Nº 1 | 2023

Journal

Is the EU's energy transition getting into gear?

"Renewables are the best way to boost our energy security

EUROPEAN COURT OF AUDITORS

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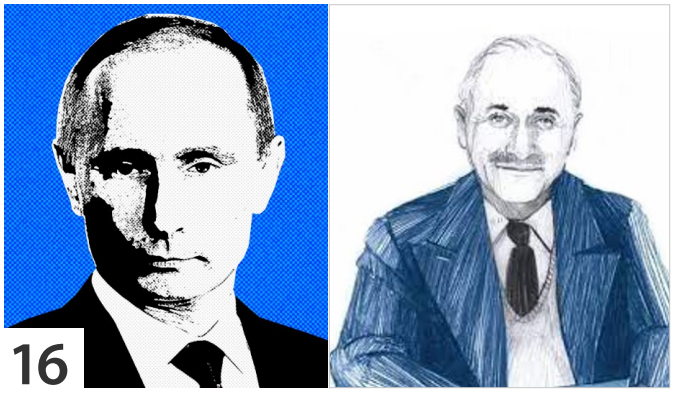

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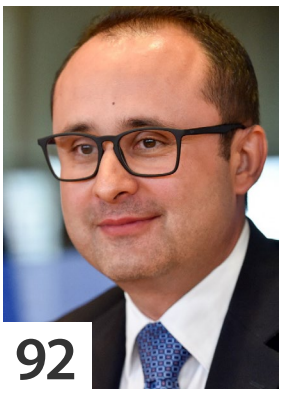

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The energetic path to decarbonising the EU – how to reconcile security, sustainability and affordability

Perhaps you've been hearing the same radio spot as me during the past few months. I initially thought it was a campaign ad for the recent Dutch elections. But then it ended 'This is a message from the EU'. The spot was aired throughout the EU in various languages. It starts justifiably from the premise that everyone wants a clean future and European energy. 'Let's ensure together that we have clean, renewable energy – made in Europe. It is only with a united effort that we can achieve these goals.' I did some research, and it transpires that this is part of the European Commission's 'You are EU' campaign. What struck me was that it focuses on two key elements: values and energy transition. And, in turn, the overriding focus of energy transition is sustainability – the part each and every one of us can play in meeting to the emission targets the EU has set for 2030 and 2050, with the ultimate aim of a zero-emission society that will keep climate change under control and preserve the planet as we know it.

While the campaign focuses on sustainability through the use of renewables, last year's Russian invasion of Ukraine accentuated two other key aspects of the energy transition equation. Second in line is energy security, which showed up Europe's addiction to energy imports. High demand led to a surge in energy prices, exposing the third element needed to secure popular support for the EU's energy transition path: energy affordability. This aspect is very close to home, as people quickly felt the impact of the energy crisis directly on their wallets. For example, my own sister had the bad luck to need a new energy contract with one of the many providers in the Netherlands which suddenly stiffened their prices, and saw her energy bill soar from €300 to over €750 per month.

When a crisis occurs, something taken for granted quickly becomes an insecurity, be it financial wellbeing, health, heating, or – as we also saw last year – peace. And with insecurity come changed priorities. Thus it was that energy security quickly came to the foreground, followed by affordability, while sustainability (investment in renewables) had to take a back seat for the time being. This shift was reflected in the Commission's REPowerEU proposals, where the rollout of renewables was obliged to take account of security and funding concerns. Paradoxically, many experts agree that renewables are exactly what is needed to reconcile all three key aspects of the energy dilemma. But in what timeframe? And how much will it cost?

As Nathalie Tocci of the Istituto Affari Internazionali explains on page 16 of this Journal, energy security and sustainability are not incompatible aspects of transition, even though the latter can only be achieved in an EU that is economically thriving, which is not yet possible without fossil fuels. Camille Defard of the Jacques Delors Energy Center (page 20) considers the EU's economic and green ambitions from a global perspective, and argues that the economic leap into the transition may be endangered by the fact that the EU has the highest energy prices in the world, not to mention the impact of recent plans to stimulate the US economy. Jana Caulier's analysis (page 26) shows that externalities are a core factor in the evolution of the EU's energy policy. But what is the current state of the energy transition in the EU? Two experts from Enerdata (page 7) discuss the trends for each energy source, with a breakdown by user sector and insights on where shifts occur, for example in gas consumption.

The Commission's role in addressing the challenges of transition has been given a boost since the energy crisis, when EU leaders placed a premium on EU unity, coordination and solidarity. According to Kadri Simson, the Commissioner for Energy (page 30), the crisis has made it possible not only to agree on a market correction mechanism to curb price spikes, but also to substantially increase structural investment in renewables, including through REPowerEU. As well as renewables, she highlights the cross-cutting emphasis on clean energy in multiple policy areas, which is also a product of the 'do no significant harm' principle.

As was the case for the Commissioner, the 2022 energy crisis significantly affected the focus and workload of Commission staff working in the energy area. Commission Director-General Ditte Juul Jørgensen (page 37) describes the dilemma of working on long-term transition challenges while addressing short-term crisis needs. The same dilemma can also be a major concern for national energy regulators, as Stanislav Trávníček, Chair of the Czech Energy Regulatory Office, points out (page 41). His office not only has to deal with increasing numbers of complaints from people in the same situation as my sister, but also looks into the 'surplus' revenues of energy suppliers. This group includes renewables producers, whose profits, according to Heymi Bahar of the International Energy Agency (page 47), may not be that easy to establish. He explains that the Russian invasion of Ukraine was a turning point for renewables in Europe.

The very necessary change to renewables raises other security, sustainability and affordability challenges. The energy transition is also a materials transition, since it requires a switch in mining from oil, coal and gas to the 'critical raw materials' of rare metals and minerals. Experts from the Commission's Joint Research Centre (page 128) join Guillaume Pitron (page 110), investigative journalist specialising in rare metals, in flagging the security risks of the fact that the mining and processing of critical raw materials lies in the hands

of just a few countries – mostly outside the EU and not necessarily maintaining environmental values the EU would wish to be associated with. Many EU countries are out of the metals game because, while we are eager to have an electrical vehicle in our driveway, we don't want a mine in our backyard. Given the enormous growth expected in demand for critical raw materials, a price surge is just a matter of time, which brings us back to affordability. This will affect the EU's energy transition ambitions, but also its digitalisation ambitions, which depend just as much on the same materials.

Where do public auditors come in regarding an energy transition where there still seems such a long way to go? Unlike some other policy areas, energy is very much science-driven, so data on all sorts of aspects is not only relevant for public policy-makers. This gives auditors important input with which to assess the risk of discrepancy between the commitments entered into and the progress made. Given the near-universality of scales of measurement, one would hope that assessing transition issues is straightforward. But as Jöelle Elvinger, ECA Member and Dean of the audit chamber dealing with energy issues, points out (page 53), some key ECA findings on issues such as energy efficiency or the actual experience of transition in member states relate to the shortage of data for a comprehensive assessment. The ECA has published audit observations on the EU electricity market (page 61), energy savings (page 67) and renewables, and will soon publish on batteries, a key driver for the transition (page 72). As well as data gaps, it has often encountered governance weaknesses that prevent the full policy impacts from being achieved.

What the ECA has recently done and will publish in the near future is covered by Florence Fornaroli (page 57), while Olivier Prigent (page 76) takes a methodical look at the EU's concrete response to the energy price spike in 2022. Among other things, he touches on the price capping measures adopted in December 2022. Professors Marco Haan and Maarten Pieter Schinkel (page 101) have analysed and published on price-capping measures in the Netherlands. The Dutch experience has become highly relevant since the Commission decided to model its proposals for the EU electricity market on the Dutch price ceiling system, which, as they see it, raises various concerns.

Electricity seems to be key to making the energy transition happen. Consequently, the electricity grid is an important audit topic, both for the ECA and for national audit institutions. Helena Lindberg, Auditor-General of Sweden, and her colleague Johannes Österström highlight (page 83) how they are reviewing the development of the electricity system in Sweden, and emphasise the increasing strain the energy transition will place on the system. Experts from the German Federal Audit Office, led by Thomas Schmidt-Wegner (page 87), likewise warned in reports published in 2018 and 2021 of various security and reliability risks to the electricity supply. Their observations, comparing ambitions and progress, were not in vain, since they and the 2022 energy crisis resulted in policy changes by the German government.

Policy-makers often express a need for clear choices in connection with the transition, both in regard to the financial means to be used and to the framework that should guide, if not regulate, transition needs. Christian Bușoi MEP (page 92), Chair of the European Parliament's committee dealing with energy issues, gives details of the European Parliament's wish for direct action to address immediate crisis concerns such as energy prices, while at the same time promoting legislation on long-term energy efficiency and hydrogen projects. Both aspects are also key for Finland, according to Hanna Kosonen MP, Chair of the Environment Committee of the Finnish Parliament (page 97), who also explains how her country intends to become emission-free as early as 2035.

Financing this challenge does not only have to come from EU or national budgets. Two energy specialists from the European Investment Bank (page 117) show how the EIB's lending policy can fuel a faster and more affordable transition, both in the EU and by providing support worldwide. Inspiration for new measures to accelerate the transition also comes from civil society organisations, writes Elif Gündüzyeli of Climate Action Network Europe (page 122). The innovations range from distributed energy sources to examples of how the EU can lead by example globally. Equally inspirational is the future painted by Erik Rakhou (page 133) regarding hydrogen, in a glimpse of energy discussions in the years to come, though with the observation that the real choice lies not between electrons and molecules but in electing regulatory models that foster competitiveness.

While solving the puzzle of energy security, sustainability and affordability in the EU may look like an impossible task, the best way forward may be to go back – back to just what it is that makes the EU such a 'one of a kind' project; the EU as value setter of what matters for the future, not just for Europeans but for everyone. From a financial perspective, many experts agree that failing to do what is needed now will only add to the future cost of transition. The younger generation seems to increasingly understand this. In the recent elections in the Netherlands, younger voters overwhelmingly favoured green parties. Whether or not they were inspired by the energy transition messages in the 'You are EU' ads, they seem to realise there is only one spaceship available – Spaceship Earth.

Energy crisis and the energy transition – a supply-side shock in gas

By Morgan Crenes and Géraldine Duffour, Enerdata

Source: Enerdata.

Despite the continued depletion in already limited fossil fuel resources, the EU remains highly dependent on them for its energy needs. In 2021, the EU price of natural gas increased significantly when the pandemic started to ease, ushering in a degree of global economic recovery. In 2022, the Ukrainian crisis led to the gradual loss of Russian fossil fuel imports, jeopardising the EU's security of supply and putting further pressure on EU fuel prices. For example, when gas prices surged in August 2022 to more than 20 times pre-COVID levels, EU end-users saw their energy bills soar. In this article Morgan Crenes, Head of the Enerdata Innovation team, and Géraldine Duffour, in charge of 'Business Intelligence' activity at Enerdata, give an overview of the recent EU energy market and examine the impact of the increase in natural gas prices on end-use consumption in the EU, focusing on buildings and industry.

The EU's energy consumption is dominated by oil and gas

In 2019, before the COVID-19 crisis, oil was by far the most widely used energy source in the EU (see **Figure 1**): it accounted for just under 33 % of total energy consumption, followed by gas (24 %). Across the globe, we observe the same shares for oil and gas. The main difference came from lower dependence on coal in the EU (13 %, compared with 27 % globally), partly reflecting the accelerated switch away from coal since 2015. This is balanced by a higher share of nuclear in the EU (14 % vs. 5 %)[1]. Before COVID-19, the COP decarbonisation objectives were far from being reached, and the level of CO_2 emissions mitigation observed during the pandemic (2020-2021) was, as it turned out, mostly – if not only – a result of the lockdown measures.

Box 1 – About Enerdata

Enerdata is an independent research company that specialises in the analysis and forecasting of energy and climate issues, at a variety of different geographic and business/sector levels. The company is headquartered in Grenoble, France, where it was founded in 1991, and has a subsidiary in Singapore.

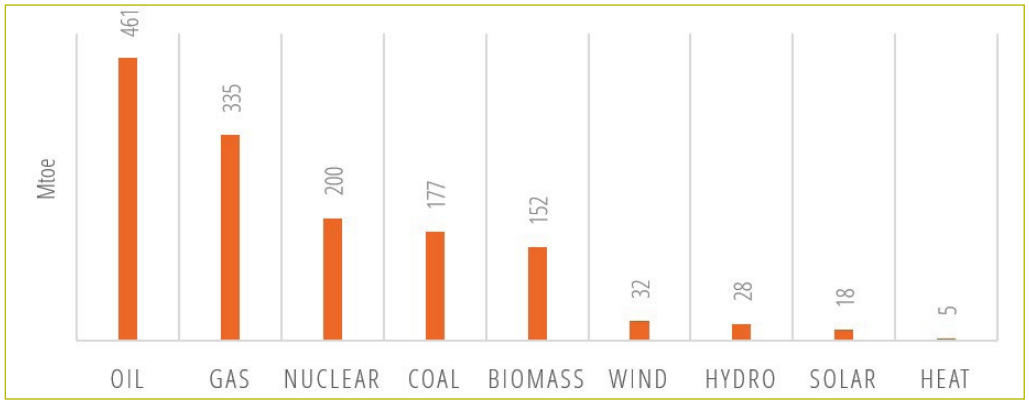
Leveraging our globally recognised databases, business intelligence processes, and prospective models, we assist our clients – which include companies, investors, and public authorities around the world – in designing their policies, strategies, and business plans.

Our experts help you to tackle key energy and climate issues and make sound strategic and business decisions.

We provide research, solutions, consulting and training to key energy actors worldwide.

1 See also Enerdata publication of June 2022.

Figure 1 - EU primary energy consumption by energy source, 2019 (pre-COVID)

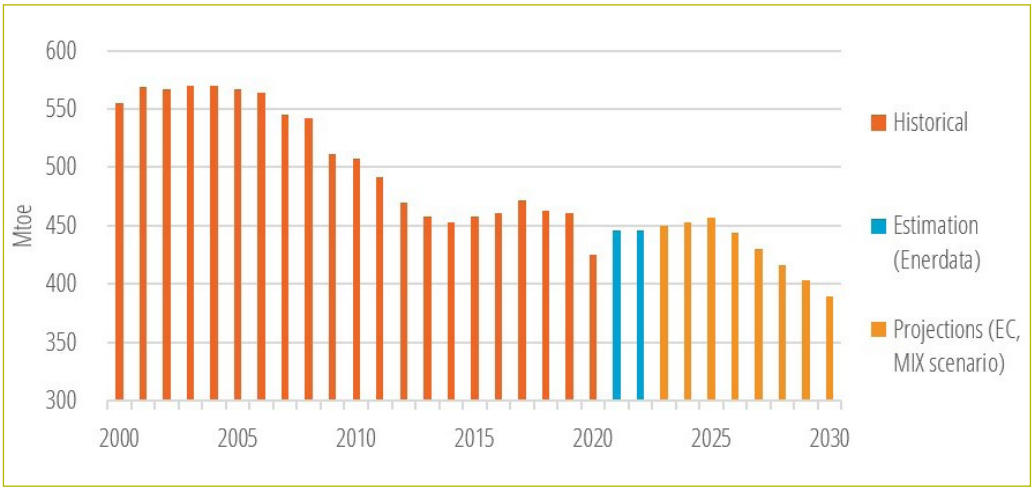


Source: Enerdata, Global Energy and CO2 Data.

Note: Mtoe = million tonne of oil equivalent.

The main driver of oil consumption in the EU is transportation (70 %), or, more precisely, road transportation (60 %)[2]. In 2021, total oil demand rebounded by 5 % in the EU (following an 8 % drop in 2020), due largely to the rebound in economic activity (GDP increased by 5.3 % in 2021 vs. a 5.9 % drop in 2023)[3]. See **Figure 2**.

Figure 2 – Oil consumption, EU



Source: Enerdata, Global Energy and CO2 Data, EnerMonthly, and European Commission.

Note: under the MIX scenario, a -55 % emissions reduction could be envisaged by 2030 by means of policy intensification and extending carbon pricing to buildings and road transport.

Since early 2022 the Ukrainian crisis has strongly impacted energy markets. Oil prices have soared to record levels and, more generally, the surge in energy prices that started in 2021 has also been a key driver in pushing inflation to levels unprecedented in the past decade. The resulting lower economic activity and reduced purchasing power limited the growth in oil demand in 2022[4]. In terms of security of supply, the Ukrainian crisis and dependence on Russian oil imports have had little impact on the EU (especially compared to gas – see the spot-price comparison in **Figure 3**) due to the nature of the oil market, which is both liquid and global.

2 Enerdata, Global Energy and CO2 Data.
3 Eurostat data.
4 EU GDP growth for 2022 was 3.6 %, vs. 4 % in January 2022 (pre-war estimate), see Eurostat.

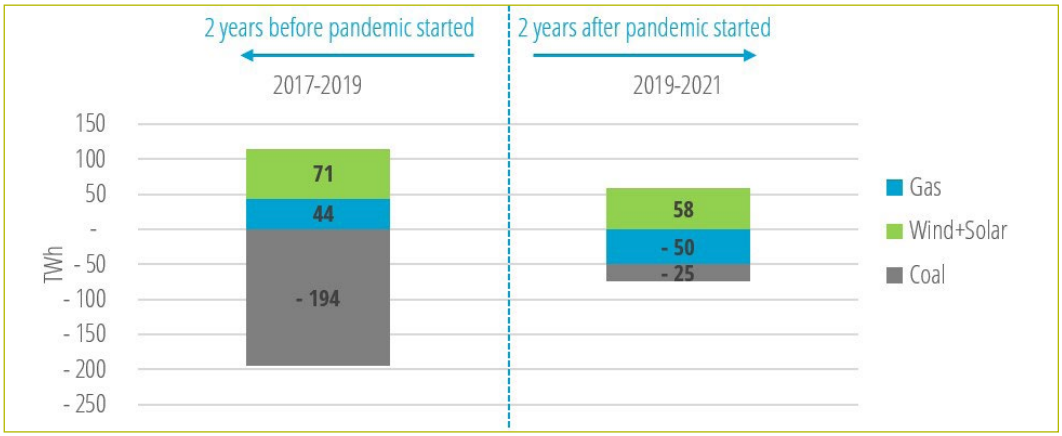
Figure 3 – Brent spot price and natural gas TTF spot price

Source: Enerdata, Global Energy and CO_2 Data.

Coal – phasing-out halted?

A focus on the two years following the start of the pandemic shows that the growth in power generation from solar and wind roughly balanced the decrease in generation from gas (see **Figure 4**). However, the two years before the pandemic tell another story. To be offset in 2018 and 2019, the phasing-out of coal required much more than additional solar and wind. The COVID-19 outbreak put a virtual stop to the phasing-out of coal. And if we look more closely at 2021, which brought a partial recovery from the pandemic, we observe that the increase in coal power generation (+20 %) more than offset the drop in gas power generation, as was necessary to support the rebound in electricity demand. Growth in solar and wind slowed slightly since the pandemic began, mainly due to poor wind conditions.

Figure 4 – EU *power generation* variation



Source: Enerdata, calculations from Global Energy & CO_2 Data.

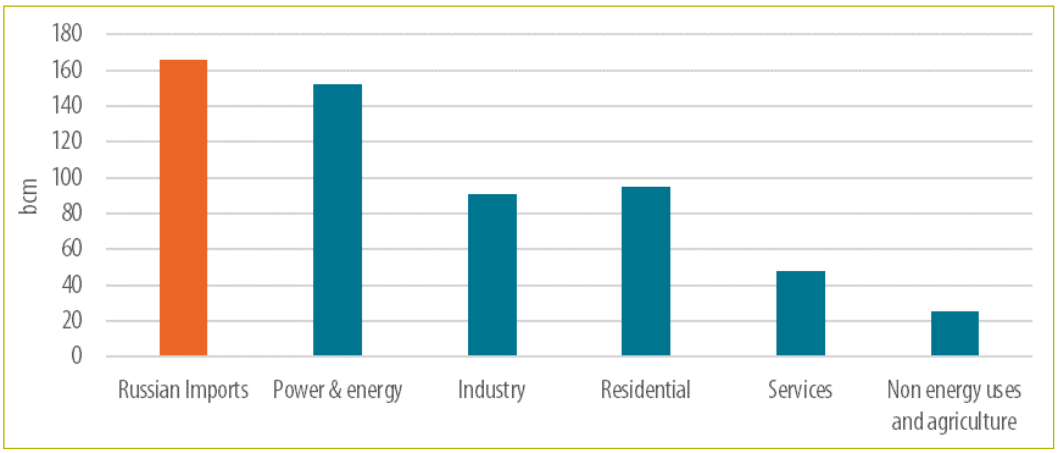
Natural gas: from a transition fuel to a threatened supply

During the past few years the greatest changes in consumption and price have been in gas. Total EU natural gas consumption was 412 billion cubic metres (bcm) in 2019[5], before the start of the pandemic. The energy sector (mainly power plants) and buildings accounted for almost three quarters of total consumption (37 % and 35 % respectively). The industry share was slightly less than one quarter of total consumption (see **Figure 5**). Two aspects are particularly relevant:

- In the short term, space heating is very dependent on climatic conditions; in the longer term, it is driven by energy efficiency improvements (such as the switch to heat pumps and improved buildings insulation) and gas prices.

5 Enerdata, Global Energy and CO_2 Data.

- Industrial consumption is driven by global economic activity and gas and CO_2 prices, and, in the longer term, by energy efficiency improvements and a switch to decarbonated processes.



Source: Enerdata, calculations from Global Energy & CO_2 Data.

Figure 5 – Natural gas consumption in the EU, 2019 (pre-COVID)

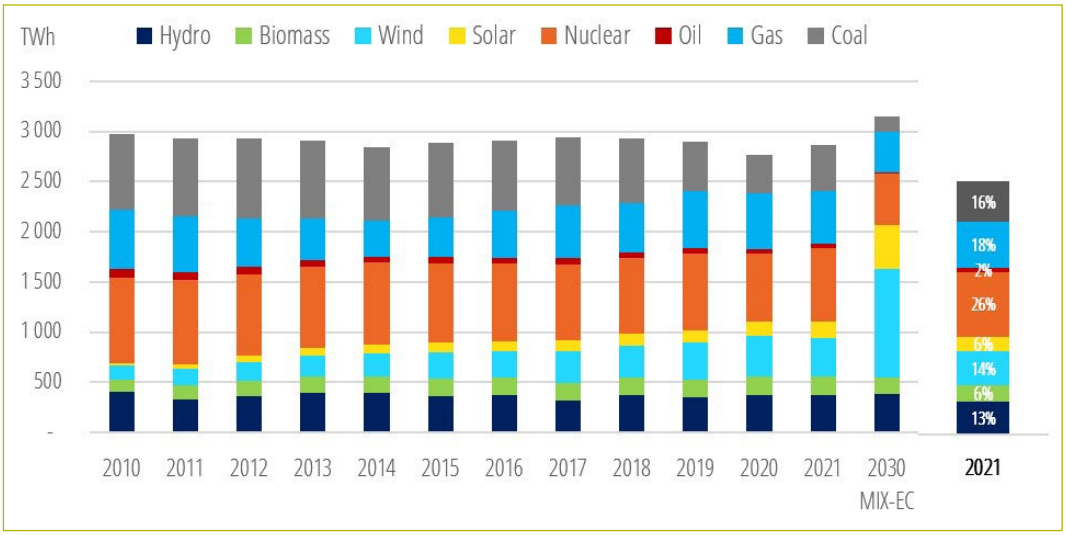
Overall, COVID-19 had little direct impact on natural gas consumption; the drop in economic activity in 2020 led to a 3 % decrease in industry use[6], and the variation in buildings consumption is more dependent on temperature and space-heating needs. However, the economic recovery in 2021 was a key factor that triggered a surge in gas prices, which, in return, impacted natural gas demand.

Uncertainty around the role of natural gas in the EU energy system increased in early February 2022, when natural gas was labelled a transition fuel in the EU taxonomy, then, a few weeks later, the European Commission presented in its REPowerEU proposals to decrease dependence on Russian imports and natural gas in general. At more than 150 bcm, Russian imports accounted for almost 40 % of total annual natural gas imports, a volume roughly equivalent to the gas consumption of the EU power sector[7]. Last summer the EU Member States committed to reducing their natural gas use by 15 % between 01 August 2022 and 31 March 2023.

The main challenges posed in relation to natural gas by the recent crises and the energy transition have been to the EU's power sector. Gas-fired power plants are responsible for around 20 % of power generation (see **Figure 6**), so play a key role in the power mix and offer flexibility with which to balance the grid. Gas is a "dispatchable" (easily adjustable) energy source with relatively high short-term marginal costs. The main drivers of natural gas power generation in the short term depend on the general balance between electricity supply and demand and its competitiveness compared with other dispatchable technologies. The recent crises have impacted several of these drivers, leading to a fall in natural gas power generation in both 2020 and 2021. In 2020 the decline was a direct consequence of the pandemic, which hit the global economy and electricity demand. In 2021 it was mainly linked to the switch to coal power generation to compensate for the decline in the competitiveness of gas-fired power plants owing to skyrocketing natural gas prices, despite the economic recovery and lower wind output. The Ukrainian crisis then exacerbated the pressure on natural gas prices.

6 Enerdata, Global Energy and CO2 Data.
7 Enerdata, Global Energy and CO2 Data.

Figure 6 – EU *power generation* mix



Source: Enerdata, Global Energy and CO_2 Data, calculations from Eurostat, European Commission.

Buildings: consumer behaviour played a huge role in reducing natural gas consumption in 2022

In 2019, buildings accounted for 35 % of the EU's total natural gas consumption and 54 % of its final gas consumption[8]. This is therefore a key sector for limiting EU gas consumption in the current context of supply tensions. Gas end use in EU buildings is divided between space heating (75 %), water heating (20 %) and cooking (5 %). In the short term, end-users of gas in buildings have been faced with soaring energy bills, as well as calls from Member State governments to reduce consumption. Despite state aid to limit gas energy bills, rising gas prices have destroyed part of the demand in the residential and tertiary sectors, with dramatic consequences for low-income households (fuel poverty). On the other hand, some households and companies have deliberately reduced natural gas consumption as part of the global effort to overcome supply issues.

We estimate that there was a *12 % drop in natural gas consumption by EU buildings between 2019 and 2022*.

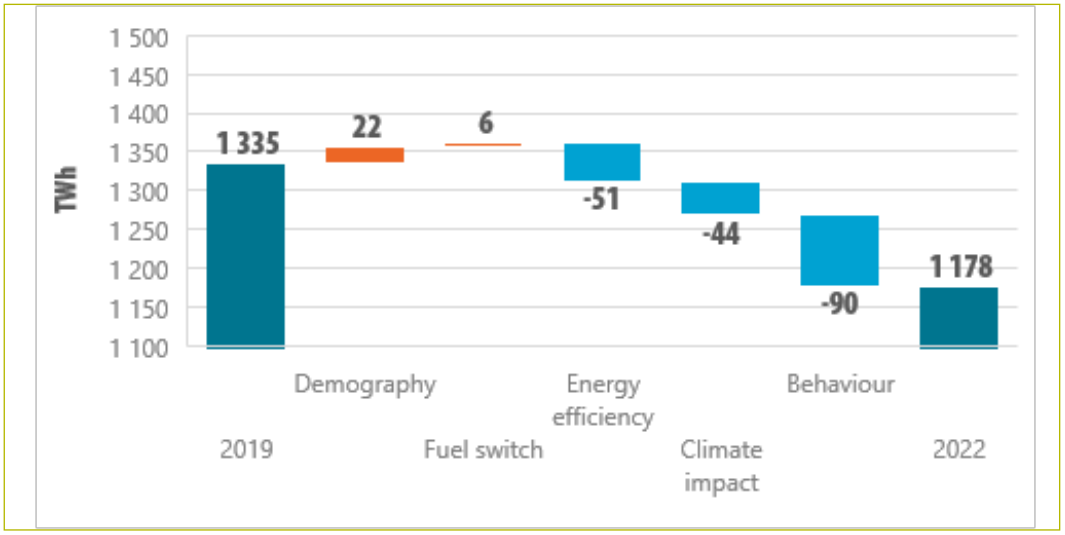
We have developed a methodology for quantifying this change in behaviour, which was mainly due to the following drivers:

- Demographic effects – changes in the number of households, floor area of dwellings and services.
- Fuel-switching effects – changes in fuel shares in buildings.
- Energy efficiency effects, based on historical trends in building renovation and technological improvements[9].
- Climate impact, based on 2022 temperature observations and historical heating degree days.
- Behavioural effects, including both the price-driven destruction of demand and voluntary reductions. This is calculated as the difference between the observed variation in buildings gas demand from 2019 to 2022 and the sum of all the other drivers.

8 End-user consumption (buildings, industry, agriculture, transportation)

9 We assumed that 2022 was in line with the recent trends observed in buildings renovation, from Odyssee database.

Figure 7 – Natural gas consumption in EU buildings: breakdown 2019 vs. 2022



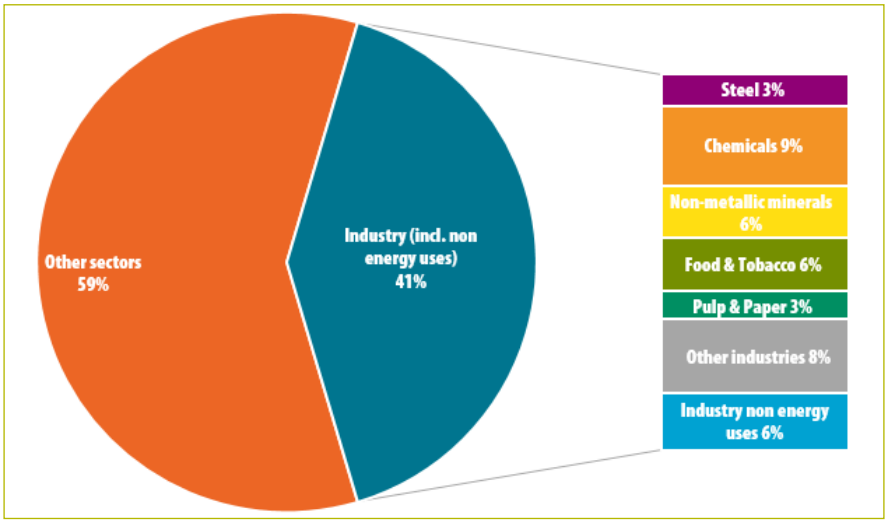
Source: Enerdata calculation from Odyssee database (demography, fuel shares, efficiency trends), Bruegel figures (2022 demand trend), Eurostat (historical degree days and consumption).

Figure 7 shows that behavioural effects contributed by more than half to the 12 % overall fall in natural gas demand in buildings from 2019 to 2022. While we have no specific data available, we can assume that price increases played a major role in these effects. The weather in 2022 also played a part, due to a milder winter at the end of the year which helped to offset some of the loss of Russian gas[10].

Fuel substitution and production curtailment contributed markedly to reduced gas consumption by industry

Industry accounts for around 40 % of final gas consumption in the EU. This makes it the second largest gas-consuming sector (including non-energy uses, behind households and before services – see **Figure 8**). Industrial gas consumption has been hovering at around 900 TWh/year since 2000 (873 TWh in 2019, a 3 % drop in 2020, and a 4 % recovery in 2021 to nearly 890 TWh).

Figure 8 – Share of industry, by sector, in EU final gas consumption, 2021



Source: Enerdata calculation from Odyssee database (demography, fuel shares, efficiency trends), Bruegel figures (2022 demand trend), Eurostat (historical degree days and consumption).

Five industrial sectors are particularly gas-intensive and sensitive to gas price variations: chemicals (including fertilisers and pharmaceuticals), non-metallic minerals (including cement and glass), food and tobacco, steel, and pulp and paper.

Soaring gas costs in 2022 fuelled fears of industrial slowdown or even economic collapse, prompting industrial groups to call for political action. However, despite the concerns, European industry has proved more resilient than expected, with industrial groups adopting two main strategies to cope with gas price spikes:

10 Compared with 2019, which was also a relatively mild year. The theoretical climate impact of 2022 compared to a 'normal climate' year in terms of heating degree days would give a -100 TWh consumption effect, more than twice the -44 TWh calculated in comparison to 2019.

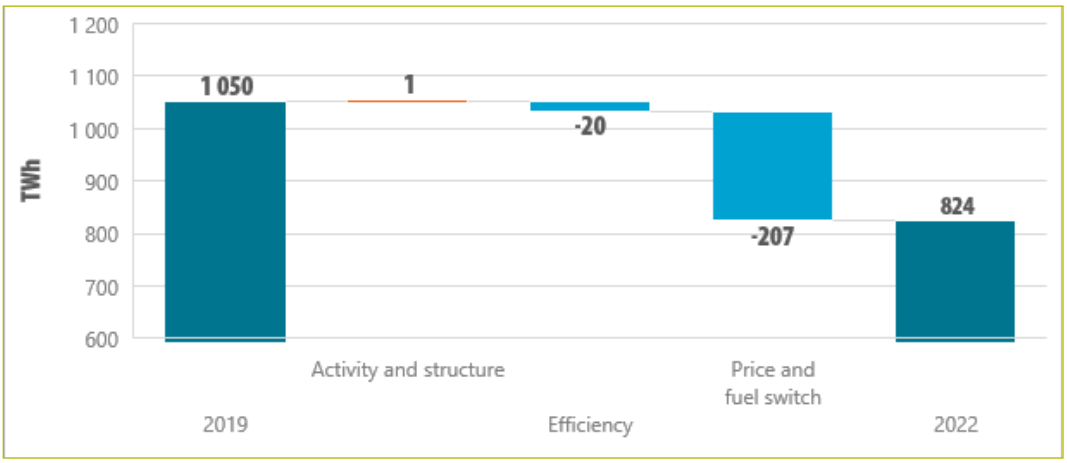
- substituting gas with alternative energies (mainly oil or coal) where possible; and
- reducing or stopping production.

Emergency aid from governments, which increased slightly in 2022, also helped to mitigate the effects of volatile energy prices on industrial production.

The price surge and threat to security of supply resulted in a 21 % drop in natural gas consumption by industry

How have announcements from the sectors described in the previous sections impacted natural gas consumption? We have quantified[11] the main drivers of industrial gas consumption in **Figure 9**. Overall, natural gas consumption *dropped by 21 % from 2019 to 2022*. The main causes, unsurprisingly, were *high prices* and *alternative fuels,* which together accounted for *90 %* of the reduction.

Figure 9 – Natural gas consumption in EU industry: breakdown 2019 vs. 2022



Source: Enerdata calculation from Bruegel figures, Eurostat, Odyssee database.

These results are in line with the theoretical short-term price elasticity[12] of gas consumption in industry, which would give a 24 % drop between 2019 and 2022, whereas our calculations, based on actual 2022 data (production index and industry gas consumption), give a 20 % drop. Looking ahead, short-term EU industrial gas consumption will depend both on the gas price trajectory and on the EU Emissions Trading System (EU ETS) carbon price. Relatively high energy prices in Europe threaten EU industries' competitiveness and could result in significant relocation for the most energy-intensive industries.

Strong uncertainty for 2023

If we project to 2023 and beyond, there are several drivers to watch closely when estimating the future natural gas demand of EU buildings and industry:

- the natural gas price trajectory, and state aid to limit the impact on energy bills;
- energy sufficiency (voluntary reductions in demand): is this the beginning of a long-term trend that could support the EU's long term decarbonisation objectives, or just a short-term trend?
- the impact of building renovation and industrial processes on energy efficiency trends;
- the competitiveness of EU industry, and its ability to attract LNG shipments and fill storage capacity;
- winter temperatures.

With the first quarter of 2023 over soon, some preliminary trends can already be perceived:

11 Based on global industry and sub-sectors levels of production (data from Eurostat), structural changes in the relative weight of industry sub-sectors (data from Odyssee database), energy efficiency (data from Odyssee database), and price & substitution calculated from the observed 2022 industrial gas consumption (based on Bruegel figures and Enerdata calculations).

12 *'Natural Gas in Europe: The Potential Impact of Disruptions to Supply'*, IMF, p. 16

- Natural gas prices have been steadily decreasing for the past four months and are much lower than last summer's peak. With a spot price of €50/MWh at the beginning of March (see **Figure 10**) and a future price for next winter also at €50/MWh, the natural gas price in 2023 could be less than half the 2022 average of €120/MWh. However, this would still be much higher than pre-COVID levels (around €10-20/MWh).
- Storage levels in the EU at the beginning of March are the highest they have been for five years. The current figure of 60 % full[13] is the same as in 2020 and much higher than in 2022 (29 %).
- LNG terminal utilisation reached record levels at the beginning of 2023, with a 74 %[14] utilisation rate compared to 62 % in 2022 and 50 % in 2019 (pre-COVID), which is a positive signal regarding LNG imports.

Figure 10 – EU natural gas price (TTF spot price)

Source: Energymarketprice.

Key takeaways

When analysing the changes in the EU's energy consumption during the past few years, it is clear that the EU's energy appetite is still dominated by oil and gas. Transportation, particularly road transportation, drives oil demand. The energy sector (mainly power plants) and buildings account for almost three quarters of total consumption of natural gas.

In the years just before the pandemic, the COP decarbonisation objectives were far from being reached. By order of magnitude, the global drop in CO_2 emissions in 2020 was roughly what would be required annually to be on track with the Paris Agreement.

The strong post-pandemic growth naturally brought a surge in emissions (notably in the industry and transport sectors) due to the catch-up effect, i.e. the appetite for goods and leisure that was fuelled by COVID-19 stimulus policies and the resulting consumer savings. This economic situation led to inflation rates that had not been seen for decades in western countries. In particular, energy prices rose sharply.

The EU's oil consumption has been hit by recent crises; however, short-term measures (subsidies, direct support) to limit the surge in oil prices could delay the transition to decarbonised transportation. EU dependence on Russian gas was, and may still be, more of a structural issue, and the Ukrainian crisis raised awareness in the harshest of ways. Several plans were set up to drastically reduce natural gas imports from Russia. For natural gas end-users the main options are *energy sufficiency* (decrease thermostat temperature), *energy efficiency* and *electrification* (for example aided by REPowerEU) or *switch from natural gas inputs* in the power system (IEA 10 points plan[15]). Several Member

13 Data from GIE https://www.gie.eu/.
14 Data from GIE https://www.gie.eu/.
15 International Energy Agency, *A 10-Point Plan to Reduce the European Union's Reliance on Russian Natural Gas*, March 2022.

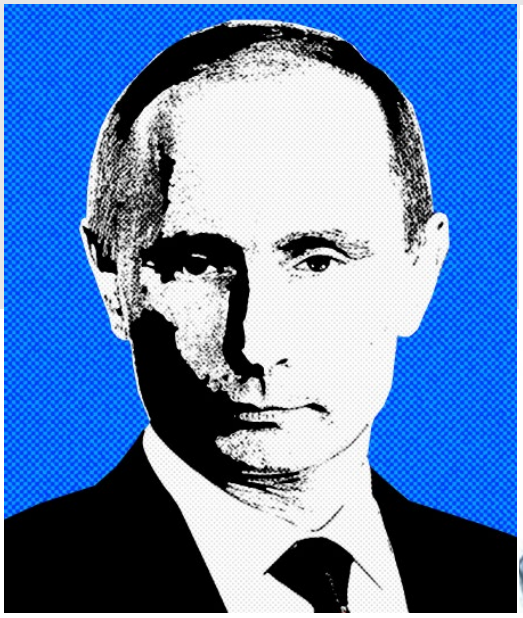
States have explicitly mentioned the option of temporarily suspending the phasing-out of coal (including Germany and Italy). However, in the short term the switch from gas to coal could have a limited impact on the carbon budget since these emissions are covered by the EU ETS.

In the longer term, structural changes in the EU's power mix do not seem to have been impacted by recent crises. So far, we have not observed adjustments in long-term coal phase-out policies. Overall, coal's comeback in the power mix is not good news and points to a structural weakness (dependence on Russian gas), but it could be just a temporary option. The role of natural gas in the power mix as a transition fuel could be questioned, depending on how fast the EU's natural gas supply can be diversified by ramping up renewables. The energy sector and buildings accounted for respectively 37 % and 35 % of gas consumption in 2019. Buildings used 12 % less natural gas in 2022 than in 2019, with behavioural effects accounting for over 50 % of the fall. Natural gas consumption in industry dropped by 21 % in the same period. In the short term, high energy prices could continue to mean voluntary reductions in demand in buildings, and the relocation outside the EU of very energy-intensive industries.

In the end, when it comes to climate effects, as some of these positive and negative consequences will balance each other out, times of uncertainty do not favour structural changes. Moreover, since solar panels and hydrogen trucks cannot be massively deployed overnight, the emissions mitigations that would be required in the short term to meet climate targets cannot be expected in the next few years. However, the recent crises could boost decarbonisation plans in the longer term.

European resilience, energy and the war in Ukraine

By Nathalie Tocci, Istituto Affari Internazionali



Source: Depositphotos/BackgroundStor

Vladimir Putin

Source: European Parliament.

Jean Monnet

As the Ukraine war escalates with no end in sight, Europe's resilience is being put to the test. Nowhere is this clearer than in the area of energy, where the crisis first created the perfect timing for Russia's invasion and then became weaponised against Europe in a broader confrontation with the West. Nathalie Tocci is Director of the Istituto Affari Internazionali in Rome. In her capacity as Special Advisor to both the current and former EU High Representatives, she wrote the Global Strategy for the EU's foreign and security policy. She is therefore well placed to analyse how recent energy developments relate to the EU's role and actions around the world, including how they influence other policy concerns, from migration to inflation. In this article*, she observes that two interpretations of resilience have come to the fore: those of Vladimir Putin and Jean Monnet. In her view, the outcome of the war and the future of Europe will be shaped by which of the two prevails. She anticipates that the actions of EU governments during the next year will help Europe steer a course through the energy crisis.

Two sides of the resilience coin: Putin and Monnet

Putin and Monnet represent two sides of the resilience coin: pain endurance and transformation through crisis. Putin believes that resilience is about pain endurance, and that liberal democracies are simply not made of that stuff. He believes Europe's pain threshold to be low, certainly much lower than Russia's, whose people are willing to sacrifice themselves for their motherland. In Putin's view, Russia is resilient; Europe is not. This interpretation is in stark contrast with the quintessential European understanding of resilience – outlined in Jean Monnet's memoirs: 'Europe [will] be built through crises, and [will] be the sum of their solutions'. Under this idea, resilience is about reacting, adapting and lifting up after a fall.

* This article is a synthesis of a piece published by the IAI: https://www.iai.it/en/pubblicazioni/european-resilience-energy-and-ukraine-war.

These two interpretations are both true and incomplete. It is true that liberal democratic societies in Europe have a low – or lower – level of pain endurance compared to authoritarian Russia or that western European societies have gone through less hardship than Russians over the last decades. However, this does not mean they are less patriotic or more politically flaccid than Russia or that they haven't experienced challenging conditions. Furthermore, taking Putin's definition of resilience as a reference, the EU has not broken down in light of its 'perma-crisis' since 2005 (the 2005 constitutional crisis, the sovereign debt crisis, the migration crisis, Brexit, the pandemic and the Russo-Ukrainian war). At each juncture, many predicted a fall – but none of these catastrophes came to pass.

The very existence of the Union and its evolution over time proves that Monnet's interpretation of resilience was not just a wish, but a prediction that so far has borne out. At each crisis, European integration, far from breaking, made steps forward, from the single market to the monetary union, passing through enlargement, and, more recently, NextGenerationEU. It remains to be seen whether the war and the multiple crises it has unleashed will see the EU react in ways more akin to the Eurozone and migration crises or the pandemic.

Putin's gamble

With the resumption of economic activity post-lockdowns, energy demand was again growing. Yet energy supply couldn't stay the pace, resulting in the rise of energy prices as early as the second half of 2021. This created a propitious strategic environment for Putin to manipulate energy markets in the fall of 2021 to further increase prices, and then to invade Ukraine.

As prices rose in late 2021, Putin deliberately fed that trend, with Gazprom reducing storage levels in Europe and withholding additional gas volumes on spot markets. This helped fill Moscow's war coffers and increase Russian leverage on Europe. Putin must have been sure that, faced with high prices and gas dependence on Russia, Europe would have barked without biting once again over Ukraine. But things worked out differently. The EU – together with the US – has shown a remarkably strong and united response, also agreeing on severe sanctions, but the Russian president's conviction regarding Europe's lack of resilience likely remained unscathed. It simply required upping the ante and turning off some taps.

Initially Putin did not do much beyond basking in the funds that skyrocketing energy prices brought about – Europe paid Russia a whopping €1 billion per day in the first half of 2022. When Europeans eventually agreed on an oil embargo, developed plans for energy demand reduction, began rapidly filling gas storage facilities and signed gas contracts with alternative suppliers, Russian hints at possible supply interruptions to Europe were put in practice. In this period, the Kremlin consolidated and spread the propagandistic narrative that linked spiralling gas prices to sanctions while denying any weaponisation of energy. In Putin's interpretation of resilience, faced with the pain of rising energy bills, inflation and recession, social discontent in Europe would rise.

Monnet's response

Monnet would have seen things differently. Truth be told, Europeans were caught off-guard by the war. Russia's invasion not only swept away the scraps of hope left from the post-Cold War era, but also invalidated the model that had been built during the last decades of the Cold War, which saw the pursuit of energy ties across geopolitical divides. Despite the trauma of this failure, the shock of the invasion led to an abrupt policy shift, especially when compared to the typically unimpressive speed of European decision-making.

The EU took longer to move on energy, but considering how intertwined Europe and Russia were in this field – and member states' different energy mixes and vulnerabilities – it is significant that by summer 2022 the EU had agreed on an embargo on Russian coal and oil. Gas is a different story. Given its strong regional dimension, Europe could not withstand an immediate halt to the supply of Russian gas – especially for those countries (e.g. Italy and Germany) that are highly dependent on gas in general and Russian gas in particular.

That said, Europeans did not stay put. Countries have rushed to find alternative supplies, approve new infrastructures. Alongside this, member states enhanced their climate targets. Renewables and energy efficiency have gained a new relevance as they contribute to energy security. With a green Europe having become the EU's new identity and mission, the aim became that of reconciling energy security with the transition: the European Commission's RepowerEU plan represented an attempt to square the circle.

The EU has also proposed unprecedented measures, both temporary and structural, to contain prices and address the socioeconomic disparities generated by the crisis. First, it agreed on electricity reduction targets. This foresees a 10 % voluntary reduction in gross electricity consumption and a mandatory 5 % cut during peak demand. Second, the Council agreed to cap the remuneration of power for infra-marginal technologies at €180 per MWh. The revenues accrued would then be redistributed to families and businesses in need. The Council also proposed a temporary 'solidarity contribution' by European oil and gas companies. Third, the EU is working on capping prices from other suppliers, beginning with Norway given its extraordinary profits despite the common cause in the war against Russia. Furthermore, the EU, within the G7, has discussed an oil price cap, which would kick in when the EU oil embargo starts. Finally, the EU has begun working on a structural reform of its energy markets, including supervision of the gas price market and the decoupling of the electricity and gas markets.

Ideas remain embryonic and complexities abound, but countries will need to ensure that the temporary measures adopted to deal with the energy emergency are functional to longer-term structural reforms as well as greater integration rather than fragmentation of the EU's energy market. While member states still disagree on certain mechanisms, the EU institutions have also been working on enhancing solidarity and joint action by proposing the joint procurement of gas.

Both temporary measures and structural market reforms must be well designed, and this takes time. However, speed is essential to prevent member states from going it alone. A failure to reach quick agreements at EU level could trigger beggar–thy-neighbour dynamics to the detriment of all.

Last and most important is the need to reconcile energy security and the energy transition. On paper, it all makes sense and RepowerEU shows the way, including an increase to renewable targets from 40 to 45 % of the European energy mix by 2030, and the rapid development of a hydrogen industry. Achieving this in practice is no sure thing. In the energy security emergency triggered by the war, Europeans have invested billions of euros in new and expanded fossil projects and allocated huge figures to shield consumers from soaring utility bills (€768 billion from September 2021 to February 2023)[1]. By way of comparison, NextGenerationEU, the EU's post-pandemic recovery plan, amounts to €807 billion over the seven-year budget cycle. Moreover, there are the lock-in effects created by new fossil fuel contracts and investments, as well as the twisted notion of selling more carbon permits to finance RepowerEU, which includes fossil projects.

It is easy to criticise this as squarely contradicting the European Green Deal. At COP27 in November 2022, several parties accused Europe of hypocrisy, but the EU has reassured other actors that it is even more committed to its long-term climate objectives. Yet the truth is that it is impossible to navigate the storm without fossil fuels. This is not to say that Europe's decarbonisation targets are destined to be trashed. On the contrary. Energy efficiency has finally been taken seriously because of the crisis. Renewables will be ramped up beyond what our pre-war plans were. Finally, it is crucial to embed decarbonisation projects – from renewables to hydrogen and carbon capture and storage – within the new energy relationships with old and new energy partners in the Middle East and North Africa, sub-Saharan Africa and the Caucasus.

1 https://www.bruegel.org/dataset/national-policies-shield-consumers-rising-energy-prices.

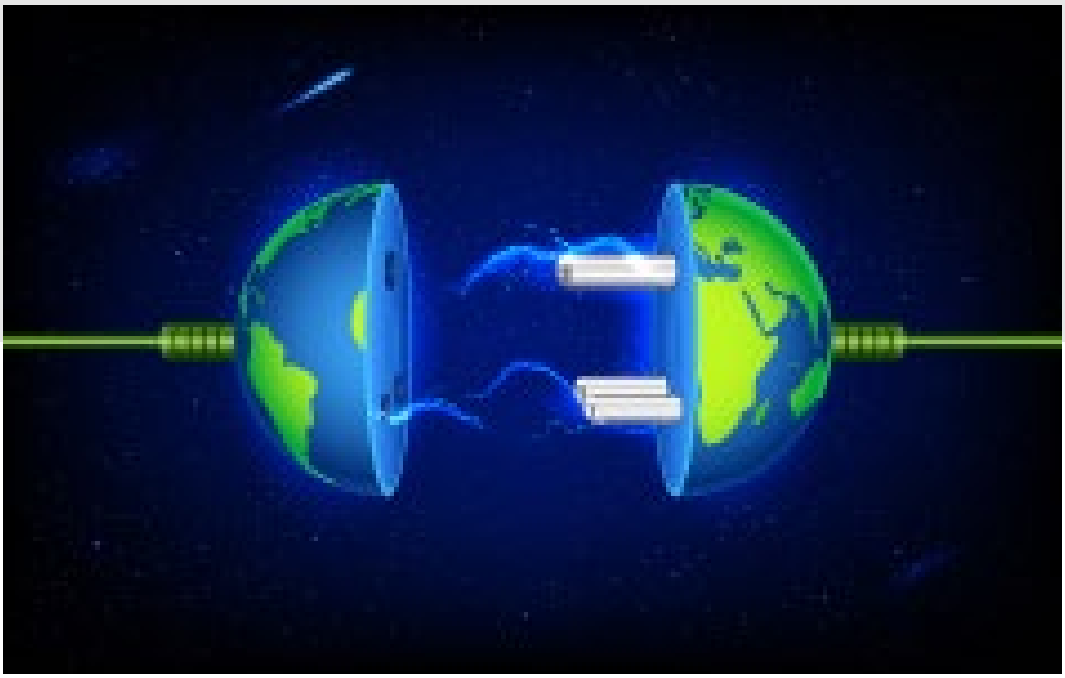
Endurance and transformation – the two sides of the coin

All this is possible but will cost huge sums of money, alongside laws, regulations and diplomacy; much more than what was planned before the war began, which itself was enormous. The energy transition requires healthy economies. In fact, decarbonisation is not sustainable without growth, in much the same way that growth can be fuelled by a well-designed decarbonisation process: it is a two-way street. Hence, the energy transition requires European economies to be put back on track, and this in turn depends on addressing the energy crisis rapidly and effectively. Which, alas, cannot be done without fossil fuels. In other words, what appears as a contradiction – energy security and energy transition – is actually two sides of the same coin.

The elements of change, reform and transformation are all there. They are complex, unpredictable and riddled with obstacles and apparent contradictions. Yet there is widespread recognition among European governments that this – much like the pandemic – is a crisis that can only be navigated by standing together. Uncoordinated measures and policies would cause intra-European competition, which would lead to an exacerbation of the current energy crisis. And there is a chance, arguably a realistic one, that Europe will navigate this crisis too and that the solutions it will find will become yet another building block in its history of integration. The upcoming months and year will indeed be crucial for Europe to build stronger mechanisms and solidarity. The jury is out on whether Putin or Monnet will win the day, and whether and how the Union will prove and strengthen its resilience. But at the height of this crisis, my bet today is squarely on Jean Monnet.

The EU Green Deal in a volatile world

By Camille Defard, Jacques Delors Energy Center



Source: Vectomart/ Depositphotos

The EU ambition to be the first region in the world to be emission free is not only an issue of political will but also of economic capability and outlook to get there. EU's energy dependency had a substantial impact on its competiveness globally and this has only increased with the war in Ukraine. Camille Defard is Head of the Jacques Delors Energy Center and Research Fellow in EU Energy Policy. In this article, she analyses the geo-economic challenges, be it from the East or the West, the European Union faces in its energy transition ambitions and which aspects the EU needs to address to successfully navigate towards decarbonisation without losing its economic edge.

Clearer goals but bumpier road

'Without an active energy policy, the European Union will not be able to free itself from its increasing energy dependence'", the European Commission stated as early as 2000 in one of its green papers. Already back then, the link was clear between energy security, competitiveness, and the green transition away from (mostly imported) fossil fuels. In the view of the Commission, meeting these common challenges also meant more coordinated EU action.

Since 2000, EU energy policy has achieved great progress, becoming increasingly ambitious and integrated. This trend is well-illustrated by the launch of the EU Green Deal in December 2019 , which aims at achieving climate neutrality by 2050. But since then, geo-economics and geopolitics have dramatically changed, with COVID-19 and the war in Ukraine worsening the EU energy crisis. The transition to net-zero emissions is now, more than ever, the obvious remedy to the fossil energy price crisis, but the road has also become bumpier. Is the EU fit to handle energy crises and to move towards climate neutrality in an increasingly volatile world?

Below I first set the scene of the EU energy transition to date, showing how climate action rose prominently in the energy security and competitiveness agendas. Then I highlight the emerging geo-economic challenges and conclude with an assessment of political answers.

The EU Green Deal - a resilient strategy still in its infancy

Achieving climate neutrality requires doubling the current pace of emission reductions[1]. Between 2005 and 2020, EU emissions decreased by over one quarter, the share of

1 See Le Quéré, C. e.a., *Drivers of declining CO2 emissions in 18 developed economies*, in : Nature Climate Change volume 9, pages213–217 (2019).

renewables more than doubled from 10 to 22%, and primary energy consumption decreased by 17,5%[2] (). While these are positive results, current policies would only lead to a 60% reduction in emissions by 2050.

To implement the EU Green Deal, the EU engaged in a regulatory overhaul. It adopted its first climate law in 2021, setting itself binding emission reduction targets of -55% by 2030, as compared to 1990 (instead of -40% previously), and net-zero by 2050. The European Commission proposed a new climate and energy package, 'Fit-for-55', which aims at aligning the energy regulatory framework with the strengthened 2030 objective. It will address a wide range of issues, including banning the sale of new thermal cars by 2035, increasing energy efficiency and renewable targets, and strengthening the EU carbon price signal. Finally, a carbon price for imported goods from third countries, the Carbon Border Adjustment Mechanism (CBAM), should be introduced on some imported high carbon-intensity products such as steel and hydrogen. This instrument would be the first of its kind and aims at preventing 'carbon leakage' and at incentivizing EU trade partners to decarbonize their energy supply.

So far, the crises have only strengthened the EU Green Deal. When the COVID pandemic struck Europe, EU leaders managed to set their disagreements aside to come up with a historic common response, breaking the taboo of common borrowing and safeguarding the EU Green Deal as a key answer for recovery. 40% of the EU recovery funds – the Recovery and Resilience Facility - have been directed to climate investment, out of a total envelope of €720 billion to be spent by 2026. The REPowerEU plan to phase-out Russian gas dependency proposes to increase renewable and energy efficiency targets in the frame of the Fit-for-55 package, to accelerate renewable energy project permitting, and to establish a common demand reduction plan.

The EU Green Deal confirms the EU as a global front runner with regards to green transition ambitions. While the US and China introduced flexibility in their climate targets, the EU now has binding emission targets, and is strengthening binding laws with the Fit-for-55 package. On paper, it could be well placed to have a first-mover advantage[3] .

But fulfilling this potential requires to address the issue of energy dependency while maintaining EU competitiveness in a time of uncertain supply chains. While the long-term benefits of a low carbon economy are clear, short-term transition costs are likely to be significant, involving major shifts in growth patterns, an investment boom and reduction of consumption with potentially large distributional effects[4] .

Climate action is now a prominent matter of energy security and competitiveness

Dependency on imported fossil fuels (oil, gas and coal) is one of the EU's greatest *vulnerabilities*. According to Eurostat, fossil fuels represented close to 60% of the energy consumed in the EU in 2020. Before Russia invaded Ukraine in February 2022, Russia stood out as EU's main supplier, with around 30% of EU imported oil, 45% of gas and 55% of solid fuels.

With such massive energy purchases from Russia, the EU indirectly contributed to funding the war in Ukraine (see **Figure 1**). However, sanctions and shifts in energy imports should start damaging Russian public finances this year[5]).

Figure 1 - Trade value of Russian exports of fossil fuels to the EU compared to Russian military expenditure in 2020

Source: Politico 2022

2 See European Scientific Board on Climate Change letter of 7 February 2023 to Council, European Parliament and European Commission.

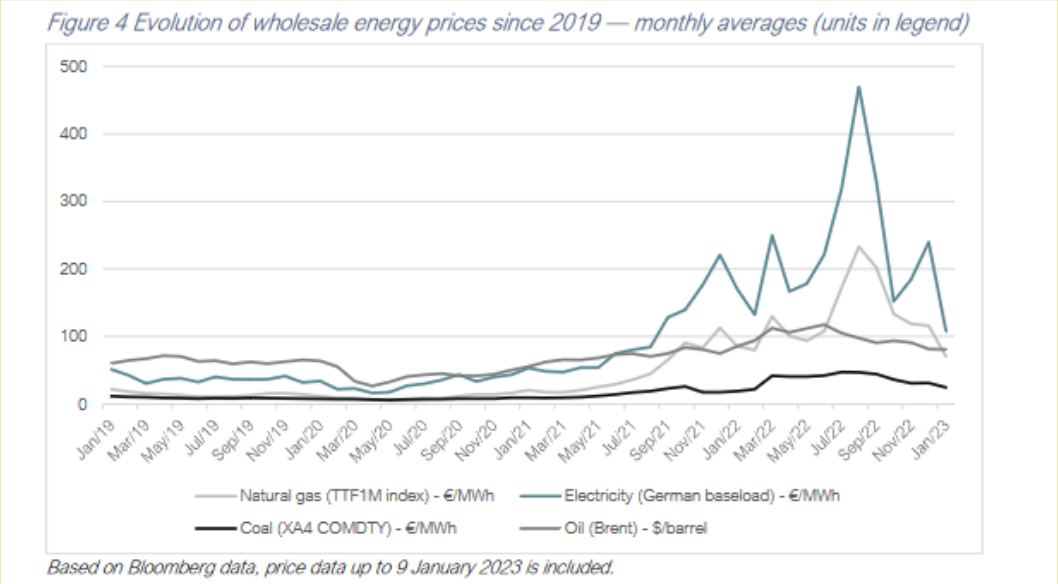
3 Derdevet, M. and Pèlegrin, C., *Dans l'urgence climatique - Penser la transition énergétique*, 2022.

4 Pisani-Ferry, F., *Climate policy is macroeconomic policy, and the implications will be significant*, in: Policy Briefs 21-20 (2021).

5 See Politico, 9 January 2023.

Besides, the EU's dependence of fossil fuel imports allowed Russia to use energy as a weapon, reducing gas flows to Europe by 80% over the course of 2022, hence fueling an energy price crisis. EU wholesale gas and electricity prices rose by up to ten times in 2022 compared to historical averages[6] (see **Figure 2**). This led to sharp increases in retail prices for households and businesses, raising concerns over cost-of-living, competitiveness and deindustrialization[7] .

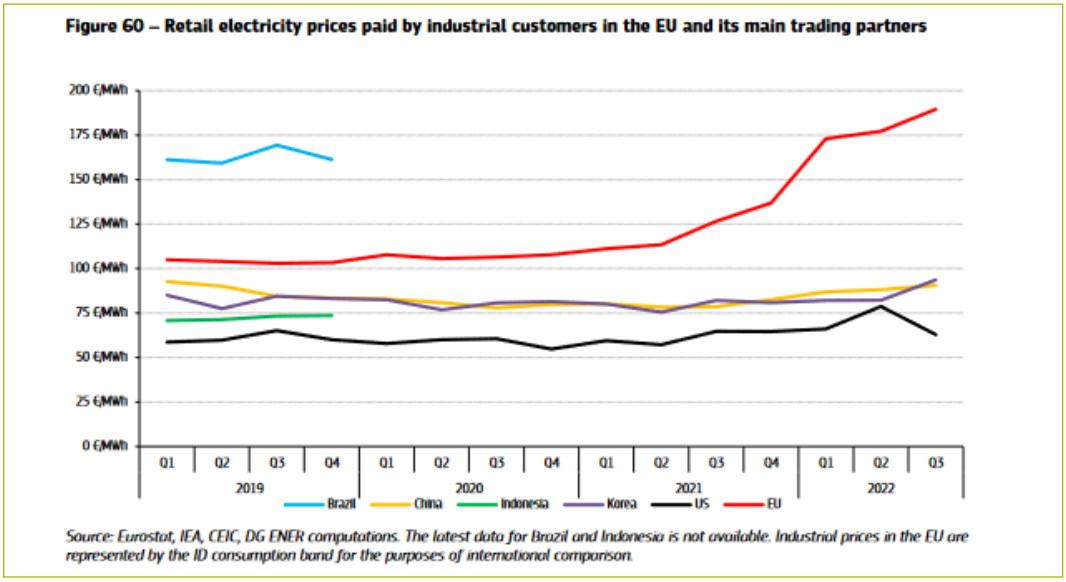
Figure 2 – Evolution of wholesale energy prices since 2019 – monthly averages



Note: units in legend. *Source*: European Scientific Advisory Board on Climate Change 2023

Since the era of cheap fossil fuels might well be behind us (EC 2023 GDIP), climate action becomes a prominent matter of competitiveness for the EU. The EU now has the highest energy prices in the world. Retail electricity prices in the EU were about twice as high as in China or the US (see **Figure 3**). Thanks to a mild 2022/2023 winter, energy savings and industrial production curtailments, gas storage levels are higher than expected (Bruegel 2023, ESABCC 2023). The pressure on energy prices has receded markedly since December 2022, but the gas crisis is not over.

Figure 3 – Retail electricity prices paid by industrial customers in the EU and its main trading partners



Source: EC 2023, Quarterly report on EU electricity markets Q3 2022

6 See Trading Economics (2022) and Ember (2023).

7 See European Scientific Board on Climate Change letter of 7 February 2023 to Council, European Parliament and European Commission.

Climate action is now energy security action. The EU replaced Russian gas mainly with LNG imports, and remains vulnerable to international market dynamics. 30 billion cubic meters of gas[8] could be missing for next winter. LNG supply could be tighter due to Chinese re-opening after a long period of lockdowns. The International Energy Agency therefore recommends to accelerate improvements in energy efficiency, deployment of renewables and electrification of heat, as well as cutting on excess consumption with sufficiency measures[9].

Geo-economical challenges to the EU Green Deal

Clean energy policies are increasingly taking center stage in geopolitics and international balance of power. Securing access to raw materials for clean technology is now as strategic as oil and gas in the 20th century. China has a quasi-monopoly on rare earth processing and permanent magnets required to manufacture windmills and batteries[10]. In early 2023, it proposed to introduce export licensing requirements on solar PV wafers, which could act like an export restriction[11]. If it materializes, it might hinder the acceleration of PV deployment in the EU.

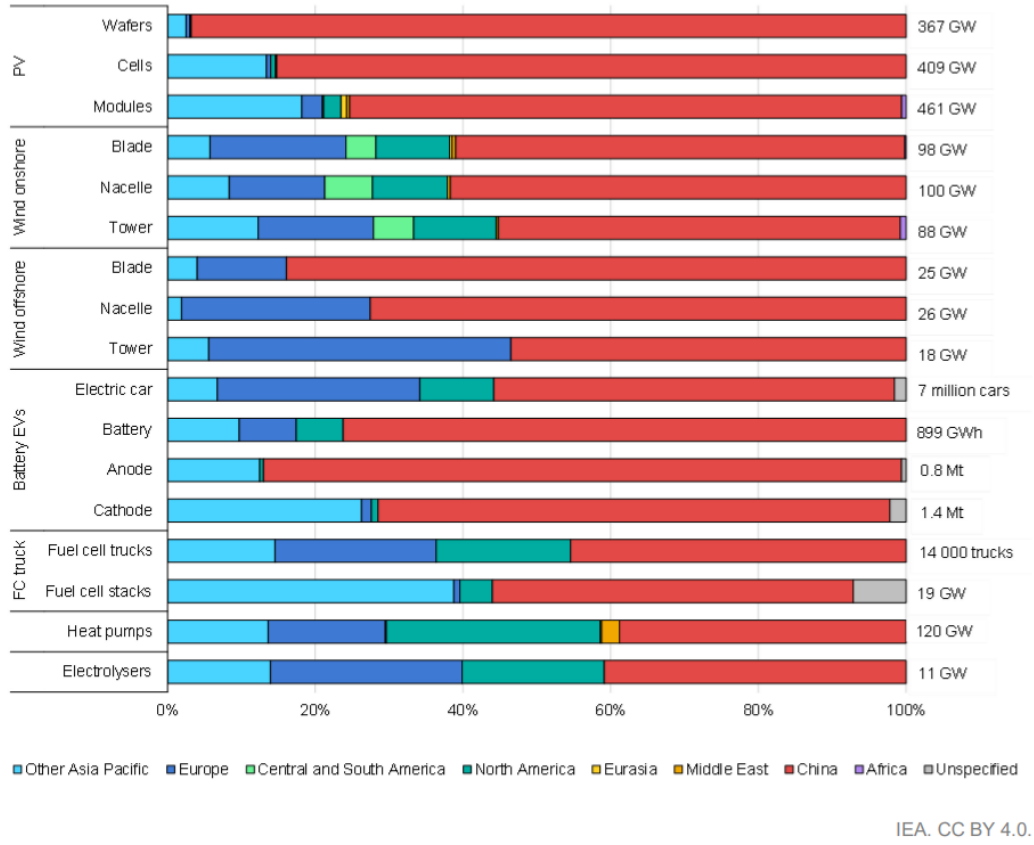
The US Inflation Reduction Act (IRA) is the last plot twist in the growing US-China rivalry and mounting concern over supply chains for the clean transition. As such, the announcement of an ambitious clean subsidy plan on the other side of the Atlantic is good news for the climate fight[12]. The only issue for Europeans is that the law passed by the US in August 2022 introduces domestic content ('Buy American') conditions.

The IRA revived fears of EU deindustrialization to the profit of the US, a business trend further amplified by the high energy prices in the EU. While it remains to be seen whether this strategy can work and compensate for the decades of Chinese investment to become a processing hub[13] (Goldthau, Tagliapietra 2022)[14], the IRA may well hurt the EU[15].

The US still lags way behind China and, to a lesser extent, Europe. China invested four times more than the US in the clean transition in 2022 (USD 546 billion)[16] . China is also the global leader in clean tech manufacturing, but the EU remains a larger producer of wind energy component and batteries than the US[17]. However, China has been subsidizing its industries at levels twice as high as the EU relative to GDP[18]. Around 90% of mass-manufacturing capacity for several key clean energy technologies is concentrated in China and the Asia Pacific region (see **Figure 4**)[19].

8 Equivalent to 7,5% of EU gas consumption.
9 International Energy Agency, *How to Avoid Gas Shortages in the European Union in 2023*, December 2022.
10 International Energy Agency, *How to Avoid Gas Shortages in the European Union in 2023*, December 2022. European Commission communication, 14 September 2022.
11 New York Folk, 31 January 2023.
12 Interestingly, Republican states top the ranking of the states that secured the most climate investments. If US Republicans soon represent employers of clean energy technology, it could dramatically change the balance of power in global climate policy
13 Goldthau, A., and Tagliapietra, S., *Energy crisis: five questions that must be answered in 2023*, Nature, 16 December 2022.
14 Besides, the US now faces bottlenecks with worker and permitting (Financial Ttimes 2023).
15 While IRA funding looks smaller than the EU RRF, the US tax credits are uncapped, meaning that the USD 370 billion value over ten years is hypothetic. It could amount to twice this amount in public subsidies, and to USD 1 700 billion when taking into account private investment (Financial Times 2023).
16 Financial Times, 2023.
17 International Energy Agency, *Energy Technology Perspective 2023*, January 2023.
18 European Commission, *A Green Deal Industrial Plan for the Net-Zero Age* (Com (2023) 62 final), 1 February 2023.
19 International Energy Agency, *Energy Technology Perspective 2023*, January 2023, page 96.

Figure 4 – Regional shares of manufacturing capacity for selected mass-manufactured clean energy technologies and components, 2021



Notes: FC = fuel cell. Heat pumps capacity refers to thermal output.
Sources: IEA analysis based on InfoLink (2022); BNEF (2022); BNEF (2021b); Benchmark Mineral Intelligence (2022); GRV (2022); UN (2022a); Wood Mackenzie (2022).

Source: IEA 2023

EU answers and policy assessment

EU emergency answers and longer-term policies show that, even in the face of 'perfect storms', EU leaders valued greater EU unity, coordination and solidarity. EU Member States finished 2022 more interdependent than when they started[20] the year, and the EU electricity market displayed its strength in ensuring solidarity without diplomatic drama[21]. The crisis also marks a turning point in EU policy with a more interventionist approach to energy markets and international energy trade[22], one example being the establishment of joint gas purchasing. The key policy debate is now on how to calibrate the degree of EU integration and interventionism needed to overcome current and future energy challenges.

In spring 2023, a regulatory package should address the joint challenge of industry competitiveness and supply chains security for the clean transition, with a Net Zero Industry Act that should be aiming at facilitating investments and accelerating permitting processes in key sectors[23] for the greening of EU industry. In addition, this package aims to contain a Critical Raw Materials Act to improve secure and sustainable access, as well as to facilitate their extraction, processing and recycling. To avoid a mining boom, the circular economy must be strengthened. Only 12% of materials used in EU industry comes from recycling[24]. The recently adopted revision of the EU battery

20 With the completion of new interconnectors between Poland and Slovakia, or Bulgaria and Greece, as well as the new reverse gas flows between France and Germany.
21 Glachant, J.-M., *Reforming the EU internal electricity market in the middle of a huge energy crisis : an absolute short-term emergency or preparation for the future?*, Working Paper, EUI RSC, 2023/03.
22 Goldthau, A., and Sitter, N., *Whither the Liberal European Union Energy Model? The Public Policy Consequences of Russia's Weaponization of Energy*, in: EconPol Forum 23 (6), 4-7, 2022.
23 Batteries, windmills, heat pumps, solar, electrolysers, CCS.
24 European Commission, *The European Green Deal* (Com (2019) 640 final), 2019.

regulation could be an inspiration in that respect, as well as a game changer for battery production because it covers life-cycle emissions, includes use of recycled materials targets, and asks imported products to comply with export requirements[25]. Lastly, a reform of the EU electricity market design is also planned. The aim is to better shield consumer bills from short-term fossil fuel prices variations and to enhance incentives for renewable deployment. However, it should not dramatically impact the root cause of the crisis in the absence of further industrial processes electrification.

Answering mounting geo-economical challenges comes at a difficult time for public investment in Europe. Due to the energy price crisis, massive national public funding was provided for energy bills support over 2021/2022 , for a total amount of over €600 billion[26]. It now endangers the viability of public finances together with Member States' capacities to invest in the green transition, in a context of ECB's rising interest rates. National answers and the loosening of State Aid rules trigger fears of further single market fragmentation. Meanwhile, about €300 billion of recovery funds remain to be spent in the next three years[27], and the dire question of the EU budget new Own Ressources – needed to reimburse the common EU borrowing – is still pending political agreement. In this context, advocates of new borrowing still have a long way to go to convince the 'frugals', while less industrialized Member States such as Spain and Ireland see no advantage for themselves in a great EU clean industry investment plan. In this context, there is still a lot of uncertainty on a possible agreement on the draft EU Sovereignty Fund proposed by the Commission.

The answer to IRA unveils the imbalance in the EU's institutional development. On the one hand, it has a powerful judicial system and an extensive body of law. On the other hand, it lacks fiscal, administrative and coercive capacity required to complement its regulatory powers[28]. The IRA raises the question of the EU fiscal capacity's adequacy to the common challenges we face.

A Sovereignty Fund may have to go beyond the narrow narrative of energy-intensive industries to include housing and mobility decarbonization[29] investments[30] that would appeal to less industrialized Member States, while also contributing to create new markets for clean technologies such as heat pumps and batteries. The EU also needs a clear outlook of common future investment needs and could improve long-term planning tools such as the National Energy and Climate Plans (NECPs).

Some of the emergency measures should be integrated in regular EU energy policy, such as demand reduction targets. Given the high stakes in energy security and affordability, setting up effective monitoring and enforcement mechanisms at the EU level would be required. This comes down to a more general question of EU governance to overcome high-level political deadlocks and achieve true EU solidarity and coordination towards climate neutrality, implement ambitious regulations, and fill the democratic gap[31] that will only widen if the EU integration is set to move forward without further EU governance changes.

25 Hermine, J.-P., *European battery regulation: an exemplary step forward in more ways than one*, IDDRI, 12 January 2023.

26 Sgaravatti, G., Tagliapietra, S., Trasi, C., and Zachmann, G., *National fiscal policy responses to the energy crisis*, Breugel, 13 February 2023.

27 Although a major difference with the US is that remaining funds consists of loans and not subsidies, firms and households do not have direct access to RRF funds.

28 Kelemen, R.D. McNamara, K., *State-building and the European Union: Markets, War, and Europe's Uneven Political Development*, in: Comparative Political Studies 2021, Vol. 0(0) 1–29.

29 Reducing energy demand in all sectors will also contribute to industry competitiveness by reducing price pressures on a limited supply.

30 Some estimates that almost three quarter to public investment needs concern the building and transport sector, see *Greening Europe – 2022 European public investment outlook*, Baccianti 2022.

31 McNamara, K., and Musgrave, P., *Democracy and Collective Identity in the EU and the USA*, in Journal of Common Market Studies 12978, 2020, page 1-17.

The EU's cumbersome road to energy autonomy has not yet arrived at its destination

By Jana Caulier, Directorate of the Presidency

Source: 63ru78/ Depositphotos

Source: Raffmaster/ Depositphotos

As the Organization of the Petroleum Exporting Countries (OPEC) already showed in the seventies, countries that own and export energy resources use their energy not only as an economic resource, but also as a tool to exert political influence. As a result, energy has become a strategic weapon in modern politics. This geopolitical phenomenon makes discussions about the EU's ability to shape its energy policy increasingly important. Russia's invasion of Ukraine has disrupted global energy supply. The subsequent increase of energy prices has hiked inflation, weakened the euro, and increased the costs of goods and services. The question then arises: why was the EU not more strategically autonomous in its energy policy? Jana Caulier worked until recently as a trainee in the Directorate of the Presidency. She specialised in the EU's strategic energy autonomy issues during her studies and below provides an overview on the evolution of the EU's energy policy and its main drivers.

The EU's asymmetrical energy dependencies

The EU recognised the strategic importance of energy already back in 2016, when in its global strategy the European External Action Service identified energy as a sector in which the EU should become strategically autonomous[1]. Strategic autonomy refers to a country's ability to set its own priorities and make its own decisions, either in collaboration with third parties, or acting autonomously when necessary. Therefore, in theory, strategic energy autonomy could provide the EU with more opportunities to act decisively and protect its own interests. However, the EU has generally struggled to achieve strategic autonomy in the energy sector, largely due to its heavy dependence on energy imports. In 2019, more than half of Europe's energy needs were met by net imports. This was the result of a steady increase in imports from third countries, in tandem with a declining EU energy production over the last two decades. At the same time, Russia became the EU's largest energy supplier, accounting for about 30 % of oil imports and almost 40 % of natural gas and coal imports. Together with Norway and Algeria, it was responsible for almost 75 % of the EU's total gas imports. These asymmetrical dependencies in a sector as strategic as energy have weakened the EU's ability to make and act on political decisions during the conflict with Russia. How did we get to this point?

Developments in European energy policy

Energy marked the very starting point of European integration, with the creation of the European Coal and Steel Community in 1951. With the establishment of the European Atomic Energy Community (Euratom) six years later, another of Europe's early

1 See European External Action Service, (2016), Shared Vision, Common Action: A Stronger Europe. A Global Strategy for the European Union's Foreign and Security Policy.

cooperation institution was energy based. Despite these early beginnings, the European Community's competence for action was limited in the first decades of European integration. However, the 1973-1974 oil crisis led to a push for energy cooperation. The oil crisis, along with the OPEC oil embargo, undermined the European Community's economy and put western European countries' economic models at risk. It pushed the European Community's leaders to make strategic decisions focusing on energy supplies and to examine low energy technologies and alternative energy sources. Despite energy security being high on the European agenda, it remained difficult to forge and implement common energy policy at EU level. As national interest and policies varied, the EU member states struggled to agree on common priorities and strategies.

The first remarkable leap forward in developing a European energy policy was achieved with the internal market reforms introduced by the 1987 Single European Act. The goal was to complete the internal market by removing obstacles to the free movement of goods, services, capital, and people. As a result, the EU adopted a series of directives leading to energy market integration at the beginning of the 1990s, which became known as the First Liberalisation Directives or the *First Energy Package*. The Commission's main objective was to improve security of supply, reduce costs, and improve the competitiveness of European industry. Despite having a major impact on European energy policy, the focus was not on the development of an energy policy as such, but rather on improving the competitiveness of the internal market.

After the turn of the millennium, between 2005 and 2007, the EU's political agenda prominently featured debates over energy security, as a conjunction of political and economic factors critically affected the security of supply in most EU member states. These debates essentially began following the EU accession of certain central and eastern European member states. As Russia appeared increasingly threatening, these member states felt that western European gas companies – major Gazprom clients and partners – were undermining European solidarity. These tensions were further exacerbated by the oil and gas disputes between Belarus and Russia in 2007, and those between Ukraine and Russia in 2006 and 2008. As a consequence, and despite earlier claims by member states and the European Parliament, the EU had to face the 'unlikely' scenario of potential interruptions in supply. Although the Russian-Ukrainian gas dispute was resolved with EU mediation after several days, it revealed the need for an EU common energy policy.

In response to these developments, several member states and EU institutions called for the establishment of a Common Energy Policy, based on an internal energy market, and equipped with an external dimension. EU institutions put forward their proposals for a more integrated energy policy[2]. Surprisingly, the framing of energy as a security issue did not garner enough support for radical solutions to address this situation at the time. The widespread agreement on the need for a more integrated energy strategy coincided with member states affirming their respective national energy policies. The framing of energy as a security problem paradoxically contributed to legitimising further EU member states' unwillingness to cede energy sovereignty. Additionally, the EU and its member states thought that despite these problems, Russia would continue to prove to be a reliable energy partner for Europe. Although the Russian cutbacks in gas deliveries did make member states question these long-standing assumptions, ultimately not much action was taken.

Shortly afterwards, in 2007, the EU included a title on energy in the Treaty of Lisbon. Article 194 of the Lisbon Treaty made energy policy a shared competence between the European Union and member states. The most innovative point refers to ensuring energy security in the EU, which was traditionally the territory of member states. However, Article 194 represents a careful balancing act between EU-level policy-making and preserving national sovereignty. It maintained each member state's right to choose their own energy sources, to determine the conditions for using them, and to establish their general energy supply structure. As a result, member states remained sovereign in many decisive areas of energy policy. This is still reflected today in the major differences that exist in member states' energy mixes, and their differing views with regard to nuclear

2 See for example the European Commission's Green Paper *A European Strategy for Sustainable, Competitive and Secure Energy*, 2006, and the European Parliament's report on towards a common European foreign policy on energy (A6-0312/2007), 2007.

energy. Consequently, the extent of energy policy coordination and integration at EU level is not that much a matter of formal competence, but the result of a constant tug-of-war between the European Commission and the European Parliament on the one hand, and fluctuating views within the Council on the other. Apart from the new energy title, the Lisbon Treaty maintained the status quo in terms of using the internal market and environment regulations as sources for developing energy policies.

Following requests from the Council in 2007, the Commission drafted the third Internal Energy Market Package. This package was adopted in 2009 for the 2009-2014 period, as a way to further liberalise the internal electricity and gas markets, and to provide the basis for the implementation of the internal energy market. Since the third energy package was adopted, member states have connected their energy markets more closely and built some of the infrastructure needed to achieve deeper interconnection. This reduced their dependency on a single gas or electricity supply source and allowed the EU to mitigate the negative consequences of another supply disruption more effectively, for example through reverse gas flows.

The member states' subsequent approval of the Energy Union in the European Council in March 2015 was a substantial step forwards towards European energy integration. On the one hand, the Energy Union was regarded as a tool to provide longer-term policy coherence between energy and climate policies. On the other hand, in the aftermath of the 2014 Ukraine crisis, energy had once again taken centre stage as a policy area that required not only technical expertise, but also a comprehensive, political, and strategic approach. The Energy Union package covers a whole spectrum of energy topics such as the internal energy market, energy security, energy efficiency, decarbonisation of the economy, and research, innovation and competitiveness. With the Energy Union, the EU has imposed the Risk Preparedness Regulation[3], which introduced important rules for cooperation between member states, with the aim of preventing, preparing for, and managing electricity disruptions. It also established common provisions for risk assessment, risk preparedness plans, managing electricity crises, evaluation, and monitoring. The Energy Union was a second step toward ensuring energy security, but it still didn't question Russian supply.

The current EU energy policy framework is based on the *Clean Energy for All Europeans package*, the aim of which is to achieve carbon neutrality by 2050 by promoting a shift away from fossil fuels towards cleaner energy. The package was adopted to help to decarbonise the EU's energy system in line with the European Green Deal objectives[4] and it identified a new comprehensive energy strategy. Energy is now a cross-sectoral policy domain and area of competence, ranging from EU exclusive competence (competition policy), to shared competence (climate policy, single market), and intergovernmental domains (security of supply), and the policy has both an internal and external dimension. The aim of current energy policy is still to define, ensure, and implement three long-term objectives, i.e. security of supply, sustainability, and maintaining the EU's international competitiveness.

Drivers for European energy policy

Historically, advancing common energy policies took place through economic routes. Competition and liberalisation were important factors for decision making in Parliament and the Commission, striving to leave as much as possible to the market itself. The European Commission adopted this market-based approach, believing that member states would be able to obtain energy imports at market rates from a diverse variety of potential suppliers, reducing their dependence on a single supplier and thus becoming more strategically autonomous. Despite the perceived benefits of liberalisation, it also poses certain problems. The market-based approach does not incentivise strategic autonomy, and many strategic interests are hindered by vested interest actors such as the energy giants. The contradiction of short-term business interests and long-term solutions ultimately leads to sub-optimal decision-making in the sphere of energy policy. Since the fundamental objective of the EU was to put the competitiveness of companies first and not to affect companies' profit margins, certain measures that might have been desirable were ultimately not taken.

3 Regulation (EU) 2019/941 of the European Parliament and of the Council of 5 June 2019 on risk-preparedness in the electricity sector and repealing Directive 2005/89/EC.

4 The European Green Deal is a set of policy initiatives with a focus on the green transition to reach climate neutrality by 2050.

Security of supply became an EU-level competence with the Lisbon Treaty, and the principle of solidarity and gas sharing in the case of an emergency has become an integral part of the EU policy framework. Oil and coal supplies are purchased at competitive rates based on international benchmarks from a variety of other countries, due to which there are no particular concerns for the security of supply with these sources. In terms of gas however, concerns regarding member states' security of gas supply have traditionally increased due to external shocks. In the past, various issues have heavily affected energy security. For example, the difficult relations between Russia and its neighbouring countries, as well as political instability in supplier and transit countries, the dependence of member states on few external suppliers, and depleting domestic resources. It is also not easy for a country to switch provider in this field, since specific infrastructure such as pipelines would be required.

Lastly, climate change and the EU's ambitions to decarbonise its economy and focus on sustainability have also influenced strategic autonomy in European energy policy. Strategic autonomy and climate goals have become almost inseparable. This has prompted discussions about phasing out gas, the increasing efficiency and using alternative sustainable energy sources. Moreover, green energy contributes to security of supply and is a gradual way of achieving greater independence from third countries.

These three strands of the EU's energy policy, i.e. competition to ensure affordability, security of supply, and sustainability, require greater coordination. However, rather than coming together in one common European energy policy, they form a hybrid collection of coexisting elements. Energy policy is one of the most sensitive areas in building Europe. In this domain, the domestic interests of individual countries regularly clash with the EU's ambitions as a whole. Different national interests dictate domestic policy decisions and influence choices made at EU level, although a slight supranational turn has been visible recently, with EU institutions playing a more prominent role following the Lisbon Treaty. As a result, this has led to a mixture of different energy technology combinations and dependence on imports.

Will a systemic shock lead to the EU's energy autonomy?

European energy policy has been considered as a special case of European integration, due to its slow and patchy development as well as its important, but highly contested external dimension. Divergent energy networks across the member states and the sensitivity of this policy domain have long hindered a single, unified European energy policy. Since the mid-2000s, policy cooperation in this area has picked up speed, leading to the creation of the Energy Union, which is considered to be the most ambitious energy initiative since the European Coal and Steel Community. Today, there is a comprehensive body of legislation that address the security, economic, environmental, and climate aspects of energy policy.

European energy policy has generally been shaped by endogenous events and geopolitical developments. This has led to 'crisis-driven decision-making', with major strides being made in European energy policy following crises such as the 1970s oil embargo, gas disputes with Russia in the early 2000s and 2014, and various climate and environmental issues. During these crises, political cohesion was high, but as the crises either continued or were resolved, political will for radical solutions also diminished. Paradoxically, Russia's use of energy as a strategic and political weapon in recent years has been the biggest driver for European action to create greater strategic autonomy.

In the end, it would take a systemic shock to turn strategic autonomy into reality in the EU and Russia's invasion of Ukraine could turn out to be this sort of systemic shock. Once more, energy is being used as a strategic tool and a political weapon by Russia, resulting in overall higher energy costs and uncertainty surrounding energy security. This crisis has forced the EU and its member states to rethink the energy system, making the need to implement strategic autonomy increasingly important. Within only three months, the Commission had launched its REPowerEU initiative in an effort to reduce the EU's dependence on Russian fossil fuels. Will this crisis lead to the paradigm shift that we need to establish strategic autonomy in Europe? Will it lead to a common and comprehensive energy policy, or will national interests once again prevail? Or will a different crisis, perhaps a less abrupt climate crisis – yet one that looms ever larger around the corner – be the trigger for accelerating the EU's energy transition, which may effectively realise the EU's ambitions of energy autonomy?

The energy crisis has accelerated the EU's transition away from fossil fuels

Interview with Kadri Simson, EU Commissioner for Energy

By Gaston Moonen

Source: European Commission

Kadri Simson

Energy was already a core policy issue before 2022, being a key element in the European Commission's ambitions contained in its European Green Deal. Energy shot to 'crisis' level with Russia's invasion of Ukraine in February 2022, making energy security a prime concern, alongside the energy transition. With the energy crisis erupting, 2022 was a particularly intensive year for Kadri Simson, EU Commissioner for Energy. Here, she explains the various actions taken by the Commission, underlining that the 2022 crisis served to highlight that a clean energy transition ticks all the boxes of the EU's energy policy – security of supply, sustainability and affordability.

EU acting in unison

Last autumn you reached agreements with member states on the market correction mechanism to address the high energy prices. What did the EU do to reduce electricity bills specifically? What was the biggest challenge in reaching such agreements and given the current price developments, will these agreements actually help?

Kadri Simson: The market correction mechanism, as agreed by the member states, addresses episodes of excessively high gas prices, which do not reflect world market prices. However, this is not a measure to structurally lower prices. It strikes a fine balance between two things. On the one hand, we introduced a cap capable of addressing price spikes similar to those observed last summer, reaching unprecedented levels above €300/MWh. On the other hand, we introduced a number of safeguards that would allow the Commission to promptly suspend the mechanism if there was evidence that it were to cause serious, unintended consequences in the energy and financial markets.

The agreement reached by member states once again showed their unity in this energy crisis. Everyone agreed that high and extremely volatile gas prices were damaging for our economy, for our people, and for our businesses. We couldn't just stand by and wait

to see what happened. As a result, we now have yet another important tool in our toolbox to protect our citizens and businesses from gas price spikes.

From December 2022, wholesale gas prices have dropped to pre-war levels, and we haven't seen concerns of security of supply due to this. We'll continue to monitor the mechanism's impact on the energy and financial markets. However, the market correction mechanism is not the only crisis instrument that has an impact on our energy prices. Rather, it was the most recent in a long list of actions taken by the Commission and the member states over the course of a year or more.

The EU acted swiftly, decisively, and in unison throughout the energy crisis. We delivered several packages aimed at curbing the difficult situation. First, we agreed in record time on our Gas Storage Regulation, which resulted in record high storage levels by the start of the heating season. We acted to lower energy consumption for both gas and electricity, we capped electricity market revenues, we agreed on a solidarity contribution for excess profits in the oil, gas, coal, and refinery sectors, and we directed the funding to mitigate the high prices being paid by consumers. In parallel, we have continuously worked with our trusted partners to find alternative gas supplies for Europe. No single measure alone can solve the crisis.

The EU acted swiftly, decisively, and in unison throughout the energy crisis.(…) No single measure alone can solve the crisis

One of the aspects of the Energy Union is an integrated internal energy market, about which the ECA issued a special report in January. One of the conclusions is that progress with this integration has been slow. The volatile price increases we experienced last year have also shown that integration is not yet a reality, with enormous differences in price levels for citizens, depending in which member state they live. Which action do you see as key in addressing these differences, to succeed with market integration?

Kadri Simson: Electricity market integration is a success story the EU can be proud of: it has allowed the EU to reap the benefits of a larger, EU-wide market as a society and as an economy, and has contributed to ensuring both security of supply and facilitating decarbonisation. According to the European Agency for the Cooperation of Energy Regulators, the integrated electricity market brought some €34 billion of benefit to European citizens. Without this integrated market, we would have had a much harder time during the current crisis. Furthermore, without pointing to any one member state in particular, we were all able to rely on our neighbours for security of supply, only turning to gas-fired power stations when this was absolutely unavoidable.

Without this integrated [electricity] market, we would have had a much harder time during the current crisis.

Indeed, the development of an ever-closer pan-European electricity market is an ongoing process, also because new challenges like the current energy crisis demand answers to new questions. The energy crisis has exposed certain weaknesses in the current system, which we plan to address in the upcoming electricity market design reform. The most important objective will be to better protect consumers from excessive price volatility, and to enable them to benefit more from the growth and low operational costs of renewables. We are working at full speed to deliver our proposals in March, and have already concluded a public consultation enabling all stakeholders to express their views.

The energy market was liberalised in the past but may become more regulated in the future in order to support a transition to renewables and provide energy cost visibility for companies and individuals. How will you ensure that the transition measures foreseen will not interfere with the principles of the internal market, and that EU citizens and companies, wherever they reside, can equally benefit from protection against energy price rise shocks?

Kadri Simson: In its current form, the European electricity market has been well integrated and benefits from the free-market principles enshrined in EU law; this is the value that we aim to maintain and even strengthen with our upcoming proposals. Based on extensive consultation, I can assure you that the underlying principle of market integration is questioned neither by stakeholders nor by member states. In the context of the gas supply crunch, the short-term power markets have not been able to deliver stable and affordable prices, but they have continued to ensure market coupling, which is the very essence of the internal market, and something that is even more crucial in times of crisis.

For the future market design to facilitate the energy transition, efficient market integration remains key to ensuring that the cleanest and cheapest energy mix is used at all times. However, we're working on ideas to improve certainty and predictability – for both consumer prices and from an investment perspective. With greater contributions from market-based long-term instruments, there is a way to achieve these goals. We will of course maintain the necessary price signals to drive the emergence of new and innovative flexibility solutions, like storage and a demand-side response.

> *… efficient market integration remains key to ensuring that the cleanest and cheapest energy mix is used at all times.*

The reforms that the Commission is going to undertake will ensure a stable and well-integrated energy market, which will continue to guarantee energy supply, attract sufficiently high private investment to meet the European Green Deal objectives, and succeed in the transition to a climate-neutral economy by 2050. It is worth noting that 2022 was actually a record year for renewable energy in the EU. We have added almost 50 GW of new capacity, mostly from wind and solar energy. Renewables are the best way for us to boost our energy security. In 2023, we need to focus on getting as much new capacity online as possible.

> *Renewables are the best way for us to boost our energy security.*

War impact more likely to accelerate EU's energy transition

You have a wide variety of responsibilities in your portfolio – security of supply, energy efficiency, renewables, and social and climate sustainability. The war in Ukraine has shown that the EU was very dependent on external energy sources. The urgency to ensure security of energy supply has also led to major investments in the supply of fossil fuels from other countries, for example through liquefied natural gas (LNG) terminals and pipelines. Particularly through the lens of the Green Deal, the EU predicted a major shift to renewables. Will the transition to clean energy sources be hampered by these investments in fossil fuels, which it is now possible to finance through REPowerEU as part of the Recovery and Resilience Facility (RRF)? What will the Commission do to 'fuel' more investment into renewables?

Kadri Simson: The war in Ukraine certainly exposed our dependence on Russian fossil fuels. To remedy this, we have put in place the REPowerEU plan, which provides for a full phasing out of Russian fossil fuels as soon as possible. Our goal is to replace these imports with renewable energy and have greater energy efficiency, leading to a structural reduction in our energy demand. As I already mentioned, we added almost 50 GW of new renewables capacity in 2022 and our citizens and industries reduced their demand for gas demand by close to 20 % between August and January.

However, Russian gas accounted for more than 40 % of all natural gas used in Europe in 2021. The situation required us to find short-term solutions to replace this gas source based on diversifying our energy supply, including by purchasing natural gas from other sources, for example through LNG terminals and pipelines. And we've been doing well so far.

Through our collective efforts, we have stopped importing coal from Russia, stopped 90 % of Russian oil imports, and pipeline gas deliveries have fallen significantly from 155 billion cubic meters in 2021 to only 62 bcm in 2022. A lot of the Russian gas has been replaced with LNG from global markets. Our LNG imports have increased from 80 bcm in 2021 to 135 bcm in 2022. However, this has also had an impact on our infrastructure needs. The historic East to West flows have been replaced with West to East flows, and some new infrastructure was needed to accommodate this change.

However, when you look at the investment needs identified under REPowerEU, you'll see that the estimated funds needed for gas and oil infrastructure at EU level represent less than 5 % of the total investment needs identified – €12 billion – out of the total infrastructure investment needs of €300 billion by 2030. Our focus is very clearly on clean energy sources, based on an accelerated deployment of renewables, and fast-paced energy savings.

We have proposed to allow targeted investments in oil and gas infrastructure under the REPowerEU chapters of the RRF, under very strict conditions. These investments would need to be absolutely necessary to address immediate security of supply concerns and

they would represent a very small part of the funding provided for energy investments. Looking at the numbers, the RRF's REPowerEU priorities will have a budget of €20 billion, the majority of which will be used for renewables and energy efficiency. However, in general, the RRF will need to dedicate at least €267 billion to the green transition. Therefore, the overwhelming majority of the RRF funds allocated for energy measures will be to support the clean energy transition, contributing to the European Green Deal objectives. According to many economists, the events of 2022 and the EU's move to reduce our dependence on imports of Russian fossil fuels are more likely to accelerate the clean energy transition than to slow it down.

> *… in general, the RRF will need to dedicate at least €267 billion to the green transition. (…) the events of 2022 (…) are more likely to accelerate the clean energy transition than to slow it down.*

Over the last year, concerns emerged about a possible 'return to coal' in the EU, raising doubts about our commitment to climate objectives. However, a closer look at the data dispels these worries: between September and December 2022, coal generation in the EU was lower than the year before. Moreover, emergency standby units generating electricity from coal added only 0.9 % to EU coal generation in 2022. Despite importing 22 million tonnes of extra coal in 2022, the EU only used a third of this and the surplus two-thirds remained unused. Perhaps most encouragingly, our countries remain as committed to phasing out coal as they were before the crisis.

Being and remaining a global leader in mitigating climate change

Perhaps even more than in certain other EU policy areas, with energy there is very much an external dimension – for energy supply, but also for energy savings, and decarbonisation. You made a speech at the COP 27 in November 2022, pleading for new solutions to address climate change and the energy challenge and detailing what the EU had been doing. What leverage do you think the EU has in terms of encouraging other parts of the world to move towards decarbonisation?

Kadri Simson: Being in the driving seat allows us to steer. The EU is a global leader in mitigating climate change. Since 1990, we have cut greenhouse gas emissions (GHG) by around a quarter, while our economy has grown by 60 %. We are pursuing this positive trajectory – decoupling economic growth from GHG emissions – proving to our international partners that there is a compelling case for moving more quickly with the energy transition and being more ambitious with their own climate actions. Apart from spreading these messages at multilateral fora, the EU also has strong strategic green partnerships with economies around the world to support their own just transitions to a climate-neutral future.

> *Being in the driving seat allows us to steer. The EU is a global leader in mitigating climate change.*

Financial leverage matters. Let me remind you that in 2021, the EU, along with its member states and the EIB, provided some €23 billion in public climate financial support for developing economies. And development assistance increasingly involves climate mitigation efforts. Moreover, the green transition holds a huge amount of technological and industrial potential, and if we are brave enough to embrace innovative green technologies, we can reach climate neutrality. We are seeking to do just that through funding projects using the Innovation and Modernisation Funds and other investments to spur on technological progress.

> *… the green transition holds a huge amount of technological and industrial potential…*

One of the main difficulties with the energy transition is in preserving the cohesion between member states when it comes to aligning and working to the objectives adopted by the Council and the Parliament. In 2022, the Commission concluded that the collective ambition of the 27 member states in terms of the 2030 energy efficiency target was insufficient, and did not meet the targets for reducing primary energy consumption. On 26 January this year, the Commission brought legal proceedings against Bulgaria and Slovakia, for failing to transpose the EU's Renewable Energy Directive into national legislation, bringing them before the Court of Justice of the EU. You use sticks and carrots to motivate member states to really engage in the transition, but it doesn't always work. What other methods do you envisage to accelerate the transition process?

Kadri Simson: EU countries have signed up to the rule of law, and the Commission is and will remain the guardian of the EU Treaties. We are therefore responsible for

ensuring that member states properly transpose Directives agreed at EU level into national law – in terms of scope and in terms of substance. We are held to account on this role, also in front of the European Court of Auditors. I do not see this as a stick. This is a non-negotiable reality. All of our rules are created hand in hand with the member states and the European Parliament, so I believe it is fair to expect that all counterparts have a certain level of ownership in terms of the EU's rules.

Most of the arguments used in the 2021 European Green Deal proposals were based on the need to reduce our greenhouse gas emissions more quickly and in a cost-effective manner, with the help of the Renewable Energy Directive and the Energy Efficiency Directive. However, the 2022 energy crisis has provided us with a number of strong, additional arguments for accelerating the transition away from fossil fuels.

Firstly, the more renewables that we can produce in Europe (or the more we can reduce our energy consumption), the less dependent we will be on imports. Secondly, the high prices witnessed last year have meant that many renewable energy projects broke even more quickly than expected. And for individual consumers, investment in solar panels or heat pumps have shown particular benefits.

The current crisis has highlighted that the clean energy transition fulfils all the main objectives of the EU's energy policy – security of supply, affordability and sustainability.

One of EU citizens' major concerns seems to relate to the windfall profits that energy companies have made on the back of the energy crisis. What more will the Commission do about these profits, or is that a matter for the member states? How do your actions align with the Commission's initial target of putting consumers at the heart of EU's energy system and making it socially sustainable? How do you engage citizens in the energy transition, how can you keep them on board?

Kadri Simson: Entering the energy crisis, consumer prices were largely based on short-term markets, and the over-reliance on volatile fossil fuel prices exposed households and companies to a significant price surge. Many consumers found they had no option but to pay higher electricity prices driven by wholesale gas prices. This put an obvious strain on many, and we have seen the categories of 'energy vulnerable' and 'energy poor' extended to new parts of society, which until now had been affected to a far lesser extent by the implications of the energy transition and the changes it entails.

EU energy legislation has traditionally paid particular attention to protecting consumers and addressing vulnerabilities. This has translated into different kind of measures, not least those linked to energy efficiency and renewables. Any specific price-shielding measures were designed primarily to protect a very small part of the population, while the market was to deliver competitive prices for the rest. The reforms that are currently under consideration should create a buffer between consumers and short-term markets, ensuring better protection from extreme prices, and delivering a lower cost of clean power generation to consumers. By default, electricity markets and consumers should have safeguards in place for any extreme price fluctuations.

> *"The reforms that are currently under consideration should create a buffer between consumers and short-term markets… and delivering a lower cost of clean power generation to consumers.*

EU funds supporting clean energy solutions across the board

To accelerate the transition, the EU has created several roadmaps with which to encourage sustainable energy sources being used to replace fossil fuel sources. At the same time, we still see that many subsidies are provided for fossil fuels, as the ECA reported in its review on energy taxation and energy subsidies, with member states subsidising fossil fuels to over €55 billion per year, and a majority of them spending more on fossil fuel subsidies than on renewable energy subsidies. How does this reconcile with the 'do do significant harm' principle as required by the RRF legislation? What action is the Commission taking to create reversed roadmaps, to stimulate moving away from and ultimately stopping fossil fuel subsidies? What is the state of play with regard to the review of the Energy Taxation Directive?

Kadri Simson: The Commission is committed to accelerating the clean energy transition, which is necessary for meeting our 2030 climate and energy targets, and

for decarbonising our economy by 2050. In the REPowerEU action plan, we made it clear that the only viable medium- and long-term solution to stop our dependence on Russian fossil fuels is to accelerate the clean energy transition.

For the RRF, which is the largest EU funding programme for providing support for energy, we have indeed imposed the 'do no significant harm' principle. It requires member states to demonstrate that the measures they propose to include in their national Recovery and Resilience Plans do not cause significant harm to the environment. The Commission also adopted detailed guidance on the implementation of this principle in 2021. While the principle excludes support for most fossil fuels, it does allow a limited support for gas projects, in line with our vision that natural gas will continue to play a significant role throughout this decade, and can sometimes help accelerate the clean energy transition, for example when used to replace more polluting fossil fuels (like coal).

The 'do no significant harm' principle also applies to the Cohesion Funds and has been included in the new guidelines on state aid for climate, environmental protection, and energy. This further limits the possibility for member states to subsidise fossil fuels through European funds, or even through their own public funds, when the subsidy qualifies as state aid.

> *The 'do no significant harm' principle (…) further limits the possibility for member states to subsidise fossil fuels through European funds…*

Here, it is important to make a distinction. Government-paid fossil fuel subsidies are the prerogative of national governments, because taxation is a national matter. There is no EU-wide 'do no significant harm' requirement for national budgets. The Commission can and does do everything in its power to ensure that EU funds go to supporting clean energy solutions.

The ECA has published various reports on EU policy related to the energy transition, such as on decarbonisation efforts, energy taxation and subsidies, energy efficiency and renewables, such as solar and wind power. And the ECA is currently assessing EU actions relating to topics like battery production, blue energy, hydrogen, biofuels, and energy targets. How do these reports feed into your activities, and where do you see opportunities for public auditors, whether at EU or national level, to add value for a smoother and more effective energy transition?

Kadri Simson: Recent ECA findings and recommendations relating to the internal electricity market, energy efficiency, energy taxation, coal regions in transition, biodiversity and nuclear safety supported the Commission, the co-legislators, and the member states in designing and developing our current EU energy policy. Moreover, DG ENER is cooperating closely with the ECA on more than 11 ongoing and planned audits in 2023 – blue energy, biofuels, energy and climate targets, hydrogen, etc. My services are fully committed to developing the European Green Deal and achieving the energy transition, to ensure that the energy acquis is correctly implemented, while simultaneously making a remarkable stream of new initiatives a reality – initiatives where our aim is to tackle the consequences of the Russian war in Ukraine, security of supply, and affordability for EU citizens.

> *Recent ECA findings and recommendations (…) supported the Commission, the co-legislators, and the member states in designing and developing our current EU energy policy.*

Colleagues in DG ENER have been working literally day and night to respond to constantly evolving challenges. To be meaningful and impactful, ECA observations and recommendations need to be timely, in order to feed into the Commission's work. The current emergencies and the increasing number of audits in the energy field makes this a challenging endeavour. However, I am confident that your work can bring European added value, and I have encouraged my team to coordinate well with the ECA's management and its teams. I know we can rely on the ECA to understand this, and we will work towards achieving our shared green transition objectives together.

As Energy Commissioner, 2022 must have been a very intensive year for you. What do you consider your main achievement as Energy Commissioner regarding the EU's energy transition, and what has been a setback? And which key issue would you still like to resolve or make happen regarding the transition in the remainder of your current mandate?

Kadri Simson: I agree that 2022 was a particularly intensive year for EU energy policy. There were 12 meetings of Energy Ministers, countless meetings with MEPs in the European Parliament, and I had many visits to like-minded partners all over the world. Much of what we achieved last year could be defined as fulfilling short-term requirements – notably ensuring that we had sufficient gas supplies to get through this winter.

However, looking back on 2022 now, in 10 years or in 50 years, it will always be remembered as the year that Russia began its brutal and inhumane war against Ukraine. I am proud of the help we have managed to give Ukraine in the energy sector. It started with the massive step of synchronising their grid, and the work is ongoing in terms of providing Ukraine with the necessary energy equipment they need to survive this winter. We need to do even more to ensure that Russia's tactic of leaving Ukraine in the cold and dark fails. This bloody war can only end if Ukraine prevails and rebuilds its land. We will stand by them as long as it takes.

> *"I am proud of the help we have managed to give Ukraine in the energy sector.*

Some have said that Russia has already lost the energy war that it unleashed on Europe last year. I would say that Europe has won the first battle, but that there is still a long fight ahead of us. Europe can look back on this winter as a crisis avoided, but must also already look ahead to next winter as a fresh challenge we will need to face. The work starts now: we need to refill our gas storage facilities, improve our energy efficiency, and maximise our deployment of new renewable energy sources.

However, we cannot only think of the short-term. As far as my actions as Commissioner are concerned, I would prefer to wait until the end of my mandate before drawing conclusions about our main long-term achievements in energy policy terms in the course of this College of Commissioners.

From the outset, our main objectives have been linked to the European Green Deal – and its support for the clean energy transition. The principal policy initiatives linked to this, notably the revisions to the Renewable Energy Directive, the Energy Efficiency Directive, and the Energy Performance of Buildings Directive, are currently entering the end-phase of negotiations with the co-legislators. We remain optimistic that we will reach a final agreement that is both coherent and ambitious.

How the Commission's DG Energy managed the energy crisis in 2022

By Ditte Juul Jørgensen, Director-General for Energy, European Commission

Source: European Commission

If there is one Directorate-General in the European Commission where the 2022 energy crisis sparked extra activities, it must be DG Energy, also known as DG ENER. While the topics covered by this DG are already vast, ranging from energy efficiency to energy infrastructure, the 2022 energy security concerns have lifted the activities to a new level. Ditte Juul Jørgensen has been Director-General for Energy at the European Commission since 2019, and explains what the 2022 energy crisis meant for her DG's activities and staff, who have been simultaneously addressing short term crisis needs and long term transition challenges.

Clean energy transition – already a priority before February 2022

When the von der Leyen Commission took office, my colleagues and I in the European Commission's Directorate-General for Energy (DG ENER) were well aware that the clean energy transition would be one of the key political priorities for this mandate. Indeed, within a fortnight, the College presented the European Green Deal, a roadmap outlining the EU's long-term ambition to become the first carbon-neutral continent by 2050 where energy policy plays a pivotal role.

The Russian invasion of Ukraine and the 'weaponisation' of energy supplies to Europe, which further exacerbated already high energy prices on the global market, led to a range of unprecedented challenges for Europe and placed our DG at the centre stage of developing and proposing concrete actions to rapidly reply to the energy crisis. While the crisis is not yet over, I am confident that the intensive work and remarkable dedication of my colleagues over the past 12 to 15 months has left us in a much more stable place to address challenges ahead of us. I am happy to take this opportunity to outline the challenges and what the recent events have meant for the DG's work and outlook.

The ongoing challenges and policy responses

In the autumn of 2021, we witnessed a global surge in energy prices as the demand for energy in countries emerging from COVID-19 lockdown outstripped supply. The concern was then to ensure that measures taken by member states would remain aligned with the internal energy market. The October 2021 Commission toolbox was an outline of the options available to EU countries under EU rules - in terms of direct support, fiscal incentives and State aid.

It is important to remember that the energy market was already under pressure when Russia invaded Ukraine in February 2022. The war has added significant strain to the complex context. This is why energy became an important component of the EU swift political response to the war. Given Russia's dominant position in supplying the EU with gas (45 %), oil (25 %) and coal (45 %), the Commission was tasked to reduce our dependence on imports of these fossil fuels. Our challenge was therefore to find medium-term solutions for our energy supplies, without contradicting our long-term objectives of carbon neutrality. This became our *REPowerEU Plan* – where we outlined the need to go even faster in ramping up renewables and energy efficiency, and also to

diversify our energy supplies and suppliers. This included a move to reopen the already ongoing revisions of the EU Directives on Renewable Energy and Energy Efficiency (as tabled in July 2021 under the 'Fit for 55' package) and set even more ambitious targets for 2030.

But with Russia disrupting supplies and weaponising the energy market, we soon had to find more urgent solutions to the immediate challenges. Given the relative inflexibility of the gas market, there were serious doubts that we would have enough gas for the winter.

Some progress was made in the spring through sourcing more Liquefied Natural Gas (LNG) as an alternative to pipeline gas. The next initiative was to introduce new rules obliging member states to *refill gas storage facilities* more quickly ahead of the winter. This was promptly agreed in June. Then, in July, the Commission was urged to take action on the demand side, and therefore proposed a new regulation on Coordinated Demand Reduction Measures for Gas, in order for member states to *reduce gas consumption by 15 %*. Agreed in record time, this commitment was voluntary, but it included contingency plans in case one or more member states were facing outages. This was the first time that the Commission had to use Article 122 – an emergency article in the Treaty, in case of genuine security of supply concerns – which allows for temporary measures to be agreed by Council without needing the opinion of the European Parliament. Indeed, this was signed off by Energy Ministers within a week.

Member states and the European Parliament also raised calls on the Commission to do something about the spiralling gas prices that were seen in this process. After much discussion, the concept of an *emergency market correction mechanism* was finally agreed at the end of 2022, intending to guarantee that the EU does not pay markedly more than anyone else for our imported gas. Another concept, under discussion since April, was the idea of member states pooling demand when buying off the market, to have a stronger purchasing position. After different regional meetings, the rules for this *Energy Platform* were agreed in December.

Finally, so as to accelerate the roll out of renewables, emergency rules were passed to allow an accelerated permitting process – thereby addressing one of the major bottlenecks which is slowing down investment.

Outline of what was achieved

13 October 2021	Commission communication COM(2021) 660 final, '*Tackling rising energy prices: a toolbox for action and support*'
8 March 2022	Commission communication COM(2022) 108 final, '*REPowerEU: Joint EU action for more affordable, secure and sustainable energy*'
23 March 2022	Commission proposal COM(2022) 135 final amending Regulation (EU) 2017/1938 of the European Parliament and of the Council concerning measures to safeguard the security of gas supply and 715/2009 on conditions for access to natural gas transmission networks and communication COM(2022) 138 final '*Security of supply and affordable energy prices: Options for immediate measures and preparing for next winter*'
21 April 2022	Campaign by International Energy Agency (IEA) and DG ENER: '*Playing my part*' with energy saving tips to help cutting the EU's reliance on Russian fossil fuels
18 May 2022	The Commission presents the *REPowerEU Plan* to rapidly reduce dependence on Russian fossil fuels
27 June 2022	Adoption of Regulation (EU) 2022/1032 amending Regulations (EU) 2017/1938 and (EC) No 715/2009 with regard to gas storage
20 July 2022	Commission proposal COM(2022) 361 final for a Council regulation on coordinated demand reduction measures for gas and communication COM(2022) 360 final '*Save gas for a safe winter*'

5 August 2022	Adoption of Council Regulation (EU) 2022/1369 on coordinated demand-reduction measures for gas
14 September 2022	Commission proposal COM(2022) 473 final for a Council regulation on an emergency intervention to address high energy prices
6 October 2022	Adoption of the Council Regulation (EU) 2022/1854 on an emergency intervention to address high energy prices
18 October 2022	Additional Commission proposals to fight high energy prices and ensure security of supply
9 November 2022	Commission proposal COM(2022) 591 final for a Council regulation laying down a framework to accelerate the deployment of renewable energy
22 November 2022	Commission proposal COM(2022) 668 final for a Council regulation establishing a market correction mechanism to protect citizens and the economy against excessively high prices
19 December 2022	Political agreement on the proposals from 18 October, 9 November and 22 November

Operational challenges and solutions

To achieve such a remarkable stream of new initiatives last year, whilst maintaining our essential enforcement and nuclear safeguards work, our Directorate-General had to demonstrate flexibility, adaptiveness and commit all its resources, and had to work at a very high pace. Our experts in infrastructure, security of supply, international relations, nuclear, our economic and market analysts, lawyers have been working literally day and night to respond to constantly evolving challenges. Teams dealing with renewables and energy efficiency worked very closely so that the EU keeps its commitments to meet long-term objectives. Colleagues working on covering legislative procedures, interinstitutional relations, and communication have been heavily involved.

All of our colleagues have clear task allocations for full-time activity, and so the additional measures we introduced last year all had to be prepared on top of the usual workload. All such initiatives involve mapping of the potential economic impact, they need a legal check, and they require a strict process of consulting with all the other Commission DGs – and with all commissioners and their cabinets. New measures generally require additional briefings and discussion sessions for member states in working groups in the Council, and for MEPs and their staff, in particular those in the European Parliament's Committee on Industry, Research and Energy (ITRE). In this context, let me just mention that EU Energy ministers held a record 12 meetings (against the average of four-five in previous years) in the course of 2022 – most of which were under the Czech Presidency in the second half of the year.

In this sense, we were given support through a couple of Commission staffing decisions. Firstly, in spring 2022, a limited number of colleagues from other DGs were put at DG ENER's disposal for a few months to help cope with the energy crisis. Secondly, a Commission decision in May established a new Task Force in DG ENER to address the crisis with two new units – one covering global demand and international negotiations, and the other for relations with member states – and including our unit for international affairs.

However, the real burden for these additional operations fell on our existing staff, who worked particularly hard. The economists and the lawyers were exceptional because they worked on all files, but all the different experts pulled their weight when it was needed. I have been in the Commission for 30 years and I have never been as impressed with the knowledge, ability, professionalism and dedication all through this DG in the course of the past 15 months.

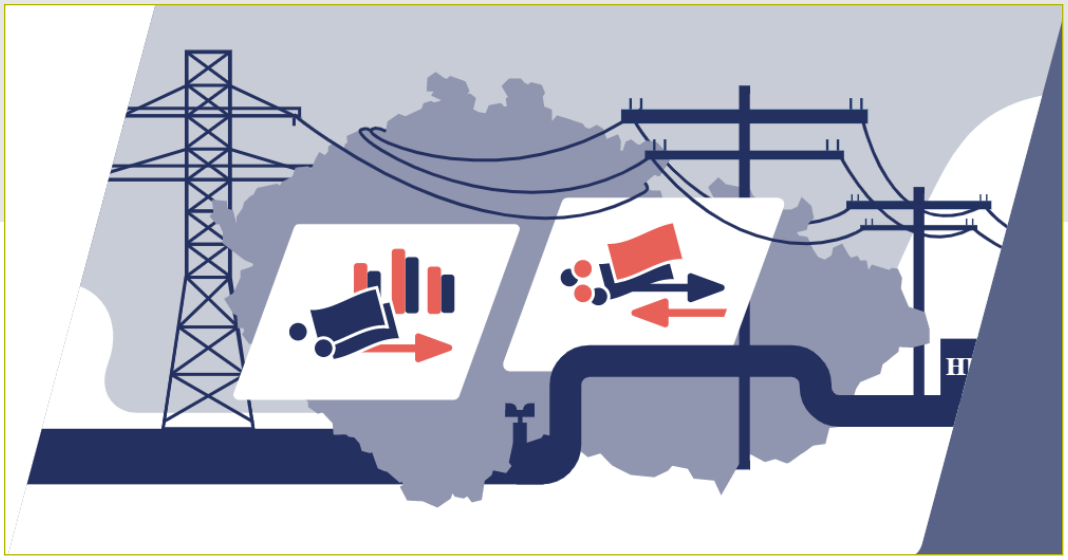
As I indicated, various actions we worked on came on top of our regular responsibilities. One of the latter being accountable for our work to the European Parliament, the Council, the European Court of Auditors and the public at large. In this context, I would draw your attention to the words of Commissioner Simson (see page 30).

The response to the crisis lays the groundwork for our long-term climate objectives. In conclusion: the relevance and impact of the work DG ENER did became particularly visible last year. In the face of serious economic difficulties, potentially impacting all households across the EU, we managed to find a whole realm of EU-wide solutions to the challenges in the energy sector. We highlighted that severe challenges such as these are best tackled working together among member states, ensuring unity and solidarity based on pan EU considerations instead of division based on national needs.

Although the difficult situation is not over – and prices are likely to remain higher than before the crisis for a few years – we are in a much better position today to face energy supply and price issues than we were twelve months ago. And part of this solution requires an acceleration of the transition to clean energy, by investing in renewables and energy efficiency even more rapidly than previously intended.

The Czech Republic's Energy Regulatory Office and the role of regulation in crises

By Stanislav Trávníček, Chair of the Energy Regulatory Office of the Czech Republic



Source: Energy Regulatory Office.

The Energy Regulatory Office (ERO) is the Czech Republic's national regulatory authority, supervising the country's energy market, which is largely characterised by a monopoly in distribution and transmission, and is also the body responsible for protecting energy consumers. But the energy crisis has revealed certain deficiencies in the market, and not only at the highest level but also in its foundations, i.e., in the relationships between consumers and suppliers, with sometimes conflicting interests. Stanislav Trávníček is the ERO Board's Chair and has worked as an energy professional since 1998. He explains what the 2022 energy crisis meant for ERO in its role as energy regulator, from dealing with consumer complaints to identifying windfall profits.

The energy crisis in the Czech Republic

The energy crisis had its first heavy impact on the Czech market as early as the autumn of 2021. On 13 October 2021, the Bohemia Energy Group's suppliers, which between them had been providing electricity/gas to more than 900 000 supply points, announced the end of their operations.

The culprit was gas supply cuts by Russia combined with the business strategy pursued by the whole Bohemia Energy Group, which had essentially been buying energy at spot markets only. Even the initial price increases at exchanges during the summer of 2021 therefore had fatal consequences for the Group and its customers, as it was unable to honour its obligations. Overnight, every tenth customer in the Czech market lost their energy supplier.

We can view the consequences of the Group's collapse in terms of two aspects: security of energy supply and impact on prices. In terms of security of supply, the safety network of suppliers of last resort got into gear right away. This network consists of five companies in the Czech Republic and it passed this historical acid test. Within a few days, it had accepted all customers of the collapsed Bohemia Energy Group and started supplying them with energy without any interruption.

There was a need to immediately transfer large volumes of data between suppliers and to instruct hundreds of thousands of customers on what they needed to do. ERO also played a major role in this process. At the same time, the legislation was silent on a number of the necessary details, and these had to be worked out in urgent meetings and agreements with suppliers of last resort and other organisations, and not only energy

ones. For example, it was also important for the State to activate its welfare system, for local self-governments to help their citizens, etc. Although supplier collapses had occurred previously, none of them had been so extensive and, most importantly, none of them had occurred during a turbulent situation in energy markets.

In terms of the other aspect, impact on the prices, the suppliers of last resort, by the very nature of their operations, could not have held a sufficient volume of energy to fulfil their long-term purchase contracts. Thus, they were compelled to buy energy at spot markets, which even back then were expensive. The practical result was a sudden surge in the final prices paid by those customers affected, which doubled or even tripled.

Adding insult to injury, these households and organisations were also confronted with higher prices after leaving their suppliers of last resort to migrate to standard suppliers and signing new contracts with them — for new, *higher* prices. As much as one tenth of the Czech market was hit, which caused a spike in prices strong enough to be felt in countrywide statistics. The growth shown by, for example, Eurostat in the period under review can be largely attributed to this development.

Record number of questions and complaints to ERO

There were record numbers of consumer questions and complaints to ERO in 2021 and 2022 – more than 22 000 each year, twice as many as in the pre-crisis years. In 2021, these were mainly about switching suppliers following the collapse of the Bohemia Energy Group suppliers. In 2022, the questions focused more on the impacts of the energy crisis, primarily price hikes or increased advances. In many cases, we addressed suppliers' anti-consumer practices, such as their breaching firm contract prices or even unauthorised threats to disconnect consumers' supply points.

The rising number of the problems to be handled was reflected in our supervisory activities: we received from consumers over 1 500 requests to open an investigation; this was ten times more than in the pre-crisis period. ERO initiated more than 360 sanction proceedings in response to irregularities found on the part of suppliers.

Another feature of the Czech energy market is the fact that ERO plays the role of arbitrator: we are responsible for alternative dispute resolution (ADR) between market participants, in particular between consumers and suppliers. In 2022 alone, we faced 440 applications from consumers to commence dispute proceedings – eight times as many as before the energy crisis broke out.

Our advisory services and assistance to consumers have therefore become a significant part of our everyday operation and are unlikely to decrease in the foreseeable future, despite our efforts to inform the public and prevent problems through media and training. If ERO is to honour its current and future obligations as outlined in this article, it seems likely that we will have to strengthen our human resources.

ERO's response to supplier collapses

The pricing consequences of the collapse of Bohemia Energy and other suppliers sparked tempestuous society-wide debates in the Czech Republic about the supervision of suppliers and about how the liberalised energy market should actually work. As regulator, we were being accused of insufficient supervision, even though we did not (and still do not) have any powers under national or EU law to oversee or, especially, to interfere with suppliers' business strategies in terms of their own energy arrangements. Quite on the contrary: laws have been geared towards promoting competition and minimising the obstacles to business in the energy industries.

Responding to society-wide demand, we have drawn up proposals for certain amendments to the legislation, intended to prevent such problems going forward. However, it is important to note that ERO has no law-making powers. In addition, the necessary amendments cannot be enacted through delegated legislation, i.e. public notices – read *regulations* – that ERO is authorised to promulgate. Certain provisions of the Energy Act would have to be changed.

Our proposals put forward several alternative options, ranging from mandatory to discretionary measures. As regards suppliers' own energy arrangements, we proposed, for example, obligatory procurement of energy under long-term energy purchase contracts in cases where the suppliers have long-term contracts with their customers. However, this proposal also has its downside. Logically, it would narrow suppliers' room for manoeuvre in business terms, thereby considerably offsetting the benefits of competition, which generates different and ultimately lower prices for final customers thanks precisely to suppliers' diverse business strategies.

This is one reason why ERO was quite inclined towards an alternative proposal under which suppliers would publish an index of their energy provisions. This would offer consumers a transparent tool to help them assess the risk faced by their suppliers and give them an opportunity to freely decide whether the risk is commensurate with the quoted price.

One important proposal was to 'stigmatise' suppliers that had failed to honour their obligations in the past, thereby barring them from re-entering the industry and forcing their customers to migrate to suppliers of last resort. Although the current liberal approach helps to expand the group of competing entities, it does so at the cost of exposing consumers to a disproportionate risk arising from suppliers that engage in moral hazard, to say the least.

Crisis and transition: impacts on grid operation

Last year, the price hikes in energy markets were also reflected in the costs of operating energy systems. As early as mid-2022, ERO therefore warned that reducing the impact on final customers in 2023 was contingent on subsidising certain regulated costs. These specifically included the cost of covering losses for distributors in the electricity grid and the gas system and the cost of ensuring balance in the electricity transmission system.

Source: Casanowe1/Depositphotos

The energy required for ensuring system operation is bought from the free market. According to preliminary calculations, Czech customers would therefore have to pay €1.5 billion more in 2023 than in 2022 in the electricity sector, and €0.1 billion more in the gas sector to cover the regulated component of prices. The country managed to prevent this only thanks to intensive talks between ERO, the Czech government and energy distribution and transmission companies. The Czech government decided to reimburse these increased costs from the national budget. Otherwise, the increase in the regulated component of energy prices' would have negated the benefits for consumers of the previously announced capping of the unregulated component of energy prices (formed on the free market), which was aimed at alleviating the impact of the energy crisis. In the Czech Republic, both the regulated and unregulated components of electricity and gas prices have thus *de facto* been capped.

However, it should be borne in mind that over the long term, the costs of operating the energy system are most likely to increase, owing to the ongoing energy transition, which primarily consists of decentralising generation. Although this process is inevitable, from the perspective of enhancing the Czech Republic's and whole EU's independence from non-European fuel suppliers, above all 'unknowable Russia', its financial impact also has to be addressed. A scheme for subsidising network operators must be implemented in addition to promoting the rollout of actual decentralised generating capacities to prevent customers from having to bear the burden of increased costs alone. For the Czech Republic alone, we are talking many billions of euros over several years.

The heavier demands on the increasingly complicated control and reinforcement of the electricity grid are obvious even today. The information provided by distribution system operators suggests that this year alone, some 75 000 new generating plants with a total capacity of more than 5 GW are to be connected. This is an explosive increase resulting in, for example, local system congestion: even now, new plants cannot be connected in some localities, or can only be connected at the cost of having to constrain overflows into the grid. This is certainly not desirable if we want to use decentralised electricity generation efficiently. At the same time, various individual network reinforcements in some places will require more than €1 billion in the short term. The rapid growth in the connection of these plants will also require an overall remodelling of the electricity grid. So far, the grid has been built for 'one-way' electricity flows from higher to lower voltage levels, from central generators to customers.

At ERO we consider community energy development to be crucial in the context of energy self-sufficiency. But this is also contingent on forthcoming amendments to the Energy Act, which currently does not cover energy storage (important for grid flexibility) or allow electricity sharing – the cornerstone of community energy. By amending the electricity market rules and allowing the sharing of electricity from shared generating plants in residential buildings, we have thus removed the barrier preventing the growth of rooftop photovoltaic systems on residential buildings, unlike on detached houses, where there has been dramatic development in recent years. However, there are limits to what delegated legislation can achieve – more fundamental changes require amendments to the primary legislation, the Energy Act.

Compensation for suppliers and collecting surplus revenues from generators

In connection with the financial impact of the energy crisis, the Czech regulator has recently been vested with powers concerning compensation for suppliers (granted due to the capping of energy prices for final customers) and the collection of surplus revenues – akin to a tax on windfall profits – from electricity generators.

Under the Czech government's order, ERO sets compensation for energy suppliers at the level of actual costs or benchmark prices. By available estimates, full-year compensation will total some €8 billion and will be paid through the market operator from the national budget unless the ERO finds a mistake in the request. The exact amount will depend on actual prices on the energy markets.

Until now, ERO, as regulator, has not had any opportunity to scrutinise or interfere with energy suppliers' business strategies. The above powers therefore constitute a fundamental expansion of our remit. The government's order must be implemented in practice expeditiously, so the whole mechanism must be put in place in an extremely short timeframe of just a few months. This is all in addition to our current – already swelling – agenda.

The situation of collecting surplus revenues from energy generators is similar. The Czech government has capped market revenues from electricity sale depending on the generating technology. Where market revenues exceed the cap, the generator must pay 90% of the difference to the state. These payments will be made on a monthly basis throughout 2023, with some €3 billion expected to be collected in this manner. As in the case of compensation for suppliers, generators' selling prices have historically not been regulated or supervised, while the collection scheme is basically akin to taxation, with which ERO has no practical experience at all. This is one reason why we will cooperate with the tax administration on technical arrangements for collection.

Gas supply in 2022

Source: Jakobchuk/Depositphotos

The energy crisis has impacted heavily on energy prices in the Czech Republic – as early as the end of 2021, the gas price on the market operator's within-day market was close to €180/MWh and exceeded €300/MWh in August 2022. However, there was more than just a price shock was at play. It became increasingly obvious during 2022 that the gas supply itself could be at risk due to Russia's systematic weaponisation of the entire industry. Ensuring gas supply was not a task for ERO directly, but as regulator our mission was to amend our delegated legislation so as to allow and motivate market participants to swiftly fill gas storage facilities, which had been only 15% full at the end of winter 2021/2022.

In 2022, ERO amended the gas market rules twice. One unplanned amendment during the year was intended to stabilise the gas sector and help to fill storage facilities thanks to new rules on auctions for unused storage capacity, based on the 'use it or lose it' principle newly embedded in the law. The key issue in the Czech context was the situation of the storage facility leased by Gazprom, which – rather conveniently – that company had not filled before the preceding winter while blocking its use by other traders until mid-2022, when new legislative measures took effect.

The change in the gas market rules to reduce the financial collateral required of traders, who at that time were acutely endangered by the cash flow bottlenecks caused by extreme price hikes, was also very important; as were the extended opportunities to transfer stored gas to new entities, including the State Strategic Reserves Administration (*Státní správa hmotných rezerv*). In late 2022, another amendment to the gas market rules implemented tools allowing international assistance in crisis situations in the gas industry. At national level, this amendment put in place new rules governing how suppliers of last resort operate.

We also changed our price decision in relation to the filling of gas storage facilities. This decision introduced a 100% discount on gas transmission from and to storage facilities, thereby reducing the cost of adding more gas to the stores. Another change concerned the search for alternatives to natural gas, specifically the extended use of biomethane. Here we laid down the algorithm for calculating the value of the withdrawal gas pipelines running from biomethane plants upon their acquisition by distributors.

These measures taken by the Czech government and ERO resulted in Czech storage facilities being filled to 100% of their capacity before winter 2022/2023, and can thus be regarded as highly successful.

Energy market evolution

In its proposal (as it currently stands, under public consultation in February 2023), the European Commission reflects on reforming the design of the energy market, focusing on generation contracts and long-term energy supply. So far, the EU energy market has relied on short-term contracts to a considerable extent, but in the future, contracts for difference or power purchase agreements, for example, could or should play a greater role.

Although such proposals appear to be logical in light of the EU market's experience in 2022, caused by Russian aggression on the energy battlefield, from our position as regulator would point out the potential shortcomings of this approach. Essentially, our view is that the proposals are born of impulsiveness and a short-term swing in the liberalised market, for geopolitical rather than energy reasons.

Making the EU's single energy market more resilient to external factors is certainly desirable. But diversifying energy mineral imports is much more likely to contribute to this aim than radically transforming the whole market, the foundations of which have been built for decades. If opinions are emerging suggesting that the market itself has failed, we have to investigate whether or not it really has failed and, if so, what the causes were.

The following, for instance, can be regarded as a negative aspect. The market's design, combined with many governments' subsidy policies and – equally importantly – with Russia's export policy (low prices for exported gas), had pushed electricity market prices down to a level where it was not really rational to invest in new generating capacities that would adequately replace those approaching obsolescence in technical and thus also in emissions terms. However, it should be noted that this was the market's response to the biased price signals that were being 'covertly pushed' onto it.

The market stands accused of another failure in relation to last year's exorbitant prices at energy exchanges; initially natural gas prices, to which electricity prices are tied through the gas-fired power stations at the end of the order of merit. However, it is appropriate to ask whether, on the contrary, the market in fact behaved rationally and ultimately helped to tackle the situation proactively. It tackled the imminent energy shortages, the potential excess demand, and the pricing mechanism using price hikes. This helped to reduce demand. In other words, the market motivated customers and governments to take radical austerity measures which, together with the mild winter, have helped Europe to see a wartime winter through with a relative abundance of energy.

Several proposals were discussed in the Czech Republic, too, in the wake of the supplier collapses. They included proposals to require suppliers to procure 100% of the energy they would need under their long-term supply contracts with customers. Gradually, as the situation calmed down, we kept adjusting our proposals to the market reality, based on the principle of preserving a competitive environment. This is because competition is, at least now, the only means of reducing prices for final customers (leaving aside *ad hoc* government intervention for the purposes of this article). That is why suggested, for example, the above-mentioned index of suppliers' energy provisions, which would serve as 'soft' regulation, as opposed to 'hard' regulation in the form of an obligation on suppliers to procure energy.

In the Czech Republic, the results of the (still voluntarily) equalisation of procurement strategies show, even now, that strict control of suppliers' business strategies is not necessarily desirable. Last year, a large part of our country's energy suppliers secured an abnormally large portion of their own provisions for energy supply via long-term purchase contracts. In one respect, this move may have been rational – the need to protect themselves and their customers against an extremely volatile market. However, in other ways it was a consequence of the irrational panic triggered by the previous collapse of a large supplier. What we are seeing now is energy prices falling at wholesale markets, but this fall will only very gradually be reflected in the price lists for Czech households and organisations, because the country's suppliers have been left with only minimal room for spot transactions.

In early 2022, ERO called for this problem, which at the time was still basically just a national one, to be tackled in a cool-headed manner. Our recommendation holds even truer for EU-wide measures. The objective must be to introduce changes for the long term, and to refrain from basing such changes on a single extraordinary event.

Renewable energy in the EU – plan, practice and prospects

By Heymi Bahar, International Energy Agency

Source: Donscarpo/Depositphotos

The energy transition builds on renewables to reach the Fit for 55 goals for 2030 and the zero emission goals for 2050. But is the EU taking enough action to get there and how do the EU energy security and energy sustainability goals relate to each other. Heymi Bahar, Senior Analyst in Renewable Energy Markets and Policy at International Energy Agency (IEA) looks at the most recent data regarding EU's transition to renewables, building on IEA's recent publications and insights*, looking at effects of REPowerEU and EU measures regarding price capping, including for power sales coming from renewables.

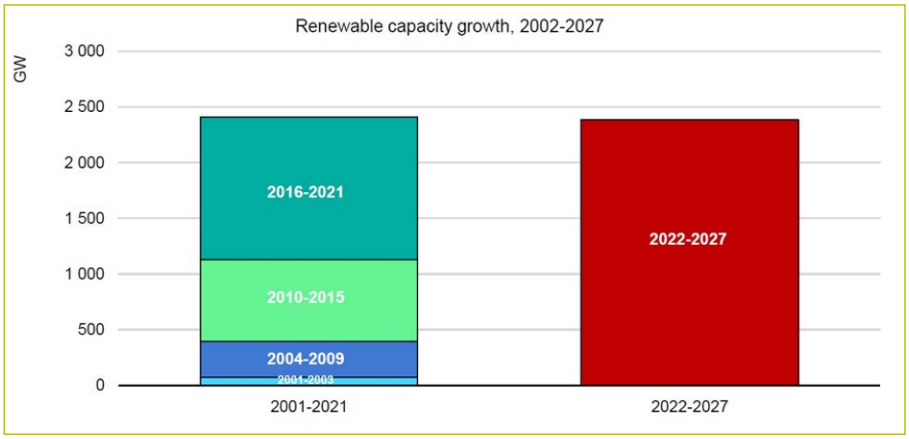
Unprecedented momentum for renewables

The global energy crisis has triggered *unprecedented momentum behind renewables*, with the world set to add as much renewable power in the next five years as it did in the past 20. The total capacity growth worldwide set to almost double in the next five years, overtaking coal as the largest source of electricity generation by 2025 and helping keep alive the possibility of limiting global warming to 1.5°C. Russia's invasion of Ukraine has motivated countries to increasingly turn to renewables such as solar and wind to reduce reliance on imported fossil fuels, whose prices have fluctuated dramatically.

Global renewable power capacity is now expected to grow by *2 400 gigawatts* (GW) over the 2022-2027 period, an amount *equal* to the entire *power capacity of China* today (see **Figure 1**). Renewables are the *only* electricity generation source whose share is expected to grow, with declining shares for coal, natural gas, nuclear and oil generation through 2027.

* See in particular IEA report *Renewables 2022 – analysis and forecast to 2027*, January 2023.

Figure 1 – Global renewable electricity capacity additions 2002-2027



Source: International Energy Agency.

Despite current higher investment costs due to elevated commodity prices, utility-scale solar PV is the least costly option for new electricity generation in a significant majority of countries worldwide. Distributed solar PV, such as rooftop solar on buildings, is also set for faster growth as a result of higher retail electricity prices and growing policy support to help consumers save money on their energy bills. Global wind capacity almost doubles, with offshore projects accounting for one-fifth of the growth.

Meanwhile, the growth of dispatchable renewables - including hydropower, bioenergy, geothermal and concentrated solar power - remains limited despite their critical role in integrating wind and solar PV into global electricity systems. Our accelerated case shows global renewable capacity can expand by an additional 25 % compared with the main forecast if countries address policy, regulatory, permitting and financing challenges.

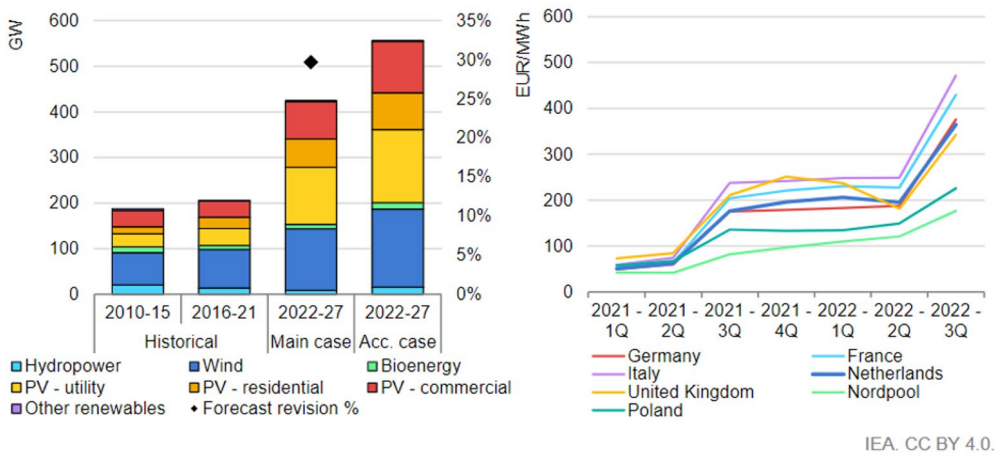
The amount of renewable power capacity added in Europe in the 2022-2027 period is forecast to be twice as high as in the previous five-year period, driven by a combination of energy security concerns and climate ambitions. An even faster deployment of wind and solar PV could be achieved if EU member states were to rapidly implement a number of policies, including streamlining and reducing permitting timelines, improving auction designs and providing better visibility on auction schedules, as well as improving incentive schemes to support rooftop solar.

Russia's invasion of Ukraine is a turning point for renewables in Europe

The war in Ukraine is expediting Europe's clean energy transitions. The energy crisis hit the EU while it was already discussing ambitious renewables targets under the Fit for 55 package. After Russia invaded Ukraine in February 2022, energy security emerged as an additional strong motivation to accelerate renewable energy deployment. At the EU level, the European Commission's REPowerEU plan released in May 2022 proposes ending the bloc's reliance on Russian fossil fuels by 2027. Among other goals, the plan aims to increase the share of renewables in final energy consumption to 45 % by 2030, exceeding the 40 % previously under negotiation.

Europe's renewable electricity expansion *doubles* over the 2022-2027 period as energy security concerns add to climate ambitions. Many European countries passed or proposed action plans to further raise their ambitions, increased policy support and addressed non-financial challenges. IEA's forecast for growth in the EU has been revised upward significantly (by 30 %) from last year's report (see **Figure 2**), led by Germany (50 % higher) and Spain (60 % higher). Germany has increased renewable electricity targets, introduced higher auction volumes and improved remuneration for distributed PV while reducing permitting timelines. Spain has streamlined permitting for solar PV and wind plants, and increased grid capacity for new renewable energy projects. However, *sluggish growth* of renewables in the *transport and heating* sectors holds back higher renewable energy penetration in the EU.

Figure 2 - Europe renewable electricity capacity additions, 2010-2027 (left) and wholesale electricity prices for selected markets (right)



Note: Acc. Case=accelerated case.

Source: International Energy Agency.

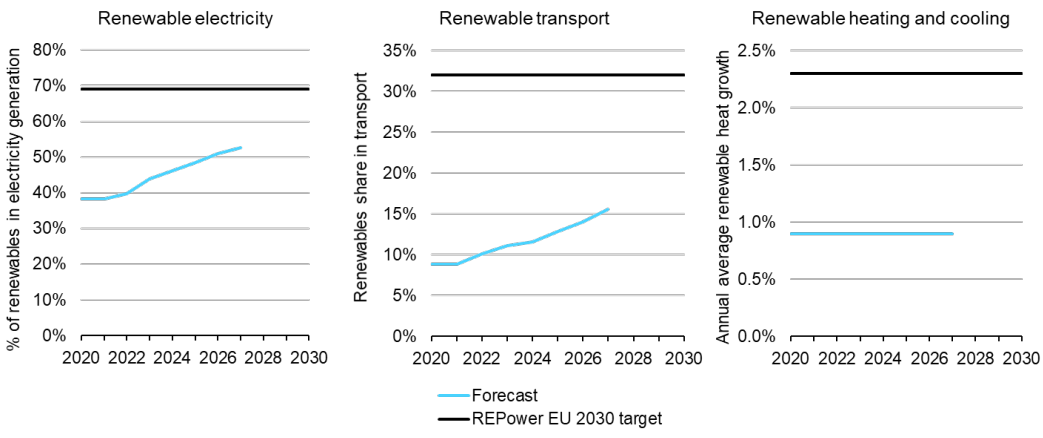
Is the EU on track to meet its REPowerEU goals?

The REPowerEU plan's aim is to rapidly reduce dependence on Russian fossil fuels by 2027, and the European Commission estimates that this will require significant expansion of renewable energy shares in the electricity, transport and heating sectors. Although the use of renewable energy does increase in all three of these sectors by 2027 in our main-case forecast, in *none of them* are levels *consistent* with the REPowerEU plan.

While the share of renewables in electricity expands to almost 55 % by 2027[1], this is well below the 69 % share the European Commission estimates is needed to support the REPowerEU plan (see **Figure 3**). To enable further increases, governments across the EU will need to minimise policy uncertainty, simplify permitting procedures and accelerate transmission and distribution network upgrades. Ramping up renewables-based power generation is also essential to expand renewable energy uptake in the transport and heating sectors, as renewable electricity can power electric vehicles and heat pumps and be used to produce green hydrogen.

For transport, a renewable energy share of 16 % by 2027 in our main case is less than half the estimated REPowerEU requirement (see **Figure 3**). EU member states will need to align their domestic policies, accelerate biofuel deployment and reinforce conservation and efficiency programmes to contain or reduce energy demand and enlarge the share of renewables in final energy consumption.

Figure 3 - Renewables forecast vs REPower EU 2030 target



1 See IEA report *Renewables 2022 – analysis and forecast to 2027*, January 2023, page 117.

Meanwhile, renewable energy shares in heating and cooling expand 0.9 % annually up to 2027 – one-third faster than during the last decade, but well below the 2.3 % annual increases needed to match REPowerEU ambitions (see **Figure 3**) i.e. the annual increase in the share of renewables would need to almost quadruple to be on track with the REPowerEU plan targets. To accelerate deployment, more aggressive policies will be needed to strengthen heat pump supply chains; increase labour availability for installations; integrate renewable energy sources in district heating networks; scale up biomethane production; streamline permitting regulations for large-scale renewable heat projects; and support alternative business models for heating.

Should government and industry overcome deployment challenges in the electricity, transport and heating and cooling sectors, REPowerEU goals appear to be within reach, at least in terms of renewable energy.

Is EU's renewable energy capacity making windfall profits from high wholesale prices?

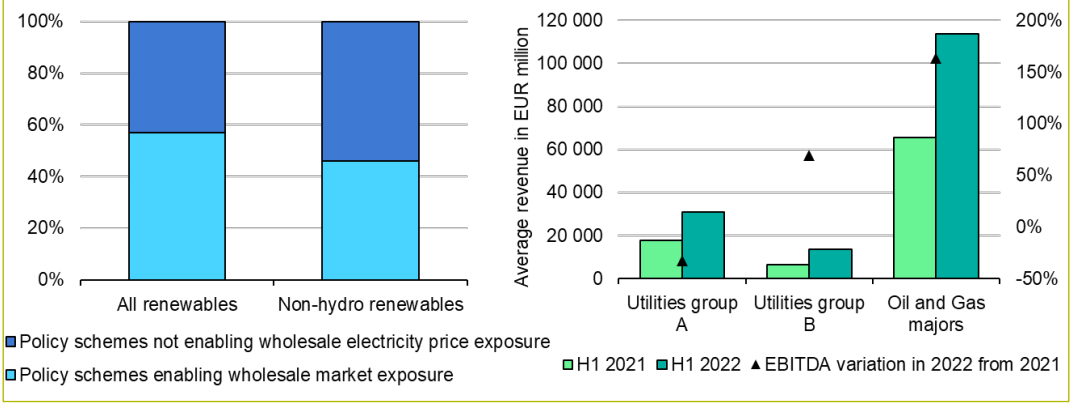
As a result of Russia's invasion, electricity prices in Europe have risen drastically because natural gas-fuelled plants remain the price-setter in the wholesale market. Furthermore, high fossil fuel prices have resulted in windfall profits for some energy companies. In fact, the profits of major oil, gas, coal and refinery companies in the first half of 2022 more than doubled from the same period last year.

In October 2022, the Council passed a regulation on an emergency intervention to address high energy prices. The regulation proposes windfall-profit levies on fossil fuel producers through a temporary solidarity contribution, and on electricity generators (or infra-marginal electricity producers) that have lower marginal costs than the price-setting gas units.

The Council also introduced plans to cap the wholesale electricity price at €180/MWh or lower, and expects that member states would raise €117 billion annually. This market intervention aims to reduce electricity prices to protect and support vulnerable energy consumers. As the proposal's interpretation and implementation by each member state remains an uncertainty, its implications at member state and EU level are difficult to estimate. In addition, several European countries have already introduced national-level windfall taxes for electricity generation and trading companies.

A direct answer to whether renewable power plant owners are making windfall profits is highly complex. Renewables based electricity generators can produce electricity at lower marginal costs than natural fuelled power plants. While renewable energy policies can provide insights on whether developers are allowed to receive higher revenues from the market, they can only partially answer the question on windfall profits because data are limited concerning non-policy factors, including long-term bilateral power purchase contracts, developers' hedging strategies and exposure in the wholesale electricity market. To understand these non-policy factors, the IEA examined the balance sheets of the European utilities with large operational renewable and fossil fuel capacities.

Figure 4 - Europe renewable capacity's possible exposure to electricity spot prices (left) and financial situation of major European energy companies (right)



Source: International Energy Agency.

In the EU, *policy schemes* enable more than 50 % of RE capacity to be eligible to receive wholesale energy prices. This is mainly due to largely amortised hydropower plants, which account for one-quarter of EU installed capacity. In the absence of long-term fixed price bilateral contracts, these hydropower plants could be able to get wholesale electricity price for instance using hedging strategies.

However, when we exclude hydropower, policies enabling wholesale market exposure is *under 50 % for wind and bioenergy* and *under 40 % for solar PV*. This is because a significant majority of projects for these technologies are under classical Feed in Tariff (FiT) schemes, while a small remainder portion are under former green-certificate arrangements or under feed-in-premium scheme (like in Germany) that enable these technologies to benefit from high spot market price.

Non-policy factors also come into play:

- all the energy companies including major utilities that we examined reported significant higher revenues in the first half of 2022 than H1 2021, but for major utilities, higher revenue came also with higher costs due to higher fuel prices;
- in case of some utilities exposure to retail and customer business, along with lower hydropower and nuclear output, reduced their profitability;
- some utilities were able to secure a higher profits in the first half of 2022, using hedging strategies and long term contracts. But, hedging strategies do not always lead to higher profits, as it depends if the utility is actually able to secure higher prices than the average sale price per MWh in advance; and
- as for the profits of oil and gas majors, as shown in **Figure 4**, it doubled in the first half of 2022 from the same period in 2021.

Large utilities and independent power producers continue to be the main investors in renewables in Europe and thus have a pivotal role in increasing the pace of wind and solar PV expansion. The current regulation enables member states to define their own price caps as well as clawback mechanisms for profits or revenues, depending on national circumstances. However, inconsistencies among regulatory regimes could create uncertainty for investors, especially if they make the business case for renewables less appealing. Thus, it is important for regulations to *tax profits* from energy sales in the wholesale market and *not revenues*.

Energy transition pace needs further policy support to get on track

Evidently the global energy crisis has created a boost for renewables, with a tangible acceleration of the build-up of renewable power, being the only electricity generation source expected to grow. For Europe the war in Ukraine has led to a surge in clean energy demand and production, triggered also by both sustainability and energy security motives.

Policy improvements can drastically increase renewables expansion and put the EU in line with REPowerEU goals. However, IEA's main forecast falls short of the modelled goals of REPowerEU plan for all sectors. For electricity, in order to reach the installed capacity needed to generate 69 % of electricity from renewables by 2030, average annual net *additions* need to be *30 % higher* for solar PV and *more than twice as high* for wind. Various policies are available for EU member states, ranging from reducing licensing timelines to decarbonisation support schemed. If member states' governments rapidly implement these changes, growth could be 30 % higher, putting the EU on track with its more ambitious REPowerEU modelled goals. In the accelerated case, renewable energy's share in transport climbs to 20 % by 2027, narrowing the gap with the EU goal of 29 % by 2030. For heating and cooling, accelerating the rollout of heat pumps will require overcoming high upfront costs through incentives, regulations and low-cost financing for households to facilitate investment.

While there is strong rationale behind interventions to protect vulnerable customers from high energy prices and prevent windfall profits for electricity generators, the impact of such interventions needs to be assessed in terms of the potential harm to renewable developers' capacity to invest in new projects. Current and proposed market interventions in Europe (such as wholesale market caps and windfall-profit taxes) could create uncertainties for renewable energy investments if they are not well designed or coordinated across countries. Moreover, the ongoing energy crisis has also sparked new discussions within the EU concerning possible future electricity market design. These proposed reforms could, in principle, boost market-driven renewable energy deployment, ensure energy security and encourage investment in flexibility resources. However, it is important that any proposals be carefully and transparently prepared, with clear visibility on timing and involving all relevant stakeholders, in order to avoid unintended uncertainty among investors.

Auditing energy transition issues – reconciling commitments and facts

Interview with Joëlle Elvinger, ECA Member and Dean of the ECA Audit Chamber Sustainable use of natural resources

By Gaston Moonen

Joëlle Elvinger

> Energy issues touch on many EU policy domains – climate, cohesion, competitiveness – and so logically also the EU's and the member states' energy transition actions. Within the ECA, most audits on this policy theme originate from the audit chamber 'Sustainable use of natural resources', immediately reflecting in its name two key elements – sustainability and resources – that are directly related to the energy transition. Joëlle Elvinger is the ECA Member and Dean of this audit chamber, and below she focuses on how she and her colleagues keep a finger on the transition pulse when it comes to auditing the EU's actions.

Energy – a cross-cutting domain

Energy transition issues have an impact on various aspects, such as energy security, energy efficiency, the scaling-up of renewables, grid issues, financing the transition, and making the transition socially sustainable. Joëlle Elvinger explains that several of these aspects have been and will continue to be covered by ECA audits. 'We have had different audits on energy over the last three years, ranging from the energy efficiency of buildings and enterprises, to transition issues in coals regions, to progress reports in terms of renewable energy. We're currently working on the ECA's next annual work programme, which will also cover various aspects relating to the transition'.

The ECA Member pointed to the variety of published ECA audits relating to energy, on topics such as the EU's emissions trading system or the integration of the internal electricity market. 'The energy transition is directly correlated to the green transition, the aim of which is to decarbonise the economy while also ensuring energy security at a competitive price. For example, we have an audit on smart grids and meters in the pipeline, which will start this autumn.'

Joëlle Elvinger explains that her audit chamber is heavily involved in audits relating to energy, which can range from audits on clean air to green tagging under the NextGenerationEU initiative, assessing alignment with the European Green Deal objectives on climate action. 'Our audit chamber takes the lead in the ECA's energy audits and we have essential knowledge in that field. Of course, energy transition

aspects are cross-cutting by nature, so therefore it's unavoidable that overlaps do occur.' She explains that this is issue is addressed by the ECA's staff who are responsible for coordinating the work programme activities of all of the audit chambers, and is also something about which the different chambers involved in energy issue audits are very conscious.

As the reporting Member for an audit on climate and energy targets, which started just recently, she is very much into the subject matter. 'There are various reasons to carry out this audit, firstly because many climate matters are closely related to energy, and secondly, there is great public interest in this topic . The EU committed itself to spending at least 20 % of its 2014-2020 budget on climate action, whereas it already sits at 30 % for the 2021-2027 budget, amounting to around €80 billion per year.'

> *… many climate matters are closely related to energy, and secondly, there is great public interest in this topic.*

She points out that this is still far from the spending that some experts believe is necessary to reach the 2030 targets, the main target being the latest European Commission proposal to increase the EU's ambition to reduce greenhouse gas emissions to at least 55 % below 1990 levels by 2030. 'The financing needs might even amount to €1 trillion per year, so we are still a long way from that in terms of our spending on climate action. In actual fact, our audit's objective is to look at whether the EU is building on successful approaches in order to reach its energy and climate targets, namely reducing greenhouse gas emissions, increasing the use of renewable energy, or of course promoting energy efficiency and reducing energy consumption.' She observes that the amounts are enormous, but so are the targets. 'But these amounts cover funding from both the public and the private sectors. Most of the investments will come from national and private funds.'

Focus on facts instead of opinions

With the energy transition being so closely linked to climate change objectives, this also can have a huge impact on people's lives, making it an even more sensitive topic politically. Joëlle Elvinger explains that the ECA is of course aware of this, but emphasises that this has no impact as such on its audit work. 'In our audits we follow the money trail and check the implementation of legislation. We talk about facts rather than political opinions. We focus on comparing EU policy objectives and the European Commission's commitments with the actions taken and the effects achieved. Sometimes it might appear that the line between making a statement that could be construed as political is thin, but we base ourselves on facts. And if there are clear facts, then we can make recommendations for improvements.' She refers to the ECA's special report 16/2021 on climate spending in agriculture, where the ECA found that the €100 billion of CAP funds attributed to climate action had had little impact on emissions.

> *We talk about facts rather than political opinions. We focus on comparing EU policy objectives (…) with the actions taken and the effects achieved.*

When it comes to selecting audit topics, Joëlle Elvinger points out that her audit chamber updates its policy scan on EU's energy policy every year. 'In these policy scans we take stock of the policies, which provide an overview of what's going on. Scans like this are internal working documents that guide us in planning our work. The ECA Member explains that in the audit selection process, various aspects are weighted, ranging from materiality aspects – i.e., the sheer financial amount linked to the EU action – to political or public interest aspects in terms of the relevant policy outcome. When discussing whether the ECA might look into the soaring energy prices combined with energy companies' record profits, Joëlle Elvinger explains that this remains to be seen. 'We have regular exchanges with member states' audit institutions, in addition to those in the framework of the Contact Committee of the EU's supreme audit institutions.' She does not exclude the possibility that the national audit institution of a given member state may look into an issue where action relating to these profits has been taken.

In various ECA reports relating to energy issues, such as in special reports 11/2020 and 02/2022 concerning energy efficiency in buildings and energy savings in enterprises, certain key findings relate to the lack of data that would enable us to make full

assessments. Joëlle Elvinger considers such data crucial, not only for the ECA but also for policy makers. 'If you don't have the data you won't have the knowledge. Having access to robust data is of course key for us to be able to reach a sensible conclusion. It may be that sometimes the data are just not available in the right quantity, or to the desired quality, and when this happens, our role as the EU's external auditor is to highlight the deficiency, so that action can be taken to remedy the situation. Very often, the time required to remedy the situation goes beyond the timeline of our audits, but we've seen that our recommendations for improving this issue are often implemented.' She adds that the ECA builds on Eurostat data and data from other solid sources, such as those from the International Energy Agency.

> *If you don't have the data you won't have the knowledge.*

Another aspect that the ECA has highlighted in its publications, for example in its review 01/2022 on energy taxation, carbon pricing and energy subsidies, relates to potentially coordinating EU actions and member states' energy taxation practices. Joëlle Elvinger explains that this is not an audit report but a review on existing EU legislation, in particular the existing EU Energy Taxation Directive and the Commission's proposal for its update. 'We highlighted several challenges, such as the fact that under the current Energy Taxation Directive, more polluting sources of energy may have a tax advantage compared to carbon-efficient sources of energy, and that fossil fuel subsides can be an obstacle in reaching climate goals because they hinder the green energy transition. Overall, member states' subsidies for fossil fuels amount to over €55 billion every year. Our review also focuses on the legislation in force, for example the Energy Taxation Directive of 2003. The Commission proposal of the recast of the Energy Taxation Directive of July 2021 addressed many of the weaknesses and shortcomings that we had identified during our review work.' In this respect, she also refers to the introduction of a kerosene tax, and setting out clearer steps to prevent biofuels being taxed in the same way as fossil fuels.

> *… fossil fuel subsides can be an obstacle in reaching climate goals because they hinder the green energy transition.*

Commitment needed at every level

This dependence on member states to take action with regard to the implementation of the EU energy transition is also reflected in the Commission's decision to take legal steps against Bulgaria and Slovakia, and bring them before the Court of Justice of the European Union for failing to transpose the EU's Renewable Energy Directive. For Joëlle Elvinger, the member states' commitment to the energy transition will be crucial in determining the outcome. 'Without full commitment from the member states, polices will be difficult or even impossible to implement, and the intended results can only be achieved if there is a willingness to achieve them. The Commission is actually responsible for checking that member states transpose directives and based on our experience, the Commission normally carries out its mandate effectively in this regard. During our audits, we also take stock of the situation in sampled member states.' She goes on to refer to the ECA's exchanges with national audit institutions in the framework of the Contact Committee. 'The heads of the EU supreme audit institutions will meet in June this year, and energy will feature as one of the main topics on their agenda.'

> *Without full commitment from the member states, polices will be difficult or even impossible to implement…*

With the EU's aim to decarbonise, we can also identify a rapidly growing EU need for rare metals and minerals, as the European Commission has highlighted in several of its communications. When discussing the factors that come into play in terms of these materials, such as their security of supply, or environmental and health concerns in mining and processing, Joëlle Elvinger underlines the risks involved in connection with these critical raw materials. 'The EU is hugely dependent on certain countries to supply different rare elements, and the resulting hazardous waste poses multiple threats both to human health and the environment. We looked at some of these already, as highlighted in our recent review 02/2023, which we published in January. The EU has taken initiatives to improve the management of hazardous waste, enforce

> *The EU is hugely dependent on certain countries to supply different rare elements, and the resulting hazardous waste poses multiple threats…*

legislation, develop strategies, and provide funding to support waste management projects. The Commission has initiated numerous infringement procedures against member states for failing to transpose the EU requirements into national rules.'

She also refers to an earlier ECA review, review 04/2021, which focused on the EU's role and the actions taken relating to waste from electric and electronic equipment. 'In our "E-waste" review, we took stock of the EU's actions on E-waste, and we highlighted the key challenges surrounding the implementation of the Waste Electrical and Electronic Equipment Directive. We noted that the EU has improved the legislation on electronic waste by resetting targets, EU categorisation, and reporting procedures, but various E-waste management challenges still remain.'

A variety of energy aspects have already been audited…and many are yet to be audited

Another EU action that the ECA will be following closely is the REPowerEU initiative, a key element of the Recovery and Resilience Facility, the RRF. The ECA issued its opinion on the REPowerEU proposal in July 2022. 'REPowerEU is a relatively new policy, and its effect will only be fully felt after a certain period of time has passed. No single specific task that focuses particularly on this initiative is currently included in our work programme. Of course, there might be scope to consider it as one part of several of our planned audits, such as that on the security of energy supply, the planning of energy resources, or green tagging under the NextGenerationEU initiative. Our audits are normally carried out ex post, where we assess whether policies achieved the intended output, results, and outcomes.'

Joëlle Elvinger points out that due to the changes over the past year, energy has obviously become a very hot topic. 'But we already had some audits on energy in the pipeline well before that. In 2023, we'll be presenting reports on batteries, energy and climate targets, blue energy, biofuels, and more. We'll soon be rolling up our sleeves and getting down to work on the audit addressing the security of energy supply. And as I indicated already, later this year we'll start work on an audit of smart grids and meters.' She adds that the ECA will also conduct an audit on gas infrastructure, and another on energy sources. 'Our work programme planning looking ahead to the next few years is currently ongoing. It is a collective exercise, so we'll have to wait and see what will ultimately be selected in terms of topics.'

> *"Our work programme planning looking ahead to the next few years is currently ongoing. It is a collective exercise…*

ECA auditing various focal points of EU's energy transition

By Florence Fornaroli, Sustainable Use of Natural Resources Directorate.

Source: Iqoncept/Depositphotos

For several years, the ECA has been publishing audit reports relating to energy as a policy area. The EU has been particularly active in this field: the commitments in the EU Green Deal are only one example of this, and the ongoing energy crisis demonstrates the importance of the subject. Consequently, the ECA will be covering various energy-related topics in ongoing and future audits. Florence Fornaroli, Principal Manager, has been involved in many energy-related audits. Here, she provides insights into the EU's energy policy and discusses how the ECA's audit work relates to it.

An increasing number of focal points

Initially, in the 1990s, EU energy policy was more oriented towards the development of the *internal market*. Over time, though, its focus has increasingly moved towards the *green transition* of the EU economy. The EU's energy policy plays a fundamental role in achieving the EU's climate targets, as 80% of greenhouse gas emissions are caused by energy production or consumption.

In parallel, policymakers have acknowledged that, as the global green transition has an impact on the whole of society, it is important to ensure that it is *just and inclusive*. This means that the climate and energy transition should be done without sacrificing social cohesion, widening inequalities, or leaving workers – for example, those working in the fossil energy production sector – without alternative employment.

Recently, *ensuring the security of energy supply* has been thrust into the spotlight by the 2022 Ukraine-Russian war. The ECA's audits since 2019 have covered a number of different aspects of EU energy policy.

Enabling the internal energy market

In 1996, the EU embarked on a complex project to fully integrate national electricity markets. The goal was to deliver the cheapest possible electricity prices for consumers and make the EU's energy supply more secure. In ECA special report 03/2023, we explained that the EU had made slow progress towards its objective of connecting electricity markets, and that nearly ten years after the project's scheduled completion in 2014, the market was, in practice, still governed by 27 national regulatory frameworks. The report also highlighted that wholesale prices differed significantly between member

states, and that retail prices remained heavily influenced by national taxation rates and network charges rather than being open to competition (see page 61).

Over the last years, a 'modernisation' of the EU's energy market has occurred through digitalisation. For example, *smart grids* are energy networks that can automatically monitor energy flows and adjust to changes in energy supply and demand accordingly. When coupled with smart metering systems, smart grids reach consumers and suppliers by providing information on real-time consumption. Smart grids and meters thus have the potential to enable more efficient energy consumption and to allow growing amounts of variable renewable energy sources to be integrated into the EU's energy systems. An ECA audit on the topic will start in 2023.

Scaling up renewables

The ECA has addressed the transformation of the global energy sector *from fossil-based to zero-carbon* sources in several reports. In 2019, the ECA published special report 08/2019 on wind and solar power. We emphasised that encouraging auctions when allocating new renewable capacity and the use of citizen participation (for example allowing the production of electricity for self-consumption) were crucial for increasing investment and enhancing conditions for the deployment of these renewables. Since the publication of the report, the deployment of renewables has seemed to be on the right track: they accounted for a record 22% of EU electricity in 2022, overtaking nuclear and gas for the first time.

ECA is currently auditing several other renewable energy sources: hydrogen, biofuels, and offshore "blue" energy. The development of such energy sources should help the EU in reaching its ambitious 2030 'renewable energy share' target of at least 32 % of EU energy energy being produced from renewable sources by 2030. In the 2022 REPowerEU proposals, this target is even increased to 45 %.

The transition to more renewables can be supported by adequate taxation. Evidently, low carbon prices and low energy taxes on fossil fuels increase the relative cost of low carbon technologies and delay the green energy transition. In ECA review 1/2022 on energy taxation, we noted that current tax levels do not reflect the extent to which different energy sources pollute. We also pointed out that 15 member states spent more on fossil fuel subsidies than those aimed at promoting renewable energy. However, we also noted that renewable-energy subsidies had almost quadrupled between 2008 and 2019, while fossil fuels subsidies had remained stable.

Alongside adequate taxation, the development of energy-storage technologies is also critical for supporting the wide-scale deployment of renewable energy sources. In 2019, the ECA published review 04/2019 on EU support for energy storage. We concluded that there were several challenges to the development of such storage. For example, we explained that the EU's current strategy might not meet the challenges of the energy transition. The EU has developed its manufacturing capacity for lithium-ion batteries (as used in electric vehicles) later than other leading global regions. As it will enter the battery-production market as a "second mover", it may have difficulty in gaining a competitive advantage. At the same time, we noted that the European Battery Alliance – established with the aim of creating competitive, sustainable battery-manufacturing in Europe – was largely focused on existing rather than breakthrough technologies, and risked not achieving its ambitious objectives.

Batteries are subject of another ongoing audit by the ECA. As the EU aims to become the world's *second biggest battery producer* by 2024, we are currently auditing (see also audit preview 02/2022) the adequacy of the tools chosen by the European Commission to intervene in the battery value chain, their degree of implementation to date and, where measurable, their impact.

Saving energy

Energy efficiency is an important part of the EU's ambition to become carbon-neutral by 2050. The ECA has published three reports on the topic over the last four years.

In ECA special report 11/2020 on *energy efficiency in buildings*, we concluded that the selection of EU co-funded energy efficiency investments in buildings was not driven

by a cost-effectiveness rationale. In other words, projects delivering higher energy savings or other benefits at a lower cost were not prioritised. We also looked at *energy efficiency in businesses* in ECA special report 02/2022, where we noted that the real effect of the significant amounts of EU funding between 2014 and 2020 on businesses' energy efficiency remained unclear and that many projects would have gone ahead without EU support. We also explained that, even without public support, investing in energy efficiency is generally efficient (see page 67).

EU energy labels provide information to consumers on products' energy consumption, and help them to make energy savings. In our special report 01/2020 on EU action on *ecodesign and energy labelling*, we found that EU actions contributed effectively to reaching the objectives of the ecodesign and energy labelling policy, but that that effectiveness was reduced by significant delays in the regulatory process. In the report, we also refer to the Commission's estimate that 10 to 25% of products sold do not comply with EU law. This failure by manufacturers and retailers to comply with the rules limits the effectiveness of the policy.

The ECA's ongoing audit on the *EU's climate and energy targets* should shed further light onto the challenges faced by the EU in reducing its energy consumption, such as the need to ensure adequate financing for the energy transition and to have robust national climate and energy plans.

Ensuring energy security

Ensuring the security of the EU's energy supply has gained in importance since the beginning of Russia's invasion of Ukraine in 2022 and the Commission's subsequent Re-power EU plan. While the topic has not directly been audited by ECA over the last four years, it will receive particular attention in 2023-2024, with three audits on the topic either ongoing or due to start soon. At least one of these audits will cover the EU's gas infrastructure.

In the ECA's recent opinion 04/2022 on REPowerEU – the Commission's plan to rapidly reduce dependence on Russian fossil fuels – we warned that the plan could fall short of ambitions. A particular area of concern was the required financing: the risk that the total amount of funding actually available may be insufficient to cover estimated investment needs. The Commission estimated that the additional investments for REPowerEU – and more particularly for phasing out Russian fossil fuel imports by 2027 – would amount to €210 billion. But the total additional funding made available amounts to only €20 billion.

Making the transition socially sustainable

An important objective of the energy transition is that it should be just and inclusive. The European Green Deal of 2019 included pledges to "leave no one behind". The proposed *Social Climate Fund*, on which ECA issued opinion 08/2022, is among the main EU measures intended to mitigate the impact of the transition to a zero-carbon economy on the most affected regions, vulnerable individuals and businesses. Auctioning EU Emissions Trading System (ETS) allowances from the buildings and road transport sectors will provide up to €59 billion in financing for the Fund in the 2027-2032 period. We explained in the opinion that, since the Commission has not yet adopted the associated procedures, it is unclear how the revenue so generated should be quantified and managed. We further emphasised that prices for emission allowances tend to fluctuate significantly, which makes them a relatively volatile source of EU revenue. It is also unclear when the revenue will be available, and whether it will be commensurate with the Fund's ambitious objectives and corresponding investment needs.

The need to undergo an energy transition which is just and inclusive was also addressed in our special report 22/2022 on *EU support to coal regions*. In the report, we explained that phasing out coal is essential for achieving the EU's climate objectives, but that the reduction in coal production inevitably led to a drop in the number of workers in the sector. In some regions, such as Lausitz (Germany) and Silesia (Poland), staff reductions were achieved through natural fluctuations and retirement, while in other regions such as Moravia-Silesia (Czech Republic), coal-mining companies had to lay off staff. We found that EU-funded training was available to laid-off coal workers, but the lack of data

on their participation meant that the auditors could not determine whether this had helped them find new jobs. We hence concluded that the support had had limited focus and impact on job creation .

ECA contributing to ensure the transparency and accountability of the energy transition

During the last few decades, the EU's energy policy has changed tremendously in terms of its objectives, means and actions. Both external and internal commitments such as the EU Green Deal, which was drafted to translate EU pledges towards the 2015 Paris Agreement into concrete policy actions, have been key drivers shaping the EU's energy transition. The ECA has not only followed this in its audits by assessing what happens on the ground, but also by reconciling progress made, or lack of it, with the projections and commitments enshrined in EU legislation and decisions. The main aim of the ECA's audits is to ensure the transparency and accountability of the EU's path in this energy transition and contributing to making it a reality.

The EU: on a slow boat to the internal electricity market

By Stefano Sturaro and Adrian Savin, Regulation of Markets and Competitive Economy Directorate

The EU's Energy Union has five strategic dimensions. Building a fully integrated European energy market is one of them; a fully integrated internal electricity market that functions well is a key component of this. Considering the complexity of electricity, ranging from its creation to distribution to storage, this is easier said than done. The EU's energy rules are set at European level but in practice, there are 27 national regulatory frameworks in operation. In this article, Stefano Sturaro and Adrian Savin, Head of Task and Deputy Head of Task for this audit, provide insights on several aspects. They discuss how to start an audit on such a complex topic, and they describe their main findings. They talk about the frustrations of slow progress, and reveal how this audit ties into macro-economic and social concerns, such as the ones the volatile energy market brought to light last year.

Source: A.S.D. scuola del remo Garda.

Igniting the audit

A few days before the 2020 Christmas holidays, a good half year before the energy crisis swept into our lives, our director, Ioanna Metaxopoulou, entered our offices to inform us that we would be carrying out an audit on the European Union's internal electricity market. We took stock of our knowledge about this area. The first thing that was clear to us was that the task was going to be challenging.

We had to become familiar with a complex market, split into two broad layers, retail and wholesale markets. These in turn are structured into four segments: day-ahead, intraday, balancing and forward markets (see Annex I of special report 03/2023). Specific conditions apply in each member state, and the number of involved actors and stakeholders is high. We also had to become acquainted with a broad set of legislation: three Regulations, one directive, and eight pieces of secondary legislation (Network Codes and Guidelines, which are the European Commission's implementing Regulations).

The process of building an internal market for electricity has been going on for a long time. It started more than a quarter of a century ago, when markets were still domestic in scope and largely dominated by monopolies. In successive waves of legislation (known as 'energy packages') the EU attempted to break up those monopolies and build up an EU-wide market. An internal market for electricity means that electricity can flow freely through the EU, with cross-border electricity trading allowing the cheapest power to be dispatched to businesses and citizens irrespective of internal EU borders. This strengthens competition and market efficiency, with lower and converging prices to the benefit of consumers, while increasing the security of EU's energy supply, with greater ability to share resources if unforeseen disruptions occur.

We met Mihails Kozlovs, the reporting member for this audit, to discuss the audit's direction and scope. Following this meeting, we decided to include the state of progress of the electricity market integration in the scope of our work, picking up from where a previous ECA audit left off in 2015[1]. We also decided that our audit should cover the implementation of the Regulation on market integrity and transparency (REMIT) to prevent electricity market manipulation, a topic which the ECA had not previously audited.

Our auditees were therefore the European Commission, in particular the Directorate-General for Energy (DG ENER), and the EU energy regulator, the Agency

1 Special report 16/2015 *Improving the security of energy supply by developing the internal energy market: more efforts needed.*

for the Coordination of National Energy Regulators (ACER). DG ENER is responsible for developing and implementing European energy policy within the scope of Article 194 TFEU. ACER promotes the completion of the internal electricity and gas markets and coordinates the work of NRAs on issues with cross-border relevance.

The budget for our audit included a training course on the functioning of the wholesale electricity market for the audit team and the cabinet staff involved, as well as for expert support to cope with the most technical details of the audit matter. Both initiatives were indeed helpful, even if the process of procuring them was time-consuming. Two colleagues, Marc Hertgen and Satu Levelä-Ylinen, joined the team in May 2021, and we were supported by a trainee.

Information exchanges with auditees were a major challenge during the audit. Auditees often provided data and information late; they also frequently delivered incomplete information, leading us to have to ask them again. As far as possible, we tried to obtain the information we needed from ACER's website. However, this turned out to be difficult: key documents for stakeholders and the general public are not easily accessible, or have not been published at all. The website lacks the transparency needed for a communication tool. In certain cases, it does not even comply with regulatory requirements[2].

Both DG ENER and ACER asked for an extension to deal with our preliminary audit findings, due to their work overload relating to the energy crisis (ACER's assessment of the wholesale electricity market, DG ENER drafting the REPowerEU plan). This crisis had already been brewing since 2021, but had been precipitated by the breakout of the war in Ukraine in February 2022. In the spirit of good interinstitutional cooperation, the ECA accommodated this request.

After our audit fieldwork was finished, we had enough material to write two special reports. We condensed the various issues we found into a single report, preserving the key messages. The clearing process for our report with the auditees was delayed because the Commission was reportedly overstretched by the work it needed to do to design proposals to cope with record high gas prices. So one of our findings, namely slow progress in integration and implementation, eventually affected our own reporting: the urgent energy crisis requiring precisely this integration and implementation to better address the situation. On 31 January 2023 we published the report; it was presented by Mihails Kozlovs, reporting member, at a well-attended press conference.

What we found

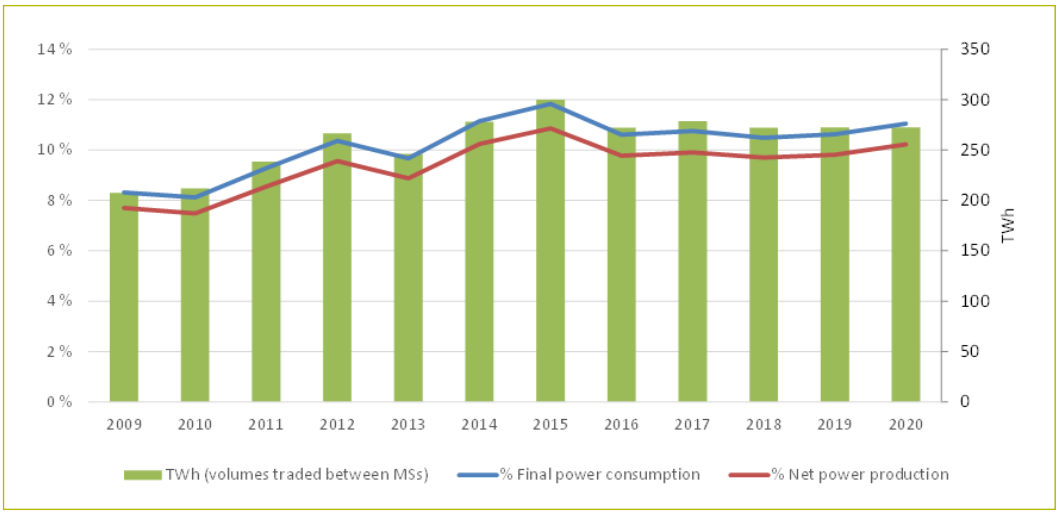
Volume and price

In special report 16/2015, the ECA had concluded that the EU's objective of completing the internal energy market by 2014 had not been achieved. There was still a long way to go before the third energy package, launched in 2009, could be deemed to be fully implemented. We started from this point and looked at whether and how much the Commission and ACER's efforts from 2015 onwards contributed to implementing the third energy package.

The focus was on the wholesale electricity market, and we tried to measure progress by looking at two key indicators: volumes of electricity traded cross-border and price convergence. We found that from 2015 onwards traded volumes had not increased (**Figure 1**), and prices had not converged (**Figure 2**).

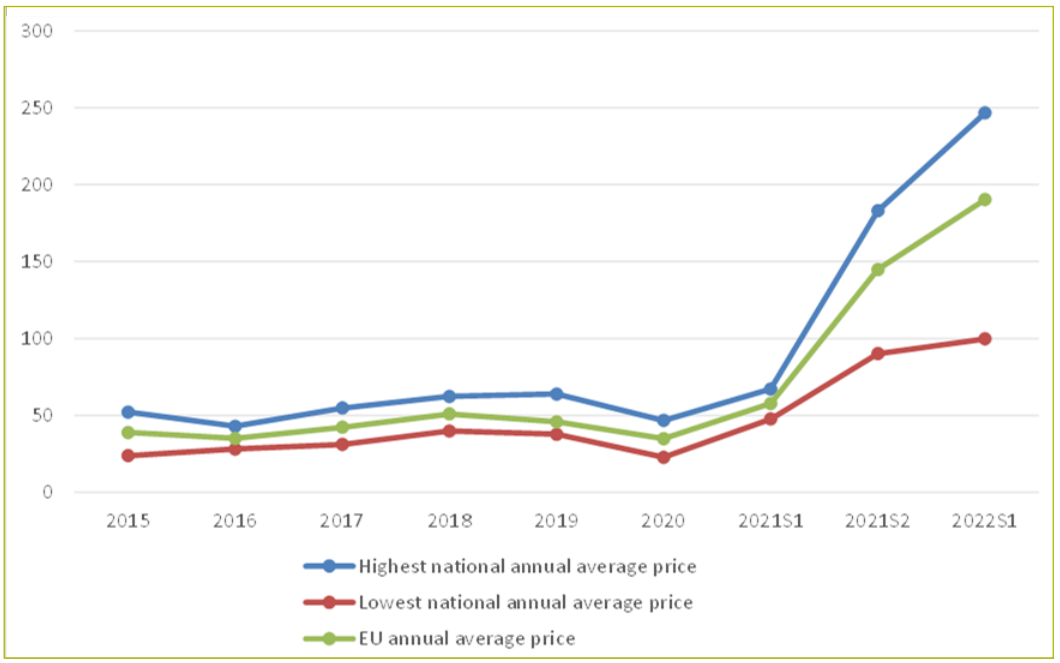
2 Special report 03/2023 paragraphs 72, 151 and Annex IX.

Figure 1 – Annual volumes of cross-border trade in electricity in the EU (TWh)



Source: Source: ECA based on data from Transparency Platform (ENTSO E), Eurostat.

Figure 2 – Annual average prices on day-ahead electricity markets (€/MWh)



Source: ECA based on data from Transparency Platform (ENTSO-E), Eurostat.

Note: Trade volumes for 2021 were not available at the drafting stage of the report. Electricity prices before 2015 were not available.

We also found that, despite certain significant achievements made over the last ten years, progress with integration had been slow and uneven across market segments and regions within the EU. From this starting point, we set out to understand what had gone wrong.

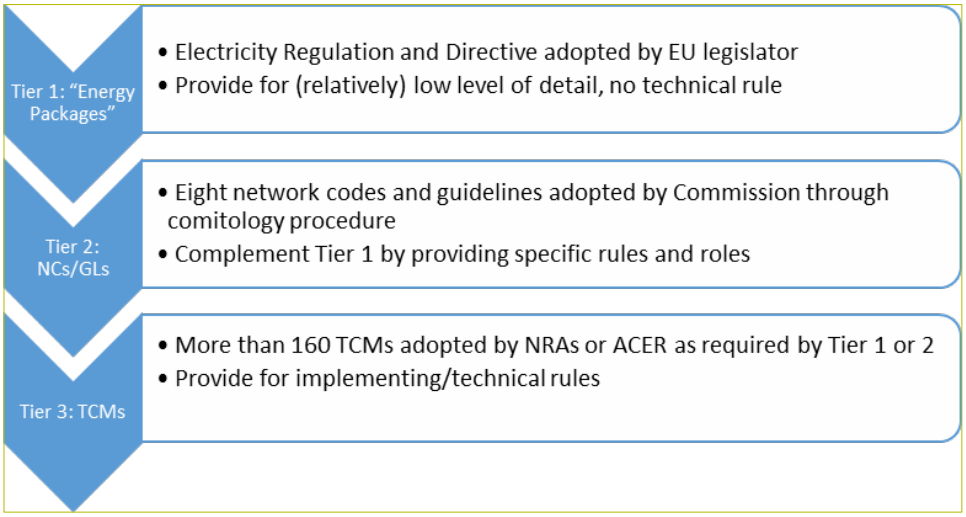
Complex legal architecture

To cut a long story short, the Commission had put in place a complex legal architecture, which had resulted in delays to the adoption of the market rules. Indeed, adopting network codes and guidelines was not the last step in the process of setting out harmonised cross-border trade rules. The implementation of network guidelines required the adoption of further technical detailed specifications through terms, conditions and methodologies (TCMs), which was delegated to national regulatory authorities (NRAs) and ACER.

Complex legal architecture

EU law on cross-border trade in electricity consists of a three-tier system, implementing article 194 TFEU (see **Figure 3**).

Figure 3 – The three-tier legal structure implementing Article 194 TFEU on electricity cross-border trade



By the end of 2021, none of the network guidelines had been fully implemented. Delays in implementation were caused by the high number of TCMs, delayed agreements on TCMs by NRAs and transmission system operators (TSOs), and inefficient approval processes set out in the network guidelines.

In its impact assessment, the Commission had not sufficiently analysed the impacts of the market design and governance mechanisms in place. In particular, this concerned key aspects related to the delegation of regulatory work to NRAs and ACER, and the coherence of market design; for example, the implications of pricing methods for price levels in crises with disturbances on input markets and in view of the growth in renewable energy.

Transmission capacity is a bottleneck

As well as the lengthy legislative process, transmission capacity was also a bottleneck. Member states have been stubbornly missing the deadlines for increasing cross-border electricity transmission. This capacity is critical: no matter how coupled power exchanges are, a lack of transmission capacity means that cheaper electricity produced abroad cannot be transported on the domestic power exchange. In other words: electricity markets remain fragmented. Delays for achieving interconnection targets (70 % of installed interconnection capacity to be made available for cross-border trade; interconnection capacity to reach at least 10 % of generation capacity by 2005 - then extended to 2020 - then replaced with a new target of 15 % by 2030) are measurable in years, if not decades.

Governance weaknesses

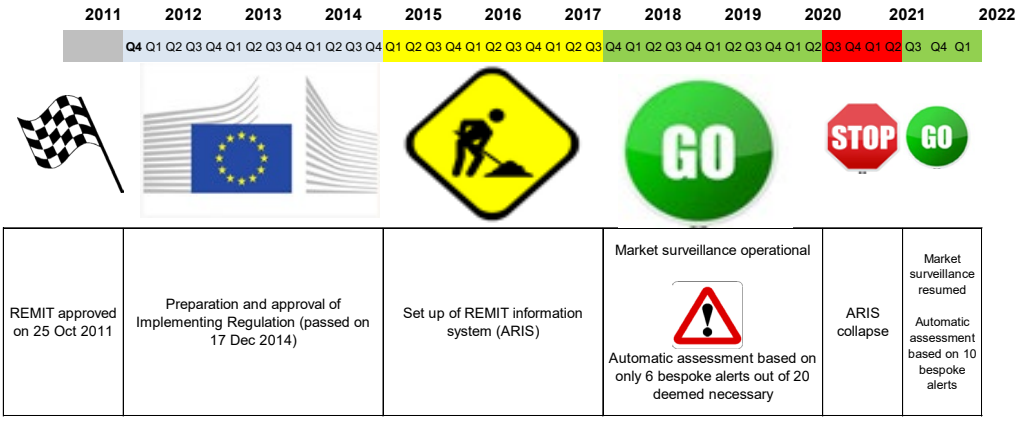
How is it possible that the process cannot be sped up? Resistance by member states, driven by national interests, combined with inefficient decision-making, poor monitoring and lack of powers at EU level, is our diagnosis. In particular, we found that ACER's monitoring of the consistent implementation of market rules across member states and its reporting were insufficient. This was particularly due to a lack of information and data, a lack of follow-up, absence of a monitoring strategy, limited resources, and poor coordination with the Commission in terms of monitoring.

CER's monitoring did not result in robust recommendations for NRAs, nor did ACER provide possible measures to foster market integration by issuing opinions to the Commission and the Parliament. Finally, ACER also lacked an appropriate governance structure and the necessary competences to effectively coordinate national authorities' actions in completing ambitious integration projects.

Market surveillance is still incomplete

Market surveillance, intended to detect and deter market abuse and manipulation, was also incomplete. ACER's surveillance became fully operational at the end of 2017 (see **Figure 4**), but data collection was not comprehensive and the assessment of data collected covered a limited number of types of abusive behaviour. ACER also allocated insufficient resources to analysing the collected data, which further hampered its assessment capabilities. Furthermore, ACER was unable to support investigations into the growing number of potential cross-border market abuse cases. Finally, ACER did not possess the appropriate tools to ensure that rules on market surveillance were applied properly at national level. Ultimately, for these reasons, ACER's surveillance has not led to many sanctions.

Figure 4- Timeline of REMIT market surveillance



Outcome and follow-up

Our report identified several issues jeopardising the integration of the electricity market under normal circumstances, issues which will also have implications for the new challenges stemming from the energy transition and the fallout of the war in Ukraine. To address these issues we made recommendations (see **Box 1**), which were generally accepted by the auditees. The report was published at a suitable point in time: just one week after the Commission had launched a public consultation on the reform of the electricity market. Our special report can now contribute to the policy debate and will hopefully help policymakers to address the issues and challenges we identified.

The report raised also considerable media interest: 329 news articles and 742 social media posts referring to this special report were published between 24 January and 14 February 2023.

Box 1 – Recommendations of special report 03/2023

In order to fix the weaknesses identified we recommend that:

the Commission should:

- streamline the regulatory framework;
- strengthen the monitoring framework for network guidelines;
- propose enhancements to ACER's governance; and
- assess the need for a framework for the consistent application of penalties.

ACER should:

- review the resources allocated for monitoring the guidelines;
- enhance its surveillance of the wholesale electricity market's integrity; and
- improve the transparency and accountability of its work.

What we learned – challenges and audit ideas for the future

Energy is a key production input and an essential commodity in our everyday life. Dysfunctional energy markets can result in consequences of macroeconomic (e.g. loss of competitiveness for businesses, increase of sovereign debt to finance support schemes) or social relevance (e.g. energy poverty). This audit can pave the way for the ECA to conduct additional audits on possible weaknesses in the design and implementation of the internal energy market.

We also see the scope for possible cooperation with supreme audit institutions, which could complement our EU-level audits at member state level. Such cooperation could, for example, cover the actual implementation of market rules, especially for retail markets, or REMIT enforcement by the national regulatory authorities.

Finally, we want to take the opportunity to say a big 'thank you!' to all of our colleagues in ECA support services who at different stages of the audit supported us with their hard work and commitment: professional training, the procurement service, ECALab, the translation and publications services, and communications. Every good audit is the result of great teamwork!

Energy Efficiency – A Miracle Solution?

By Oana Dumitrescu, Directorate of the Presidency, and Lorenzo Pirelli, Sustainable Use of Natural Resources Directorate

Source: shawn_hempel/ Depositphotos

When the energy crisis became all too apparent in 2022, many people believed the obvious starting point should be energy saving! Public information campaigns were stepped up to encourage everyone to turn down their heating and invest in insulation, low-energy lights and innovative energy-saving production methods. Public financial support for such actions had been underway long before 2022, however, including at EU level. Oana Dumitrescu and Lorenzo Pirelli were the heads of task for the ECA audits on energy efficiency in business and energy efficiency in buildings, respectively. Here they highlight some of their more striking audit findings, along some thoughts on how to make energy efficiency actions more… efficient.

Towards a net-zero economy

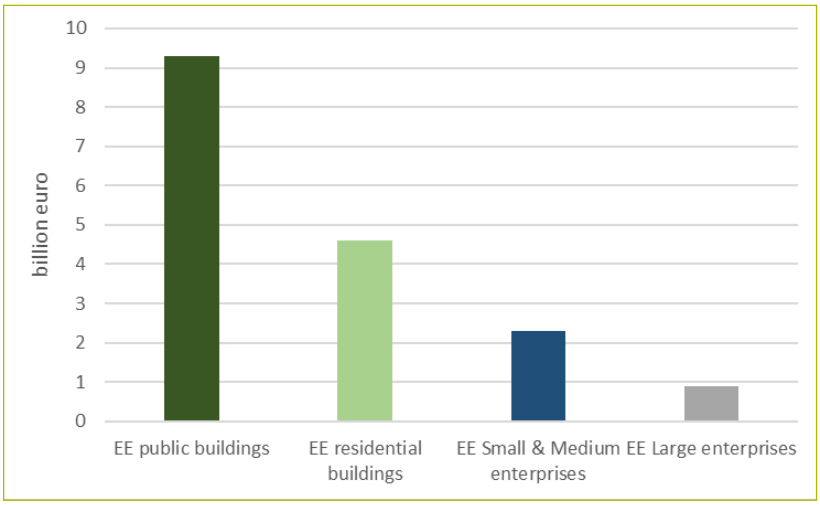
The reality of climate change is knocking at our door. We urgently need to reduce our worldwide greenhouse gas emissions. Energy is currently the biggest source of GHGs, even though some of these emissions are still not included in the figures (e.g. methane from gas and oil exploration).

The way we view energy depends on a complex network of factors, ranging from strategic autonomy to our own comfort. Enterprises rely heavily on energy and are therefore deeply impacted by energy-related issues. The availability of energy and its climate impact are starting to have a significant effect on its cost. We are now headed towards pervasive electrification, renewable energy and alternative fuels (biofuels, hydrogen and, for a transition period, natural gas), as presented in the various scenarios for the net-zero economy.

Efficiency as a transition source

For the past few years, the International Energy Agency and the EU have viewed energy efficiency as 'the first fuel' in Europe and worldwide. Its importance is obvious: energy saved is energy that does not need to be produced in the first place. The EU supports energy efficiency through regulation – e.g. via the Energy Efficiency Directive – and through funding. The most significant contribution comes from the cohesion policy funds. **Figure 1** provides a breakdown of 2014-2020 cohesion policy funding for energy efficiency investments.

Figure 1 – Focal points of 2014-2020 cohesion policy funding for energy efficiency (EE)

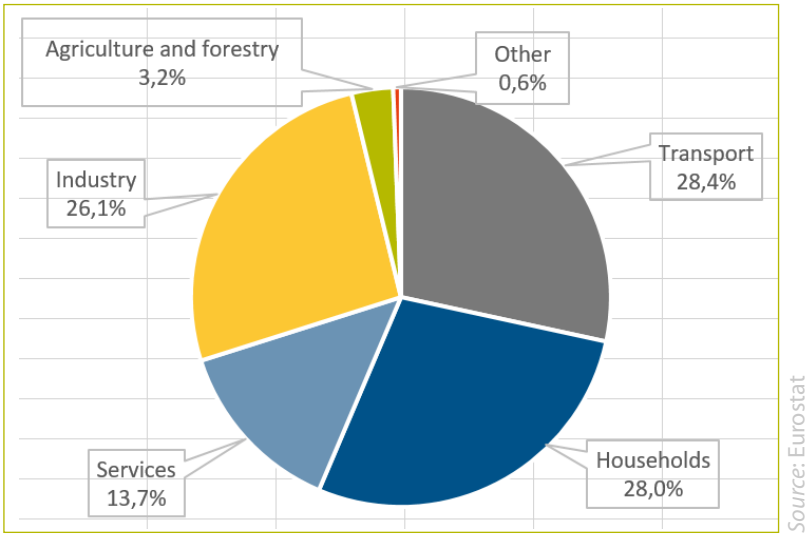


The high energy demand in buildings and enterprises, and the large amount of funding available to reduce this demand, led us to audit the relevant measures supporting energy efficiency.

Efficiency investments and cost effectiveness in buildings

We audited investments in public buildings, resulting in special report 21/2012, and in residential buildings, resulting in special report 11/2020. In both cases, we decided to focus on buildings as this sector consumes more energy than any other in the EU, followed by transport and industry (see breakdown of energy consumption by sector in **Figure 2**). This sector is also the one with the greatest potential for energy saving.

Figure 2 – Energy consumption by sector (EU 2020)



In both audits, we found that project selection was not based on cost-effectiveness. In most cases, member states allocated EU support for energy efficiency in buildings on a first-come, first-served basis, which did not allow them to assess the relative costs and benefits. In addition, it was not known how much energy was saved thanks to the €4.6 billion in EU funding invested in renovating residential buildings, or the €2 billion in national co-funding. Consequently, as in the case of enterprises (see below), the European Commission was unable to assess the contribution made by EU funding to the EU energy efficiency target.

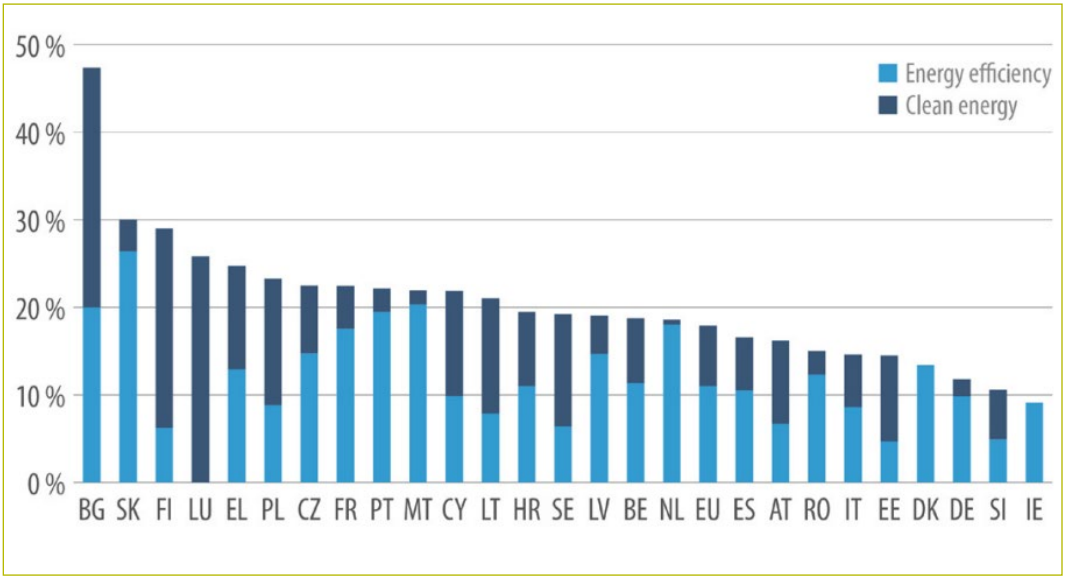
Therefore, we recommended improving:

- the targeting of the investments, by promoting the use of repayable loans and using grants for 'deep' renovations going beyond minimum energy performance requirements;
- the project selection procedures, by setting minimum and/or maximum thresholds for key parameters, e.g. the net present value, simple payback time or cost per unit of energy saved; and
- the monitoring system, by using indicators to measure the cost-effectiveness of the investments made, e.g. how much energy was saved.

Special report 11/2020 was published in April 2020, just as the COVID-19 pandemic hit the EU. The ECA presented it to the Council in June 2020 and the European Parliament in October 2020. Both the Council and the European Parliament upheld our conclusions and recommendations, encouraging the Commission to better target EU funding for energy efficiency and bring it into line with the national energy and climate plans and the national long-term renovation strategies.

In the meantime, the Commission has launched a series of initiatives to improve the energy efficiency of buildings, in particular the Renovation Wave. The aim is to tackle in particular energy poverty and the worst-performing buildings. With the current high energy prices, the issue is now more relevant than ever, as around 10 % of EU citizens cannot afford to heat their homes properly. In addition, the national recovery and resilience plans, created in response to the COVID-19 pandemic under the EU Recovery and Resilience Facility, are heavily focused on supporting energy efficiency in buildings. **Figure 3** provides an overview of the budget devoted to energy efficiency in the 27 national recovery and resilience plans.

Figure 3 – Budget earmarked for energy efficiency in the national recovery and resilience plans



Source: European Parliament briefing on *Energy policy in the national recovery and resilience plans*

We may carry out further audit work in this field to assess whether our recommendations to use EU funds more cost-effectively have been implemented, so that more energy can be saved by renovating buildings at a lower cost.

Lack of data on energy efficiency in enterprises

The ECA's special report 02/2022 concerned energy efficiency in enterprises. We decided to audit a large sample of projects funded by cohesion policy funds rather than focusing on just a few projects and the supporting framework. This was not an easy job, as the necessary data was not readily available. Receiving recent data on projects from all over the EU was challenging enough, particularly as 110 different managing authorities

managed the funding schemes. However, the most difficult part was receiving the right data and then cleaning it for analysis. We were surprised that, despite the ongoing discussions about digitalisation and big data, the data was not available in a common format across the EU.

After compiling a relatively comprehensive database of EU projects supporting energy efficiency in enterprises, we analysed a large statistical sample. This enabled us to extrapolate our findings to the whole population and estimate the results of EU intervention in terms of energy savings. What was also surprising was that, although member states require projects to provide expert-verified data on energy savings, most authorities did not have this information readily available for analysis, for example in their databases. This made it difficult to collect the available data from project documents in order to draw meaningful conclusions on the effectiveness of the funds, which was one of the core aspects of our audit.

Our audit offered further added value as the Commission did not have information on energy savings, but only on the amount of funding spent. This was because, although there were some common EU indicators, they did not specifically relate to energy efficiency. We found that member states' objectives in the national energy efficiency action plans (up to 2020) were not aligned with the funding measures or, consequently, with the indicators measuring the results of EU-funded energy efficiency actions.

The Commission appreciated the fact that we were able to estimate the overall energy savings achieved with EU funding towards the EU targets, as they did not have this data. However, we disagreed on the reference period. In our view, the projects (most of which were operational after 2020) contribute to the 2030 energy efficiency targets. The Commission considered that these projects contributed to the 2020 target, which had already passed.

Another approach to determining project effectiveness was to perform an analytical review of the whole project population. When we analysed all project descriptions based on certain criteria, we were able to identify projects that this measure should not have funded. For example, some did not concern enterprises, but public institutions and bodies. Others did not concern energy efficiency, but renewables or the addition of heating installations to buildings. Even though the EU funds for energy efficiency are quite substantial in our view (more than €2 billion), they are just a drop in the ocean of funding needed for energy efficiency in Europe. Every euro counts, and we considered that some managing authorities showed excessive flexibility, with funding filtering through to projects not related to energy efficiency.

No added value from financing easy options

We were able to present several findings concerning the efficiency of EU funding. First, we think both audits showed that investors always go for the easiest option available. In terms of buildings, this meant changing light bulbs to make small savings. In terms of enterprises, energy audits did not identify actions with the highest savings potential. Instead, they were tailored to investments that the company was already planning, such as replacing production lines to increase production and energy efficiency. This increases the risk of "deadweight" financing, supporting actions that would have taken place anyway.

When looking at the most common business indicator used by enterprises, the payback time, we found three categories of project. Some had such long payback times that it would not have made sense to invest private funds in these measures. We were unable to identify any benefits deriving from the investment that would have allowed it to make financial sense. In our opinion, investments that do not make sense financially should not receive public funding just because of their 'energy efficiency' designation.

At the other extreme, we encountered some projects with very short payback times. We considered that such projects did not need grants in order to accomplish their energy efficiency measures, so again there was a risk of deadweight. The investment would have been repaid almost immediately, at 2021 energy prices, and public funding should have been channelled to where it was actually needed. The number of such projects would be even larger today, in the context of higher energy prices. Now, investments

in energy efficiency actually make financial sense, even without any public funding. One allocation criterion that should be considered and commonly used would be for public funds to only support investments with a very high impact and innovation level, allowing promising small-scale technologies to be scaled up.

Another remarkable finding was that the managing authorities did not take advantage of the option of publicly funded loans for enterprises for which public grants were not essential. We noticed that publicly funded loans represented only 1 % of the total funds granted, and that they went mostly to micro, small and medium-sized enterprises. Large enterprises tended to receive grants through a specific measure rather than loans. Nonetheless, they still achieved the greatest savings due to the scale of their activity.

Driving efficiency towards 2050 requirements

It is clear that energy efficiency equates to a core source in the energy transition and therefore deserves to be a top priority for EU policymakers in this area. But how can they ensure that we prioritise efficiency? One option could be to ask all EU-funded projects, irrespective of sector, to ensure that their investment is energy efficient as a condition for receiving public funds. In other words, a horizontal condition for vertical budget flows.

Another idea could be for the EU to fund the complete energy renovation of buildings, since, even at the current high energy prices, the huge investment needed to make a notable difference is often not repaid in the owner's lifetime. As an underlying motive, today's buildings are likely to still be standing in 2050, the year by which the EU has pledged to be climate neutral.

ECA auditing EU progress in the energy transition

By Sarah Filippczyk, Secretariat-General

Source: Buchachon_photo/ Depositphotos

The EU's ambitious energy transition goals require extensive efforts not only from the European Commission and the EU member states, but also from public auditors. The vast measures being contemplated need to be audited to assess progress towards the goals of the *Fit for 55* and 2050 zero emissions objectives. Sarah Filippczyk, a trainee in the ECA's Secretariat-General, has a background in journalism. She has analysed the various audits on this subject that the ECA has undertaken recently, or will conduct in the near future. Here she focuses on three of them. All of them relate to policy actions that are key to the energy transition. She provides insights on the key audit questions and the ECA's findings.

Energy transition ambitions require additional effort

A climate-neutral economy. That is the target the EU has set itself for 2050. However, to meet this goal significant action is needed, a systemic change towards renewable energy. This systemic change relates to aspects such as energy autonomy, energy efficiency, and modernising the electricity grid, keeping the transition affordable for EU citizens and businesses. Introducing and scaling up renewable energy is a key challenge in the fight against climate change.

In September 2017, the ECA published a landscape review (review 01/2017) entitled *EU action on energy and climate change*. A key message of this review was that effective action on energy is essential to tackle climate change. The ECA reported then that energy production and use in the EU accounted for 79 % of EU greenhouse gas emissions. The EU has set itself targets for 2030, set out in the Fit for 55 package, and 2050. In the review, the ECA observed that these 2030 and 2050 emissions reduction targets and objectives would not be achieved without significant additional effort, and that all economic sectors would need to contribute.

In its 2017 review, the ECA also recognised successful growth in renewables. But it reported that audits had identified obstacles to investments and a lack of cost-effectiveness. Since 2017, the EU has further increased investments in renewables and battery production to enable the energy transition. The installation of wind and solar power, the production of renewable hydrogen and the increase of battery production

in the EU play particularly important roles in that process. In this article I look at three different audits the ECA has either carried out in the past or is currently conducting relating to the scaling-up of renewables.

Wind and solar energy gaining in importance

In 2019, the ECA published special report 08/2019, reviewing the EU's progress in wind and solar energy. As part of the audit, the ECA also assessed how likely it was that member states would reach their individual renewable energy targets. The assessment was that wind and solar play an integral part in the EU's goal of achieving zero greenhouse emissions and reducing the EU's dependency on imported fossil fuels. Between 2005 and 2017, the proportion of electricity produced from renewables had increased from around 15 % to almost 31 %. Even though hydro-power was still in the lead in terms of volume, wind and solar power exhibited the strongest growth. Wind and solar photovoltaic energy had become cheaper, allowing it to become economically more competitive with fossil fuels. Presumably, this competitiveness has only increased with the increase in energy prices since the audit.

Regarding the policy framework and targets, the audit built on the 2009 Renewable Energy Directive (RED I), which stipulated that by the end of 2020, the whole European Union, including each member state individually, should derive at least 20 % of its total energy consumption from renewable sources. The RED II set a binding target of at least 32 % by 2030. A key audit question was whether the proportion of renewables in gross final energy consumption had progressed enough for the EU to meet the 20 % target set by the Directive by 2020. The ECA also looked at the effectiveness of the EU and member states' support for electricity generation from wind and solar power. Had the EU and its member states managed to increase the attractiveness of investing in wind and solar power, and had the EU legal framework for 2021-2030 created a supportive environment for the development of wind and solar photovoltaic installations?

The ECA concluded that around half of the member states were at risk of not reaching their 2020 targets. Another finding was that there was initially an excess of financial support, but that decreasing the level of subsidies attached to wind and solar energy production had served to deter potential investment. Half of the member states were either close to reaching their 2020 targets or had reached them already, but there were concerns about whether the other half could make enough progress for the EU to reach its overall target of 20 % renewable energy production by 2020.

Since the special report, which cited results up to 2018 and looked at targets to be reached by 2020, new data has become available about whether the targets met the actual outcomes. A 2022 report by the European Commission on the achievement of the 2020 renewable targets stated that in 2020, 14.3 % of EU energy came from wind power, making it the second largest renewable source. The fourth largest renewable energy source was solar power, the source of 6.9% of energy. According to Eurostat, 22 % of the EU's gross final energy consumption came from renewable sources in 2020, which meant that the EU exceeded its target by 2 %. The 2030 targets are set out in the REPowerEU plan, a document published by the Commission in May 2022. In the document, a series of measures is set out to reduce the EU's dependence on Russian fossil fuels. The measures are based on three pillars: saving energy, producing clean energy and diversifying the EU's energy supplies.

Becoming the second largest battery producer

Lithium, cobalt and nickel. Stable access to these raw materials is essential to allow the rapid growth of battery production. However, these minerals are not produced in the EU in quantities sufficient to cover the increase of future demand, so other ways must be found to ensure a stable supply. Since battery development is an essential part in reaching the EU's goal of climate-neutrality by 2050, the ECA is currently conducting an audit[1] looking at the EU's goal to become the world's second largest battery producer by 2025.

1 European Court of Auditors. 2022. *Audit preview 02/2022: Becoming the world's second largest battery producer.* 10 May. Accessed 26 January.

In 2020, European renewable energy production reached 44GWh. To achieve the EU's target, this figure needs to increase to 400GWh by 2025, meaning that renewable energy production needs to increase by around nine times. This would have a significant impact on the EU economy, creating 800 000 jobs and generating about €250 billion per year. It is estimated that, in the 2014-2020 period, the EU allocated at least €1.25 billion in grants and guaranteed around €500 million in loans to projects across all stages of the battery value chain. Support for battery production also appears in some national recovery and resilience plans, which form the backbone of the EU Recovery and Resilience Facility.

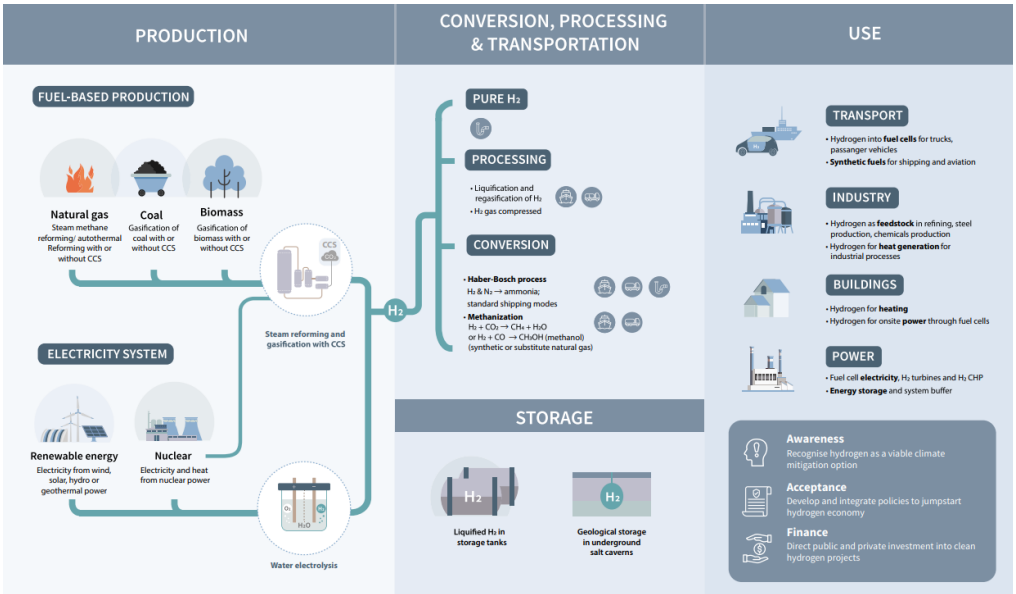
Source: Patrick P. Palej/Adobe stock

The ECA's audit will focus on whether the Commission has been effective in contributing to a globally competitive and sustainable battery value chain in the EU. The ECA will examine the Commission's strategy and objectives for this value chain and their consistency with the EU's wider strategies. The ECA will also review the capability of intervention tools chosen by the Commission, their degree of implementation to date and, where measurable, their impact on the battery value chain. Another question addressed will be how the Commission, in collaboration with the member states, allocated EU funding to this sector during the 2014-2020 period and what results have been achieved so far. The audit covers six member states. 16 projects implemented in Germany, Spain, France, Poland, Sweden and Portugal are being analysed based on their selection and implementation and whether they maximised the impact of EU funding.

Less dependency on fuel fossils with renewable hydrogen

Renewable (or 'green'/'clean') hydrogen involves almost zero greenhouse gas emissions. It is therefore a key tool for achieving a climate-neutral economy by 2050. Renewable hydrogen can be used as both a carrier to store and distribute renewable energy, but also as fuel and feedstock (see **Figure 1**). It would thus also reduce the dependency on fuel fossils and help the EU become more independent from, for example, Russia. In her 2022 State of the Union address, Commission President Ursula von der Leyen announced the creation of a Hydrogen Bank, meant to guarantee the purchase of hydrogen and help building the hydrogen market.

Figure 1 – Hydrogen value chain



In view of the role of hydrogen in the energy transition and the substantial amounts of EU funds involved, the ECA recently started an audit taking a closer look at the EU's hydrogen production. The audit was selected by the ECA as part of its 2022+ annual work programme. The topic is of high interest for various stakeholders, including industry and the European Parliament. In May 2021, the Parliament issued a resolution on a European Strategy for Hydrogen. The resolution established an urgent need to develop infrastructure for hydrogen production, storage and transport, and to develop demand and supply in parallel. On 9 February 2023, the European Parliament's committee for this policy area decided to enter into negotiations with the Council on the Gas and Hydrogen Directive and Regulation – the 'gas package'. The Council is another stakeholder which is concerned by this topic. In December 2020, it emphasised the need for the EU market for hydrogen to become a competitive, agile market that attracts investments. It therefore asked the Commission to continue its work on drawing up an EU hydrogen strategy. In October 2022, ministers discussed the future regulatory framework for hydrogen and its phase-in.

The ECA audit is highly relevant as it will provide independent insight into potential strengths and weaknesses in the cooperation between the Commission and the Member States, as well as their respective responsibilities for delays in progress towards achieving the objectives of the hydrogen strategy. The ECA will assess the effectiveness of the Commission's strategy in promoting the EU's hydrogen infrastructure for transport, and the efficiency of EU co-funding in supporting the development and timely provision of hydrogen infrastructure for transport in the Member States. Topics that may be covered in the audit include the policy framework, the appropriateness of funding in relation to the EU ambitions set, coordination between key players, and whether funded projects contribute to realising the strategic goals set. Publication is planned for 2024.

Factual insights on what exists between plans and practice

The above audits are only a selection of the various audits the ECA has published and is currently conducting about the EU's progress in its energy transition. The ECA's 2023+ Work Programme contains audits on subjects ranging from transition in coal regions to the Energy Union, and from security of energy supply to biofuels. The findings in various areas will show whether the EU is making progress towards meeting the overall Fit for 55 target: reducing the EU's net greenhouse gas emissions by at least 55 % by 2030. The EU reaching its overall target of a climate-neutral economy by 2050 is likely to depend on this.

Facing soaring energy prices - how the EU is tackling the energy crisis

By Olivier Prigent, cabinet of Viorel Ștefan, ECA Member

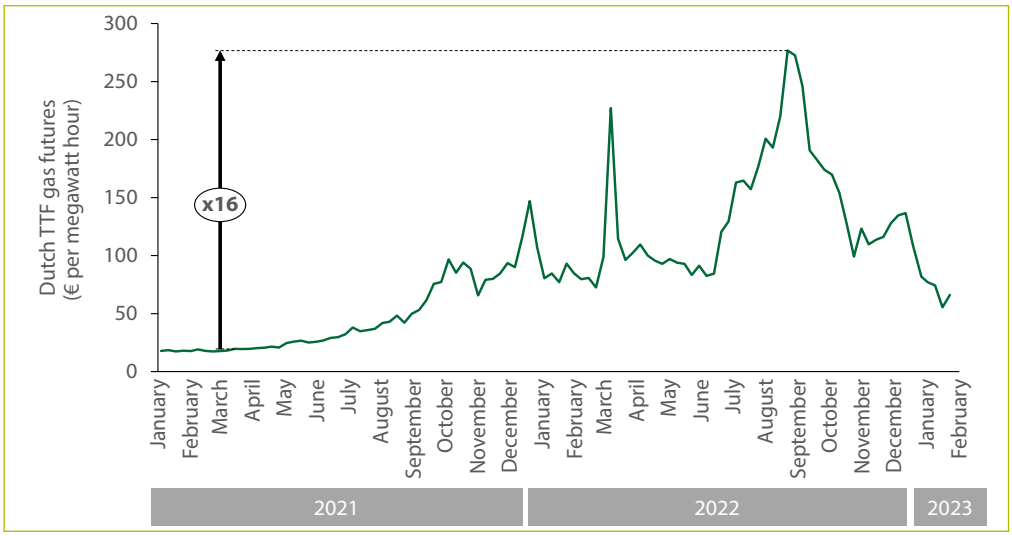
Source: Adobe stock

With its adoption of the Green Deal in 2019, the European Commission launched a set of long-term policy initiatives, the overarching aim of which is to make the EU climate neutral by 2050. Various elements of the Deal related to energy and involve, among other things, reviewing the Energy Taxation, Renewable Energy, and Energy Efficiency Directives. Greatly increased energy prices caused by the war in Ukraine threw up yet another challenge for the EU, which had to act quickly, without compromising on its long-term objectives. What measures did the EU introduce to tackle the high-energy prices? Olivier Prigent, attaché in the cabinet of Viorel Ștefan, ECA Member, explains how prices are set within the EU electricity market and outlines both the expected impact and challenges of the EU measures adopted by the Council.

Why did both my electricity and gas bills increase in 2022?

Between early 2021 and mid-2022, my gas bill doubled. This was due to the fact that energy demand increased as most parts of the world recovered from the COVID-19 pandemic, reigniting consumption, and invasion of Ukraine by Russia. As a result, EU gas trading prices increased 16 fold (see **Figure 1**).

Figure 1 – Evolution of TTF gas futures



Source: CA based on Statista

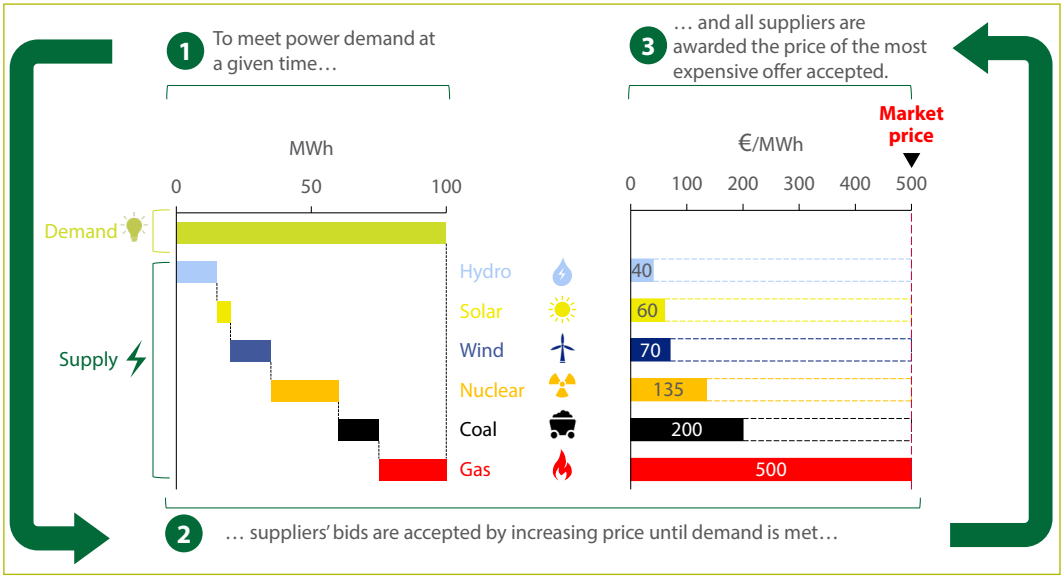
Note: The TTF (Title Transfer Facility) is a virtual trading point for natural gas and serves as a reference for gas prices in Europe.

But why did my electricity bill go up as well? First, because the EU generates about one quarter of its electricity using natural gas. Second, because the EU energy market is based on a 'pay-as-clear' pricing model (see **Box 1** and **Figure 2**). In order to meet power demand at a given time, power producers bid into the market by establishing their price according to their production cost. Renewable energy sources are produced at nearly zero marginal cost (sun, wind and water being either free or cheap), and related bids are therefore usually the lowest. The bidding goes from the cheapest to the most expensive energy source. The cheapest electricity is bought first, next offers in line follow. Once the full demand is satisfied, everybody obtains the price of the last producer from which electricity was bought: this is the market-clearing price. According to the Commission, this model is the most efficient for a liberalised and 'well-functioning' market. Most EU countries used it before it became anchored in EU legislation. Such a system also encourages energy transition by increasing the profits of the renewable energy industry, which faces high capital costs and low operational expenditure.

Box 1 – Example of the application of the pay-as-clear model

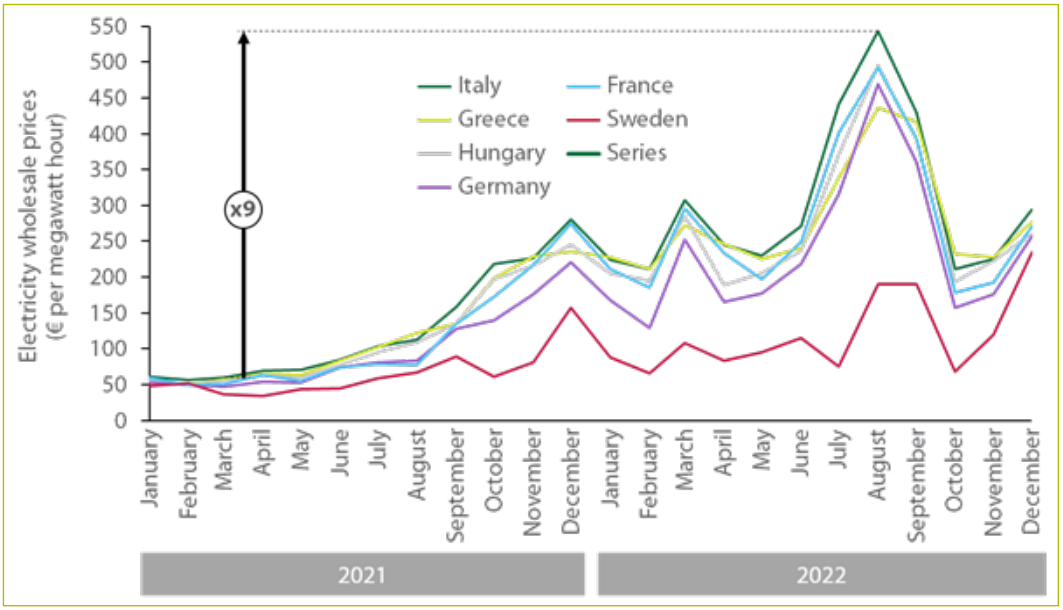
Imagine you operate a wind farm and that you can sell electricity at €70/MWh. To meet peak demand on 31 December 2022, we need electricity from a range of power plants, including a gas-fired plant, the most expensive option, which sells electricity at €500/MWh. All operators, including you, receive €500/MWh, irrespective of the price at which you offered it.

Figure 2 – *Pay-as-clear* pricing model (illustrative numbers)



However, a side effect of this model is that, when the price of a given energy source drastically increases, it affects the price paid to all power producers. Since a quarter of EU electricity was being produced from natural gas, the high gas prices pushed all wholesale electricity prices up (see **Figure 3**). The low availability of nuclear power, due to plant maintenance, and hydropower, due to drought, exacerbated the price increase.

Figure 3 – Wholesale electricity prices in selected member states



What was the EU's first step in reacting to the looming energy crisis?

In May 2022, the Commission published its REPowerEU plan, a plan for saving energy, producing more renewable energy, and diversifying the EU's energy supply by way of new targets, cooperation with third countries, and new legislation. Most of these actions are described below.

Where will the money come from?

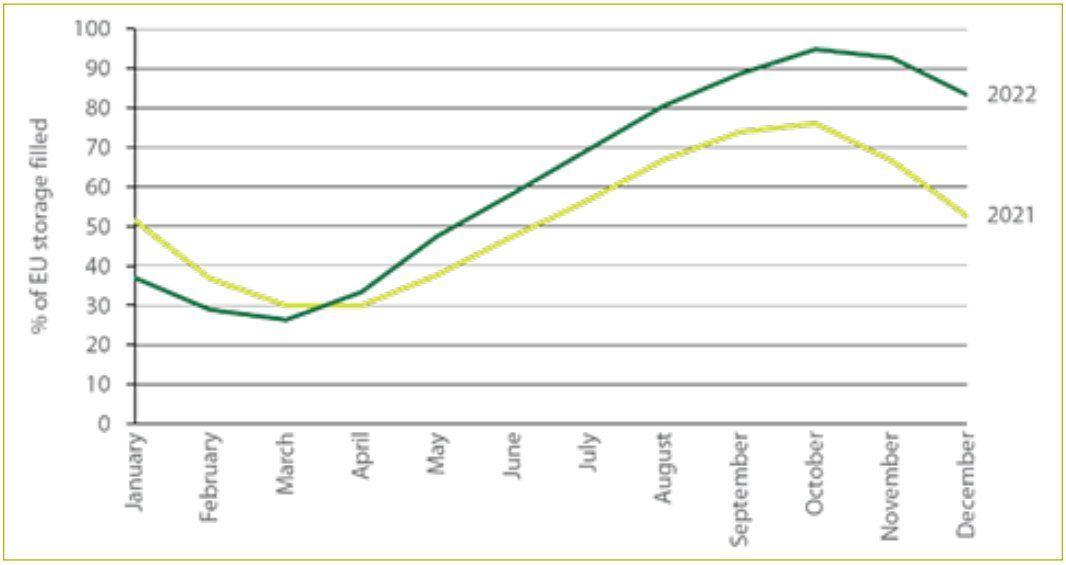
The REPowerEU plan stated that €210 billion was needed to phase out Russian fossil fuel imports. It was therefore proposed to cover part of this need by using both unspent funds from the 2014-2020 EU budget, and loans and grants not taken up under the EU's COVID-19 Recovery and Resilience Facility (RRF) – an instrument originally set up to mitigate the impact of the pandemic. A key principle of this facility is that no investment or reform may harm either the environment or the climate: the 'do no significant harm' principle.

In December 2022, the European Parliament and the Council struck a deal on using EU RRF funds for REPowerEU measures. The deal included an exemption from the 'do no significant harm' principle for measures that allay the EU's immediate energy security concerns – in other words, COVID-19 recovery funds can now be used to finance gas projects.

What did the EU do to ensure security of gas supply and decrease gas bills?

Another immediate reaction of the EU was to start storing gas. In June 2022, the EU imposed minimum gas storage obligations on member states: underground gas storage had to be at least 80 % full before November 2022, and 90 % before subsequent winters. Consequently, EU member states' storage were filled at higher rates and levels than in 2021 (see **Figure 4**).

Figure 4 – Evolution of EU gas storage



Source: ECA based on GIE AGSI

In addition to increasing gas storage, demand can also be reduced. In July 2022, member states agreed on a regulation to reduce gas demand by 15 %. To achieve this target, the Commission suggested actions such as switching fuels for electricity and industrial production, implementing energy efficiency measures, and reducing heating in offices (as many of us have probably experienced). This Regulation was based on Article 122(1) of the Treaty on the Functioning of the European Union (TFEU), which allows the Council to adopt a regulation on the basis of a qualified majority of member states, without formal negotiation with the Parliament, in the event that severe difficulties arise in the supply of certain products, such as energy.

In parallel, the EU diversified its gas supply by securing a commitment from the US to deliver more liquefied natural gas (LNG), and by signing two agreements, one with Egypt and Israel for the export of natural gas to Europe, and another with Azerbaijan to increase cooperation in the field of energy. In 2002, the EU began operating two new gas interconnectors, between Poland and Lithuania and Greece and Bulgaria, to facilitate gas exchanges between member states.

Last but not least, in December 2022, the Council approved a regulation establishing a mechanism for limiting excessive gas prices, a 'gas cap', and another allowing joint gas purchases. These two regulations were also based on Article 122(1) of the TFEU. The gas price cap came after weeks of discussion that split opinion across the EU member states as to the emergency crisis measure that should be taken. Some feared that such a cap would divert gas supply to other continents. Council members finally agreed to trigger a cap if prices exceeded €180 per megawatt hour for three days in the Dutch Title Transfer Facility (TTF) gas hub's front-month contract, which serves as the European benchmark.

What did the EU do to reduce electricity bills?

The EU encouraged electricity savings as a means of decreasing electricity bills. In October 2022, the Council approved the regulation on an emergency intervention to address high energy prices which included, under the various conditions specified, two demand reduction targets, i.e. an *indicative* target to reduce overall electricity consumption by 10 %, and a *mandatory* target to reduce electricity consumption by 5 % during peak hours. Indeed, it is the consumption at peak hours which requires the most burning gas, currently the most expensive source of electricity production, and therefore setting the overall electricity price as per the 'pay-as-clear' model. In December 2022, the Council also agreed on a regulation to speed up permits for renewable energy projects. Both regulations were also based on Article 122(1) of the TFEU.

What about super profits?

High gas prices obviously benefited fossil fuel companies, and higher electricity prices benefited power producers that did not generate electricity from gas, both of whose

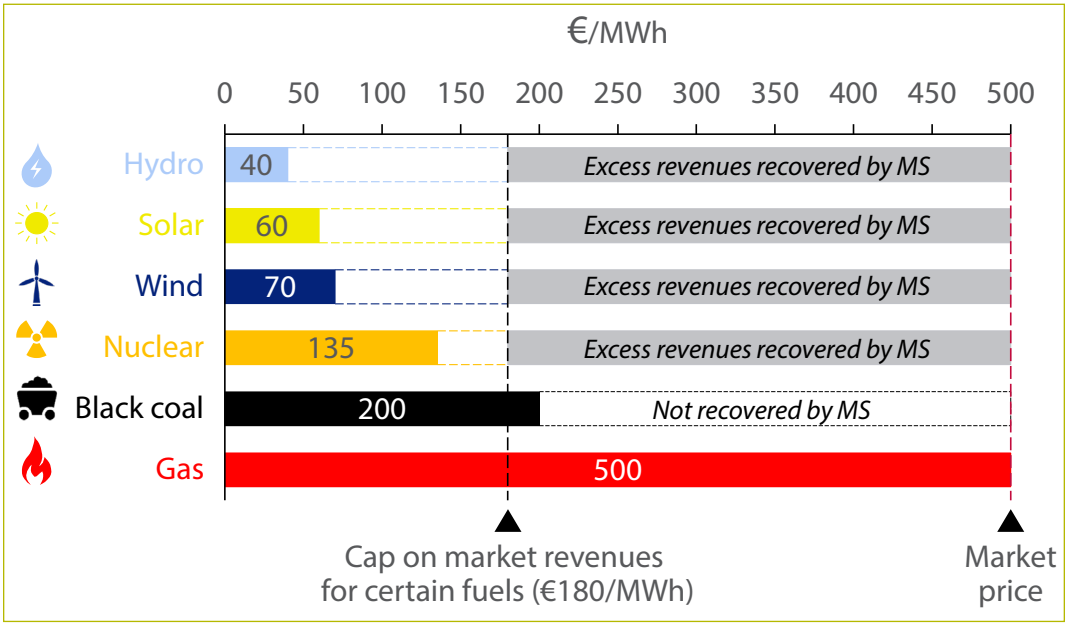
revenue and profit increased significantly (see **Figure 2**), while costs remained the same. To correct these super profits, the Council, in the context of the regulation on an emergency intervention to address high-energy prices, introduced a temporary 'solidarity contribution' whereby fossil fuel companies' extraordinary profits would be taxed at 33 % in 2022 and/or 2023.

The same regulation caps the market revenue of certain electricity producers (those using mainly renewable energy, nuclear energy and brown coal) in that, even though these lower-cost producers will still sell their electricity at the market-clearing price, member states will recover revenue in excess of €180/MWh (see **Box 2** and **Figure 5**). Member states can then use the proceeds of both contributions to support, for example, vulnerable households, renewable energy projects and cross-border energy projects.

Box 2 – Example of a cap on market revenue

Imagine you own the wind farm referred to in Box 1. You can sell your electricity for the clearing price of €500/MWh because a gas company sells it at that price, but you will have to transfer the amount received in excess of €180/MWh, i.e. €320/MWh, to the government.

Figure 5 – Cap on market revenue from power generation (illustrative numbers)



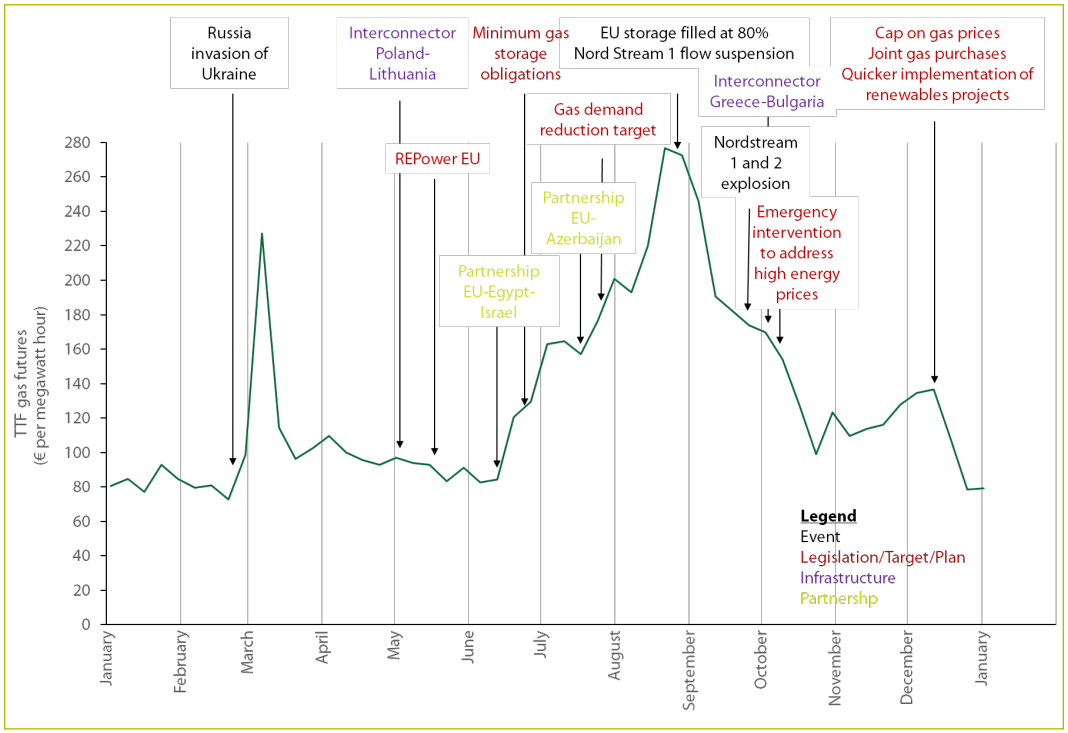
What else did the EU do to support households and companies?

In 2019, Directive (EU) 2019/944 on the internal market for electricity laid down the conditions under which member states may use regulated prices to support households and microenterprises. One of the conditions for such public intervention was to set a price *above cost*. However, in the regulation on an emergency intervention to address high-energy prices of 6 October 2022, the Council allowed member states to set regulated prices *below cost* and extend them to SMEs. One means of compensating distributors for this would be for national governments to pay them the difference between the market price and the regulated one.

Was all this effective?

Gas prices in December 2022 were at their January 2022 level. **Figure 6** shows the evolution of gas prices in 2022 and summarises the main EU initiatives described above.

Figure 6 – Evolution of EU gas prices in 2022, main events, and EU initiatives to deal with the energy crisis

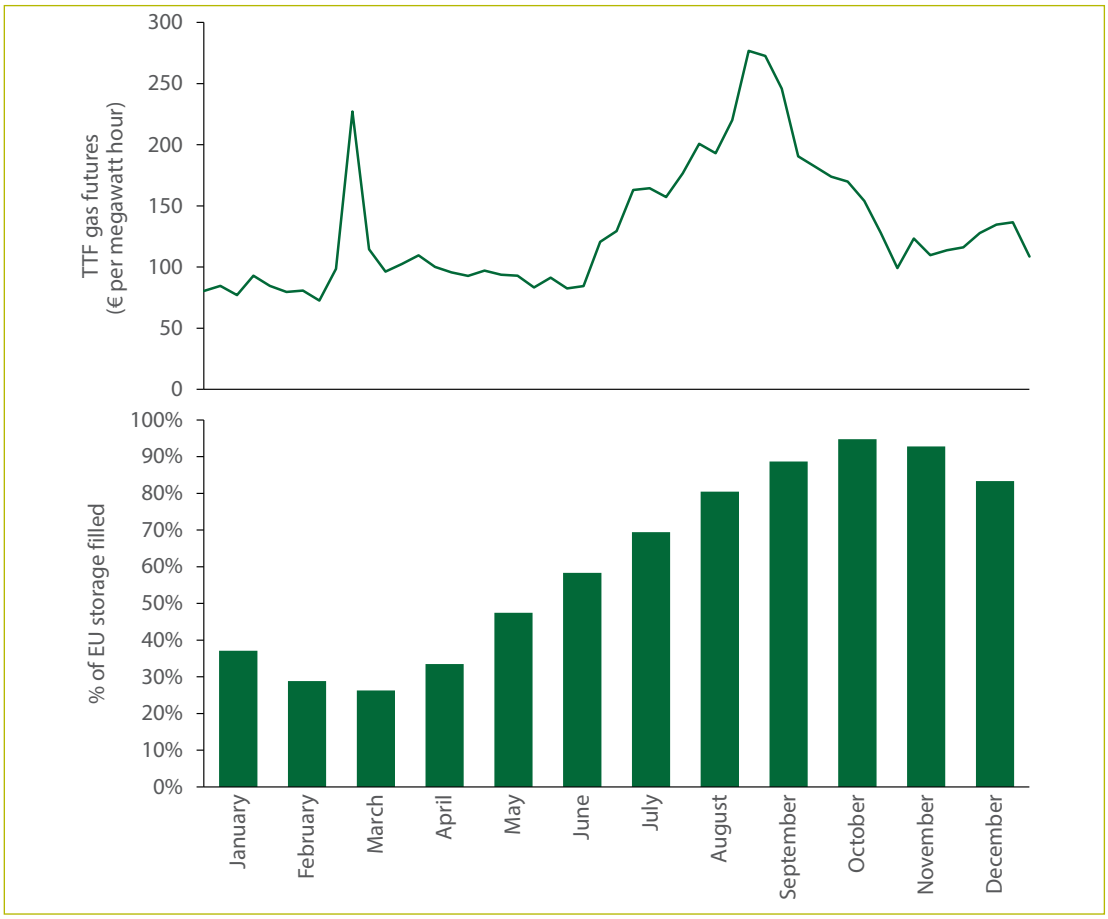


There was clearly a speculative bubble in March 2022, shortly after the war broke out in Ukraine. However, since Russian gas initially kept flowing to the EU, prices decreased, before starting to increase again before the summer, which is precisely when the EU was filling its gas storage (see **Figure 7**). This begs the question as to whether the EU inflicted pain on itself by setting over-ambitious refilling targets. However, prices fell abruptly in September 2022, while the EU was still filling its storage. With prices in February 2023 lower than in January 2022, it may also be argued that some EU measures, or a combination thereof, have been partially effective.

Two other factors clearly played a role in driving down gas prices:

- Europe experienced its second-warmest year on record in 2022. In particular, the winter in the EU up to at least February 2023 was mild, while the US and Russia froze, with temperatures as low as -40°C in Montana and -30°C in Moscow. This allowed the EU to save gas and keep gas storage levels above 70 % at end of January 2023;
- high inflation rates slowed EU growth considerably in the second half of 2022. Although this is not good economic news, the sluggish growth also meant decreased energy needs.

Figure 7 – Comparison of EU gas prices and gas storage levels in 2022



Source: ECA based on Statista and GIE AGSI data.

Has the problem been solved?

So, with gas prices lower than in January 2022, is the EU energy crisis behind us? Well, as **Figure 1** shows, gas prices are still around three times higher than they were at the beginning of 2021. Second, most households will not see an immediate decrease in their energy bills because most domestic energy prices are regulated and governments have shielded them against part of the price spike. Third, some households and SMEs renewed their energy contracts last summer, when prices were at their highest; they are therefore now stuck with prices that may lead them to the verge of bankruptcy. Fourth, some inland member states may still face difficulty in finding alternatives to Russian gas pipelines because they have no interconnections with LNG hubs. Last but not least, the EU will need to refill storage facilities to 90 % of capacity in the spring of 2023 to prepare for next winter.

What other challenges does this bring?

As explained above, the Council used Article 122(1) of the TFEU to adopt regulations quickly, bypassing the European Parliament. That was efficient, but prevented democratic debate on regulations with far-reaching consequences in not only the field of energy, but also in that of taxation, in the only EU Institution that is directly elected by EU citizens. ExxonMobil actually took the EU to court in December 2022 over the 33 % 'solidarity contribution' to be paid by fossil fuels companies. It claimed that this contribution was a 'tax', and challenged the use of Article 122(1). One can also wonder whether certain temporary adjustments to the electricity and gas markets (e.g. the capping of electricity revenue) might actually be made permanent via the electricity market reform the Commission is due to propose in March 2023.

The current energy crisis provides an opportunity to speed up the energy transition. However, to satiate our addiction to gas, COVID-19 recovery funds assigned to REPowerEU could be used to finance new gas projects. It was stated in ECA review 01/2022 that 'fossil fuel subsidies hinder or increase the cost of the energy transition'. New gas infrastructure that will be operated for decades before ultimately becoming stranded could spoil this opportunity to achieve a faster energy transition.

The Swedish National Audit Office examining the role of the state in the development of the electricity system in Sweden

By Helena Lindberg, Auditor General of Sweden, and Johannes Österström, Swedish National Audit Office

Source: Depositphotos/binnerstam@telia.com

Powerlines passing through the Swedish countryside.

With various EU actions, ranging from the Energy Union to an agreement on gas price capping, the EU sets out objectives and targets and provides funding for reaching them. But most of the activities to reach the targets set for the energy transition are done by member states through transposition to national targets and measures they see most fit to reach them. Sweden has specific ambitions when it comes to the energy transition, aiming that 100 % of Sweden's electricity must come from renewable sources by 2040. Looking back to what actually has been done in practice to actually develop the electricity system in Sweden along the energy policy lines adopted, the Swedish National Audit Office (SNAO) is doing an audit in this area. Helena Lindberg, Auditor General of Sweden since 2017 and Johannes Österström, Audit Director, provide insight on the various aspects relating to this audit.

Focus on risk

The Swedish National Audit Office (*Riksrevisionen*), the SNAO – see **Box 1** - is part of the Swedish Parliament's (*Riksdag*) parliamentary control system and independently audits activities carried out by the state. The design of our audit work is based on a risk model, according to which, we have identified three main risks at state level. The risks of deficiencies relate to:

- public finances;
- governance, follow-up and reporting;
- organisation, responsibility and coordination.

Box 1 - the Swedish National Audit Office (*Riksrevisionen*)

The Swedish National Audit Office (SNAO) was established on 1 July 2003, as a new authority under the Swedish parliament. This year therefore marks the 20th anniversary of the Swedish National Audit Office.

The task of the SNAO is to examine how the state's money is spent, how it is accounted for, and how efficiently it is used. By virtue of its constitutionally protected independence, the SNAO has a strong mandate to audit government authorities and activities. The SNAO examines whether the government complies with directives, rules and regulations, whether it achieves its goals, and whether government actions are effective; it checks that the government and the authorities carry out their work properly.

The SNAO has three main tasks:

- through its *performance audits* address matters relating to the state's budget, its implementation and the commitments and results of government activities;
- through the *financial audit* it examines the authorities' financial statements in order to provide an opinion on whether they have been prepared in accordance with the applicable regulations, whether they provide a fair presentation of the accounts, and whether resources have been used in accordance with the applicable conditions and regulations; and
- *international development cooperation* takes place in accordance with the decisions made by the Swedish parliament. Its purpose is to support the development of independent professional auditing bodies, contribute to democratic development, and strengthen parliamentary control.

The Swedish National Audit Office is led by an Auditor-General appointed by the Swedish Parliament (*Riksdagen*). The current Auditor-General is Helena Lindberg.

We have designed our audit plan for the coming years based on these overall risks. Significant and current factors that have also played a major role in the audit scope are the war in Ukraine, rising inflation, the increasing cost of electricity and fuel, and problems related to energy supply.

The electricity system is less robust now than before

The electricity system accounts for a large part of Sweden's energy supply and plays a fundamental role in society. The electricity system has been undergoing a number of major changes, and in recent years there have been indications that it is less robust now than before. We have also seen challenges with regard to combining the three pillars of Swedish energy policy: ecological sustainability, competitiveness and security of supply.

Furthermore, certain signs indicate a risk that energy policy implementation may not be efficient. Therefore, within the framework of the performance audit, the SNAO is currently conducting an audit of the state's role in developing the electricity system in Sweden.

What do we want to know?

The aim of the audit is to decide whether the state actors have prepared and implemented measures that have an impact on the electricity system, so that the three energy policy pillars can be combined effectively.

In order to answer this, we have developed three sub-questions:

- Have the responsible authorities, namely the *Affärsverket Svenska kraftnät* – the Swedish transmission system operator (TSO) and a Swedish state-owned public utility (see below), the Swedish Energy Markets Inspectorate (*Energimarknadsinspektionen*) and the Swedish Energy Agency (*Statens energimyndighet*) been monitoring their responsibilities and reporting back to the Swedish government?
- Has the government analysed, considered, and reported the implications for the energy policy pillars before taking decisions on measures that have an impact on the electricity system?
- Have the government and *Affärsverket Svenska kraftnät* taken measures to deal with the consequences of decisions that have an impact on the electricity system, in addition to trends identified through the authorities' strategic intelligence?

The Swedish electricity system and its actors

The Swedish electricity system is regulated by Swedish law (which is largely based on regulations at EU level, through EU directives) and EU regulations. The main state actors in the electricity system are *Affärsverket Svenska kraftnät*, the Swedish Energy Markets Inspectorate and the Swedish Energy Agency.

The Swedish Energy Agency is the managing authority for energy and its task is to contribute with facts, knowledge and analyses to promote the energy policy objectives. *Affärsverket Svenska kraftnät* owns, manages and develops the transmission grid. *Affärsverket Svenska kraftnät* is also responsible overall for balancing production and consumption, and ensuring that the electricity system is stable. The Energy Market Inspectorate is primarily responsible for supervising actors in the electricity market as well as following up and analysing the operation of the electricity markets.

Problem indicators

The decision to conduct the audit was based on a number of identified problems:

Rising and variable electricity prices

Recent years have been characterised by volatile, and at times very high electricity prices in Sweden, at levels that we have not experienced before. Moreover, there have been significant differences between electricity prices in southern and northern Sweden. Until 2019, electricity prices were largely the same across the country, but at times in the past year, southern Sweden has seen tens of times higher electricity prices than northern Sweden.

The price differences are due to the fact that the capacity of the electricity grid is insufficient to be able to transfer the electricity produced in the north for consumption in the south. In addition to the energy crisis that was triggered in the wake of Russia's war against Ukraine, the closure of planned electricity production in southern Sweden (namely four nuclear power reactors and one large gas power plant) increased the need for transmission from the north. At the same time, market access to transmission capacity between northern and southern Sweden decreased between 2017 and 2021, with a slight reversal of the trend in 2022.

The transition to ecologically sustainable electricity production is under threat

The transition towards a larger amount of sustainable and variable electricity production places high demands on the adaptive capacity of other parts of the electricity system, for example through grid expansion. During the periods where transmission capacity has been low, the profitability of the wind power expansion in northern Sweden has been under pressure, as the electricity price at times dropped below the cost of wind power production. Therefore, cheap fossil-free electricity is stuck in the north, while southern Sweden suffers from higher electricity prices. It also means that the electricity produced by Sweden cannot be exported to replace power from fossil fuels elsewhere in Europe.

Risk of lower security of supply

Until the mid-2010s, Sweden had a significant power surplus, even during more severe winters. Nowadays, also partly due to the closing of the power plants referred to earlier, we no longer have the domestic production margins to meet peaks in demand for power, and so Sweden has to rely on significant imports to cope with cold winter days on which there is no wind.

Assessment criteria

We use assessment criteria to be able to answer the audit questions. In this audit, the assessment criteria are based on the Swedish government's vision of what should happen in this field, and on the energy policy objectives.

The Swedish parliament has decided that energy policy should aim to combine its three constituent energy policy pillars: ecological sustainability, competitiveness and security of supply. Furthermore, the Swedish parliament has decided that its energy policy should create conditions for an efficient and sustainable use of energy

and a cost-effective Swedish energy supply that has a low adverse impact on human health, the environment and the climate, and facilitate the transition to an ecologically sustainable society.

The Swedish parliament has placed particular emphasis on the need for a long-term perspective and a stable energy policy. Long-term decision-making is also a prerequisite for the functioning of the electricity system, due to the fact that the system is unified and sensitive to rapid changes.

Ecological sustainability means that unwanted environmental impacts in the energy system should be low, and also means that it is important to take into account changes in the landscape's natural and cultural environments. The Swedish parliament has also concluded that 100 % of Sweden's electricity must come from renewable sources by 2040. While this would imply that nuclear would be phased out, there has not been a ban on nuclear power.

Security of supply is the ability to provide a safe and adequate supply of energy to all users on demand. Trusting the way in which the market operates also forms part of the security of supply, i.e. the price depends on supply and demand. At the same time, the Swedish parliament has decided that private individuals will receive financial compensation for the exceptionally high electricity prices. Moreover, prices should not vary too much domestically because the focus within the EU is to create an integrated electricity market. In its decision-making, the government should therefore take into account possible factors that could contribute to an even greater price disparity.

Competitiveness means that a sustainable electricity system, which has safe and stable electricity supplies, is a prerequisite for many key and essential functions that are important to both society and the business community. In particular, the Swedish parliament has emphasised that the energy system should enable and contribute to a high employment rate. Smoothly functioning competition in the energy markets is considered to result in determining an efficient price formation and result in a more efficient use of resources. Competition that functions properly requires competitive neutrality in the market. Therefore, the government and the authorities will continue to pursue competitive neutrality in the measures taken with regard to Sweden's electricity system.

Information gathering and analysis

Important evidence gathering for the audit will consist of statistics in various forms. This relates to: price developments (including electricity costs, cost of the grid and taxes), transmission capacity nationally and abroad, capacity use, variation in electricity grid frequency, the energy mix between different types of production, and consumption patterns, etc.

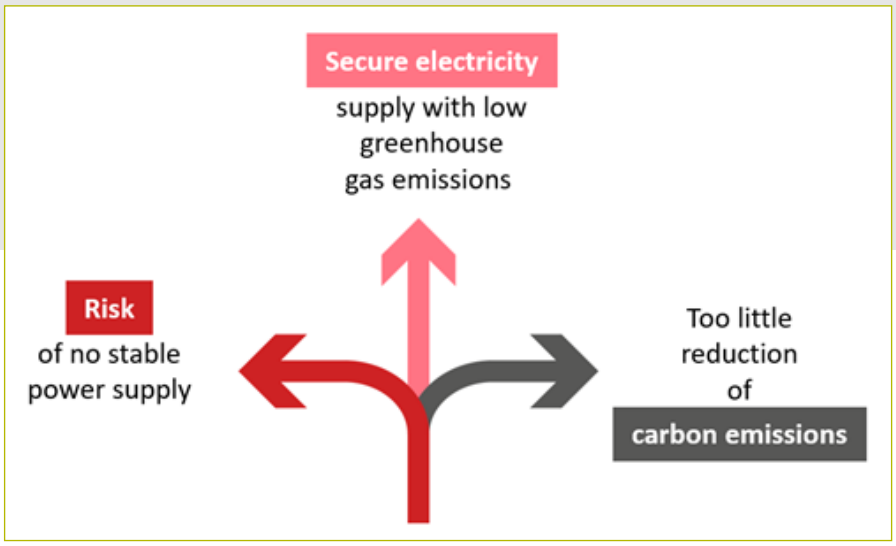
It will also be important to define the government's mandate and that of *Affärsverket Svenska kraftnät* in relation to the legislation at EU level. This is to highlight more clearly the measures that can be taken to address problems or shortcomings, and also, for example, limitations created by EU rules on competition in the electricity market.

Publication of the audit report

We are planning to publish the audit in the autumn of 2023.

Secure electricity supply: is Germany´s energy transition still on track?

By Thomas Schmidt-Wegner, Dirk Schulte and Christoph Lanhenke,
German Federal Audit Office



Source: German Federal Audit Office/ECA

Choices and risks in energy transition.

When making decisions on the energy transition, policymakers face a delicate balancing act: how can they stimulate sustainable energy resources while keeping them affordable and ensuring supply of energy at any given time? Will one of these elements be at the cost of another? In 2021, the Bundesrechnungshof – the German Federal Audit Office – published an audit report that looked in particular at how the German federal government had dealt with energy transition issues in relation to security and reliability of electricity supply and possible risks linked to this transition. Thomas Schmidt-Wegner is a Member of the Bundesrechnungshof and head of the audit unit responsible for energy policy. Dirk Schulte (lead auditor) and Christoph Lanhenke were members of the audit team. They present their key findings below.

Various dimensions of energy transition

Since 2016, the Bundesrechnungshof – the German Federal Audit Office –- has consistently monitored the process of energy transition through dedicated audits. The German government defines energy transition as the shift from fossil fuels and nuclear energy to a sustainable energy supply based on renewables. Two key aspects of energy transition are the expansion of renewable energy sources and energy efficiency.

In this article, we focus on the *security of electricity supply*: The findings and conclusions result from a special-purpose report on the German energy transition[1] published in spring 2021[2]. On the basis of such reports, the Bundesrechnungshof informs the German government and parliament about 'matters of particular importance'. At the beginning of 2023, we once again started to review the progress made in Germany's energy transition.

Prior to the 2021 audit, we published a special-purpose report on the Federal Ministry for Economic Affairs and Energy's coordination and governance of Germany's energy transition in 2018. In our 2018 report, we recommended that the federal government set measurable targets for security of supply and affordability. If such targets are not measurable, the federal government will be unable to measure the success of its action and effective governance will therefore be impossible or at least very difficult.

1 For reasons of space, this article can only cover a selection of our audit findings and conclusions. We focused on findings and conclusions on the security of electricity supply.

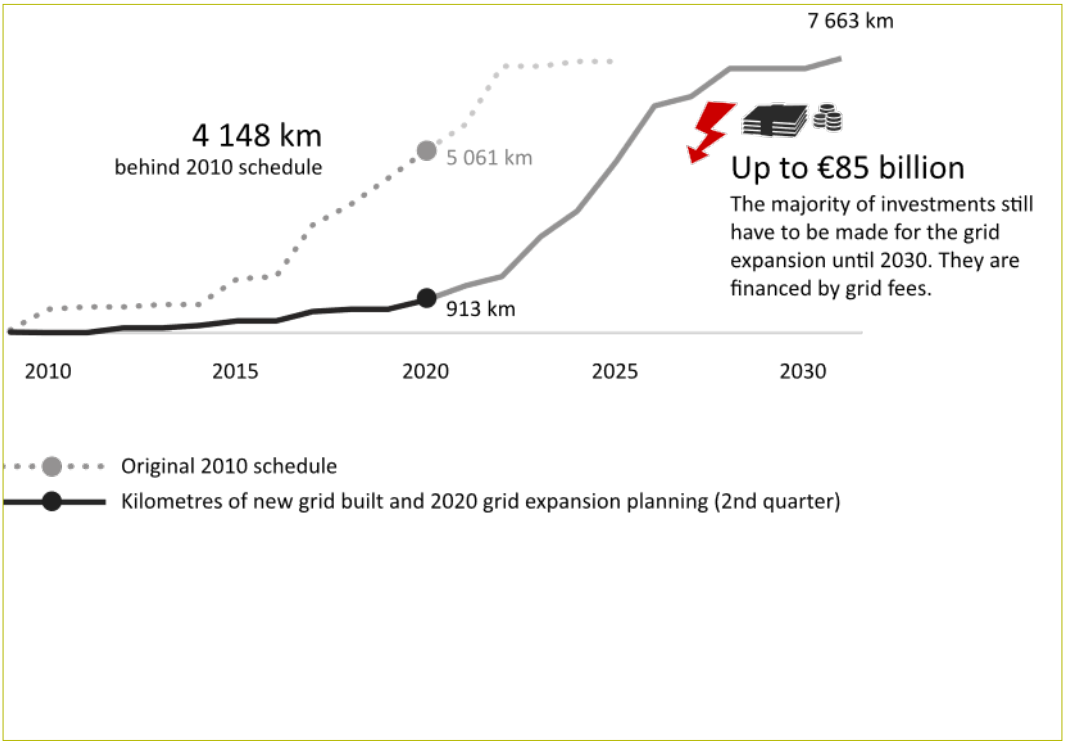
2 https://www.bundesrechnungshof.de/SharedDocs/Downloads/DE/Berichte/2021/versorgungssicherheit-und-bezahlbarkeit-von-strom-volltext.pdf?__blob=publicationFile&v=1, retrieved on 2/18/2023 (in German only)

Transition targets are ambitious…

In our 2021 audit, we wanted to assess what the federal government had done to address our recommendations on measurable targets and on the setting of goals for the transition to renewable energy in Germany's energy legislation (the 'Energiewirtschaftsgesetz'). Our 2021 audit was preceded by major developments which had an impact on electricity supply and demand: through its Climate Action Programme 2030, the federal government intends to rely much more on renewable energy, in particular for heating and transport. This goal is to be achieved through the use of electricity from renewable energy sources and the promotion of electromobility. The plan envisages that, by 2030, between 7 and 10 million electric vehicles will be registered in Germany and 1 million charging points will be available. Oil and gas heating systems are to be replaced by 'clean energy systems' or 'renewable heat'. In August 2020, laws to end coal-fired power generation entered into force. These laws require all coal-fired power stations in Germany to be closed by no later than 2038.

The federal government did not take the phase-out of coal into account appropriately in its monitoring activities. Its scenario analyses were based on coal capacities of up to 4.5 GW above the statutory decommissioning schedule. The federal government thus overestimated the *reliably available* capacity by an amount corresponding to the capacity of four large conventional power stations.

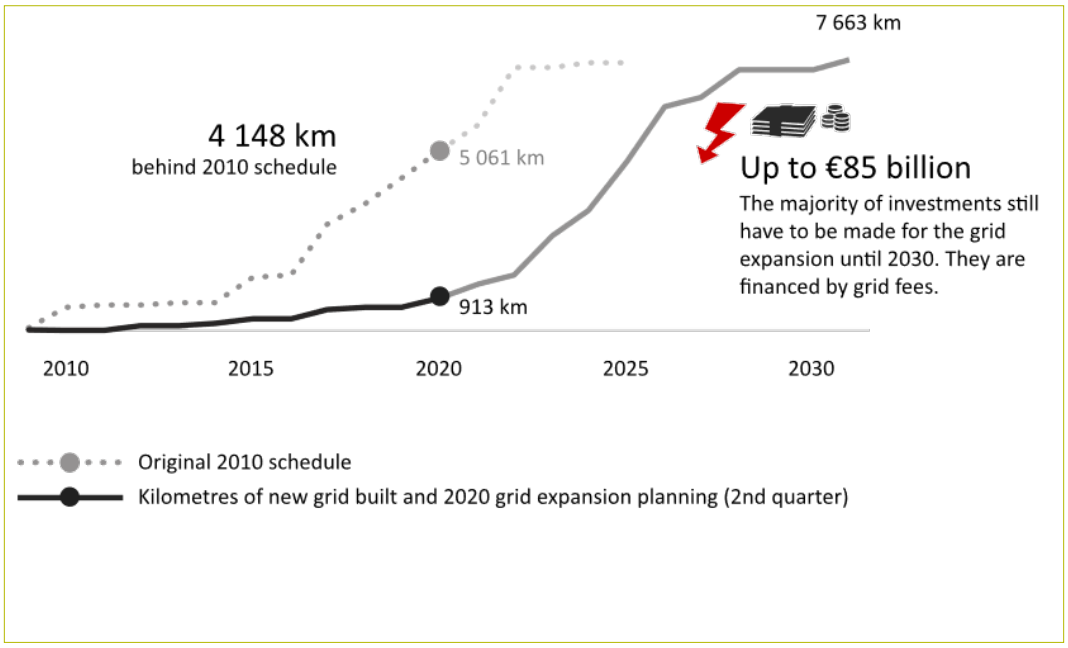
Figure 1 – Federal government's overestimation of reliably available capacity



Source: Bundesrechnungshof.

The reduced capacity resulting from coal phase-out was expected to be compensated by new renewable energy plants. With the 2021 amendment of the Renewable Energy Sources Act ('Erneuerbare-Energien-Gesetz'), the federal government set the ambitious target of renewable energy sources making up 65% of the total electricty consumed in 2030. Wind power and photovoltaic systems will therefore have to increase in capacity by 74% by 2030 to meet the climate targets.

Figure 2 - Ambitious expansion targets in wind energy and photovoltaic systems



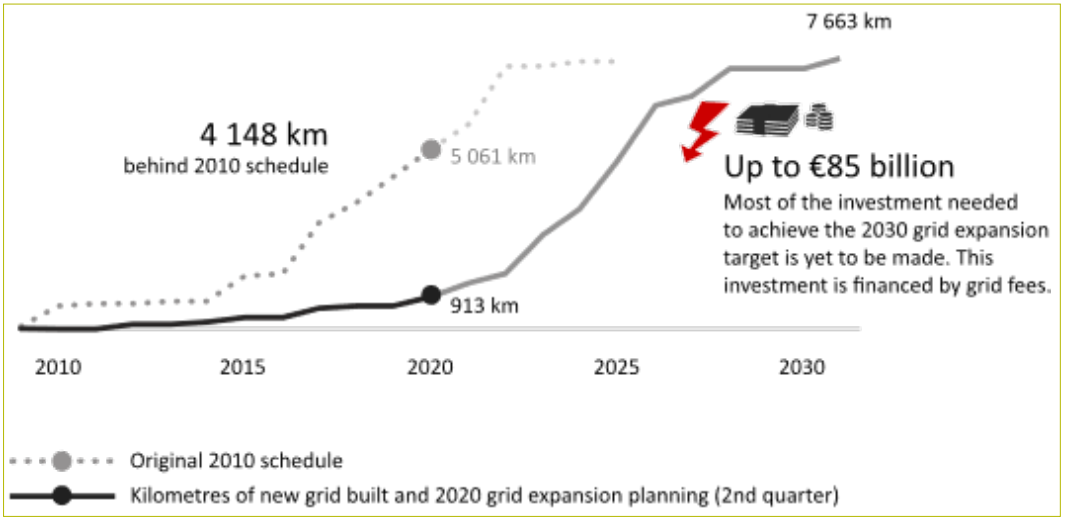
Source: Bundesrechnungshof.

The challenge is whether the *reliably available capacity* of *retired* generation plants can be replaced by *new renewable* energy plants with *volatile* energy generation without jeopardising the security of supply. An absolutely secure electricity supply is of the utmost importance for Germany as a modern, highly industrialised country.

… but their achievement is lagging behind

The further expansion of decentralised renewable energy plants leads to larger amounts of electricity to be transported from the places where they are generated to the places where they are used. This requires a major *expansion* of the electricity grid. So far, this expansion has been far behind schedule: as of 2020, it was more than 4 000 km and five years behind schedule. The figure below shows the situation in 2020 compared with the original schedule for the grid expansion project.

Figure 3 - Required grid expansion far behind schedule (2020 data)



Source: Bundesrechnungshof.

According to experts, the critical grid situations resulting from the significant delays in grid expansion can still be fixed by cost-intensive ancillary services. Without more resolute action on grid expansion, however, the federal government is jeopardising the achievement of the targets set for the expansion of renewable energy plants and risking shortages of supply in the long run.

In addition to grid expansion, *energy storage systems* are needed to respond to the volatility of the power generated by wind and solar systems. Energy storage systems are also expected to help make wind and solar systems gradually more stable. The Federal Ministry for Economic Affairs and Climate Action ('the Ministry') has not stated how much storage capacity is required or will be available in the future.

As already indicated, in our 2021 audit we examined whether the Ministry had set measurable targets to ensure a secure and affordable electricity supply. Our audit examined how the changes in electricity generation and transport resulting from energy transition had impacted the *security and reliability of Germany's electricity supply*.

At first glance, security of supply seemed to have been ensured: in 2018, the average duration of power outages per consumer was about 14 minutes, according to the 'System Average Interruption Duration Index' (SAIDI). However, SAIDI does not cover planned power outages, interruptions due to force majeure or power cuts lasting less than three minutes. We found that the federal government had *not looked at all* possible risks associated to the electricity supply. Some of the assumptions on which it had based its calculation of the load balancing probability[3] did not seem to be reasonable or were overtaken by political events. For example, it was not reasonable to assume that the targets for expanding renewables would be met under circumstances in which gaining acceptance for the energy transition, and for wind energy projects in particular, was difficult.

The simulation for wind and photovoltaic electricity should also have reflected years with low energy output from wind and solar systems. Finally, the Ministry's analyses did not take into account additional scenarios in which multiple potential risks to the security of supply materialise simultaneously, and did not include a *worst-case scenario*.

We recommended that the Ministry make its monitoring of the security of electricity supply more comprehensive by covering the phase-out of coal and plans to avoid grid bottlenecks, among other things. We also recommended that it use the resulting findings and tools in a timely manner to respond effectively to emerging and real risks to the security of supply. Finally, we recommended that the Ministry urgently analyse current and realistic scenarios, including a worst-case scenario, in which several risks to the security of supply materialise at the same time.

Developments after our 2021 audit

Shortly after we published our special-purpose report, our assumptions proved to be true.

After the 'climate change order' of 24 March 2021[4], the federal government amended its Climate Change Act ('Bundes-Klimaschutzgesetz'). The Act itself sets out a binding legal framework including annual emission budgets for all sectors (except the energy sector). These budgets decrease each year. The amendment commits Germany to reduce its greenhouse gas emissions by 65 % compared with 1990 levels by 2030, and to become greenhouse gas neutral by 2045.

The new government's coalition agreement envisages an increase in the share of renewable energy sources to 80 % of Germany's estimated 2030 gross electricity consumption of 680 – 750 terawatt hours (TWh). In order to meet the climate targets, the federal government is striving to accelerate the phase-out of coal-fired power generation, at best by as soon as 2030. The remaining German nuclear power plants must cease operations by no later than 15 April 2023.

In February 2022, the situation as regards Germany's energy transition changed significantly as a result of Russia's war against Ukraine. At the beginning of the war, Russia accounted for about 35% of Germany's crude oil imports and 50% of its total gas and hard coal consumption. The Russian gas supply through Nord Stream I pipeline

3 The load balancing probability describes the likelihood that supply and demand on the electricity market can be balanced as needed and at any given time.

4 https://www.bundesverfassungsgericht.de/SharedDocs/Entscheidungen/EN/2021/03/rs20210324_1bvr265618en.html;jsessionid=A035B5BB60C19969901EC15C34071656.2_cid354, retrieved on 2/18/2023.

was initially first reduced and then discontinued entirely. The completed Nord Stream II pipeline has never been used. Germany's strong dependence on Russian imports is causing problems in the case of natural gas in particular. This is having a significant impact on all energy policy goals – security of energy supply, energy affordability and environmental sustainability.

For example, new gas power plants are intended to cover increasing electricity and energy demand in the next years and provide back-up for the fluctuating power generation from renewables, at the competitive prices the German economy needs. Between 1 January and 21 December 2022, *22 laws and 21 regulations* or non-legislative measures were *adopted* in the energy sector. These measures include the accelerated planning, approval and implementation of electricity grids.

In April 2022, the German federal government adopted a package of immediate measures (the 'Easter Package') to rapidly *accelerate the expansion of renewable energy plants* and to adapt their expansion roadmaps to the new 80% target. The package includes the specific target of increase the installed capacity of photovoltaic systems from 54 GW in 2020 to 215 GW in 2030, of onshore wind energy from 54 GW to 115 GW and of offshore wind energy from 8 GW to 30 GW.

Again, the Government seems to have set very *ambitious* targets. Germany's current climate action status published by the Ministry[5] states that 'the last three years saw on average just one gigawatt of onshore wind capacity added, the lowest amount for more than ten years. In the case of offshore wind, the rollout has ground to a complete halt: not a single new offshore wind turbine was connected to the grid in 2021. Again, this is the lowest level since the offshore era began in 2012. Solar energy is the only field in which there has been a steady amount of new build of around four to five gigawatts a year, but this in no way compensates for the lack of new wind capacity'.

In order to meet these ambitious targets, as a core element of the package, the Renewable Energy Sources Act ('Erneuerbare-Energien-Gesetz') enshrines the principle that the *use of renewable energy sources* is in the *overriding public interest* and in the interests of a different type of security: *public security*. Until greenhouse gas neutrality is achieved, the federal government intends to include renewable energy sources as a priority concern when weighing up legitimate interests in relation to protected resources.

We are currently reviewing the implementation of Germany's energy transition in light of the three energy policy goals: security of energy supply, energy affordability and environmental sustainability, in relation to both gas and electricity. In line with our accountability principles, we will assess whether or not Germany is delivering on its commitments and report on whether its energy transition is on track.

5 https://www.bmwk.de/Redaktion/EN/Downloads/E/germany-s-current-climate-action-status.pdf?__blob=publicationFile&v=11, retrieved on 2/18/2023.

‘Putting the energy transition at the heart of the EU’s energy future’

Interview with Cristian Bușoi, Chair of the European Parliament Committee Industry, Research and Energy (ITRE)

By Gaston Moonen

Source: European Parliament

Cristian Bușoi

In the European Parliament, energy – and therefore everything related to energy transition issues – is part of the daily bread and butter of the Industry, Research and Energy Committee, better known as ITRE. Cristian Bușoi has chaired ITRE since 2019. Among other things, this is something he combines with being an alternate member of the EP Committee on Environment, Public Health and Food Safety, which is another important committee when it comes to energy legislation. In this interview, he explains how the energy crisis has affected ITRE’s work and what ITRE has done for EU citizens and businesses to address short-term energy supply issues and long-term energy transition challenges.

An integrated energy market as a building block for the energy transition

You have been an MEP for many years and for several of these you’ve chaired the ITRE Committee. Your committee has legislative responsibilities for various EU key policy areas, ranging from EU research and innovation to energy. How important was energy in your discussions prior to 2022 and in which way have discussions, and the time spent on energy-related matters, changed since the war in Ukraine and the soaring energy prices?

Cristian Bușoi: Energy has always been one of the ITRE Committee’s key responsibilities, even before the war started. We are committed to making the energy transition the future of energy in the EU! Our committee ranks highly in terms of legislative activity, largely because of the amount of legislation relating to the energy field. The Renewable Energy Directive, the Energy Efficiency Directive, and the Energy Performance of Buildings Directive are some of our cornerstone pieces of legislation.

Of course, after the war started, we entered a period of extraordinary activity in this field because energy supply has been a core feature of the war, and we are working extremely hard to counteract the consequent effects that Russia's weaponisation of energy is having on our citizens and on our economy.

> *… we are working extremely hard to counteract the consequent effects that Russia's weaponisation of energy is having on our citizens…*

As we saw last year, energy is a topic that directly concerns EU citizens, with severe energy price increases for both citizens and companies in the EU. Faced with this situation, where and how can your committee make a real difference to EU citizens, and how has it done so over the past few months? Can you provide a few concrete examples?

Cristian Bușoi: Energy is fundamental for our welfare and prosperity. At the European Parliament and specifically in the ITRE Committee, we're working very hard to ensure that the EU's energy policy delivers an integrated energy market – one that is properly interconnected and that functions well, to provide citizens and companies with access to clean, competitive, and abundant energy. This will allow us to continue on the EU's path towards a carbon-neutral economic and social model.

Under normal circumstances, we have an energy market that benefits from the generation of low-carbon energy, and one that over time has ensured that the share of indigenous low-carbon energy is increasing and on target to reach our 2050 goals. However, it is important to acknowledge that over this last year and a half, we've been living through extraordinary times, where we've seen energy prices that have been heavily affected by Russian market manipulation – this had already begun before February last year, and thereafter continued with the war.

We therefore have to differentiate between long-term measures such as the *Fit for 55* package and short-term emergency actions where our aim is to tackle the consequences of the war on our energy markets. Both are extremely important lines of action where the ITRE Committee is fully involved. On the one hand, we are finalising our negotiations with the Council on essential issues to establish the underlying rules for faster renewable energy deployment, as well as for energy efficiency (including in buildings), and defining the conditions for future energy markets that will include hydrogen and other renewable gases. On the other hand, we have defined the EU-level obligations for mandatory gas storage, which is something that has proven to be a very successful tool to help stabilise the volatility generated in the markets, sparked by Russia's war.

The ITRE Committee has also played a key role in defining how member states might spend the Recovery and Resilience Facility funds – the RRF – on the RePowerEU chapter of the RRF. ITRE supported making a portion of RRF funds available to alleviate the effects of high energy prices on citizens and companies. Furthermore, we've supported the European Commission's and member states' efforts to introduce joint purchases of gas, to pool demand and provide EU companies with a better negotiating position when buying from third countries. We proposed and supported the ban on further purchases of Russian oil and gas. Likewise, we supported the introduction of alternative benchmarks for the gas TTF spot market, and we encouraged member states to take all measures necessary to keep energy prices at a manageable level (e.g. capping windfall profits, inframarginal pricing on the electricity markets, and social welfare actions to support vulnerable citizens and SMEs directly). We'll soon be starting our legislative work on revising the electricity market design.

> *The ITRE Committee has also played a key role (…) on the RePowerEU chapter of the RRF.*

> *… we encouraged member states to take all measures necessary to keep energy prices at a manageable level…*

ITRE and swift EU measures on energy issues

To address the high energy prices over the past few months, the Council has used Article 122(1) of the TFEU to pass EU legislative proposals for market correction mechanisms quickly. What's your view of using this article for this particular situation? Do you think it was justified, and what alternatives do you envisage, while aiming to keep a similar legislative pace?

Cristian Bușoi: Our committee has been supportive of the measures that have been introduced to tackle market disruption caused by the war. We understand that there is a need for speedy decisions to be made in some cases, which is why Article 122 of the TFEU exists. However, it's worth noting that we consider some actions could have been achieved using ordinary legislative procedures, such as speeding up procedures for issuing permits for renewable energy generation, defining rules for joint gas purchases, and the ban on Russian pipeline gas imports. With the Gas Storage Regulation, the Parliament has shown that it had the capacity to deal with a legislative matter rapidly. We reached a deal within two months following the Commission's proposal, which is the equivalent of the time the Council took to agree on the issues I just pointed out. Specifically, with regard to issuing permits and in terms of joint purchases, there was less urgency in terms of implementation than there had been for other measures such as the market correction mechanism or the energy savings and solidarity measures, which would have allowed for the EP's full participation in the process.

> *We understand that there is a need for speedy decisions to be made in some cases (…) However, it's worth noting that we consider some actions could have been achieved using ordinary legislative procedures…*

How do you perceive the possibility of RRF funds financing gas projects under the REPowerEU chapters? Is there a clear majority view on this aspect in your committee? Do you see the energy transition that the EU wants to achieve being hampered by the search for energy security? Do you think that the EU's energy security actions will be jeopardised by the gas cap that the EU decided upon last year?

Cristian Bușoi: The REPowerEU chapters of the RRF are an extremely important solution to help European citizens deal with the energy crisis and gradually become independent from Russian fossil fuels. Financing gas projects is part of the solution, at least in the immediate term. A targeted exemption from the 'do no significant harm' principle for specific investments and projects was also deemed necessary, under the Commission's scrutiny. The ITRE Opinion supported this approach and the subsequent vote was passed with a broad majority – 42 in favour, 10 against, 3 abstentions.

Nevertheless, increasing energy security does not necessarily undermine the energy transition. REPowerEU also ensures that financed measures should contribute to the green transition, including biodiversity, and to addressing the challenges resulting thereof, for at least 37 % of the funds. Furthermore, Parliament remains committed to the energy transition, and is working on multiple pieces of legislation to deliver on this objective.

> *… increasing energy security does not necessarily undermine the energy transition.*

At the end of January 2023, the ECA published its special report 3/2023 on the integration of the EU's internal electricity market. The main conclusions are that integration is slow and benefits linked to greater price convergence are still to be realised. In your view, what changes should the Commission propose in terms of the electricity market reform, which is expected later this year? Do you foresee any actions from the EU, and more specifically from your committee, to address EU citizens' concerns regarding the windfall profits of electricity suppliers and those of energy suppliers in general?

Cristian Bușoi: We will be dealing with the EU's electricity market design – the EMD – revision, giving it our full attention and the urgency it deserves. We expect the Commission to propose a targeted amendment to the existing framework to address the shortcomings in the existing market rules that have been evidenced with the war. However, it is important to clarify that the current electricity market design has served its purpose of promoting the generation of indigenous renewable and low carbon electricity generation very well. This is something that is and will continue to be essential in our 2050 carbon neutral future. But of course, the legislation in force did not take into consideration the rising energy prices and supply shocks such as those we have experienced since the war started. Therefore, certain measures will have to be considered to ensure that vulnerabilities and the price volatility we have been faced with will not be repeated in the future. I am confident that the EMD proposal will serve as a good starting point.

> *…certain measures will have to be considered to ensure that vulnerabilities and the price volatility we have been faced with will not be repeated in the future.*

Legislative steps forward on hydrogen and energy efficiency

You are also an alternate member of the Parliament's Committee on Environment, Public Health and Food Safety, ENVI. Do you see a big difference in the energy-related issues and discussions in ENVI compared to in the ITRE committee?

Cristian Bușoi: ENVI focuses more on CO_2 aspects and sustainability criteria, while in ITRE we focus more on security of supply, the internal energy market, infrastructure, interconnections, and overall energy policy coherence. We pave the way to reach our climate targets, and work towards making the energy transition both possible and attainable for all sectors.

On 9 February 2023, the ITRE committee discussed a legislative package on gas and hydrogen. What was the committee's main concern regarding the package as it now stands, and where do you think the EP can make a difference?

Cristian Bușoi: Indeed, on 9 February the ITRE committee adopted its position to enter into interinstitutional negotiations with the Council on the so-called gas package – the Gas and Hydrogen Directive and Regulation – following months of internal deliberations. Our position differs from the Commission's proposal in several ways. Notably, with regard to the Directive, the EP position allows more certainty for investments in hydrogen infrastructure based on the existing natural gas grid. It also calls for gas, hydrogen, and electricity infrastructure to be planned jointly, and it prioritises hydrogen in sectors that are hard to decarbonise.

> *…[The European Parliament position] calls for gas, hydrogen, and electricity infrastructure to be planned jointly…*

Concerning the Regulation, the EP position notably calls for member states to collectively ensure that at least 35 billion cubic metres of sustainable biomethane is produced and injected into the system. We propose extending the European Network of Transmission System Operators for Gas (ENTSOG) to include hydrogen network operators. The EP also proposes using the Regulation to enshrine some of the provisions adopted as part of the Council's Emergency Regulation of October 2022, such as those relating to the joint purchase of gas and a new reliable LNG benchmark, to make these provisions permanent.

As part of the energy transition discussions, one of the key aspects for swift gains regarding energy relates to energy efficiency. In its special report 11/2020 in 2020, the ECA reported on energy efficiency in buildings and concluded that cost-effectiveness as a determining factor was lacking. On 9 February, you discussed the Energy Performance of Buildings Directive, which should enhance energy savings, including those supported by EU funds. In your view, what is the key new element in this latest package compared with previous legislation, and what has been the main change introduced to this package by the ITRE committee?

Cristian Bușoi: The Commission proposal was already a substantial step forward, compared to the existing legal framework since it contained the following points :

- the obligation for all new buildings to be zero-emission by 2030;
- increased EU-level minimum energy performance standards for existing buildings, whether residential or non-residential, with a particular focus on the lowest performing buildings to address energy poverty;
- improving energy performance certificates by making them more transparent and more comparable, e.g. through using a harmonised scale from A to G;
- creating a building 'Renovation passport' that provides owners with a tool to facilitate their planning and give a step-by-step renovation guide to help move towards a zero-emissions level;
- contributing to green mobility efforts by rolling out the necessary infrastructure in buildings' parking areas to accommodate e-vehicles and e-bikes;
- more cross-policy coordination by integrating national buildings renovation plans into national energy and climate plans; and

- adapting our legislation to cover technological developments and encouraging the use of smart systems, which help operating buildings efficiently, especially in terms of energy performance.

In a second round, the Commission also introduced new provisions to facilitate solar panel installation on buildings.

To single out one single change made by ITRE in such a complex area would be unfair to the hard work done by all the colleagues involved. Of course, some could point to phasing out fossil fuel-based heating systems in all buildings, unless it can be shown to the Commission that such phasing out is not feasible. However, above all, it is important to keep our approach in mind instead. ITRE has worked very intensively to strike the right balance between higher ambition – higher than that proposed by the Commission – and realism, in a context where European citizens are confronted with higher energy bills and rising prices, and where member states have very different building types, quantities and energy performance levels.

Tackling energy poverty

What kind of audit would you like to see from the ECA in the future when it comes to the energy transition, which could potentially support your committee's work? What topics spring to mind?

Cristian Bușoi: Topics that I would like to see covered by ECA audits range from how member states finance energy poverty measures to member states' actions to tackle excessive windfall profits made by energy companies, from progress in terms of implementing energy legislation to permit-related issues for renewable energy sources.

In the dual context of the energy transition and the energy crisis, what's your view on the EU's role in the fight against energy poverty? Are there many divergent views on this issue in your committee?

Cristian Bușoi: It is the ITRE Committee's view that all levels of governance must play their part in tackling the issue of energy poverty. Already as part of the third energy package in 2007, it was our committee that introduced the need for member states to define energy poverty, something that not all have yet done and our reason for defining it now in the Energy Efficiency Directive. At EU level, we can contribute by establishing a harmonised approach to determining what energy poverty is. To ensure that all EU citizens will eventually be able to enjoy the same level of protection, we can also allow EU funds to be used for that purpose and in general, we can definitely contribute by developing the right energy legislation to promote the most extensive possible generation of competitive and sustainable energy sources and transparent market rules.

Remaining on target for an emission free Finland by 2035

Interview with Hanna Kosonen, Chair of the Environment Committee of the Parliament of Finland

By Gaston Moonen

Source: BEDA

Hanna Kosonen

When the energy crisis hit the European Union in 2022, it had a direct effect on its citizens: higher prices, future uncertainty, energy-saving initiatives and plans to foster the use of renewables. While the EU has stepped up its financing and coordination, the main action must come from the member states, including approval and control by the parliaments, as the citizens' representatives. Hanna Kosonen has been a Member of Parliament in Finland since 2015. She has also served as Minister of Science and Culture, and is currently the Chair of the Environment Committee of the Parliament of Finland. So, what has the energy crisis meant for Finland? How has it affected its transition plans? And what role does the Environment Committee play in moving towards the transition goals?

Finland's dual challenge

Finland's approach to the challenges posed by the energy transition is particularly interesting because of the dual challenge the country faces: its geographical location in the north requires it to use extra energy, yet the country has set itself the goal of being emission-free by 2035. Hanna Kosonen concedes that this is not an easy task. 'It is actually quite ambitious. But we have this message for our companies and it is also a global message that we are really serious about this enormous climate change, which will severely affect our lives if we don't quickly do the things we have to do.' All the more important, she thinks, for Finland to lead this change. 'Because we have our own country specifics, which have both strengths and weaknesses. But we think it is doable.'

> *…[on Finland being emission free by 2035] we are really serious about this enormous climate change (…)*
>
> *In the electrical field we are already almost emission-free, it is over 80 % already.*

Finland has clearly taken steps in this direction, as evidenced by the information Hanna Kosonen gives. 'In the electrical field we are already almost emission-free, it is over 80 % already. Heating is the challenge we have. We have the target to get rid of coal by 2030. This was established

five or six years ago, so companies had time to get new ways to get electricity for heating, the more since these coal plants are especially for heating systems. We have short-term targets and ways to do this. Using biomass is part of this. In the long term we have to stop biomass use and we have to get more totally emission-free heating.'

She explains that gas for heating is not that much of an issue for Finland. 'Actually, when the Russian border closed, quite soon the gas imports closed too. So that is not such a problem in Finland.' She points out that Finland has a liquefied natural gas terminal and that fortunately there is a pipeline from the Baltic states. 'So we could replace Russian gas quickly. Nevertheless, we are still going for our programme to get rid of fossil gas soon. Instead, in the future we will have a lot more wind and solar energy.' She adds that this is not despite but thanks to Finland's geographical situation. 'Because when the sun is shining during the summer there is really a lot of it because of the long days. And in wintertime, we have quite a bit of wind.'

> *"… we could replace Russian gas quickly.*

Besides creating renewables for direct needs, the MP highlights Finland's aim of becoming a leader in hydrogen. 'I think we have a really good plan to get there. We have actually started building hydrogen plants, very important, also from a storage perspective. We have various things on our side in the hydrogen business: we have pure water and lots of land on which we can build solar and wind energy. And we have a rather good grid, which is very essential. I am really excited about this.' She points out that Finland has historically been an energy importer. 'But I think we can be more energy exporter even, depending on the season. I think we can be a scientific leader in the hydrogen area.'

> *"I think we can be a scientific leader in the hydrogen area.*

Hanna Kosonen highlights another power source besides solar and wind: nuclear. 'We have had these nuclear power plants for quite some time and, unlike in Sweden or Germany, we did not see a change in public opinion regarding their use.' She talks about the new nuclear power plant currently being completed, 'Olilluoto3', which should increase the nuclear share in Finland's electricity mix to 30 %. 'Unfortunately the realisation of Olilluoto3 has been delayed, with setbacks coming in on an almost weekly basis. But we have also learned lessons from the older nuclear power plants and this more recent one, Olilluoto3. Such as that the time of these large-scale nuclear power plants is over.' She calls for clearer, EU-harmonised regulations regarding smaller nuclear power plants. 'Coordination at EU level on this is very important, and we should finalise this soon. Because that is the way we can get these produced competitively and facilitate an integration of the EU electricity market. In the US they are progressing with this and they are testing with these small-scale plans. So in Europe – and Finland – we have to do this quite quickly.'

> *"… we have also learned lessons from the older nuclear power plants and this more recent one (…) Such as that the time of these large-scale nuclear power plants is over.*

Energy saving… to reduce energy prices

Hanna Kosonen has served as a member of the Environment Committee for several years, and as its Chair since September 2022. She explains that her committee approaches energy issues from a climate change perspective in particular, and also from the point of view of energy diversity. 'These are rather important aspects for energy nowadays. For two years I was also member of the Economic Committee, Vice Chair actually. In our parliament that is also an important committee for energy issues. In my parliamentary activities I am actually concentrating on energy issues.'

Unsurprisingly, Hanna Kosonen has found that since last year, the topic, and hence her work, has attracted far more attention in view of the energy crisis. 'Of course, we were very concerned about availability of gas, oil, energy elements which we imported a lot from Russia. This also includes bio energy, so wood imports from Russia. We saw quite soon that another major aspect would be the affordability of energy. Because if you don't have much energy available then prices will go up quickly, which we saw last year.'

She points out that in Finland the focus has been on different ways to ensure that Finnish citizens can afford to consume energy. 'The most important thing was to give help for those people who were most affected, preventing energy poverty for those

people without means. Also, because these energy prices could affect people rather unequally.' She explains that the most affected were those living in houses with electric heating and perhaps not the best insulation. 'And they might have had a bad electricity contract. Last year was actually the first time in Finland that the electricity price was so high that it affected how we *use* energy.' She observes that the Finns were quite inventive in this respect. 'We were very keen to distribute and absorb information on how you can save energy. There is for example this Facebook page, very popular with much advice. But also, information from public services on how you can save energy. And it was very motivating, also for myself, because you really saw the effect in your electricity bill.' The focus on savings was effective. 'We saved 15 to 20 %, so real energy saved. And luckily, we had a mild winter, not such a freezing one as we normally have.'

> *We were very keen to distribute and absorb information on how you can save energy. (…) We saved 15 to 20 %, so real energy saved.*

Discussions of high prices and energy poverty lead on to the issue of potential record profits for energy companies and the corresponding concerns that have surfaced in several member states. Hanna Kosonen confirms that this is also the case in Finland. 'We actually introduced what people may call a "windfall tax" for energy companies. So the exceptionally high income, the high profits were cut, to prevent reaping so much money from these exceptional prices.'

> *We actually introduced what people may call a "windfall tax" for energy companies.*

Aligning with the EU… but with an eye on Finland's specific situation

When it comes to discussing how to address the energy crisis and aligning views and solutions, Hanna Kosonen, particularly given her role as Chair of the Environment Committee, looks back with satisfaction. 'On these urgent issues which we got from the EU side, we were quite likeminded, also in our committee. Because we realised that with such a tight schedule it is better to do something instead of trying to get the best.' She explains that, as far as she is aware, the process in Finland is rather different from that in most other EU member states. 'Our government makes a proposal to parliament on what the Finnish opinion on an issue should be. And then we have special committees, such as the Environment Committee, where we listen to specialists. Subsequently we give our Committee's opinion on the government's proposal. And then we have in parliament one special committee, the Grand Committee, that actually decides on the Finnish opinion. The opinions do not go to the plenary sessions, it is this Grand Committee that decides on the Finnish opinion regarding such EU issues. Actually, I am a member of the Grand Committee as well.'

She reflects that subsequently there is the hard task of considering all the opinions of the 27 member states. 'There we see it is easy to agree on a target but when it comes to how to get there, opinions are often quite different. In our discussions in Finland, we aim to ensure that our officials clearly know what they want when they go to the EU negotiation table.'

> *it is easy to agree on a target but when it comes to how to get there, opinions are often quite different..*

While Finland is generally well aligned with fellow member states in EU discussions, Hanna Kosonen identifies certain topics in which Finland stands out. 'For example, besides our own emission targets, take the forest situation, a major issue in Finland, but also in Sweden and Austria, which also have lots of forest and forestry. It has really been a long road to get the EU to become more aware about our special circumstances on this aspect. We have about 78% of our land covered by forests. Most other countries have cut most of their forests 200 or 300 years ago. But still, in the EU we need many wooden based products. Of course, we try to do more in our forests, more for wood diversity and more for environmental things. And we have really strict targets for that. It is a very complicated issue in Finland, and it is quite complicated because of the EU.'

> *[on forestry] It has really been a long road to get the EU to become more aware about our special circumstances…*

She explains that many member states wish to preserve forests. 'All of us need wood-based products, that's for sure. But when you have these EU statistics, you have forests

and you cut the wood. But if you use the wood-based products from somewhere else, it is not included.' She indicates that one disposes the externalities of using these imported wood-based products elsewhere, mostly in the country of export. 'Regarding the use of our forestry, you will of course see it in our carbon credits comparisons. This is a very complicated issue, and we have looked into it more in Finland to further clarify and strengthen our specific situation. I think we will have to go through lots of negotiations with the EU to get across a total understanding of what we are doing in our country in this respect.'

Assessing progress towards to targets with solid and comparable data

As Chair of the Environment Committee, Hanna Kosonen has been closely following new EU initiatives regarding energy. This includes the REPowerEU proposal. 'Of course, we are really interested in these new possibilities and related financing. I believe it is very important to have the same targets in the EU and create a sustainable and resilient energy system. It is very important for all of us to show what we think about Russia's war in Ukraine and cut imports from Russia.'

> *… it is very important to have the same targets in the EU and create a sustainable and resilient energy system.*

As for the targets set by REPowerEU, these allow the financing of gas, so fossil fuels. Hanna Kosonen thinks that sometimes small steps are needed first, in order to then take bigger ones. 'It is our luck that we already have these ambitious goals in Finland for 2035, including our plan that we outlined several years ago. So we are on the way already. But then we had to give away a little bit from our ambitious target to stop burning peat. Although only used on a small scale, we took a step backwards by postponing stopping peat.' She adds that a decision was made to decrease the biofuel mix in the composition of gasoline. 'Postponement for 18 months, leading to lower gasoline prices because biofuels are normally more expensive. It is quite an important part in our traffic systems and an aim in addressing climate change.' She explains that this dossier will probably be passed on to the next government after the elections, so will most likely be addressed in the autumn.

When it comes to holding the government accountable for keeping prior energy and climate commitments, including through legal action, Hanna Kosonen explains that Finland seems to be achieving the commitments it set out seven years ago. 'We try to electrify the traffic, I already referred to the biofuel mix. Regarding any legal action I think we have one case where an NGO has taken legal action against the government on the basis that the government had not done enough to realistically achieve the emissions commitments set for 2035.'

Speaking about accountability and how public auditors can help her as an MP, Hanna Kosonen would really appreciate more comparative information, for example on forestry issues. 'Are data indeed comparable, are measurements done in the same way in the different EU member states? After all, it is quite important how you measure things.' She thinks research on emissions from the industry side may be quite reliable. 'But when you go to nature, like wetlands, forests, and mountains, etc., then it is said that there might be even 80 % unreliability. And in Finland it is seen then that it may cost us millions. This shows all the more that these statistics can really matter. So I would very much appreciate more analysis on this, regarding facts and how they compare.'

> *… statistics can really matter. So I would very much appreciate more analysis on this, regarding facts and how they compare*

Energy price ceilings with partial cover: A Dutch master?

By Professor Marco Haan, University of Groningen, and Professor Maarten Pieter Schinkel, University of Amsterdam[1]

Source: Marco Haan

Men constructing a ceiling, in the style of van Gogh. Generated using artificial intelligence, with the assistance of DALL·E 2.

Following the surge in energy prices and the financial stress this created for many households, several EU member states reacted with price-capping measures to protect their citizens. The Netherlands designed a price ceiling on the fly, in which households pay lower prices on limited amounts of gas and electricity. Marco Haan, Professor of Industrial Organisation at the University of Groningen, and Maarten Pieter Schinkel, Professor of Economics at the University of Amsterdam, analysed the system and gave an early warning that it would reduce competition on retail markets, driving up prices, profits, and subsidies. Their analyses have just become all the more relevant, considering that the proposal for the EU's electricity market design, which was presented by the European Commission on 14 March 2023, is closely modelled on the Dutch price ceiling system. The authors present alternative designs that deliver the same values of income support to households, while maintaining competition and incentives to conserve energy.

Misdiagnosed market failure

When energy prices skyrocketed end of summer 2022 to levels that households could no longer afford, governments throughout Europe rushed to implement energy-bill aid measures. Support was delivered through reduced energy taxes, transfers, wholesale and retail price regulation, and various combinations of these[2]. The surging retail prices for energy originated in an artificial scarcity of the natural gas supply, created for geopolitical reasons by the dominant supplier, Russia. Household electricity is a homogenous good produced from various sources with different efficiencies that are engaged in order of their increasing marginal cost of production. Wholesale gas is late in that merit order, but a necessary input at the margin for meeting electricity demand

1 This article is based in part on joint work with Simon van Tartwijk and Jan Tuinstra, both University of Amsterdam, and Bert Tieben, SEO Amsterdam Economics.

2 Hirth, L. The Merit Order Model and Marginal Pricing in Electricity Markets, neon.energy/marginal-pricing, 2 September 2022; Sgaravatti, G., S. Tagliapietra, C. Trasi, and G. Zachmann, National fiscal policy responses to the energy crisis, Dataset, Bruegel, 13 February 2023.

in most member states. Gas for domestic consumption in heating and cooking is straightforwardly refined from crude gas.

Accordingly, when the steep increase in the marginal cost of input gas shifted retail energy supply curves drastically downwards, consumer market prices rose. European energy markets functioned remarkably well, quickly translating the sudden shortage of natural gas into higher energy prices, bringing demand and supply back in line. This induced users to reduce their energy consumption down to the available supply, signalled to producers the need for an urgent transition to other energy sources, and generated the incentives necessary to invest in them[3].

Marginal cost pricing is a well-established and efficiency-enhancing economic principle. However, in leading policy circles, the steep consumer price rises were rashly diagnosed as a system failure of the free energy markets. France's President Macron found it 'absurd' that electricity prices followed gas prices upwards.[4] UK Prime Minister Boris Johnson called pricing on the basis of 'the top marginal gas price', now that it was high, 'frankly ludicrous'.[5] The President of the European Commission, Ursula von der Leyen, believed that renewables like solar and wind had made the market system 'outdated'[6]. Most dramatically, Vice-President Frans Timmermans stated at a press conference on 14 September 2022 marking the introduction of a Council regulation on emergency interventions to address high energy prices that: 'What was once a free and functioning market has been sabotaged'.

Russia always had been dominant in crude gas, and now abused its position by excessive pricing[7]. However, while the resulting unprecedentedly high consumer prices certainly had huge negative income effects on households, a failure of the European energy markets they were not.

ECA Journal Short Read

The **Dutch energy ceiling** system design, while capping the tariffs paid for gas and electricity on household consumption up to set ceiling volumes, also created upward pricing pressures on Dutch retail prices, by reducing competition and by basing compensation for suppliers on their market prices. The European Commission proposed **reforms of the EU's electricity market design**, published on 14 March 2023. They include **an 'electricity price crisis' regulation** to assure households of access to affordable energy while maintaining incentives to reduce energy use that is **closely modelled on the Dutch price ceiling system.**

The **ceiling prices apply to high consumption volumes** that cover total demand from the majority of households, disengaging them from the energy market and reducing their incentive to save energy. This softens price competition between energy suppliers. In addition, a particularly strong price-increasing effect is introduced if suppliers are given **lost revenue compensation** on the basis of market prices.

A system of providing similar household support through **an indexed lump sum fosters competition**, as well as the incentives for all households to consume less energy. **Retail market competition can be preserved** also within a price ceiling system, by giving indexed government discounts. Current market developments suggest that the **Dutch energy price ceiling system** has **kept energy prices up**, despite the recently sharp fall in the purchasing cost of input gas.

The **Dutch experience** can serve as an **educational example** for the EU to properly address the **challenge to provide energy price support while ensuring incentives to reduce energy demand**.

Price caps on limited volumes: The Dutch energy ceiling system

Nevertheless, the concern that citizens could no longer pay their energy-bills led many member state governments to intervene hastily and deeply in the retail energy markets. In his glowing speech, Timmermans suggested that in particular 'setting a lower price for limited volumes' would be 'a good way to offer specific support to low- and middle-

3 See Heussaff, C., S. Tagliapietra, G. Zachmann and J. Zettelmeyer, *An assessment of Europe's options to reduce energy prices*, Policy Contribution 17/2022, Bruegel; or listen to *The Sound of Economics, Europe's energy crisis: Is Europe's energy price surge here to stay?*, Bruegel podcast, 16 February 2022.

4 24 News Recorder, Emmanuel Macron castigates the "absurd" fixing of the price of electricity and the "unreasonable superprofits", 29 June 2022.

5 Bloomberg, Boris Johnson Hints at UK Energy Market Reform Amid Inflation Surge, 25 June 2022.

6 Von der Leyen addressing the European Parliament, 8 June 2022.

7 In fact, the European Commission had opened proceedings against Gazprom abusing its dominance in Central and Eastern European gas markets that in 2018 led to commitments to enable the free flow of gas at competitive prices; see Case AT.39816 – Upstream gas supplies in Central and Eastern Europe, 24 May 2018.

income households'[8]. Within a week, on 'Prinsjesdag', the start of the parliamentary year in the Netherlands, the Dutch government implemented such a system of retail price caps on limited gas and electricity volumes[9]. In 2023, Dutch households pay fixed, relatively low prices of €1.45 for their first 1,200 cubic meters of gas consumption, and €0.40 for their first 2,900 kilowatt-hours of electricity consumption. Only for consumption beyond those ceiling volumes do retail market prices apply. The energy companies are compensated for the revenue they lose from supplying energy below cost. The Dutch government essentially pays them the difference between the retail prices and the fixed ceiling prices on the actual amount of energy consumed below the ceiling volumes, provided these do not exceed a maximum gross profit margin, which is set rather generously[10].

Other member states imposed retail energy-market interventions too, ranging from full price control, such as in France, to more sophisticated individualised price ceilings, as in Germany. But the Dutch energy ceiling system is remarkable for its combination of two elements that conspired to raise energy prices even further than they had already been by the high cost of input gas. On the one hand, the Netherlands set rather high uniform ceiling volumes, namely at about (and later adjusted a little upwards from) the average household consumption levels of electricity and gas in 2021. As a result, based on 2021 consumption, at least some 70% of households was projected to stay fully below the threshold with their energy use. The actual share of households that was fully covered by the ceiling volumes was even higher, as ceiling prices were higher than 2021 average retail prices and the winter turned out to be unusually mild. This generous full demand cover essentially disengages the majority of Dutch households from the energy market, thus reducing competition between energy suppliers for them[11]. On the other hand, however, the Dutch system continued to rely on market forces – now hampered by the ceiling system itself – to determine the prices that high-volume users pay for consumption above the ceiling volumes, and, moreover, the compensation that the Dutch government pays the energy companies.

Preliminary lessons from an experiment in progress

In this article, we set out how the design of this Dutch energy ceiling system created strong net upward pricing pressure on Dutch retail rates, thus increasing the cost of energy consumption for users not entirely covered by the energy ceiling system, as well as the compensation cost for the government. In essence, the Dutch ceiling system stalls competition between suppliers in the retail market for household energy. The high volumes to which the price ceilings apply have made the majority of Dutch households insensitive to market prices[12]. We set out several price effects from the system, including also potential downward pricing pressures, the net effect of which is probably to increase prices, profit margins, and government cost. A particularly strong price-increasing effect is added by compensating the energy suppliers for lost revenue on the basis of their own market prices for gas and electricity, as the Dutch did – albeit constraint. Alternative, better ways of giving energy-bill support were proposed, but not implemented. We also present some preliminary indications of elevated price and profit margins in the first quarter of 2023 that the Dutch energy ceiling has been operational, despite the recently sharp fall in the purchasing cost of input gas. Competition seems at least to have been impeded by the ceiling system.

8 Timmermans, F., Opening remarks by Executive Vice-President Timmermans and Commissioner Simson at the press conference on an emergency intervention to address high energy prices, 14 September 2022; European Commission, Proposal for a Council Regulation on an emergency intervention to address high energy prices, 14 September 2022. Such price ceilings had been advocated by the Netherlands socialist party PvdA since the summer.

9 Reuters, *Dutch government to impose price cap on energy* - NOS, 19 September 2022.

10 The definitive Dutch energy ceiling system was published on 9 December 2022 as EZK (2022) *Subsidieregeling bekostiging plafond energietarieven kleinverbruikers 2023*. Kabinetsbrief, DGKE-DE / 22564387. Suggestions for last-minute improvements we gave in Haan, M., en M.P. Schinkel, *Drie uitvoerbare voorstellen om het energieplafond te verbeteren*, Blog on esb.nu, 14 December 2022.

11 In the German ceiling system, each household received support on a percentage (80%) of *its own* 2021 consumption, keeping all households in the market. However, the support increased in the market price, so that households that consumed below their ceiling volume had an incentive to contract for high tariffs. See Ralph Bollmann, *Das grosse Geldverbrennen*, Frankfurter Allgemeine Zeitung, 11 December 2022. This again shows how, in market interventions, the devil is in the detail.

12 We originally gave this warning in Schinkel, M.P., M. Haan, S. van Tartwijk, B. Tieben, and J. Tuinstra, *Energie-plafondsysteem heeft prijsopdrijvend effect*, in: Economisch Statistische Berichten, 108 (4817), 26 January 2023, 16-19 (online publication 19 October 2022).

These unintended consequences of the Dutch energy ceiling have become all the more relevant with the Commission's proposed reforms of the EU's electricity market design, published on 14 March 2023[13]. These include an 'electricity price crisis' regulation that is to assure that households have access to affordable energy, which is closely modelled on the Dutch price ceiling system[14]. If the Commission would declare a crisis of sustained sharp increases in electricity retail prices, member states may set a ceiling price for the supply of electricity that is below cost, provided it applies to no more than 80% of median household consumption and energy suppliers are compensated for their supply below cost.[15] The lessons learnt already in the Dutch experiment with price ceilings on limited volumes of energy consumption, although that experiment is still ongoing and to be studied more, should be valuable for assessing this part of the proposed reform of the EU electricity market design.

Capped volume limits competition

An important aspect of retail energy markets is that competition between energy providers is *for* households; to attract and contract them for their entire use against specific gas and electricity tariffs for a certain period of time – including flexible periods against variable rates. By offering consumers competitive tariffs, providers try to lure households away from their competitors and induce them to switch supplier[16]. A lower retail price means higher demand for a given supplier, and a lower likelihood that its customers will switch away to another. These competitive forces to undercut rivals keep retail prices low at close to production costs.

The first effect of the Dutch energy price ceiling is that all Dutch households pay the same fixed below market prices for their energy use up to the ceiling volumes of 1,200 cubic meters of gas and 2,900 kilowatt-hours of electricity – regardless of their supplier. Households whose consumption is covered by these ceiling volumes – that is in 2023 some 70-90% of Dutch consumers – are entirely disengaged from shopping for a better energy contract deal[17]. They have been made perfectly price-inelastic by the fixed low prices, and so lost their incentive to shop around. Suppliers can no longer induce them to switch by making low price offers. The reduced competition lowers competitive pricing pressure, increasing market prices for energy above the ceiling volumes.

However, households that consume more than the ceiling volumes – while a small minority – do maintain some competitive pressure on prices. These households do have an incentive to switch, with their entire consumption, to an energy supplier that offers lower market rates. In fact, suppliers now have to compete more fiercely to attract these households, as they benefit from lower prices only for their consumption above the ceiling volumes, which can be small for many. After all, these households too pay the fixed ceiling prices for all of their consumption below the ceiling volumes. The higher the ceiling volumes, and thus the lower the demand above those volumes, the less large-consumption households can gain from switching suppliers at given prices.

Further price effects depend on the compensation received by suppliers for implementing the ceiling system. If that compensation is higher than the cost, which is what the supplier will try to assure and therefore arguably is the likely scenario, providers have more of an incentive to try to attract those households with total consumption above the ceiling price, because they come with a lucrative subsidy on their consumption below. Hence, while it

13 European Commission, *Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) 2019/943 and (EU) 2019/942 as well as Directives (EU) 2018/2001 and (EU) 2019/944 to improve the Union's electricity market design*, 14 March 2023.

14 In footnote 139 of the *Commission Staff working document, reform of Electricity Market Design*, published 14 March 2023, The Netherlands, together with Austria, Hungary, Germany and Rumania are named as member states that already implemented the approach.

15 European Commission, Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) 2019/943 and (EU) 2019/942 as well as Directives (EU) 2018/2001 and (EU) 2019/944 to improve the Union's electricity market design, 14 March 2023, Article 66a proposed for implementation in Directive (EU) 2019/944 of the European Parliament and the Council of 5 June 2019 on common rules for the internal market for electricity.

16 In addition to the tariffs, energy providers also compete on contract terms, as well as on lump sum discounts or presents to win customers over. In the following, we abstract from such other dimensions of competition as unit prices. We note that, in particular, non-linear pricing can significantly affect the price effects of the ceiling system – essentially reducing some of the price-decreasing effects of the ceiling system. Out of total residential consumption in 2022, roughly 90% is below the quantity ceilings.

17 Out of total residential consumption in 2022, roughly 90% is below the quantity ceilings. See Ministerie van Financiën, *Budgettaire verwerking APB*. Kamerstuk, 4 October 2022.

becomes harder for suppliers to attract consumers, it also becomes more attractive for them to do so. The net effect of these two factors on prices is ambiguous. If, on the other hand, the government would only pay a compensation that is lower than cost, suppliers would have an incentive to try to shed high-volume consumers by raising prices.

Most markets are in some form of imperfect competition, and the Dutch retail energy market is no exception. In fact, the market is essentially a triopoly of Eneco, Essent and Vattenfall, which together serve some 80% of demand[18]. They are disciplined somewhat by a competitive fringe, consisting of quite a few small providers. Still Dutch retail energy market competition is oligopolistic, which implies strategic price setting and positive profit margins – even if only small. This presents an additional mechanism by which the ceiling system design can actually reduce prices. Consider a company that is contemplating lowering its price, weighing up the pros and cons. The advantage is that sales increase. The downside is that revenue per product decreases – also for the products the company sells anyway. However, with a ceiling price, this disadvantage does not apply to sales below the ceiling volumes, because the price for that part is fixed. This makes it more attractive to choose a lower price, giving a downward effect on the imperfectly competitive prices for low enough ceiling quotas[19].

With these various possible price effects of a price ceiling, some upwards others downwards, the net effect is an empirical question for the retail energy market at hand. A preliminary assessment of the Dutch retail energy markets suggests that upward pricing pressures are probably the stronger ones.

Lost revenue compensation drives up prices further

An additional, and particularly strong upward price effect occurs if energy providers are compensated on the basis of the unregulated retail market prices. Such 'lost revenue' compensation was what the Dutch government originally intended to give[20]. This may sound reasonable, since suppliers forgo selling against the market price on the below-ceiling volumes on which they can only charge the lower ceiling prices. The problem is, however, that those market prices are not exogenously given: in imperfect competition, they are set by the energy suppliers themselves. Lost revenue compensation then provides all of them with an additional incentive to raise prices. After all, increasing one's retail price now means receiving a higher government compensation on all the energy provided below the ceiling volumes. Doing so will not drive away those households whose demand is fully covered by the ceiling volumes. On the other hand is market price-based compensation lucratively above cost, which induces suppliers to attract high-volume households by lowering prices. The net price effect of lost revenue compensation is typically upwards, certainly at higher ceiling volumes that leave fewer households with consumption beyond to attract.

In a last minute reconsideration of the original design of the ceiling system, the Dutch government constrained the lost revenue compensation it gives[21]. In the implemented version, energy companies receive a compensation advance, for energy provided below the ceiling levels, that is equal to the difference between their market price and the ceiling price, but with a cap on the maximum gross profit margin that the advance can contain. If it turns out that more compensation was given, the suppliers are to pay back the difference. In other words, a profit ceiling was added to the Dutch price ceiling mechanism. However, the maximum allowed gross margin is rather generously determined, and is based on the seller's own reported operation cost. Issues of cost accounting and control introduce complexities in determining actual gross margins in hindsight. There are no penalties on having to repay excessive advances. Moreover, the details of the gross profit margin test are still to be published, and so it remains unclear to what extent the test will constrain prices. Weak control of the true cost and the actual rate of return are likely to keep market prices and compensation costs higher than necessary.

18 See the pie chart in Financieel Dagblad, *Vrije energiemarkt leidt tot meer keuze maar niet tot lagere prijzen*, 27 November 2019; and GfK Energie Monitor, *Cijfers over het derde kwartaal van 2019*, published in 2020. See Schinkel, M.P., en J. Tuinstra, *Forced freebies: a note on partial deregulation with pro bono supply requirements*, in: Journal of Regulatory Economics, 26(2), 2004, 177–187.

19 See Schinkel, M.P., en J. Tuinstra, *Forced freebies: a note on partial deregulation with pro bono supply requirements*, in: Journal of Regulatory Economics, 26(2), 2004, 177–187.

20 Minister Jetten's letter to Parliament, EZK, *Nadere uitwerking tijdelijk prijsplafond energie,* Ministerie van EZK, Kabinetsbrief, 4 October 2022.

21 EZK, *Subsidieregeling bekostiging plafond energietarieven kleinverbruikers 2023*, Kabinetsbrief, DGKE-DE / 22564387, 12 December 2022.

Indexed lump sum support

There are better ways than a price cap to shield consumers from high energy prices; ways that do not interfere with market processes and that are also easier to implement. An obvious one is a lump sum payment to households of roughly the size of the income effects. Lump sums were already given in the Netherlands, as an intermediate measure in the months of November and December 2022, when the ceiling system described above was still under construction. Each household twice received a fixed amount of €190 per month. A major advantage of such a lump sum is that it delivers income support while preserving in full households' incentives to switch supplier for lower contract prices on all of their demand. It therefore does not affect the market for energy at all. If it is so desired that the total value of income support for households remains that of the price ceiling system, the size of the lump sum can be adjusted to move in tandem with changing energy prices. For example, if energy prices double from one month to the next, the lump sum could also double. That way, subtracting the fixed amount from each household's energy-bill leads to the same net bill total as under the energy ceiling system.

It should also be noted that lump sum compensation maintains the incentives of all households to save on energy and reduce demand in full, unlike the ceiling system. After all, each unit of energy saved under lump sum compensation would save a household the full market price, rather than just the lower capped price. Indeed, in the ceiling system with artificially low prices, governments essentially subsidize fossil fuel consumption. The much higher retail prices for household gas and electricity without such subsidies provide a strong incentive for reducing energy use. That force for the environment coming from the competitive pricing system is *preserved* when lump sum income support is given. By reducing that force, providing energy-bill support through price ceilings fundamentally runs counter to the Green Deal objectives. It is quite ironic therefore that it is Frans Timmermans who encourages the member states to waste a good energy crisis as an opportunity for the Green Deal to gain momentum.

Indexed discounts

A drawback of the lump sum approach is that each household receives the same amount of support, regardless of their need and actual energy consumption; indeed, the latter is what maintains their incentives to economise. A political concern with this alternative is that lump sum aid would not be 'targeted', as required by the European Commission[22]. Also, the compensation costs to the government do not decrease with households consuming less energy, as compensation costs do under the ceiling system. Moreover, the Dutch cabinet and Parliament considered it a desirable feature of the price ceiling system that households have certainty about the price that they pay, and the energy-bill that they will face – even though, as explained above, properly indexed lump sum support would give that same certainty regarding the energy-bill[23]. For these reasons, lump sum compensation, despite being much easier to implement and much less disruptive of competition in the energy markets, was rejected.

It is, however, not difficult to design an adequate alternative energy-bill support system that provides price certainty for households and is targeted in the sense that it does not give more support than necessary. Such a system implements the income support through discounts given on retail prices that are indexed to those retail prices[24]. It has the large advantage that it preserves competition, so that market prices, profit margins and government costs do not increase unnecessarily. This indexed discounts systems works as follows. The existing ceiling volumes of 2,900 kilowatt-hours of electricity and 1,200 cubic meters of gas remain in place. Households pay market prices, but receive substantial discounts for all usage up to the ceiling volumes, which is subtracted from their energy-bills. For electricity, this discount is equal to the average electricity retail price, minus the current ceiling price of €0.40. For natural gas, it equals the average retail price of natural gas, minus €1.45.

22 European Commission *Proposal for a Council Regulation on an emergency intervention to address high energy prices*, 14 September 2022, recital 14.

23 Ministerie van EZK, *Beantwoording vragen over tijdelijk prijsplafond*, Kabinetsbrief, DGKE-DE / 22526088, 7 October 2022.

24 We originally suggested this alternative in Haan, M., and M.P. Schinkel, *Alternatief energieplafond verenigt prijszekerheid met marktwerking*, in: Economisch Statistische Berichten, 108 (4817), 26 January 2023, 20-23 (online publication 30 November 2022).

This set-up means that the net prices households end up paying on average exactly equal the desired certain ceiling prices of €0.40 and €1.45. The discounts can be determined regularly with changes in market prices, for example every month, based on the then-current retail prices. The discounts are administered by the energy suppliers, but they will be regularly compensated for the total amount of discounts that they will have to pay or have paid out. Determining the proper compensation is straightforward, as it requires no in-depth insight into the costs and operations of energy suppliers. This makes the government's involvement fully transparent[25].

One important feature of this indexed discounts system is that for households it works out almost the same as the current price ceiling, insofar as it provides near price certainty. In other words, a household that pays a retail price equal to the market average receives exactly the same compensation as in the current system. For example, if the average retail price for electricity is €1.00 (or 100 cents) per kilowatt-hour, the discount is 100 (the average price) – 40 = 60 cents. A household that faces a retail price equal to the average therefore pays 100 (its retail price) – 60 = 40 cents, i.e. the fixed ceiling price. If the average market price rises to 150 cents, the price discount also increases by 50 cents to 110 cents, so the average household still pays 40 cents per kilowatt-hour. For natural gas, an indexed discount per cubic meter works exactly the same. As intended, consumers thus no longer face the uncertainty of strong price fluctuations.

The main benefit of this system is that competition in the energy market remains fully effective. Households receive the same discount from each provider, but these discounts are based on the actual retail price they pay. Consumers thus retain the incentive and ability to switch to the provider with the lowest prices. The following example clarifies this. Suppose there are four suppliers, each charging an electricity price of €1.00. The discount is then 100 – 40 = 60 cents. If one of them lowers its price to 92 cents, the average market price becomes 98 cents, and the discount 98 – 40 = 58 cents. Its customers then pay 92 cents (the price of this supplier), minus 58 cents (the new discount), hence 34 cents, for their consumption under the quantity ceiling. A customer of some other supplier pays 100 – 58 = 42 cents. Switching to the price-buster thus implies a saving of 8 cents – exactly the 8 cents by which it lowered its price. Similarly, no supplier can raise its price without losing a significant portion of the households it serves. This keeps suppliers sharp and prices competitive, even for consumption below the quantity ceilings. It prevents excess profits and keeps compensation costs for the government low.

The only real disadvantage of this indexed discounts system is that is does not give *perfect* price certainty. Some price variation remains, as only households facing a retail price exactly equal to the market average will actually end up paying exactly 40 cents per kilowatt-hour and €1.45 per cubic meter. Households in a contract with above-average prices are slightly worse off, as they pay the above-average price but are reimbursed based on the average price. However, customers paying a price below the market average are somewhat better off. It should be noted that it is precisely this feature of the indexed discounts system that ensures that competition remains unaffected. It keeps it attractive for households to shop around for the lowest prices – to which their discounts apply. As a result, the different suppliers' retail prices will be driven down by that competition to the same, relatively low, levels. With all contract prices converging towards the average, all households ultimately end up paying the desired €1.45 per cubic meter of gas and €0.40 per kilowatt-hour of electricity. Hence, while some price uncertainty remains around the level of the ceiling prices, it is driven down towards zero by the system itself.

Chilled competition in the Dutch energy market

The Dutch energy ceiling system is an educational example of how intervening in an otherwise well-functioning market can easily backfire. It shows how the devil is in the detail. This is especially the case if the design of that regulation gives firms the scope to obtain and use market power to their advantage. The Dutch price ceiling system, despite good advice and extensive debate in Parliament, came into effect on 1 January 2023 in a form that still contained the main design flaws that give concern for stifled competition and raised prices, profit margins and government compensation costs. Of course, it is too early to tell what the effects of the Dutch energy price ceiling eventually will have been. Various things relevant to the operation of the energy market have changed at the same time, and are changing still, so

25 A spreadsheet that illustrates the core workings of the indexed discount system is available at www.marcohaan.nl/indexed-discounts

that it is hard to determine the proper counterfactual. Yet a shock to the mode of competition the introduction of the Dutch energy ceiling system certainly seems to have been, and there are some first signs that indicate higher prices and profit margins[26].

First, price dispersion in retail rates is remarkably high. For natural gas, retail prices among the 20 largest producers range from €1.77 to €3.22[27]. Such a wide price range for a homogeneous product is not something typical for a well-functioning competitive market. However, it would be consistent with the kind of distortions of competition that the Dutch price ceiling system would bring about, as explained above, in a tightly oligopolistic market with a competitive fringe trying to attract price-sensitive consumers with demand above the ceiling quantities. Indeed, the big three energy providers, Vattenfall, Essent, and Eneco, still set prices at the high end of the price range.

Second, although input gas prices on the world market have come down dramatically since August 2022, it seems that this decrease is still only partially reflected in Dutch retail prices. **Figure 1** shows gas prices on the TTF trading platform (yellow) and the unweighted average retail prices of the 20 largest producers (purple). Clearly, retail prices tracked TTF prices rather closely until the summer of 2022, but have so far failed to come down as strongly as the TTF prices. The pattern is consistent with prices falling like feathers, which can be a sign of limited competition[28].

Figure 1 - Average gas prices, wholesale and retail

Source: Energieprijzen, www.overstappen.nl (last consulted 23 March 2023); Dutch TTF gas futures, www.investing.com (last consulted 30 March 2023)

The fact that these market prices remain high suggests that the compensation cost to the Dutch government are unnecessarily high, as predicted. Nevertheless, when wholesale gas prices, spot and future, unexpectedly, sudden and steeply decreased from their peak at the end of August 2022 and into 2023, various media in the Netherlands cheerfully reported that the cost of implementing the Dutch ceiling system would be much lower than expected[29]. Certainly, with Europe the Netherland was lucky with a relatively warm winter. With hindsight, the peak in gas prices seems to have been a unique and temporary occurrence[30]. However, a hampered competitive retail market for energy makes that those decreases in cost are reflected only very partially in lower market prices, thus keeping the cost to government

26 Haan, M., and M.P. Schinkel, *Energieplafond houdt overheidskosten ver boven ramingen*, in: Economisch Statistische Berichten, 108(4819), 23 March 2023, 124-127 (online publication 7 February 2023).

27 Source: www.overstappen.nl (last consulted 30 March 2023).

28 See, for example, Tappata, M., *Rockets and feathers: Understanding asymmetric pricing*, in: The RAND Journal of Economics, 40(4), 673–687, 2009.

29 Nieuwsuur, *Bij huidige gasprijzen kost het prijsplafond 'slechts' 4,7 miljard,* NOS Nieuws, 3 January 2023, a number based on the most optimistic of scenarios for TTF gas price development in CPB, *Scenario's energieprijzen*, 6 December 2022.istic of scenarios for TTF gas price development in CPB, Scenario's energieprijzen, 6 December 2022.

30 See The Economist, *The energy crisis and Europe's astonishing luck*, 11 January 2023.

high. The Dutch energy price ceiling system so far appears to have kept energy prices up, despite the recent sharp fall in the cost of purchasing of raw gas. Figure 1 illustrates with end of March purchase and sales prices. Only now, at the time of writing, with the winter officially over, are prices gradually starting to come down – in some instances even below the ceiling prices.

Providing energy-bill support while maintaining incentives to reduce demand

The Dutch energy price ceiling system illustrates some possible pitfalls in the design of price caps for limited consumption volumes with supplier compensation in an otherwise competitive market. This is how the European Commission intends to regulate that all member states should protect their vulnerable consumers in case of an electricity price crisis[31]. The Dutch system has two main design flaws: one is that it specifies rather high ceiling volumes, the other that it compensates energy producers essentially on the basis of their own market prices. We argued how the scheme is likely to keep retail prices and profit margins high, and hence the costs to government. The Commission's proposed regulation, in particular Article 66a proposed for implementation in Directive (EU) 2019/944 of the European Parliament and the Council of 5 June 2019 on common rules for the internal market for electricity, can be improved to avoid those pitfalls.

We discussed better alternative systems for implementing energy-bill support. An indexed lump sum energy-bill discount can give the same amount of support while preserving competition and the incentives for all households to reduce energy consumption. At least, rather than providing energy companies with compensation for lost revenue, consumers should be given an indexed discount equal to the difference between the average retail price and the target ceiling price. Such a system also maintains competition for all households, while only introducing a limited amount of price fluctuation around the desired ceiling-price levels. A downside compared to (indexed) lump sum compensation is that (indexed) discounts too only incentivise energy savings by large-consumption households.

We criticize the energy ceiling system for probably raising market prices. Of course, one could argue that higher retail prices for households that consume beyond the ceiling volumes are not a problem, as they would lower energy consumption in support of environmental objectives. In fact, the proposal to reform the EU electricity market design specifies that the aim is to administer energy-bill support but also 'not [to] create incentives to increase consumption'[32]. This reflects the Council's recommendation for crisis measures that apply 'cost-efficient two-tier energy pricing that ensures incentives to energy savings'[33]. Still, it is always preferable that money left on the table ends up with the European taxpayer rather than in the coffers of energy companies. A good energy-bill support design helps to assure that.

In theory, there may be optimal combinations of ceiling volumes and supplier compensation, depending on the policy objectives. In practice, however, it seems nearly impossible for a government tinkering with retail energy markets – which are complex and whose effects on prices and consumption are difficult to predict – to finetune a price ceiling system in exactly the desired way. High energy prices that restrict consumption and income support for European citizens can both be better reached by indexed lump sums, which on top of that are relatively easy to implement.

In closing we note that the proposed Article 66a does seem to leave room for cleverer designs, that can draw on the experiences of the Dutch and other member states with energy price ceilings. The article text says in 4(a) that member states may temporarily set lower prices on 'at most 80% of median household consumption'. At least this formulation appears to allow for lower, as well as individualised rather than fit-for-all ceiling volumes, and the support possibly also being given through discounts rather than fixed ceiling prices. Condition 4(c), 'suppliers are compensated', should allow for cost-based rather than lost revenue-based compensation. Clearly, there is an urgent need for more study, both theoretical research and empirical analysis, of the few experiments currently ongoing in a couple of member states, in order to obtain a better understanding of the various effects that two-tier pricing with price ceilings on limited volumes can have, and for developing workable energy crisis designs, before rolling out one policy across Europe.

31 European Commission, *Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) 2019/943 and (EU) 2019/942 as well as Directives (EU) 2018/2001 and (EU) 2019/944 to improve the Union's electricity market design*, 14 March 2023.

32 European Commission, *Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) 2019/943 and (EU) 2019/942 as well as Directives (EU) 2018/2001 and (EU) 2019/944 to improve the Union's electricity market design*, 14 March 2023, recital 53

33 European Commission, *Council Recommendation on the Economic Policy of the Euro Area*, 22 November, 2022, recital 8.

The dark side of the energy transition

Interview with Guillaume Pitron, journalist and documentary maker

By Jana Caulier and Gaston Moonen

Source: guillaumepitron.com

Guillaume Pitron

As the European Commission appears to recognise in its current focus on critical raw materials, the energy transition is accompanied by a switch to a new set of basic materials. But rare metals and minerals come at a cost which may not be so visible in the final product that makes your smart phone, electric vehicle or solar panel work. Guillaume Pitron, journalist, documentary maker and associate researcher at the French Institute for International and Strategic Affairs (IRIS), has done extensive research on the raw materials which are now crucial to the success of the energy transition, leading for example to his book The Rare Metals War. In this interview with Jana Caulier and Gaston Moonen, both from the ECA's Directorate of the Presidency, he shares his concerns and proposes some ways of tackling the hidden drawbacks of clean energy so as to ensure that green really is clean.

What are critical raw materials?

The European Union's attention to critical raw materials goes back at least a decade. Guillaume Pitron explains that the EU has kept a list of critical raw materials since 2011, updating it every three years, with the last list published in March 2023. 'The first list contained 14 materials, and it grew to 34 this yearin 2020, including some agricultural raw materials, while most of the others are either minerals, such as graphite, or metals, such as silicium metal or lithium. These materials are deemed to be critical because their production is concentrated in the hands of very few countries.' He adds that Europe is too dependent on a handful of countries for its imports, which puts it at risk of supply shortages because of the lack of diversification. 'Just like we saw with gas, all these other resources are critical for green energies, for the replacement of fossil fuels.'

Green energy not necessarily that green

The energy transition is currently in full spate in Europe, and rare materials are the driver for the switch to new energy forms. Guillaume Pitron observes that, just as oil has to be produced, transported and stored, the metal that makes green electricity possible also has to be extracted, and the green energy itself must be transported and stocked. 'For each step, you will need metals. You need rare earths from the ground to produce

electricity using magnets. You need copper to transport the electricity through the grids. For storage, you will need lithium, nickel, cobalt, manganese, and iron for lithium-iron-phosphate batteries for example.'

He refers to 2020 figures from the International Energy Agency. 'The IEA has said that we will need 42 times more lithium, 24 times more cobalt, nickel and graphite, and 7 times more rare earths in the next 20 years.' Adding a historical perspective, he explains that, 170 years ago – middle of the 19th century, Europe produced 65% of all metals. 'This has decreased to 3% today! The reason for this is that we do not want to have the dirty mines or the dirty refineries in our backyard. We relocated the production, including the pollution of such metals, elsewhere.'

Guillaume Pitron has travelled to China four times during the last 10 to 12 years. 'I have been in mines, illegal and legal ones, refineries, refinery areas. There you see the impact on the environment and on the health of people. You know about regulations, which are not respected on the ground. It is simply a reality that sometimes green technologies, "clean" technologies, are a dirty business.' He concludes that the western world often has no notion of this issue. 'Because it has been moved far away from our eyes.'

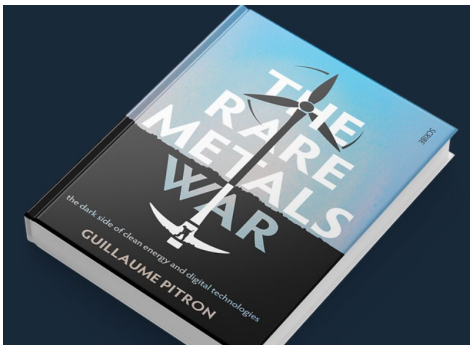
> *It is simply a reality that sometimes green technologies, "clean" technologies, are a dirty business.*

Geopolitics and everyday products

About 15 years ago, Guillaume Pitron dived into the 'business' of critical raw materials. 'Geopolitics seems like a far-away subject for the everyday reader of an article. However, when you talk about raw materials that are being extracted or produced at the other end of the world, with all the environmental, sociological, political and economic impacts that entails, and you think of your everyday needs as a consumer, what is happening at the other end of the world suddenly becomes very relevant for you because you're an actor in that.' He gives a concrete example. 'I wrote an article about gum arabic in Sudan. No one cares about the geopolitics of Sudan – until the moment you realize that gum arabic is necessary for Coca-Cola, and Coca-Cola get all its best quality gum arabic from Sudan. Then, suddenly, the geopolitics of Sudan become so much more interesting.'

According to Guillaume Pitron, one could think of critical raw materials as the next oil, which is one of the reasons he wrote a book to share his knowledge and understanding of the topic. That book is *The Rare Metals War*, published in French in 2018 and subsequently translated into ten languages and published in 16 countries. In it he uses his six years of research to explain the new dependence on rare metals. 'No one cared about this topic until recently. But for the development of the new green and digital society these metals are indispensable.'

> *…for the development of the new green and digital society these metals are indispensable.*



Source: guillaumepitron.com

Rare earths are extracted both legally and illegally. 'At some point in time, in China, 40% of the rare earths extracted were being exported illegally.' Guillaume Pitron shares one of his experiences. 'Back in 2016, I took a trip to the province of Jiangxi in the south-east of China. It is a beautiful area, but when you go deep into the mountains and the forests you come across illegal mining and basic refining areas. The mining and refining processes I saw were very polluting. I showed pictures of this area to the European Commission's raw materials unit. It was not easy to take these pictures.' He also speaks about taking footage with a drone in 2019 in a remote area of the outskirts of Baotou, Inner Mongolia, at the risk of being accused of spying. 'Not surprisingly, since rare earths are very strategic. Imagine the Chinese coming to film uranium mining in in Niger or Canada with a drone. They might end up in jail. So a French guy going with a drone to film rare earths in China is a tricky business.' With a sigh he observes: 'Now we are turning green, and we are turning responsible. I want to believe in these beautiful words, but there is a dark side and we have to look at that.'

The energy transition as a catch-22 situation

When discussing how 'green' the green energy transition can actually be, Guillaume Pitron recalls a point raised by French researcher Jean-Baptiste Fressoz. 'He said that, rather than an energy transition, we are going through an energy *addition*. He argued that if you look at the future of energy production in the next 15 years, according to IEA projections, we will consume as much oil and coal as today.' While the percentage of oil and coal in the electricity mix will be less, the absolute numbers will remain the same. 'The production of green energy will satisfy economic growth and the growth in demand. We might get the worst of both worlds unless we have much more technological progress, especially given the environmental impact of green technologies. And unless we change the way we consume.'

> *… rather than an energy transition, we are going through an energy addition.*

Guillaume Pitron refers to his recent book *Dark Cloud: how the digital world is costing the earth*, to be published in English in May 2023. 'It's absolutely essential to run the energy transition with IT, for a simple reason: wind doesn't blow all the time and the sun doesn't shine all the time. It is intermittent energy production. So, on the one hand, the electricity coming into the grid is not regular, unlike with nuclear or coal. On the other hand, our needs for electricity are getting more diversified. To make sure that the production of electricity meets the demand at the right time in real time, we will need IT technologies and calculations. There won't be a green transition without AI.'

He explains that the metals that are necessary for green technologies are exactly the same as those needed for digital technologies. 'The batteries and magnets of phones and other devices are made of the same materials as those for electric engines in cars. We have two families of different technologies which nurture each other, which work together hand by hand, which need the same methods. The history of energy transition and digitalisation is a history of complexification, for which we need increasingly more metals.' He points out that, to extract just 15 grammes of a rare metal, it may be necessary to mine over 250 kg of material. 'The lighter the device is in your pocket, the heavier it is to manufacture.'

> *The lighter the device is in your pocket, the heavier it is to manufacture.*

Another dimension of the dilemma relates to the cost of refining raw materials. 'Lithium is mostly produced in Australia in a way that is much more consistent with western environmental regulations. However, Australia does not refine what it produces, and China refines metals that it does not necessarily produce. So in any case China is in the process, whether it is in the extraction or refining process.' He explains that refining is very energy-intensive, which makes it even more relevant to determine where the electricity comes from. 'China's electricity mix is 70 % oil and coal; that we can call 'scope one'. When we look at 'scope two' – the emissions of CO_2 in order to produce the metals that end up in a low-carbon solar panel – you end up with a lot of CO_2.' Solar panels emit much less CO_2 than a coal-powered plant. 'However, the paradox is that to emit less carbon with solar panels you need to produce more metals. Instead of solving a problem, we are shifting from one problem to another.'

Energy transition 2.0

Guillaume Pitron argues that the focus on lower CO_2 emissions means that other environmental impacts are not really considered. 'Mining and refining not only are very polluting but also pose health risks for the communities where they are happening.' He recalls that a Chinese expert once told him that China is devastating its environment to feed the rest of the world with rare earth. 'To say this is not a comfortable truth. It is uncomfortable to say that green is not clean. Green is not responsible, not sustainable. Green is not recyclable.'

> *To say this is not a comfortable truth. It is uncomfortable to say that green is not clean.*

Guillaume Pitron labels the current phase of the energy transition as 'energy transition 2.0': how we align our actions with our claims, and with the values we associate with these claims. 'This is where, at EU level, the question of extraction at a lesser cost enters the discussion. It is a question of ESG standards[1] for mining and refining; of ethical supply chains. Of investigating your supply chain to make sure that what is mined has been

1 Environmental, social and governance.

refined a better way.' These discussions, and regulatory discussions, are taking place in France. 'At European level there is a proposition for a regulation from the European Commission on ethical supply chains: companies will have to investigate their supply chains to make sure that the mining and processing of minerals and metals have been carried out in a fair way[2]. There is also a Critical Raw Materials Act in the works, to be published in March, as far as I know[3].'

He explains that more could be done to monitor the impact of mining to make the clean energy transition cleaner and more acceptable. He has held discussions in this connection with a number of politicians, such as Pascal Canfin, chair of the European Parliament's Committee on the Environment, Public Health and Food Safety (ENVI). 'But only very few discussions with the Greens. Perhaps they don't see me as their best friend since I am saying that we will not produce enough metals for the energy transition if we keep up this path of production. The IEA says there is a discrepancy, a gap between the availability of future materials and the Green Deal objectives. This means that, if you want to make the green transition possible, you have to extract more. If we do not tackle this issue, the transition will be much slower than expected.'

> *… if you want to make the green transition possible, you have to extract more.*

He also sent his book to Commission President Ursula von der Leyen during the summer of 2022. 'Then came her speech on September 14 where she talked about lithium and rare earths, which gave me the thought that I may have contributed somehow a bit to this. Actually, she replied to me after I sent the book. That does not mean I have played a role in the subsequent regulations…but who knows that may have played a role, even very little…I will never know, discussions are just starting.' He explains that recent events, such as the COVID-19 pandemic, the Russian invasion of Ukraine, the energy crisis, and the Evergrande incident in the Suez Canal, have completely changed the perception of what security is. 'We used to base our security on the efficiency of supply chains. Now, we realise that the invisible hand of the market cannot always make the materials and end products available and we talk more about turning from efficiency to resilience. This means the relocation of production, more recycling, possible stockpiles. That is going to come at a cost. What price are we going to pay for being consistent with our values and our claims? Do people understand that a greener world will be a more expensive world?'

> *… the invisible hand of the market cannot always make the materials and end products available…*

Circularity will be pivotal for critical raw materials

Guillaume Pitron identifies two reasons why critical raw materials are not yet that high on the political agenda. The first reason is that, in the energy transition, the criterion of CO_2 emissions somehow overshadows all other criteria. In this connection he mentions the biodiversity COP that took place in December 2022 to no great public fanfare. 'This primary criterion of CO_2 emissions dissimulates the other criteria of the ecological transition, which means that ecological criteria such as ocean acidification, impact of mining on water, on soils, on biodiversity and resource depletion are somehow less considered.'

His second reason is that, as long as pollution in not in one's backyard, it is hard to grasp the material impact. 'The complexification of logistics chains has made it possible for companies to disregard where their resources come from and to simply act as assemblers of products.' He argues that the same goes for consumers. 'Who really knows what is in their phone or electric car? We have gained buying power, but lost the knowledge of the origin of resources. The energy transition and digitalisation bring these issues back to the forefront.'

> *We have gained buying power, but lost the knowledge of the origin of resources.*

2 The draft European Supply Chain Act requires EU companies to carefully manage social and environmental impacts along their entire value chain, including direct and indirect suppliers, their own operations, and products and services.

3 The European Commission indeed presented its proposals on 16 March 2023.

He identifies the paradox that a low-carbon world is a high-resource world. 'We are solving one issue, while replacing it by other issues. The good news is that you can recycle metals much more easily than CO_2. The technology is available, which makes it more possible, from a physical viewpoint, to recycle metals.' The great challenge today is to lower the ecological impact of green technologies to make them socially and politically acceptable. 'In the end, ideally we are going to harmonise the low-carbon world with a low-resource world. We want to make more, but with fewer resources. This is where circularity happens. People tend to think that recycling is circularity. However, circularity is much more than that.'

Guillaume Pitron gives the example of recycling water. 'The Chuquicamata open copper mine in northern Chile, which is the biggest open copper mine in the world, consumes 2000 litres of water every second. You can recycle 70% of the water and they do. In this case, circularity starts with recycling water. Then eco-design. Then collection and territorial economy. Then we can talk about the sharing economy, repairing products, making product lives longer. And at the very end of the process comes the question of recycling.' He sees circularity as *the* challenge for the coming decades. 'It is going to be much more difficult to make the world more circular than to make it greener. We need to have the technologies to make the supplies meet the demand. Most importantly, we have to reorganise and make all the actors in the loop talk to each other. The circular economy is a network economy, in which the actors in the chain should cooperate. This cooperation is going to be the hard part. One challenge hides another, as they say. The green challenge hides another: the challenge of becoming circular. An important success factor will be the cooperation mode of companies.'

> *It is going to be much more difficult to make the world more circular than to make it greener.*

Promoting the value of recycling

This last statement requires some explanation. He highlights the competitiveness of second-hand products compared to the primary material. 'The metal business is the only business I know where the second-hand product is more expensive than the first-hand product. Why would you buy a second-hand product at a more expensive price than a new product?' He foresees two solutions. 'The first one has already been put into practice with the 2022 EU Battery Regulation, which was passed in December 2022. It creates artificial value for recycled products by forcing EV electric battery constructors to feature recycled materials in their future batteries in 2030-2035. If you do not respect this regulation, the fine would be more expensive than the price you have to pay for using secondary material. This creates an artificial economic model based on the law.'

The second solution may lie in new narratives. 'Until you take into account specific values relating to reputation, privacy, strategic foresight and autonomy, there will probably always be more interest in the primary product. This can be autonomy, because recycling brings autonomy as it's another source of supply. It can also be strategic visibility, as it helps organise your business in the medium or long term, because it gives you supply security. The same goes for privacy, for example when recycling servers, to prevent them ending up in, for example, Nigeria, and to protect the people whose data is in the servers. Then there is reputation, being seen as a responsible company.'

Guillaume Pitron highlights the need for a proper business model, with the prospect that it will pay off in the long run. 'When you recycle, you will have to invest in recycling techniques for a specific metal, which may require you to invest hundreds of millions of euros into techniques and recycling plans in order to develop, for example, lithium. What guarantee do you have that lithium will be as strategic and critical tomorrow as it is today, in this rapidly changing world?' He explains that right now, Tesla is replacing cobalt, which comes from DR Congo, with nickel for reputational reasons. 'Nickel may be replaced by lithium-iron-phosphate batteries. In this ever rapidly changing environment, it is hard to make sure that you're investing in the right technology for the recycling of the right metal for the right end use. That ever-changing environment of innovation, paradoxically, hampers innovation for the recycling sector. It may create uncertainty and to some degree makes it more difficult to invest in the long term.'

> *That ever-changing environment of innovation, paradoxically, hampers innovation for the recycling sector.*

Crunching the numbers makes it clear that recycling alone will not do the trick. 'The world consumed 100 000 tons of lithium in 2022, but in 2040 we're going to use 42 times more. Even if we recycle 100% of the lithium used this year, we won't have enough for 2040, as the lithium is not available right now. As the expression goes, if you want to recycle something, you need to have something to recycle.' He calls this the 'time-diversified effect', meaning that what we consume right now will be used for recycling in 15 or 20 years. 'Recycling is not a short-term option, but rather a long-term strategy we will not be able to achieve without mining.'

EVs and their footprint

Recycling is only one aspect of our environmental footprint. Guillaume Pitron zooms in on electric vehicles to identify some others. 'An electric car is as clean as the metals that are inside it. An electric car is as clean as the type of electricity which is used to refine the metals and manufacture the product.' He calls this a car's 'scope two'. For him recharging is scope three: 'An electric car is as clean as the type of electricity that is used at the recharging station. 'Here you have 50 shades of green. Most often, depending also on the country of production, when an EV gets out of manufacturing, it is dirtier than a conventional car because it needed more electricity and the battery manufacturing is complex. After a while, it will be better to drive an electric car, because conventional cars need oil or gas.' In Norway, where the electricity mix is skewed towards nuclear and hydroelectricity, EVs emit much less CO_2 than diesels. But the data shows that, in China, EVs emit only 30% less CO_2 during their life cycle than do diesel-powered cars – and in India EVs and diesels emit the same quantity of CO_2. 'So, you have green cars, less green cars, dirty cars and in some countries electric cars which emit as much CO_2 as a diesel.'

> *An electric car is as clean as the metals that are inside it.*

Studies by Harvard and Tsinghua University have shown that gas or coal-fired power plants are turned on to deal with universal simultaneous demand for electricity. 'As a result, EVs in China can be more CO_2-emitting during their life cycle than diesel cars. You have to think about when to charge your EV in China.'

Nevertheless, Guillaume Pitron still makes the case for investment in EVs. 'We are going to make progress and we are going to make technological changes.' He calls this 'a transition into the transition', underlining that things are going to get better in the fields of mining, recycling, standards for mining abroad, etc. 'However, do not tell me that it is green and do not tell me that it is clean. Yes, EV CO_2 figures are good in Europe. Generally speaking, we have a greener electricity mix. Yet Europe is 7 % of humanity. What about the 93% left? How do they drive, which electricity do they use? Half of the EVs in the world are traded in China. CO_2 pollution in China is not going to stop at the Chinese border. It is *global warming*. It is not *Chinese* warming or *European* warming.' He emphasises the need to focus on global emission figures, not only country by country. 'If we don't have a global outlook, we don't get the full picture and we don't get to understand the full extent of the challenge.'

> *It is global warming. It is not Chinese warming or European warming.*

Getting clarity on the green taxonomy – scopes, figures, scenarios and behavioural changes

Guillaume Pitron strongly advocates including mining in the EU's taxonomy for green energy. 'If you don't do so, investors will be hesitant to invest in mining, claiming that there are too many reputational risks. The ESG standards are getting so high that investors don't want to take the long-term risk of investing in mining. At the European level, I would put the mining of critical minerals for EVs, solar panels and wind turbines, and copper for electricity grids into the taxonomy, in order to help investors invest heavily in this sector, because we will not be able to do without. They need to do this at European level, because otherwise we won't have sufficient resources to make the green transition possible.' He refers again to IEA studies that have noted the discrepancy between objectives and the availability of resources in the medium term.

He sees it as the ECA's role to provide clear figures and more information about scopes. 'For example, the scopes of pollution. We have scope one, scope two, scope

three, and now we are even speaking about scope four, which is the social and health issues associated with production.' He provides a specific example relating to copper, which is necessary for green electricity grids. 'When making a documentary on green technologies we went into the copper mines of Chile. You need water to extract copper. The water comes from the Pacific Ocean, because there is not sufficient water in the ground. They move it from zero altitude to 2 800 metres by pumping the water with electricity. Where does the electricity come from? It comes from a coal power plant.' He explains that the coal comes from New Zealand and Colombia. 'These are the scope-three effects of producing one ton of green metal. If we do not understand all the direct and indirect impacts we don't have the full picture of these scope three effects.'

For Guillaume Pitron these concerns necessitate both more regulation and an enhanced ability to make calculations and interpret all the facts and figures. 'There is a large field of research and development for the ECA to investigate and use, in order to bring this knowledge to the public, to political decision-makers so that they can see the full picture of what electricity and technologies entail'. For him this might include projecting scenarios, in the same way as the IEA, as to whether Europe will have sufficient resources for its future needs. 'I am afraid that we would probably see that these resources will be lacking even in the short term. In my view, this is something very interesting to look at.'

> *There is a large field of research and development for the ECA to investigate and use, in order to bring this knowledge to the public…*

Besides technological issues, he raises the dimension of society and democracy. 'In the democratic world, we can see how ecology and democracy are getting intertwined. NGOs and civil society are putting their heads together to disseminate the scientific information. How do you better integrate governance bodies in order to include local populations in the decision-making process? How do you share in a better way? How do you reduce inequalities in order to make the green world more acceptable?' He highlights that technology is just the tip of the iceberg. 'All this entails profound democratic political discussions that build on something Albert Einstein once said: "We cannot solve our problems with the same thinking we used when we created them." We must make a transition at the political level and act on it, not only as consumers, but also as citizens.'

> *… ecology and democracy are getting intertwined. (…) How do you reduce inequalities in order to make the green world more acceptable?*

He concludes by noting that human behaviour is currently dominated by a lifestyle based on individual consumption. 'To what extent do we want to put back some collectiveness into the way we consume.' Take transportation, for example. 'Our current model, based on individual transportation, may come to an end at some point because it is just not sustainable. Which brings us to light mobility, also called "intermodal modularity" between transportation systems, of sharing driving devices. Quite a change from a world with SUVs or even electric cars driven by only one person. A change of mind in the collective interest.'

> *Our current model, based on individual transportation, may come to an end at some point because it is just not sustainable.*

Sustainable lending as an enabler for EU's energy transition

By Hendrik Engelmann-Pilger and Federico Ferrario, European Investment Bank

Source: Jittawit.21/Depositphotos

Those with long-term investment challenges generally turn to banks. The same is true when it comes to financing the energy transition, and the European Investment Bank (EIB) has positioned itself as the EU's public bank for sustainable energy projects in the EU and worldwide. In the light of the war in Ukraine, the EIB saw an urgent need to move even faster towards achieving the EU's energy transition objectives. What has the EIB done to date regarding these specific EU priorities? How do these actions tie in with other EU transition programmes, including net zero emission objectives outside the EU contributing to Sustainable Development Goal 7 (universal access to reliable and modern energy by 2030)? Federico Ferrario and Hendrik Engelmann-Pilger, energy specialists in the EIB's Project Directorate, provide insights into the EIB's Energy lending policy (ELP), including specific details about what is being done to facilitate the EU's energy transition.

An increasing need for sustainable, secure and affordable energy

Over the last 20 years, the transition of Europe's economy towards a decarbonised future has grown into a policy and investment priority throughout the European Union, driven by the need to mitigate the harmful effects of climate change, while at the same time helping to reduce Europe's dependence on foreign energy supplies. For the energy sector, renewables and energy efficiency have been the most tangible, immediate, and effective measures to drive the energy transition. However, much more is needed in the form of adapting energy networks and markets to enable and support decarbonisation, and developing and deploying new solutions for clean energy in other key sectors, such as industry and transport.

Russia's invasion of Ukraine turned these needs into absolute imperatives. The massive reduction of Russian energy supplies to Europe pushed energy prices to record levels, which in turn fuelled inflation and forced governments to intervene massively in the energy sector. A crucial new element in the European policy response to this unprecedented situation is the REPowerEU Plan. It aims to fast track investments in energy efficiency and renewables from the 'Fit for 55' legislative proposals (which aim to achieve at least -55 % net greenhouse gas emissions by 2030). While the short-term focus is on energy security and affordability, the long-term objective remains reaching net zero in the EU by 2050.

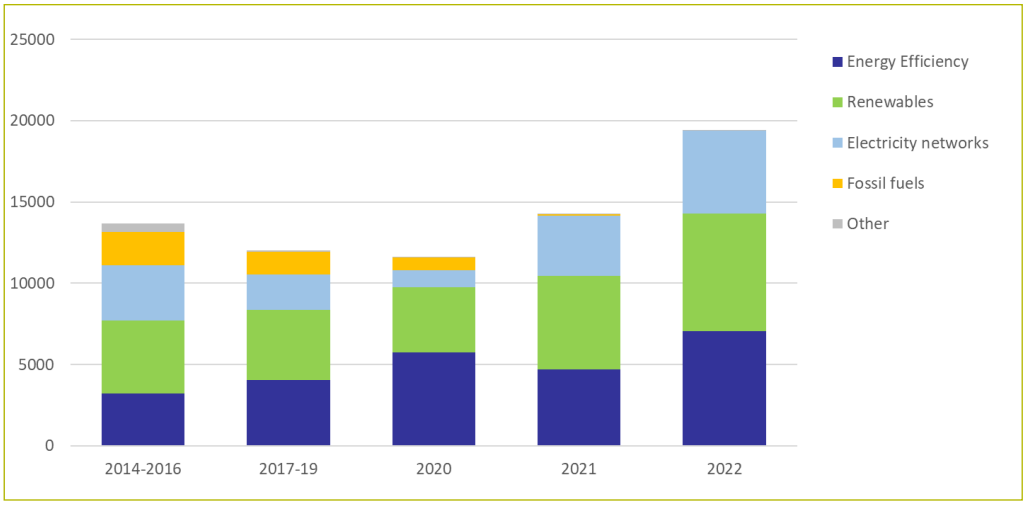
Since it was set up, the EIB has been supporting the European energy sector and has made a significant contribution to delivering sustainable, secure, and affordable energy in the EU. Recognising the need for more action in this area, in 2019, the EIB decided to focus its efforts on the energy sector to maximise support for the EU's ambitious climate and energy targets. It was the first step to becoming the 'EU's Climate Bank'. With the adoption of its Energy lending policy (ELP) in 2019, the EIB phased out the financing of energy projects reliant on unabated fossil fuel combustion (without carbon capture and storage) and focused on the long-term challenge of reducing emissions in the energy sector, while continuing to support security of supply.

EIB energy financing focuses on EU priorities

The EIB's energy lending has successfully focused on delivering on EU priorities, particularly since 2019, as set out in the EIB's ELP. Contract signatures for energy-related investments across all countries increased to €19.4 billion in 2022 (see **Figure 1**), representing almost one third of total EIB deals signed that year.

Having adopted its ELP, the EIB became the first international financial institution (IFI) to stop lending to all unabated fossil fuel energy projects, including natural gas. As shown in **Figure 1**, lending to fossil fuel projects was negligible in 2021, and no such project was approved in 2022.

Figure 1 - Breakdown of EIB energy financing 2014-2022, in *euro millions*



Source: European Investment Bank.

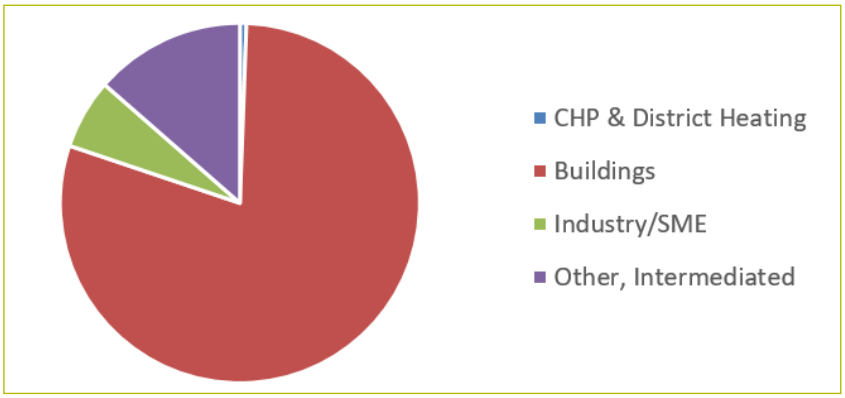
The ELP defines the following priorities to guide EIB energy lending:

1. overcoming persistent investment gaps;
2. focusing on infrastructure needed over the long term, including innovation and scaling up of low-carbon technologies; and
3. supporting new market-based investment in the energy sector.

The EIB has successfully focused its lending on the activities that contribute most to the energy transition as described below.

Energy efficiency is a primary pillar of EIB lending, in line with the European principle of 'energy efficiency first'. Energy efficiency in buildings currently dominates EIB activity in this area, supporting renovations in the EU and ultimately helping households and businesses to reduce their energy bills and the overall demand for heating energy. This very often means lower natural gas consumption. Lending related to energy efficiency investments exceeded €17.5 billion over 2020-2022, representing 42 % of overall energy lending in that period, a significant increase from earlier levels (**Figure 2**).

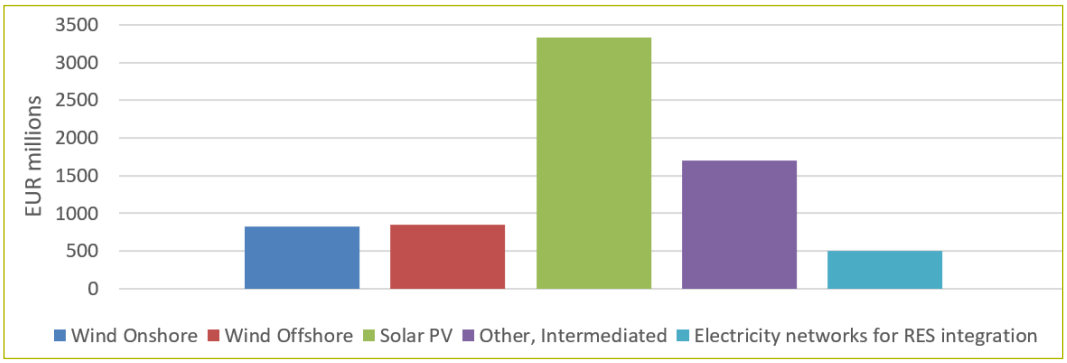
Figure 2 – EIB lending for energy efficiency purposes



Source: European Investment Bank.

Renewables enable the remaining energy consumption to be climate neutral. As well as maximising the amount of renewable energy sources deployed in the EU, the EIB seeks to support market integration of technologies for renewable electricity projects, such as offshore wind and low-carbon gases, at an early stage of deployment. In 2022, lending for various types of renewable energy projects (**Figure 3**) was at its highest level ever, reaching €7.2 billion in total, of which €5.5 billion was for projects in the EU.

Figure 3 – EIB lending for renewable energy



Source: European Investment Bank.

Innovation is the third main theme of the EIB's ELP. New technologies are needed to produce, transform, transport, and use clean energy so that the EU's energy and climate targets can be reached in an economically sustainable way. The EIB has thus been supporting investments in several first-of-a-kind projects in the energy sector, including floating offshore wind, advanced green fuel production, and innovative electrolysis. The EIB has also supported innovative business models for demand response (shifting or shedding electricity demand), batteries, electric vehicle chargers, and the roll-out of commercial energy service companies (ESCOs). The EIB also supports innovation through its role in the Innovation Fund (**Box 1**).

Box 1 - Innovation Fund

The Innovation Fund (IF) was created by the European Commission's DG CLIMA and Executive Agency CINEA, and the EIB has a key role in its implementation. The IF is one of the world's largest programmes providing funds for the demonstration of innovative low-carbon technologies. Funding will come from the auctioning of 450 million carbon allowances between 2021 and 2030. The IF targets innovative flagship and first-of-a-kind projects that are not yet bankable but are beyond the research stage. It aims to provide support for the commercial demonstration of innovative low-carbon technologies in the energy sector, and in energy-intensive industries and substitute products, including projects for carbon capture and utilisation/storage, innovative renewable energy generation, and energy storage. Accelerated development of these technologies will contribute not only to climate action but also to energy security, and is thus also particularly relevant in the context of REPowerEU.

The EIB is in charge of receiving and managing the revenues from the monetisation of the carbon allowances, and for disbursement of the funds to the Commission. In addition, the EIB provides project development assistance (PDA) services, supporting both technical and financial aspects of projects to accelerate innovation and help them secure the necessary investment, including EU grant support.

The energy transition requires appropriate *enabling infrastructure* to allow effective, reliable, and climate-friendly energy supply. Support for the development of this infrastructure is an important activity by the EIB, particularly in relation to energy networks and storage. During the past 3 years, EIB financing of enabling infrastructure has been dominated by electricity networks, with over €4 billion per year on average, of which a significant share has been focused on integrating renewable energy sources into the networks, and on safer and more effective operations of the grid by means of digitalisation.

The strong focus on the energy transition means there must be greater support for *security of supply* as networks are reconfigured to meet the changing requirements of higher shares of variable renewable energy sources in the system. This is mainly done by strengthening electricity networks and cross-border infrastructure, reducing energy demand through energy efficiency projects, and low-carbon power generation. In addition, the EIB has supported new types of energy security, such as demand response and energy storage. Such projects both improve security and also support the decarbonisation of energy systems.

Not all European regions are equally ready to venture into the energy transition, nor are they equally affected by it. Recognising this situation, the EIB decided to establish an energy transition package in order to provide extra support for clean energy projects in member states that are beneficiaries of the Modernisation Fund[1]. In addition to advisory support and targeted sectoral dialogue, the EIB also has made available larger shares of financing to projects in these member states, and this is now being extended to selected energy infrastructure in the whole of the EU to help meet the REPowerEU goals.

EIB will further increase energy lending to support clean energy and energy security

The use by Russia of energy supplies as an 'instrument of blackmail' in its war of aggression in Ukraine has given new and greater urgency to the energy transition, to reducing the use of fossil fuels, and to energy independence.

The record levels of EIB energy-related lending reached in 2022 (€17 billion in the EU alone) reflect the increased focus of the EIB in this area and were an immediate response to the challenges outlined above. Investments in energy efficiency and generation capacity of renewables make up 70 % of this lending amount, in equal proportions. As support for the REPowerEU plan for the short and medium term, the EIB Group[2] has decided to implement a package of specific measures. On the volume side, it has committed to increasing its energy lending by an additional €30 billion during 2023-2027 – an almost 50 % increase over historical levels – of which €27 billion is EIB lending and €3 billion is EIF (European Investment Fund) equity investment. The additional funds from the EIB Group will be directed to the areas where they can be most effective: renewables, energy efficiency, grids and storage, electric vehicle charging infrastructure, and breakthrough technologies such as low-carbon hydrogen or its derivatives, which might have applications also in hard-to-abate industrial sectors. The EIB's response to REPowerEU will focus on improving energy security over the medium to long term.

Source: European Investment Bank.

1 Estonia, Lithuania, Latvia, Poland, Czech Republic, Slovakia, Hungary, Romania, Bulgaria and Croatia, see Annex IIb of Directive (EU) 2018/410.

2 Consisting of the EIB and the European Investment Fund (EIF).

In addition to raising energy lending volumes, the EIB's Board of Directors has also adopted a series of measures to accelerate the pace and maximise the impact of these new investments. Key technical elements include higher upfront disbursements as well as longer maturities. In addition, the co-financing ceiling has been increased to 75 % for energy projects under REPowerEU (up from the usual 50 % EIB limit per project).

EIB Global supports the energy transition worldwide

Energy security and energy transition policies go beyond EU borders because of the dependence on foreign energy supplies, the global dimension of key energy markets, and the worldwide effects of climate change.

Since the adoption of the ELP in 2019, the EIB has also been focusing its lending on the energy sector outside the EU to support the energy transition, projects that have a significant impact in terms of decarbonisation, and access to modern and sustainable energy. Around 10 % of the EIB's total energy lending has been in non-EU countries since 2020.

Energy-efficiency investments are common in the European Neighbourhood Policy countries (ENP) in the east, where building renovation needs are very high. Energy access, grids and renewables feature prominently in sub-Saharan Africa and the Mediterranean region. Investments in electricity grids to increase the extent of electrification of rural areas, whether on-grid or off-grid solutions for renewables, are typically found in Africa. New renewable energy sources are a major area of development in Latin America, with lending to such infrastructure of, on average, between €380 and €890 million annually, which is a quarter of all non-EU EIB energy financing in recent years.

The EIB has been in dialogue with an increasing number of countries outside the EU to support more ambitious Nationally Determined Contributions to the Paris Agreement. For example, the EIB is working with South Africa and Indonesia[3] to reduce coal use and address the social consequences thereof, to ensure a 'just transition' outside the EU. The creation of EIB Global will further accelerate this interaction. These initiatives are fully in line with the EU's international energy engagement strategy to promote energy efficiency, the deployment of safe and sustainable low-carbon technologies, the increasing uptake and system integration of renewable energy, and the highest environmental, nuclear safety and transparency standards. Another example is the DEmand side management, Social Infrastructures, Renewables and Energy Efficiency (DESIREE), an initiative of the EIB and the European Commission to support these activities with an approach combining technical assistance, concessional (below market rate) financing, and traditional loans in African, Caribbean and Pacific (ACP) countries.

The EIB will continue to work with other European stakeholders to develop new partnerships and initiatives. It has strengthened its cooperation in the energy sector with the European Bank for Reconstruction and Development (EBRD), the Agence Française de Développement (AFD), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the Dutch entrepreneurial development bank (FMO), and with member states. This is to work together on projects outside the EU as part of a unified 'Team Europe' approach. The EIB is also collaborating with the European Commission as part of the Global Gateway initiatives.

3 Indonesia Just Energy Transition Partnership, 15 November 2022.

The EU at a crossroads: empower people for transition to the energy system of tomorrow, or simply use quick fixes that lock in the dirty old system of today

By Elif Gündüzyeli, Climate Action Network Europe (CAN Europe)

Source: Pixabay/ Nicolas Toulas

With the European Green Deal, the EU presents itself as a leader in climate action measures, including those in relation to energy. But has the EU done all it can to reach the goals set for 2030 and 2050? And, when it comes to decarbonisation, is the EU really the global leader it made itself out to be at COP27 in November 2022? Climate Action Network Europe (CAN Europe), an NGO coalition with over 170 member organisations in Europe, has published briefings claiming that the EU can do a lot more, with similar resources, to accelerate towards the transition goals that have been set, and that it can put people in the driving seat. Elif Gündüzyeli, Senior Energy Policy Coordinator at CAN Europe, describes the areas and actions where the EU can further excel, both inside and beyond its borders.

A just energy transition with people and the environment at its heart

All the external pressures of the last 3 years mean that the European Commission is navigating a difficult path between yesterday's centralised, dirty, burdensome and unreliable energy system that is a main contributor to the climate crisis, and tomorrow's decentralised, flexible, efficient system using 100 % renewable energy. Tomorrow's system promises delivery of Paris Agreement Commitments through a digitalised, mostly electrified system, with people and the environment in centre stage. But will the EU be able to stay the course, or will it be distracted by the fossil fuel and nuclear lobbies so it gets locked into a system that continues to pollute? This is assuming that consumers, who have to live with the consequences, remain inactive and uninvolved.

Box 1 – Climate Action Network Europe (CAN Europe)

CAN Europe is a coalition of European NGOs fighting climate change and promoting the development of sustainable climate and energy policies. CAN Europe has over 170 member organisations active in 38 European countries, representing over 1 500 NGOs. CAN Europe aims to influence the design and development of effective climate change policy in Europe, both in and outside the EU.

The European energy system and markets have been going through a major shift since Russia's invasion of Ukraine. Unprecedented energy price increases and price volatility due to the EU's dependence on Russian gas began surfacing by the end of 2021, and issues such as the right to affordable energy, energy security, and the functioning of the EU's internal energy market became part of everyday conversations. This was also because the worst impact of both gas supply shortages and the increased cost of living was expected to be felt by the low-income and vulnerable members of society, and indeed it turned out that way.

We began to experience a fossil gas crisis; imported fossil gas suddenly became scarce after being "weaponised" by its largest exporter, Russia. This crisis emerged during a

time of hope in economic reinvigoration after the COVID-19 pandemic, with anticipated benefits of NextGenerationEU spending, notably for energy transition investments. Since then, negotiations have been the most intense around the key Fit For 55 proposals, to ensure the EU reaches its 2030 climate and energy targets, before the member states draft revised national energy and climate plans.

In May 2022, the European Commission launched its REPowerEU Plan to respond to these challenges, explicitly aiming for independence from Russian energy imports while tackling the climate crisis. The plan had many positive aspects to accelerate the energy transition by proposing higher 2030 targets for energy efficiency and renewable energy, and laying down a solar strategy and a solar rooftop mandate. The plan also claimed it would wean Europe off Russian gas imports, arguing for the need to "diversify" fossil gas imports from elsewhere (replacing 155 billion cubic metres of Russian gas imports by new deals with the US, Qatar, Azerbaijan, and some African countries). The Commission introduced a new mandate for a portion of the Recovery and Resilience Facility (RRF) to be used for the REPowerEU goals, and left it very open to member states to make wider use of the fund by waiving the do no significant harm Principle to accommodate new liquefied national gas (LNG) and other oil and gas diversification investments via the RRF.

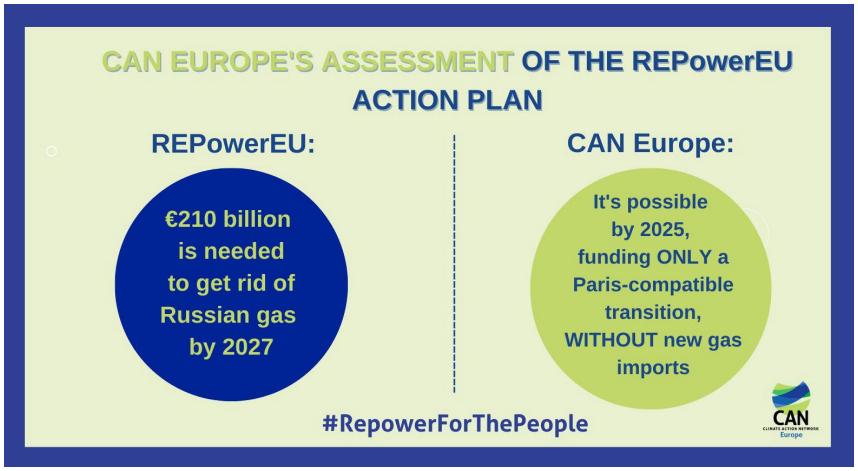
Separating measures that create challenges from those that drive solutions

The REPowerEU agenda offers huge opportunities which, if seized, could lead to success, but if missed, might mean valuable time is lost and efforts eventually end in failure. Measures that will drive the solutions sought by that agenda include:

- increasing energy savings;
- building on behavioural measures adopted during the lockdown by backing them with the right policies;
- repairing substandard buildings immediately;
- ending dependence on fossil fuels;
- massive roll-out of renewables while maximising citizen involvement and ensuring protection of biodiversity;
- universal rooftop solar panels;
- enabling installation of heating systems that use renewables.

Diversifying gas imports may look like a quick fix, not because it is quick or it actually fixes something, but because it gets closest to the claim of a dirty old energy system, dependent on unreliable, non-renewable energy sources, namely that energy security means dependence on fossil fuels.

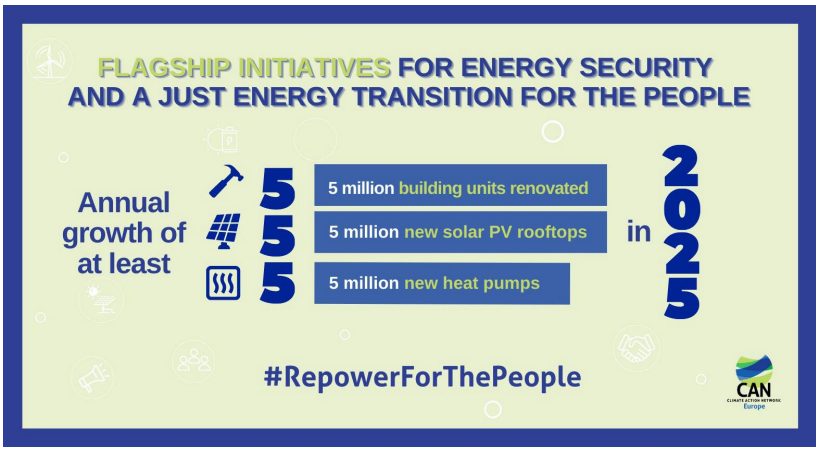
Figure 1 – Presenting a REPowerEU alternative



Source: CAN Europe

CAN Europe published a briefing, *Repower For The People* (**Figure 1**), just before the REPowerEU plan was launched, showing that both energy security and ambitious climate goals to limit global warming to 1.5°C could be achieved using the same Paris-Agreement-Compatible (PAC) energy transition path *if* the political will is there. We asked the Commission to adopt and immediately ensure the implementation of three key flagship initiatives (**Figure 2**), in order to accelerate the roll-out of decentralised energy solutions in the next few years. This would help to increase the pace needed for the energy transition and also protect consumers from energy price increases and volatility.

Figure 2 – Flagship initiatives proposed by CAN Europe



Source: CAN Europe

In the past year, since Russia's invasion of Ukraine and the introduction of the REPowerEU agenda, we have seen an explosion in citizens' initiatives to protect themselves from the high and volatile energy prices driven by fossil fuel shortages. In 2022, wind and solar generated a fifth of EU electricity, overtaking fossil gas and coal power for the first time. Yet, despite citizen's initiatives (better insulation, solar PV installations, and replacing fossil fuel boilers with heat pumps) to address their dependence on fossil fuels and generally poor energy performance overall, plus the prevalence of renewables in the power market, the EU legislative framework still lacks structural measures and policies that create a pathway towards systemic change in energy generation and consumption. Ambitious and *binding* targets for energy savings, renewable energy and demand-side flexibility are needed to achieve the speed and scale of transition that are needed to stay on course for 1.5°C, protect people from the monetary costs and negative effects of fossil fuels, and ensure energy security.

Energy system of tomorrow: beyond the baseload

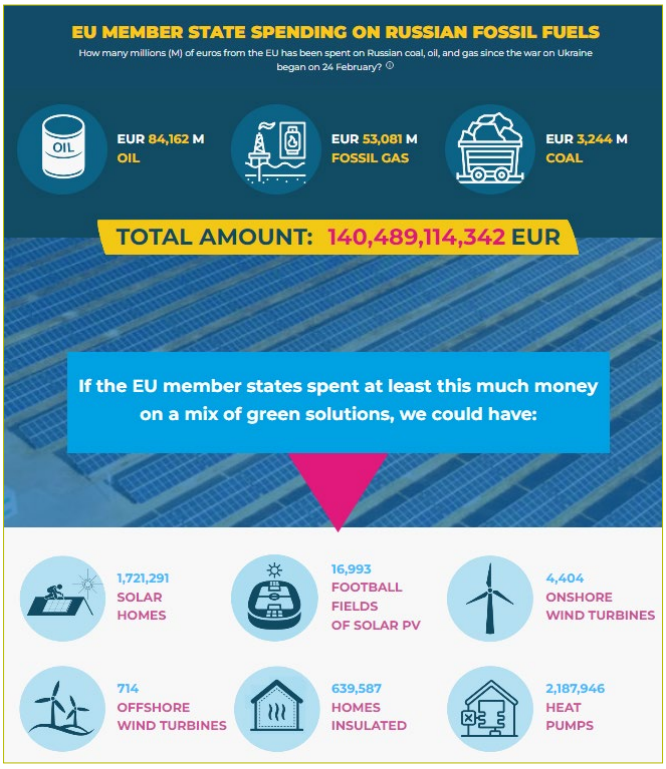
One of the communications attached to the Commission's REPowerEU plan proposed some short-term, EU-wide intervention measures, while signalling possible structural changes in the design of the electricity market to make it better suited to withstand "future price volatility and fit for the future decarbonised energy system, with an increasing share of renewables in electricity production".

After a series of emergency intervention measures proposed by the Commission to address the ongoing gas crisis, a targeted reform of the electricity market design was announced, which was to start early in 2023 with a public consultation. There was, however, no impact assessment of the implementation of the existing market design adopted in 2019 as part of the Clean Energy Package.

Reforming the design of the electricity market is not a magic wand. The EU's commitment to deliver its fair share of global emission reductions under the Paris Agreement, as well as the urgent need for secure, reliable and affordable energy, means that the European energy system has to be changed. Simply redesigning the market will not make that change happen. Furthermore, focusing already limited time and resources on adjusting the existing market design draws attention and effort away from proper implementation of those provisions of the Clean Energy Package which could have done much to alleviate the negative impacts of the current fossil gas and cost-of-living crisis

(for example, by empowering energy communities and unleashing the full potential of demand-side flexibility).

Figure 3 – Tracker EU member states spending on Russian fuels



Source: https://beyond-coal.eu/russian-fossil-fuel-tracker/

A real-time tracker of EU member state spending on Russian fossil fuels since the start of the war in Ukraine. Status: 7 March 2023.

Changing the electricity market design and using the existing design to empower individual/collective self-consumers (who consume what their own system generates) is just one piece of the puzzle. The proposed electricity market design reform comes at an historic moment of humanitarian, social and climate emergencies and a generally agreed sense of a paradigm shift in the scale and speed of the energy transition that is needed. This reform must put forward measures to achieve a strong, flexible, resilient and *consumer-centric* system to run on variable renewables.

As a response to the Commission's public consultation on the reform of the electricity market design, CAN Europe published a briefing. This sets out fundamental principles of how any reform of the current market design can help achieve tomorrow's energy system by empowering people to be in the driving seat of the energy transition and of their energy bills.

One of our key demands regarding the reform of the electricity market design requires a major shift away from a mentality dominated by the idea of *centralised* power generation, towards promoting the value of the demand side putting consumers at the centre, driven by the horizontal guiding principle of Energy Efficiency First. Demand-side measures, including energy savings, flexibility, distributed energy sources and storage, must be valued as resources on an equal footing with traditional supply technologies, and they must be incentivised to reduce peak demand. Demand-side measures can help replace the 'marginal' but very costly role of fossil gas while ensuring consumers are in control of their energy bills, benefiting fully from increased penetration of renewable energy sources exerting downward pressure on the electricity price.

The era of baseload is over. A 100 % renewable energy system dominated by solar and wind is safe and stable when it is complemented by a broad range of flexibility options: expanded grids, flexible and sustainable renewable energy supply, demand-side measures (including energy savings and self-consumption), increased interconnection, and different storage technologies such as hydrogen from electrolysis, batteries, pumped hydro and thermal storage.

"Walk the talk" at home to remain a leader in international climate mitigation agenda

From the adoption of the Clean Energy Package, through Fit For 55, NextGenerationEU, the REPowerEU plan, emergency measures for the electricity and gas markets, as well as for permitting renewables, to the debate around reforming the design of the internal electricity market, one crucial question remains: where is the *implementation* of the right measures that will enable moves towards the energy system of tomorrow? The Commission now has a vital but difficult task to monitor and assess how member states are advancing towards implementation of the right measures through different legislative and non-legislative tools.

This year provides *three* key processes which the Commission can use as opportunities to "walk the talk" in terms of its own energy transition to retain its climate mitigation throne at international level: the upcoming revision of national energy and climate plans (NECPs), the European Semester, and climate diplomacy. First of all, in 2023, national governments will set out their climate and energy pathways for 2030 that should profoundly transform our energy systems. NECPs can be a powerful instrument in the EU's contribution to limiting global warming to 1.5°C while at the same time ensuring energy security and energy justice across the EU. The NECP revision between 2023 and 2024 must be prioritised by the European Commission as it is a fundamental opportunity for EU member states to set things right and bring NECPs much closer to their real, transformative potential. The Commission must give clear signals to the member states that they must opt for a drastic acceleration of climate action at all levels during this decade. This means leaving fossil fuels in the ground and investing in future-proof solutions such as sustainable renewables and energy efficiency – especially in the light of the current, fossil-fuelled energy crisis stemming from the Russian war in Ukraine – and ensuring consistency across policies towards climate neutrality.

Secondly, another powerful tool for a just energy transition is the European Semester, the cycle for the coordination and surveillance of the EU's economic, fiscal, labour and social policy. Although we welcome the increased comprehensiveness of last year's Semester, we believe that the Commission can use this tool in a more targeted way by making sure country-specific recommendations are much more precise, measurable and binding. Back in 2016, the EU, together with the G7, committed to phasing out fossil fuel subsidies by 2025. In 2023, given the current scale of the fossil fuel crisis, it is important to assess progress on the fossil fuel subsidy phase-out, as well as implementation of demand-side flexibility and the roll-out of distributed energy resources, including energy communities and individual/collective self-consumption.

Thirdly, when it comes to showing that the EU is "walking the talk" in climate mitigation in the international arena, seeking new fossil gas import routes from Africa does not help. The EU should not achieve its emission reduction targets and energy security at the expense of outsourcing its energy transition to vulnerable countries. These face the biggest impacts of climate change and might not yet have achieved full renewable energy access, or a switch to energy savings and efficiency for their own domestic needs. Instead, the EU should reduce its reliance on fossil gas use more quickly overall, and fulfil its obligations to massively increase support for its African neighbours by accelerating the financing and use of renewable energies, as envisaged in many African nationally determined contributions for climate mitigation.

CAN Europe sent a letter[1] (see also **Figure 4**) to EU foreign ministers before the Foreign Affairs Council meeting that discussed climate and energy diplomacy conclusions on 20 February 2023.

1 CAN Europe letter to EU foreign ministers of 15 February 2023

Figure 4 – Possible EU actions at the diplomatic stage

Source: CAN Europe

The EU should recognise that fossil fuel extraction very often endangers the development of democracy and human rights. As a result, fossil fuel exporting countries tend to threaten regional or even global security, as shown by the cases of Russia, Iran, and others. As recommended by the European Parliament in its 2018 *Report on climate diplomacy*, the EU should engage with fossil fuel trading partners with the goal of a proactive transition in trade relations. The EU also has a role to play when it comes to phasing out fossil fuel subsidies worldwide. A phase-out of insurance and guarantees for fossil fuel investments from European export credit agencies by the end of 2023 is a commitment we expect from the Commission, as well as ensuring that all EU member states' export credit policies should be fossil-fuel free before an EU export credit facility is considered, as proposed in the Global Gateway Strategy. The climate and energy diplomacy conclusions discussed and to be adopted by EU foreign ministers in early 2023 are an opportunity to formalise positions on these points as part of a comprehensive approach across key climate diplomacy areas.

Finally, we welcome the announcement that the EU calls on the whole G20 to step up mitigation ambitions in line with the 1.5°C limit. However, we urge the EU to recognise that its own ambition for emission reductions does not match its fair share, and that its emissions need to be cut by at least 65 % by 2030. All of the above would make the EU a more credible leader in green diplomacy in this crucial decade of climate action. A special UN climate ambition summit in September 2023 and the UNFCCC COP28 in the United Arab Emirates in November 2023 are important diplomacy milestones in the coming year. This is the time to advance globally coordinated measures, and the EU should then have a chance to put more of its words into action.

EU energy autonomy and climate targets – the next ten years

By Catriona Black, Tilemahos Efthimiadis, Rainer Jungwirth and Marzio P. Rotondò,
Joint Research Centre, European Commission

Source: ©Studioworkstock, Adobe Stock 2023

The European Union has been taking significant steps to strengthen its energy autonomy while preserving its goal of becoming the first climate-neutral continent by 2050. In this article, Catriona Black, Knowledge Management Officer, Tilemahos Efthimiadis and Rainer Jungwirth, both Portfolio leaders, and Marzio P. Rotondò, Press Officer, all in the European Commission's Joint Research Centre (JRC)[1], explore some elements of the European Union's energy autonomy and how the relevant policies are supported by evidence-based research. In particular, they focus on critical raw materials and energy infrastructure.

Climate-neutral by 2050

The EU aims to be the first climate-neutral continent by 2050. This transition has been gathering speed in recent years in response to the growing body of scientific evidence on the impacts of climate change, such as the comprehensive assessment reports of the Intergovernmental Panel on Climate Change (IPCC).

Securing a sufficient supply of affordable, decarbonised energy, and of the critical raw materials needed to produce it, is a prerequisite for a greener, digitalised and resilient EU. The Joint Research Centre (JRC), the Commission's internal science and knowledge base, offers the independent evidence to support EU policies and our path to open strategic autonomy.

The EU's need for strategic autonomy, and for a speedy energy transition, were both pushed to the top of the agenda last year by Russia's aggression against Ukraine. Energy security became a top priority, as the EU faced the consequences of its over-dependence on problematic imports, especially of coal, natural gas, and oil. The EU's immediate and strong response to Russia's aggression demonstrated solidarity and unity, and was appreciated by a majority of EU citizens polled, who also agreed that the EU should reduce its dependency on Russian gas and oil as soon as possible, and take measures to increase energy efficiency and autonomy.

1 We want to thank our JRC colleagues Samuel Carrara, Michalis Christou, Jette Krause, Teodor Kuzov, Zoe Onutu, Lucia Soldatova, Nigel Taylor, Georgios Tsionis and Matthias Weitzel for their input.

Anticipation, integration, impact

While the EU has demonstrated its ability to react fast in a crisis, it must also steer its course with an eye to the horizon, ensuring that the ground is prepared for future success and for future crises too. The Commission is therefore strengthening its culture of preparedness and evidence-based anticipatory policymaking with the help of the JRC.

In February this year, a two-year process of internal transformation (read the ECA Journal interview with JRC Director-General, Stephen Quest) culminated in the adoption of the new JRC work programme for 2023 and 2024, with 33 thematic portfolios at its core. At least 12 of the JRC's cross-cutting portfolios address, in whole or in part, the energy transition, some looking at the bigger picture, others at specific aspects such as hydrogen and social justice.

Europe's energy autonomy

For the energy sector, open strategic autonomy is key. The EU must assume greater responsibility for its own energy security, reducing one-sided dependencies in critical areas and strengthening its capacity to set and implement its own priorities. These goals are pursued through a variety of actions that include the promotion of a single internal market for energy, implementing policies for upgrading the building stock, setting targets for the share of renewable energy in the EU's overall energy mix, and strengthening international cooperation. The policies are guided by the principles of sustainability, security of supply and competitiveness.

Since 2021, the surge in the volatility of energy costs has challenged consumers and industry worldwide. An analysis by the JRC shows how low-income households across the EU are more affected by rising energy prices, and the resulting increases in both energy and absolute poverty.

The Commission was of course hard at work on the issue of energy autonomy before the event of these overlapping crises. Experts from across the JRC were producing analysis to underpin the various new and improved directives of the Fit-for-55 package, designed to implement the European Climate Law's legal obligation of reducing EU emissions by at least 55 % by 2030.

Some of these initiatives have already produced important results, such as the Battery Alliance which was launched five years ago, and has contributed to the scaling up of the EU's battery production. Thanks to that, the EU is now close to having the capacity to produce two thirds of the batteries it will need.

Within three months of Russia's invasion of Ukraine, the REPowerEU Plan was published, with the central aims of diversifying energy imports, accelerating clean energy (including wind power, solar photovoltaic and hydrogen production), and improving energy savings at all levels. These were accompanied by a requirement for natural gas storage across the EU to be filled to at least 90 % by 01 October 2022 (a goal that was achieved and surpassed), the creation of a European Hydrogen Bank, and other initiatives.

Frans Timmermans, Executive Vice-President for the European Green Deal, said:

Putin's war in Ukraine demonstrates the urgency of accelerating our clean energy transition.

Another important step in that direction is Europe's Green Deal Industrial Plan, presented by the European Commission on 01 February this year. Three elements from this plan are worth highlighting:

- developing our net-zero industry;
- ensuring the supply of critical raw materials; and
- remaining open for business with the world.

First, in the fight against climate change, we rely on our industry to be able to produce net-zero technologies. This radical transformation of Europe's industrial base requires targeted innovation, skills and financing, all of which will be addressed in the Net-Zero Industry Act.

Second, the clean tech revolution also requires access to lithium, rare earths and other critical materials. Demand for rare earths for the EU's wind turbine needs alone will increase fivefold by 2030. We must avoid becoming dependent on unreliable sources again, as we did with oil and gas. That is why we are working on a Critical Raw Materials Act, with a proposal published on 16 March 2023, which will ensure the necessary supply of strategic raw materials from mining to refining, processing and recycling – all while ensuring the highest social and environmental standards.

Third and last, we need to resist the temptation of putting up trade barriers to protect the green transformation of our economies or to address the current economic challenges. The European Union is committed to global cooperation and to making trade work for the green transition, under the principles of fair competition and open trade.

Critical raw materials

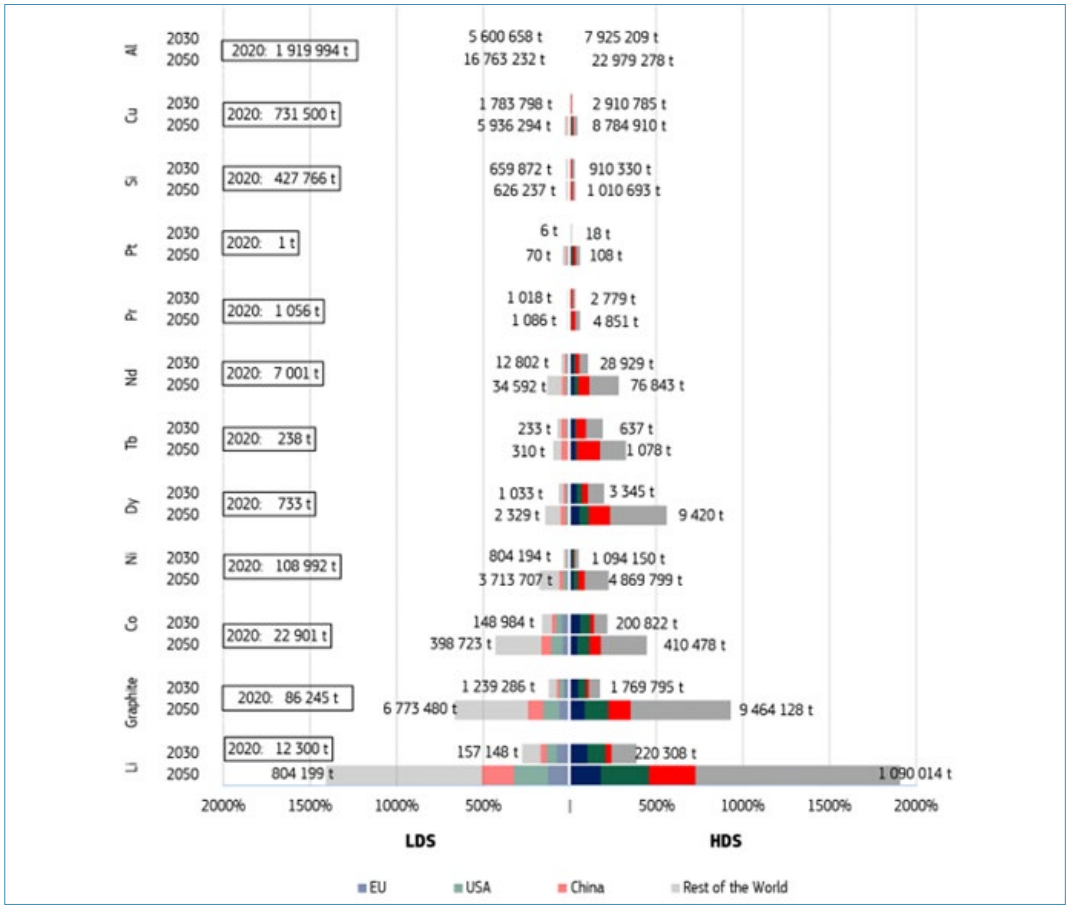
It is becoming increasingly clear that the energy transition is also a materials transition. A clean energy system is much more minerals and metals-intensive than a conventional fossil fuel energy system, and even with increased circularity, the implications for the extraction of raw materials, and for global competition to secure access to them, are enormous.

The demand for many critical raw materials, such as cobalt and lithium, is projected to rise dramatically along with the ramping up of the production and deployment of the clean energy technology required at scale, and at speed, by the REPowerEU Plan. This risk to the energy transition was already flagged up in 2018 by the European Political Strategy Centre, the Commission's in-house think tank of the time, with the help of the JRC.

The JRC has since continued to work closely with policymakers on this topic, and its major foresight study on supply chain analysis and material demand forecast in strategic technologies and sectors in the EU was published alongside the Commission's proposed Critical Raw Materials Act in March 2023. The study's projections for the demand and supply of critical and strategic raw materials in low and high demand scenarios, and the potential bottlenecks at every step of the supply chains, provided evidence to underpin the Act.

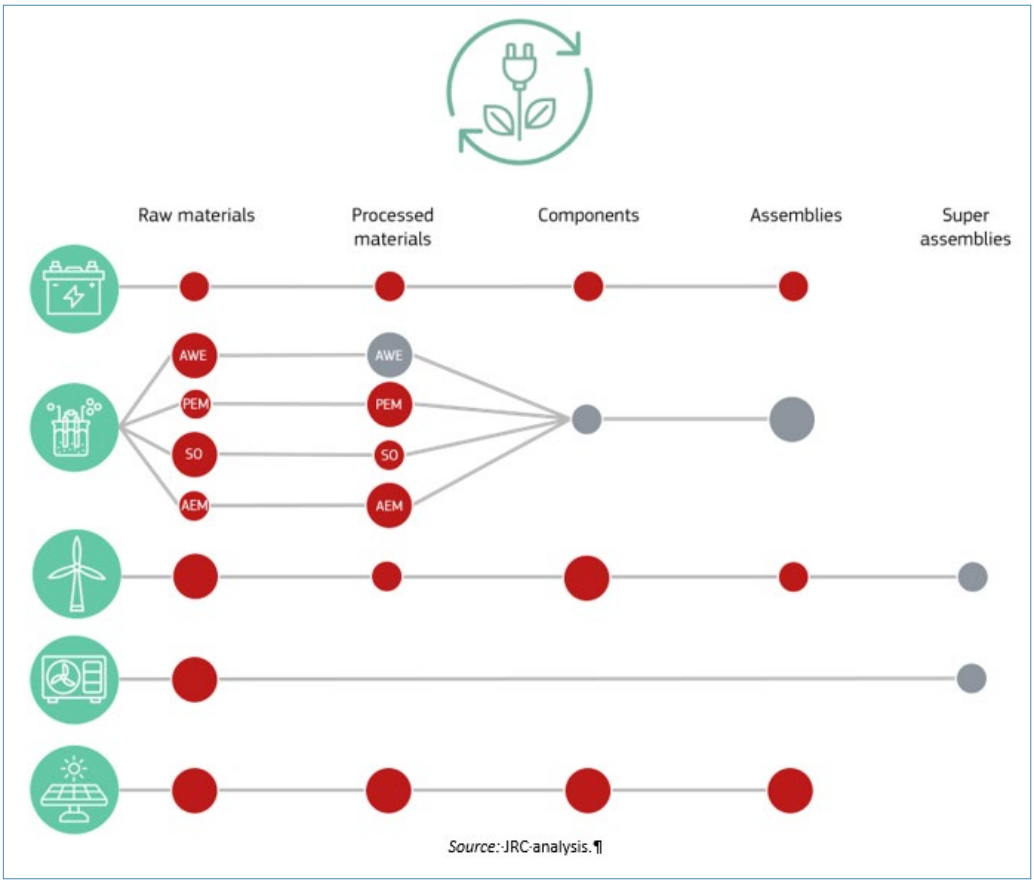
Our study showed, for example, that while the EU is a global leader in wind turbine production, it is fully dependent on China for the permanent magnets and the rare earth elements used in them. China is also the major world supplier for crystalline silicon solar photovoltaic cells and modules, which is the main technology that will be deployed to achieve the almost fivefold increase in EU's solar PV capacity by 2030. Raw materials are also key for hydrogen electrolysers, especially as the REPowerEU Plan requires a tenfold increase in electrolyser manufacturing capacity in Europe by 2025. Global shortages loom in the 2020s and 2030s, as supply is unlikely to keep pace with demand for certain raw materials unless significant actions are taken (see **Figures 1** and **2**).

Figure 1 - Main EU suppliers for critical raw materials (2020)



Source: https://publications.jrc.ec.europa.eu/repository/handle/JRC132889

Figure 2 - Overview of supply risks, bottlenecks, and supply patterns along the selected supply chains relevant to the renewable energy sector



Source: JRC-analysis.¶

Source: JRC Analysis

In this context, the Commission's Raw Materials Information System, managed by the JRC, provides up-to-date analysis to support policies for targeted innovation in the areas of substitution and circularity (recovery and recycling). Here, again, forward planning is crucial. While for some technologies, sufficient recycling volumes may not become available before 2030, work must start now on creating the conditions for circularity.

Anticipation is key to getting this right. New production and processing capacities take time to develop. While we don't have good alternative materials yet, research and innovation in the area of substitution (with advanced materials for example) is of paramount importance both to the EU's autonomy and to its global leadership.

The evolution of the Critical Raw Materials Act demonstrates the JRC's value as a trusted partner to policymakers, starting with anticipating potential future issues, going on to provide the evidential basis for action, collaborating on the shape of legislation, and ultimately, measuring its implementation and impact.

Interconnecting the energy grid

The EU's energy system has the distinction of being the most complicated, but also the most interconnected, resilient and flexible in the world, thanks mostly to regulatory developments and support over the past two decades. This interconnectivity has allowed for the sharing of resources across borders, the provision of solidarity when needed, and the development of sophisticated energy markets. These markets allow European consumers to save billions of euros every year, and do away with the need for member states to invest in their own expensive backup systems and flexibility.

One of the EU's main challenges is the need to modernise its energy infrastructure. This includes upgrading transmission and distribution networks, and investing in new technologies such as smart grids and energy storage. This is necessary for integrating increasing amounts of renewable energy and ensuring the stability and reliability of the energy system. For example, further investment is needed in interconnectors to couple energy systems and allow energy to flow seamlessly across borders, ensuring security of supply, the integration of renewable energy and stable prices. A milestone will be achieved in 2026, when all member states will have a direct physical connection to the European electricity grid.

The JRC supports the European Commission in the design and implementation of the Connecting Europe Facility Energy, a key EU funding instrument for supporting sustainable energy infrastructure projects, especially for cross-border electricity and hydrogen transmission, energy storage, CO_2 transmission networks, electrolysers, smart electricity and gas grids, and offshore wind. We developed, for example, the cost-benefit methodologies for assessing candidate infrastructure projects for EU support, considering sustainability, security of supply and market integration.

Looking ahead

While achieving energy autonomy and the green transition can be challenging, particularly in the light, as the UK Prime Minister Harold Macmillan once famously opined, of 'Events, dear boy, events', the EU remains committed to its objectives and its international obligations. The Commission continues to be supported by the JRC in maintaining its course and in steering new initiatives. The JRC supports table top exercises that aim to test the EU's responses to hybrid threats, with EU Integrated Resolve 2022, for example, a joint exercise co-led by the Council, Commission and the European External Action Service, in parallel with NATO.

With the Strategic Foresight Report, the JRC produces an annual, forward-looking and comprehensive perspective for the European Commission on the key challenges and opportunities facing Europe in the decades to come. It underlines the renewed sense of urgency linked to the rapid evolution of the geopolitical and climate situation, energy autonomy and security, as the EU works together to achieve a more resilient and green energy system and a true Energy Union.

How to lead the world into hydrogen – looking beyond battles

By Erik Rakhou, Boston Consulting Group

Source: celt.sarmat.gmail.../Depositphotos

How will a zero carbon future look like? Will it be based on electric propulsion or hydrogen? In the EU, but also well beyond, there have been various strategies and initiatives to propel both ways to realise decarbonisation by 2050, as foreseen in the Fit-for-55 package. Erik Rakhou is Associate Director at the Boston Consulting Group (BCG) and member of the BCG's global team in low-carbon hydrogen, advising clients on energy transition. He is also co-editor of the book Touching Hydrogen Future, issued in 2022. He takes a look into the future, where a continued ideological discussion between what works best – electrons or molecules – may still go on. He then takes a step back into the present, looking at which elements will be crucial for consumers and business in the choices they have towards a zero-emissions society.

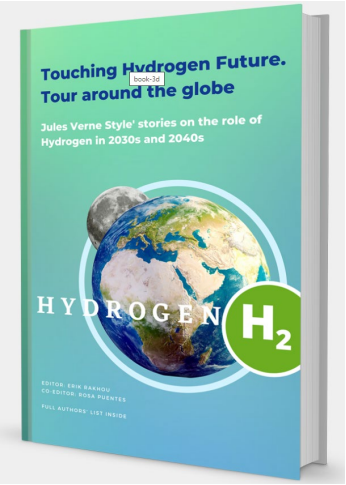
Hydrogen in the limelight

Hydrogen is at the center of global attention for a while, as a molecule that is abundantly present in our earthly system and could fuel the world without carbon emissions, if only we managed to produce and transport it at scale economically in comparison to decarbonized alternatives. Any country or alliance that masters this will be both a world leader in energy, and will have economic independence so strived for by many. In this article I do not try to defend, or to convince you as a reader of the pros and cons of hydrogen technologies. It's offering a teaser to two most critical issues – *battles* if you like - that may drive the uptake or downfall of hydrogen as an important energy carrier in Europe[1], and – perhaps – globally.

The two battles driving hydrogen market uptake at present are the 'electrons versus molecules', and the one for 'green jobs and competition', also known as regulatory incentives and subsidies battle. Hence I want to share two stories, which may contribute to insight and debate on what it takes for Europe co-leading the Hydrogen market rise.

1 'Important' would mean at least 10% of primary energy mix by 2050 as some of leading global energy agencies like the International Energy Agency (IEA) and the International Renewable Energy Agency (IRENA) have forecasted on occasion.

One story is from *Touching Hydrogen Future*, a book that educates on hydrogen futures in Jules Verne style travelling the world in 2030s and 2040s, of which I am co-editor and one of the 28 authors.



Source: europeangasmarket.eu

The other story is on the importance of policy context, and takes you through the ongoing debate on Europe's response to global green competition through the hydrogen market prism. The first story is virtual, second story plays out now. I will then draw conclusions on what may be the next step for Europe and others wishing to lead hydrogen market evolution, inviting debate. To give you a heads up as a reader on my view, the battle is won with policy, not with choosing for best or either technology of electrons versus molecules. The common thread between the two battles is the hydrogen leadership on a global scale being driven by policy competitiveness, at turn driving consumer and business preferences.

The tale of consumer choice – electrons versus molecules

Setting the scene of debate

'We need to be at consumer's future car dashboard' said a CEO of a global energy company, when speaking of his firm's energy transition pathway in one of my favourite podcasts. Now, there are many consequential ways in which you can read such a thought. My reading – as a hydrogen advisor and someone who has worked with over 50 firms and governments last year on energy transition and hydrogen – that the pathway of change and future of energy transition are both co-depending on what technological preferences consumers will make. The only way to experience what such choices entail is to live through them as a business, or a consumer yourself. Let's relive such choice through a story below.

Extract from chapter 'The Netherlands 2029', Touching hydrogen Future[2].

His watch bleeped again – his hydrogen-fuelled next generation Toyota taxi, called the Dutch HYPE after a few successful Paris projects – was reporting to wait for him at the airport. How things had moved on since his debate with a Tesla taxi driver in Amsterdam in the early 2020s, who happened to be an expert on the pros and cons of electric vehicles versus hydrogen cars and trucks.

Me: *So what do you think about the use of hydrogen in cars and trucks?*

Tesla taxi driver: *It's feasible but not sensible. It can't compete with battery electric and uses too much energy. The distribution of hydrogen is almost prohibitively expensive, and they're struggling to get rid of grey hydrogen in sectors like fertilisers and refining. Hydrogen is a problem we've just started to solve. It's not a solution that justifies expanding the market for it. We're better off putting the effort into finding ways to make it competitive in sectors where hydrogen is already used. I'm all for green hydrogen for ammonia in the fertiliser industry, and methanol production. That's about it.*

Me: *Hmmm…. but I do see some industrial scale-ups for hydrogentrucks - Hyzon, Nikola, Daimler, Quantron, Hyundai, Tevva, Gaussin & Plug Power…*

Taxi driver: *It does not make it right, just because strong and innovative players are doing it. Most of the world's hydrogen is made from methane and coal in a dirty energy consuming process. Any expansion of that market shouldn't be allowed today. I can put it into perspective. Do you like maths? Here are some quick numbers for you. The current wind generation in this country is, let's say, 1x. Converting the trucks and car fleets from diesel to green hydrogen would require another 1.5x in comparison with 0.5x for the fully electric conversion of fleets. There are ball park figures based on Volkswagen research, which show huge conversion losses from renewable energy down to using hydrogen in fuel cells in comparison to the direct use of renewable power. Feel free to challenge me, I know this assumes the current state of technology. But there is no reason to even attempt to do that. It would benefit only the current fossil industry - using tax payers' money, probably. It would be insanely expensive, and still not solve the current decarbonization problem.*

2 See freely available book *Touching Hydrogen Future* at www.europeangasmarket.eu

Me: *If we were only looking at building 100 percent renewable energy just here in Europe, I would agree. But there are global trade value chains emerging where hydrogen helps to bring stranded renewable power to end-users on different continents. And what about other factors in the decision? In your experience, are your solutions for cars and trucks able to cover, say the 800 km between Rotterdam and Munich?*

Taxi driver: *I don't drive trucks, so it's a mental exercise. But if you are suggesting that hydrogen is superior to battery electric in terms of range, you're wrong. Range is similar in my view. The limitation for hydrogen is weight and volume, with emphasis on volume. The limitation for battery electric is also weight and volume with emphasis on weight. In reality there is no real difference at present. I'm aware of the dreams of storing the hydrogen in liquid form in trucks, which is possible, and will provide over 1,000 km in range, but paying for that kind of hydrogen distribution is foolish. The only benefit for hydrogen trucks over battery is filling time, which is a perceived benefit rather than a real one. There is no problem charging a 44-tonne truck with 400 km of range in well under an hour. 400 km is roughly what's required to cover the allowed time for driving intervals under European rules for taking breaks. That's more or less all you need to know to realise that hydrogen for cars and trucks is a dead end. Unfortunately, because it would be good for business. Plus, hydrogen refuelling stations would face challenges equal to electrical charge stations of requiring huge grid expansions.*

Me: *If range is indeed manageable at 400 km, in Europe hydrogen in trucks will face strong electric competition. It will come down to who manages the supply of hydrogen and storage versus electrons and storage better. Nikola's and the Shell-Daimler concept, which appear to copy Tesla's approach of fuel-plus-vehicle, is a good one. If the same is offered in electric, hydrogen trucks will face competition indeed. The electric storage is not trivial - assuming now that current fuel stations get depleted every second day, one needs by analogue to hold a day or two's worth of power - battery solutions, don't yet match the required duration, so one needs grid power. Grids may be slow to ramp up. But as the hydrogen value chain gets developed for other industries, then its supply chain could be reused for cars and trucks with hydrogen fuel cells, just in time to compete with electric cars and trucks …?*

Taxi driver: *All those things matter, but in the end three main arguments should put a stop to any tax money being poured into subsidising hydrogen for vehicle use. First, it's still a monumental task to get rid of the existing grey hydrogen, which is most of today's hydrogen production. Expanding the market to trucks will only be an expensive distraction in that effort until grey hydrogen is greened first. Second, hydrogen trucks and cars need two to three times' more energy as input due to energy conversion losses versus electric solutions - why would taxpayers want to pay for that fuel production? Third, we are talking about the fruits hanging highest in the tree for CO2 reduction in transport. All efforts of transport decarbonization should be focused on the lowest hanging fruits where electrification is another-no-brainer. I'm sure there will be shipping industry or aviation industry firms that struggle for alternatives to decarbonize and will be more than happy to pay top dollar for fuels derived from green hydrogen, and pay for their special properties as molecules – hence there's no reason to waste green Hydrogen in trucks or cars, just yet.*

He then continued to say, *Well, thanks for the conversation, we arrived.*

My mind circled back to today - in 2029: *That taxi driver was quite right, aviation and shipping came first. But the use of hydrogen in cars and trucks came second [..].*

*A battle beyond technology?*In the above story, we have seen, through a virtual dialogue, how consumers can deeply disagree on the role that electrons and molecules play. Historically such 'technology choice' battles are often won due to non-technological reasons, policy support is a big reason for victories of one technological preference over another[3]. We are seeing the making of this green jobs battle, which may decide hydrogen, and electron, technological preferences for consumers in passing, in discussions Europe is having on its own version of an Inflation Reduction Act[4].

3 For illustrative discussion on the battle of electrons versus molecules, please consult my business media writing on Linkedin - https://www.linkedin.com/posts/erik-rakhou_electrons-hydrogen-eu-activity-7027934076720291841-fCBj?utm_source=share&utm_medium=member_desktop.

4 For illustrative sentiment on the matter, I recommend reading Thierry Breton's article on global green competition and Europe's potential response on business media Linkedin at (3) No Green Deal without strong European clean tech manufacturing | LinkedIn.

Fighting for green jobs – green competition brings advancement to all[5]

The world was woken up in January 2023 by the developing global debate on green competition. At Davos 2023, Ursula von der Leyen, President of the European Commission, announced a new *#NetZeroIndustryAct* as part of the *#GreenDealIndustrialPlan* – widely seen as Europe's response to the US Inflation Reduction Act (IRA). She said: 'We need to create a regulatory environment that allows us to scale up fast and to create conducive conditions for sectors crucial to reaching #netzero.' This includes *#wind, #heatpumps, #solar, #cleanhydrogen*, and a continued response by EU for access to critical raw materials needed for energy transition.

One observes the pressures for, and value from decarbonization (the rising tide of green competition) are creating new sources of competition between global governments. This includes competition for capital, market share, raw materials, labor/capabilities. In turn, these new competitive dimensions are what is shaping the US and EU responses on policy formulation in context of green competition. Let's unpack an example, of what it means for hydrogen in particular.

EU responding to IRA type of approach on Hydrogen

The EU has its own ambitions to develop a green hydrogen sector, and is concerned that this might be undermined by highly subsidized US imports. It's responding by stepping up its own hydrogen strategy, with four key actions proposed:

Net-Zero Industry Act: a new Net-Zero Industry Act with yet to be defined clear goals for European clean tech by 2030. The aim will be to focus investment on strategic projects along the entire supply chain, including green hydrogen, with a theoretical ultimate access to overall EU climate spending (at least €600 billion in the 2021-2027 multiannual financial framework (MFF) is to be spent on fighting climate change. In her speech von der Leyen referred to EUNextGeneration, which is part of MFF[6]);

State aid loosened: adapt EU state aid rules to speed up and simplify giving subsidies to green projects across Europe. There is strong pressure from member states with more limited national resources for more EU-level funding to help them introduce similar measures. The EU Sovereignty Fund – lingo for more EU funding for EU member states with less strong balance sheets - can be a way forward for such assistance;

Investments in green upskilling: details are yet to be defined. Here we may expect initiatives like the EU funded Clean Hydrogen Partnership to benefit with additional focus on education and upskilling; and

Fair trade focus: the EU will take a carrot and stick approach to the international trade in hydrogen. As a stick, under the new Foreign Subsidies Regulation, the EU can probe the operation of companies receiving significant subsidies. It may consider 'countervailing duties' - additional import tariffs on subsidised products. However, as a carrot, the EU wants to extend its Free Trade Agreements with key partners to include products such as hydrogen, as it has recently done with Chile.

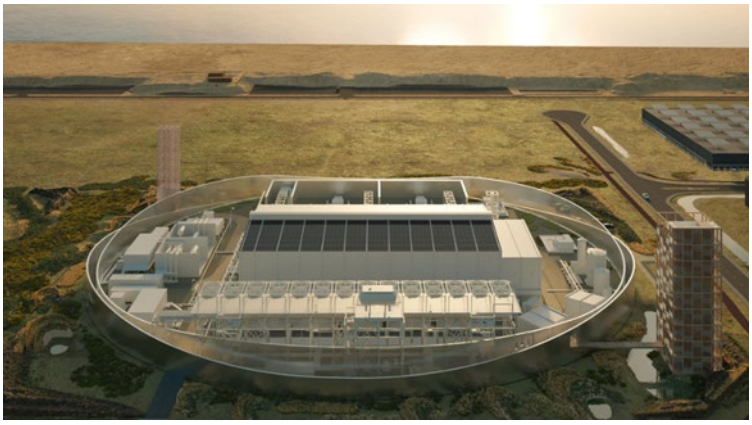
So what for trade conflict, and for Hydrogen technology rise?

5 The story above is an amended version of business media writing I published on Linked-in, co-written with my industry peers - (11) A rising tide lifts all boats – Europe and US are both working to develop green technologies – Hydrogen as example | LinkedIn

6 The 2021-2027 EU budget is the largest stimulus package ever financed in Europe, totalling €2.018 trillion. It comprises (a) the long-term budget for the next 7 years, the Multiannual Financial Framework (or MFF, totalling €1.211 trillion) and (b) a temporary recovery instrument, NextGenerationEU (NGEU, totalling €806.9 billion). NGEU includes the Recovery and Resilience Facility (RRF), worth €723.8 billion, which makes up nearly 90% of the NGEU and is disbursed directly to member states. The funds form a key component of the European Green Deal, the EU's strategy to become net zero by 2050. Roughly one third of the funds are directed at climate change; there is a 30% target for climate spending across the entire 2021 EU budget, while the RRF requires 37% of funds allocated to each Member State to be used to support climate action. Hence, together these EU funds represent a target of at least €600 billion of climate funding, or €86 billion public funding per year across 7 years. Source: Recovery plan for Europe (europa.eu)

In the speech in Davos von der Leyen mentioned the *US #InflationReductionAct*, to which these measures appear designed to be part of the EU response. She said:'And of course, we have seen the Inflation Reduction Act in the United States, their USD 369 billion clean-tech investment plan. That means that together, the EU and US alone are putting forward almost EUR 1 trillion to accelerate the clean energy economy. This has the potential to massively boost the path to climate neutrality. But it is no secret that certain elements of the design of the Inflation Reduction Act raised several concerns in terms of some of the targeted incentives for companies. This is why we have been working with the US to find solutions.'

Does this mean that the EU and the US are set for a trade conflict over decarbonisation? No. In reality, the rising tide of climate action will lift both the European and American boats, just through different regulatory models. And in particular hydrogen markets may be the area where this will play out.



Source: Plotvis

The green competition of incentives and jobs in Europe and the US to promote inter alia the use of clean hydrogen will have a significant impact on the global hydrogen market. It will accelerate the cost curves for both supply and demand, driving investments in larger assets and increasing the efficiency of electrolysers, which are used to produce hydrogen from low carbon energies and water. This will establish both the US and Europe as leading hydrogen players, which could potentially stimulate a further subsidy race globally, and reorient and strengthen equipment suppliers in their manufacturing build-up.

Weaving the two stories together – the common thread

In Europe, one tends to like the ideological debate (for/against electrons and hydrogen molecules-fuelled cars in first story) but for once one should, and we are, paying attention to competitiveness on a global scale driving consumer, and business preferences (second story)[7].

Companies must consider their exposure to the US and European market, portfolio shape, supply chain position, regulatory approach, and funding opportunities. Similarly, country agendas must consider their competitiveness, role, and localizing supply chains to stay competitive amidst a global green jobs race.

As an example, for Europe, for the transition period we may need to have a pragmatic approach through pushing – with well designed for ease of access 'alike IRA' subsidies – consumer choices towards energy transition. This may mean facilitating multiple winners, both electrons and molecules – in hydrogen we are now enabling personal cars come to finish in parallel to electric vehicles by mandating refuelling stations every 100 to 200 kms across Europe in AFIR, a specific Fitfor55 proposal for Alternative Fuels Infrastructure Regulation[8]. This, paired with an EU blueprint for easy to access subsidies at EU-level, for switching industrial and mobility demand to hydrogen, may further unleash the hydrogen future, and bring a tide of energy transition rising all boats, including European co-leadership of hydrogen landscape.

Finally: there is still enough time to achieve strategic innovation leadership in climate and energy security for all those able to look beyond battles and form alliances.

7 An illustrative debate on need of pragmatism can be found in a recent debate with industry peers at business media Linked in, around green hydrogen pricing - https://www.linkedin.com/posts/erik-rakhou_what-should-be-the-price-of-green-hydrogen-activity-7032295620581183488-N1Rn?utm_source=share&utm_medium=member_desktop

8 See Fit for 55: towards more sustainable transport - Consilium (europa.eu)

‘Count on us to speak the truth, whether it is welcome or not’

Interview with Stef Blok, ECA Member since 1 September 2022

By Gaston Moonen

Stef Blok

On 1 September 2022, Stef Blok joined the ECA as a new ECA Member, taking over the post of Alex Brenninkmeijer, who tragically passed away on 14 April 2022. With long experience in public life – as a parliamentarian and minister responsible for various policy areas – Stef Blok is keen to go into depth about the details and effects of EU programmes and actions. His aim is to help to make the EU function better.

A broad policy interest stemming from his previous responsibilities for various portfolios

Stef Blok has been in public service for most of his professional life, first in the Dutch parliament, and then as a minister responsible for various ministries. Before going into national politics, he worked in the private sector for a well-known Dutch bank. ‘I enjoyed working there because it allowed me to see different aspects of society. I worked with SMEs when I was a branch manager, with all the local private customers and their daily issues, as well as with mortgages and savings accounts. Then I turned to corporate banking, seeing how large companies and public institutions work: for example, hospitals in the Netherlands have credit facilities with banks, as does higher education.’ He explains he already had an interest in politics, combining his work with membership of the municipal council in the town where he lived. ‘I truly enjoyed this combination. As they do every four years, my party, like any party other, was looking for new faces, and asked me to give it a try to join the national parliament.’ Under the motto ‘no guts, no glory’, he decided to do so, and was elected to parliament in 1998 at the age of 33.

Both as a parliamentarian and as a minister, Stef Blok dealt with many different policy areas, serving as a minister for housing, economic affairs, climate policy, security and justice, and foreign affairs. He thinks it is useful to have knowledge of the policy area

you are responsible for, but that you don't need to be a specialist. 'You are blessed with very skilled people, with huge departments. But of course, you have to understand what really matters. For housing, banking is an ideal background because housing is to a large extent macro-economics and financial markets. I was responsible for mortgages when I was 24 years old. As a minister, I was responsible for the civil service, which was very much linked to human resources, as well as for IT and real estate. I was even responsible for the royal palaces. Of course, I was not a specialist in any of these areas. But having held management posts in the private sector, I knew about management issues.' He regards his post as minister of security and justice as the most challenging, given the knowledge required, and explains that the justice department employed a total of 120 000 staff, including the police, prisons, the public prosecution service, and the judiciary. 'My concern was how to make all these different people and organisations cooperate. I had the impression that many people appreciated the fact that the minister left the technicalities of the law to the specialists, and concentrated on managing what was more or less a conglomerate.'

> *My concern was how to make all these different people and organisations cooperate.*

From his time working as a parliamentarian, Stef Blok recalls that he visited the ECA, meeting former Dutch ECA Member Maarten Engwirda, some time around the year 2000, as a member of the Finance Committee of the Dutch parliament. 'The main reason for our visit was that we considered the ECA's work as very important. Especially the discharge: in those days, the statements of assurance contained much higher estimated error rates, and there were real concerns in the Netherlands about that. Two other elements played a role: the Dutch have a Calvinist outlook, and are not inclined to spend money. And the Netherlands Court of Audit is also held in high esteem, and has a good relationship with parliament.' He thinks that in the Netherlands the ECA is viewed in the light of this tradition, supporting an important part of parliament, both at national and EU level. 'In those days, the ECA's reports were well read and well used. And that is still the case.'

Separating audit from politics

Stef Blok's main takeaway from his time in politics is how blessed we are to live in the European Union. 'We cannot take that for granted. It is hard work to maintain what we have and to improve. And I think we owe it to our children, and to people who are less well off. That we constantly look critically at what governments do, and are honest about what is not going well in order to find ways to improve. As I said, what drove me as a parliamentarian and what drives me now as an ECA Member is to look at how the EU operates so that we can improve things.' He argues that it is undeniable that there is no alternative to cooperation in Europe. 'It is also undeniable that EU politics is even more complex than national politics, due to differences in culture and in levels of economic development. But there is no alternative to this cooperation, so let's make a success of it.' He believes that having independent institutions like the ECA is an essential part of this. 'Taxpayers are paying us to bring the facts to light, regardless of whether they are positive or negative for the Commission, or sometimes for a Member State. In that respect, the ECA is an ultimate fact checker. And then it is up to politicians, and of course up to the public and journalists, to form judgements and preferably take action.'

> *… look at how the EU operates so that we can improve things (…) there is no alternative to this cooperation, so let's make a success of it.*

When discussing how to clearly distinguish facts from politics, Stef Blok is straightforward, referring to the theme of this Journal: energy transition. 'There are many facts to present there: there is the CO_2 reduction aim, enshrined in legislation, and measurements to assess whether we are progressing towards that aim.' He continues that we can look into detail at which measures are contributing and which are not, whether sustainable energy is competitive pricewise and why, which can also include looking at taxes. 'Then you can suggest what might be done to make it competitive. The choice to do it or not is then a political one.' In his view, the wording is important here. 'You can say, for instance, as the ECA did in a review from last year: because of the current tax situation, fossil fuels are more attractive than sustainable in certain sectors. And as long as this is the case, it is unlikely that fossil fuels will be phased out. Things become political if you

say how taxes should actually be imposed. You cannot avoid the conclusion that something needs to be changed in the current set-up of tax subsidies, etc. But I think you should stop there, underlining that with the current situation you will not reach your aims. Which is, of course, huge for a Commissioner or minister responsible for this area. If I as a minister had such a report, then the parliament would fall over me.'

> *You cannot avoid the conclusion that something needs to be changed in the current set-up of tax subsidies…*

As a minister, Stef Blok dealt with multiple discharge procedures, and found them useful and valuable. 'Also as a minister, I was really glad that there was an impartial auditor. You can never be sure that staff are aware of everything that is happening on the ground. Nor can you be sure that they will tell you everything that may become important, especially when things are going wrong.' He recalls several examples where it was the Court of Audit in the Netherlands that warned him that things were going wrong. Giving a specific example, he mentions the backlog there was in addressing cyber security issues while he was working as minister of Foreign Affairs. 'And there is a real threat, as we all know, from cyberattacks, especially for that ministry. I was very grateful for this report, and I really set my IT staff to work, asking them to report to me each month on the progress they'd made.'

> *…as a minister, I was really glad that there was an impartial auditor.*

Being questioned by parliament is not a new experience for Stef Blok, even at European Parliament level, since as a former MP and minister he had visited the European Parliament before. 'For my hearing as the nominated ECA Member, I prepared myself by meeting with members of the Budgetary Control Committee and watching recordings of the hearings before mine.' What he considered specific in his case was that he had become a candidate after an open procedure. 'So although I had not already been through hearings, I had had a number of interviews in the Netherlands following an open advertisement.'

In his current position, he still has to deal with questions about his past responsibilities, particularly from Dutch journalists. On this point, Stef Blok stresses that he believes it is very important for ECA Members to have close contacts with journalists. 'Because we can only be effective if our reports are well covered in the media. Dutch journalists are very interested in our work, but so far they have also asked me questions about current political affairs in the Netherlands connected to the past. He smiles, saying that he always gives the same answer: 'I understand your question, but I am an independent ECA Member now, so I will not comment on current political affairs in the Netherlands.' He adds, laughing: 'And that makes my life easy. But it cannot be any other way.'

> *… we can only be effective if our reports are well covered in the media.*

Speaking up, no matter what

At the ECA, Stef Blok is a member of the audit chamber responsible for 'Investment in cohesion, growth and inclusion'. He stresses that he has a broad interest in many topics. 'And I consider myself even more blessed to work at the ECA because you have the possibility to really dig deep into different areas of public policy.' He adds that of course he also follows the work going on in other audit chambers, raising issues there or at Court meetings. 'I am very interested in the Recovery and Resilience Facility (the RRF) because it is huge and contains many new elements. I know it from my time as Minister of Foreign Affairs because I was involved in the negotiations.'

Having experienced the ECA's 'bread and butter' issues from the inside for some months now, he believes the ECA should be self-confident when dealing with the Commission. 'As I've already said, I have also been an auditee. If we as the ECA have well-founded findings, gathered by highly qualified people, based on a strong methodology, then we should stand up for them and not shy away because a Commissioner may not be satisfied. Likewise, if things are going well, we should clearly say so, and often they are going well.' For Stef Blok, this goes right to the heart of 'what we are on earth for'. 'We are all here with the same aim: bringing the truth to light in order to make the EU perform better.'

> *If we as the ECA have well-founded findings (…) we should stand up for them…*

In his role as an ECA Member, Stef Blok sees it as an important responsibility to connect with national parliaments, not least the Dutch one. 'This role is very important, because EU policy is made not only in the European Parliament but also in the Council. And national ministers are controlled by national parliaments.' He explains that he has participated in many Council meetings on various topics. 'There is a monthly parliamentary debate for each Dutch minister participating in a Council meeting about the agenda for that meeting. And for these debates, ECA reports are crucial.' He says that his private office follows the agenda. 'If my private office staff see a debate on an issue where the ECA has produced a report in the past two or three years, we send a letter to the parliamentary commission in the Netherlands, referring to the ECA report that may be useful for the discussion they have with the minister in question. This involves considerable work. Apart from that, each year we present the ECA's annual reports, including the Statement of Assurance. Any reports just published I will post, for example, on LinkedIn.'

In addition, he has regular contacts with the media. 'Sometimes they will call me themselves because they want a comment in Dutch on a special report, and I will ask the coordinating colleague whether they are okay with me commenting on, for example, Dutch radio. This was the case with our special report 28/2022 on SURE. I also provided a comparative analysis between the RRF and cohesion funds, and I have twice had a meeting with Dutch journalists covering the EU, pointing them towards our schedule for special reports to be published this year.'

In his hearing before the European Parliament in June 2022, Stef Blok pleaded for a more performance-based approach to the EU budget. He still takes that view, stressing that the practical implementation of such an instrument is crucial, and also referring to the RRF. 'Regarding the RRF, the ECA published special report 21/2022 in September last year, containing our assessment of the practical implementation of this performance-based instrument. Also, our 2021 annual report covered the RRF, and we published a comparative analysis with cohesion that we provided regarding the RRF in review 01/2023. There, we made relevant – and also somewhat worrying – remarks about whether long-due reforms were actually included, whether targets and milestones are clear enough and measurable, and about the fact that there was insufficient clarity about what will happen if these targets and milestones are not fully met. Another remark relates to the European Commission relying very much on national controls, while the Treaty and the Financial Regulation oblige the Commission to take care to ensure that European taxpayers' money is well spent.'

Besides the RRF, there is another potentially major audit task for the ECA around the corner, relating to EU money spent in relation to the war in Ukraine. Stef Blok foresees work for the EU in this area, and hence for the ECA. 'We all hope that peace will return to Ukraine as soon as possible. But even if there is peace soon, the challenge of rebuilding the country is enormous. It is up to the politicians to decide in what form. But it is quite likely to involve a huge amount of money.' He explains that this will probably include non-financial programmes, such as strengthening the judiciary, and fighting corruption. 'And for all of that, the ECA will be called upon again to do our 'bread and butter' work. And here too, we have no other option but to be clear and honest, as we were in our special report 23/2021 on EU programmes fighting corruption in Ukraine, also relating to the rule of law. As an ECA Member, I have to contribute to bringing the facts to the fore, even if they might not be very pleasant.'

Aiming for impact

When it comes to his ambitions for the future, Stef Blok is clearly motivated to highlight the results of the ECA's audit work wherever possible. 'As I said, when we adopt our reports, we must be self-confident and defend them with all our strength. Furthermore, to be effective, we not only have to be good, but also to say so. Building on my experience as a parliamentarian and as a minister, the media are very important here. Politicians are very much driven by press reports. Both parliamentarians and commissioners will be far more motivated to improve those things that have to be improved if there is press coverage.' This is why he identifies one of his core duties as making sure that the press is aware of what the ECA does. 'I also think we owe it to the general public – they pay our salaries. But they will not

> *… to be effective, we not only have to be good, but also to say so. (…) Politicians are very much driven by press reports.*

read the Official Journal. We owe it to them to bring out the facts. And we are a public institution. For me, this means that we must be relatable – we should do our utmost to show the public what we are doing.' He stresses that this should be done in a factual, non-sensationalist way. 'You can also put it the other way: if nobody is aware of our reports, what is the point of our work? What is our added value then?'

> *… if nobody is aware of our reports, what is the point of our work?*

For Stef Blok, the task for the ECA is huge. 'Because those new instruments, such as the RRF and energy policies, are new, they will have unavoidable teething trouble, and unavoidable pressure from all sides, which we have also discussed. I am reminded of the famous adage "May you live in interesting times." We do live in interesting times, but this also places a huge responsibility on our shoulders.'

‘EU citizens need to know the ECA addresses their concerns’

Interview with George Hyzler, ECA Member since 1 October 2022

By Gaston Moonen

George Hyzler

Since 1 October 2022 George Hyzler is ECA Member, nominated by Malta, succeeding Leo Brincat. Feeling predestined to serve, as a lawyer, as a politician, he is very well aware of risks and challenges when in public office. The more so since he served, before becoming ECA Member, as Malta’s Commissioner for Standards in Public Life. Not surprisingly he considers that the ECA is not only about audits but also a standard setter, also when it comes to ethics and integrity.

The work ECA does is not sufficiently well known

Having spent almost six months in the ECA George Hyzler is eager to share one of his key impressions he got as a new ECA Member. ‘The work carried out by the ECA that is so important is not well known to the average EU citizen.’ He explains that one may know that the ECA exists and have a vague idea of what it does. ‘… but the impact of its reports, the level of detail, and how topics of importance are chosen, not only from an auditing perspective but also from a public interest perspective is not known.’ Ultimately, also, citizens need to have the comfort that the EU institutions are working in their interest and that there is proper scrutiny as to how their tax money is spent.’

He observes that in general people might not like to be placed under public scrutiny.’ But in reality it is extremely important, as an auditee, to have the comfort that what you are doing is also being checked. The role of the auditor is that of exposing errors and weaknesses in the work of the auditee, to avoid the same thing happening in the future. We do not take decisions that are directly enforceable and therefore our work takes the form of recommendations that are generally speaking, adopted and implemented.’

> “ *… it is extremely important, as an auditee, to have the comfort that what you are doing is also being checked.*

Driven by law, serving in politics

George Hyzler is a lawyer, not only by training but also by ‘vocation’, as he puts it. ‘I was a very active lawyer, I was the president of the legal profession.’ His choice for law,

however, was to a large extent determined by his love of politics. 'I made up my mind to be a lawyer when I was barely fourteen years old. Even at that age, I had realised that law is the best training for a politician.' He explains that he actually comes from a family of medical doctors who were also politicians, for generations. 'So I was to a certain extent directed in that way and I knew precisely what I wanted to do.' He sees his law background as an advantage because, as a politician, apart from being a representative of the people, one is also a legislator. He points out that lawyers make up the single largest profession in political circles. With a smile he adds: 'I must admit, when I told my father that I intended to be a lawyer and not a doctor, he nearly had a heart attack. The trauma was only mitigated by the fact that I would follow in his footsteps in politics. He had served as a member of Parliament and a government minister himself.'

'As a student, I was always very active in student committees, president of the student representative council, member of University Council. I always occupied these positions since I was very young. The writing was on the wall.' George Hyzler explains that he only briefly interrupted his legal profession when he served as a full-time parliamentary secretary for five years, an executive function. 'Otherwise as a member of parliament, I was still a practising lawyer. I left the profession formally in 2018 when I became Commissioner for Standards in Public Life. I have 34 years of legal practice.'

George Hyzler explains that what attracted him initially to go in politics has remained with him all his life. 'It is this idea of service. There is a certain degree of similarity between law and public life. These are two professions where you have to have a strong sense of service . Both in law and politics or public life in general, it is even more important, because you have to put the individual before your own personal gain. Of course, in all professions there are ethical rules that you have to follow. Unlike in business, politics and law should not be driven by the profit motive. 'Even as the president of the Chamber of Advocates, I would constantly remind young lawyers that the profession is not a business, this is a profession where one should be of service to others and money should not be one's primary motivation.'

> *There is a certain degree of similarity between law and public life. These are two professions where you have to have a strong sense of service.*

Following his graduation as a lawyer George Hyzler followed a post-graduate course in European Integration at the *Europa Institut* of the University of Amsterdam and from then actively supported Malta's bid for EU membership. 'Despite being a British colony until 1964, we had strong democratic values and a robust civil service culture, which was important, of course; but after independence, there was a period where these values were being relaxed. We also had problems with transparency and accountability. One of the advantages of European membership, was to have a bit more reassurance on this front as well.' He observes that even though human rights are mainly safeguarded by the European Court of Human Rights which is a Council of Europe institution, the EU as a political and economic union has an interest in ensuring its member states abide by a certain set of rules. 'Once you join, you have no choice; you have to stick by them. In my view, EU membership would guarantee that whichever government would be in power, those rules would still have to be respected. I believe that across the political divide, there is consensus on this, and I can state confidently that in Malta there is now close to unanimous support for EU membership.'

> *Once you join, you have no choice; you have to stick by them. In my view, EU membership would guarantee that whichever government would be in power, those rules would still have to be respected.*

Higher ethical standards

George Hyzler has observed a change to the positive also in terms of accountability and transparency since Malta's EU membership. 'Take the role I was appointed to as Commissioner for Standards in Public Life. The Maltese government must have felt the need to set up the post also because of pressure from the EU and other international organisations -such as GRECO[1] and the Venice Commission[2] - but mainly the EU. We have seen major improvement across the board in Malta as a direct result of EU membership.'

1 The Group of States against Corruption (GRECO) is the Council of Europe anti-corruption body.
2 The advisory body of the Council of Europe

He explains that by accepting that appointment, in October 2018, he was exposing himself to public scrutiny. 'My nomination required a two-thirds majority in Parliament and I was appointed unanimously. I was expected of course to be independent and impartial despite having come through the ranks of the party then in opposition. In a way this made sense since the main responsibility is to hold government ministers, their persons of trust and parliamentarians to account and by far the largest percentage of complaints would be against government ministers and their persons of trust. 'Also, the role extended beyond ethics. Apart from dealing with complaints on ethical issues and breach of the law, I also had the remit to look at abuse of discretionary power. Of course, if I were to come across a matter involving fraud and /or corruption, I'd have to refer the matter to the competent authorities and suspend the investigation.'

> *Apart from dealing with complaints on ethical issues and breach of the law, I also had the remit to look at abuse of discretionary power.*

He points out that ethics are not the same across the board and are sometimes culturally defined. 'Take the issue of declaration of assets by parliamentarians and ministers. In Malta, such declarations are not intended merely for identifying purposes of conflict of interest but also for transparency. Your assets are declared annually and any increase from one year to the next would have to be explained. Not just increases are relevant but also lifestyle. Where lifestyle does not correspond to declared assets I would request an explanation. In Malta, we had this code of ethics that you had to declare the assets of your spouse. It was removed, and I was strongly advising them to reintroduce it, and not only for the spouse, but also for the partners given that the situation now has changed and there is a high percentage of unmarried partners.'

Regarding the challenge for the EU on ethics the new ECA Member thinks that 'The promotion of common standards, or common interpretation, is a good thing. The issue is more a question of what powers are given to the ethics committees of each institution and maybe a discussion between institutions - because we have similar goals, including promoting more trust within the institutions - could be useful.' He explains he is in favour of more discussions between institutions on common standards with a view to raising those standards. 'It would also help to have better common interpretation and application, without impinging on the individual responsibility of the institution itself.' In this context he also believes that if the allegations about Qatargate are correct, no amount of ethical rules would have stopped that. 'The thing is, when you enter public life, you undertake to abide by the rules of ethics'. This depends on you: you are either prepared to respect those rules or not. It goes beyond just making an undertaking! In any case ethical rules do not stop criminal behaviour. They do however discourage those with bad intentions from entering public life.'

> *[on ethics] It would also help to have better common interpretation and application, without impinging on the individual responsibility of the institution itself.*

George Hyzler explains that if you are prepared to submit yourself to transparency, to declare your assets, to having your life open, to not fearing skeletons in the cupboard, there is a higher chance of people that are not prone to corruption to be more attracted to that profession. 'I don't exclude that certain people are attracted to politics for personal gain, but you can try to catch them in the ethical net before they have the chance to become corrupt.' He recalls one of the rules he tried to introduce in the code of ethics in Malta. 'Which is that exposing yourself to situations of embarrassment is in itself a breach of ethics.' He points to the leading role that is probably expected from the ECA. 'You're looked at from outsiders as the standard setter, so you have to be a bit holier than the Pope. You must be aware that you're in the public eye and that you are expected to abide by higher standards.'

> *… certain people are attracted to politics for personal gain, but you can try to catch them in the ethical net before they have the chance to become corrupt.*

Diving into the world of cohesion

George Hyzler serves as a member in the ECA audit chamber Investment for cohesion, growth and inclusion. 'Our audit chamber deals with many different things and I am very happy to be in this chamber. I am currently reporting member for two special reports. The first relates to Cohesion's Action for Refugees in Europe (CARE). We shall examine whether member states properly deployed cohesion policy funds to help the Ukrainian

refugees. The second special report, state aid in times of crisis, shall examine whether the temporary framework introduced to allow exceptions during the crisis was not abused by member states, with negative effects such as the disruption of the internal market.'

In exercising his responsibilities, the new ECA Member wants to be involved throughout the process. 'I want to be kept informed on developments, hear regular updates.' He sees his role as mainly to supervise and ask questions that should be asked. 'I will let the auditors work and challenge them as they go along. Because I also want to be able to take ownership of the report.'

> *I will let the auditors work and challenge them as they go along.*

At a more general level George Hyzler sees a task for him to bring ECA reports to Maltese stakeholders and the public in general. 'As I said, I think there could be more awareness of the ECA work. During my first experience, presenting the annual report to the Maltese parliament, I realised that greatereffort has to be made in order to make parliamentarians more aware of our work. One of the areas we should work on as an institution is being closer to the member states, the national parliaments, NGO's, even to the ordinary citizen, and present our reports in a manner that can be more readily understood.' Here, George Hyzler is aware of the impact reports have on trust in the EU. 'Whereas it is important to highlight the auditees' weaknesses in our reports, as expected of us, it is also important to highlight best practices.'

> *One of the areas we should work on as an institution is being closer to the member states, the national parliaments, NGO's, even to the ordinary citizen…*

As to the role of the ECA regarding fraud and corruption, George Hyzler thinks that if the ECA stumbles across such cases it should refer the matter to the EU anti-fraud office (OLAF) or the European Public Prosecutor's Office (EPPO). 'It is not our remit to investigate corruption. Reviewing systems is one thing, but for fraud prevention purposes. For the Recovery and Resilience Fund – the RRF - I think we have in that respect a serious challenge on our hands, as we are in unchartered territory from a compliance auditability point of view.'

Also, from a performance audit perspective, he thinks that the RRF presents quite some challenges. 'To what extent can you tie the attainment of milestones and targets to EU funding? States are being given X amount of funding to carry out investments and reforms. There is no money tied specifically to reforms, they are not cost-based obviously.' He gives an example relating to digitalisation: 'If one of the reforms was to improve digitalisation and the member state introduced the legislation as planned, the funding must be released. However, this does not mean that the desired effects have been achieved.'

Another challenge for auditors will be auditing various aspects related to the rule of law. The ECA Member points out: 'We also have to respect the boundaries between the world of politics and audit.'

Bringing the ECA closer to EU citizens

George Hyzler highlights that the credibility of the ECA as an institution is very important to come across well to the citizens. 'In this respect the issue of ethics is particularly important to me, and I hope I can contribute here for the ECA.' Furthermore, he notes that the European Parliament uses ECA reports very well. 'We might want to take it one step further, which is to the citizens. EU citizens need to know we address their concerns.' Therefore he thinks that audit topics that directly affect citizens are also important topics to be considered, besides focusing on processes and impact relating to big programmes. 'Take for example the special report the ECA did on EU passenger rights.'

> *EU citizens need to know we address their concerns.*

He concludes that bringing the EU, and particularly also the ECA, closer to citizens can have some long-lasting effects, recalling his own experience that added trust to his perception of the EU. 'I attended a conference on European integration in London when I was 16 years old. I was in post-secondary school and was one of six students across Malta picked at random. The UK had just joined the EEC as it was then called. That experience must have left some mark on me, because I became a europhile at that age. Never would I have thought that Malta would be a part of the EU and the UK would have left.' He does not hide his disappointment at the UK's exit.

> *Never in would I have thought that Malta would be a part of the EU and the UK would have left.*

Promoting awareness in EU institutions: ECA organised the Disabilities Awareness Week

By Olga Ioannidou, Human Resources Directorate

Creating a better workplace for everyone is an important ambition for the ECA. This includes raising awareness about people with disabilities, and finding ways to integrate them into the workplace. Olga Ioannidou, Diversity and Inclusion Officer and HR Communication Officer, was one of the organisers of the Disabilities Awareness Week the ECA organised at the end of 2022, with people attending from various EU organisations. Here, she explains the event's purpose and what the main activities were.

Lance Corporal Grzegorz Rankan, and Master Corporal Tomasz Rożniatowski – Polish veterans from Afghanistan, welcomed by Marek Opioła, ECA Member

A strong commitment to a "can-do" culture

At the end of 2022, from 28 November to 2 December, the ECA organised for the second time the *Disabilities Awareness Week* around the international day dedicated to people with disabilities – 3 December. By organising a dedicated week, the ECA aimed to raise awareness and promote *an inclusive 'can-do' culture* focusing on what people with disabilities can do in life and at work.

During the week, a series of webinars, workshops and events took place, all of which were open to staff from all EU institutions and agencies. We are firmly convinced that sharing experience and knowledge is an important step towards creating a fair and inclusive future for all of us, and so we invited all staff, both internal and external, to participate in our hybrid events. This innovative project was intended to raise awareness by adopting an inclusive approach for all EU institutions and agencies, and to demonstrate to EU citizens the ECA's strong commitment to the cause.

The week was sponsored by ECA Member Marek Opioła, who took on the role of the ECA's first Disabilities Ambassador. This role includes proposing and sponsoring initiatives, hosting events, bringing knowledge to the ECA through partnerships, publishing articles, and more. Since he joined the ECA, Marek Opioła has expressed great interest in the subject of disabilities and supported the ECA's action in this area.

Planning for this challenging one-week event began nine months in advance: the process of organising, communicating and collaborating with different EU internal and external stakeholders needed to start early. Several ECA teams met and worked closely together throughout this period, from our professional training team to our colleagues in communications and graphics.

Great variety of topics covered

The main activities we organised during the Disabilities Awareness Week are described below:

- opening of the event by guest speaker Polish Minister Paweł Wdówik, Secretary of State and Government Plenipotentiary for People with Disabilities. Mr Wdówik, who has a disability himself, described the situation regarding people with disabilities in national and European administrations, as well as the EU's policy and future prospects for this area;

- presentation on "Disability and reasonable accommodations in EPSO's selection procedures" by Carine De Baets of the European Personnel Selection Office (EPSO). She focused on EPSO's efforts to ensure equal opportunities for candidates with disabilities or medical conditions in its selection procedures. Topics covered included the way EPSO defines reasonable accommodations, the procedures candidates need to follow to request adjustments in selection tests, and the types of accommodation possible;

- 'What doesn't kill you makes you a warrior". Lance Corporal Grzegorz Rankan, and Master Corporal Tomasz Rożniatowski – two Polish veterans from Afghanistan, one of whom suffered from PTSD following his tour of duty and the other of whom lost an arm while deployed –discussed how to deal with disability and war memories through art. Despite their ordeals, both soldiers are still on active military duty. They spoke about their experiences, how they and their families coped with their disabilities, and how they had found comfort in different types of art – one in painting, the other in martial arts. They also shared their thoughts on how to face sudden visible or hidden disabilities that affect either our loved ones or ourselves;

- in a webinar on disability mainstreaming, Katrien van der Heyden of the European Institute of Public Administration talked about disabilities often being invisible in society or stereotyped in ways that prevent people with a disability from developing their full potential. She provided insights into what disability is about and what role the EU can play, and how disability can be mainstreamed into existing policies;

- Corinne Cahen, Luxembourg's Minister for Family Affairs and Integration and Minister for the Greater Region, came to the ECA to present a hybrid event on Luxembourg City's "Design for all" approach, which is aimed at making the urban environment more accessible to everyone, including people with disabilities; and

- a disability equality workshop led by Camelia Gheorghies, and ECA translator who has also trained as a disabilities facilitator at the International Training Centre of the ILO, led a participatory and interactive awareness-raising exercise. The activities included role-playing scenarios, games, and discussions. The main aim of the workshop was to persuade people to change their attitudes and practices, and raising awareness of how to include people with disabilities in mainstream work areas and activities.

Photographer Wojtek Szwej came from Poland to present the "Photo Confrontations: One moment" exhibition, dedicated to people with disabilities. The exhibition is part of the European Film Festival *Integration you and me*, which has been held in Koszalin, Poland, since 2003.

Luxembourg's Minister Corinne Cahen (middle) was welcomed by ECA Member Joëlle Elvinger (right) and ECA Secretary-General Zacharias Kolias.

Aimed at an inclusive workplace

In addition to the event, the Wojtek Szwej's exhibition was hosted at the ECA during December. Also, on 2 December, to mark the occasion of the International Day of People with Disabilities on 3 December, we published a tweet to demonstrate the ECA's strong commitment to promoting an inclusive workplace for people with disabilities.

The events were well attended and elicited positive feedback from staff, both internal and external. They particularly welcomed the fact that all events had been open to participants from different institutions, enabling them to meet and hold discussions, either online or in person. We hope that events like this lead to a more "can-do" attitude towards people with disabilities working for EU organisations, encouraging both people with disabilities and the people who can recruit them to feel positive about the contribution they can make here.

Dutch auditors share their audit findings with ECA auditors on how EU grants in the Netherlands make a difference

By Maaike Damen and Frank van den Broek, Netherlands Court of Audit

Source: Netherlands Court of Audit

The ECA organises regular practice-sharing sessions where public auditors from both inside and outside the institution share audit experiences. In the framework of its "Cohesion Talks", an initiative to periodically discuss topics relevant to cohesion funds with external parties, an online discussion was organised with two experts from the Netherlands Court of Audit, Maaike Damen, Senior Auditor, and Frank van den Broek, Audit Manager. They presented the report The Added Value of EU Grants in the Netherlands which the NCA published in October 2022, and shared their audit experiences with ECA auditors.

Auditing the added value of EU grants: a new perspective

In October 2022, the Netherlands Court of Audit (NCA) published a report entitled *The Added Value of EU Grants in the Netherlands*. In recent decades, the focus of the NCA's audits of EU grants under shared management has been their financial management and the regularity of expenditure. It is hard to overestimate how important it is that EU grants are managed soundly. Proper management is crucial to minimising errors and fraud. Public money should be spent according to the rules. Public trust is at stake!

However, spending money according to the rules is not the ultimate goal of EU grant funding. EU grants serve a purpose. Public and private parties in the Netherlands receive around €1 billion every year to achieve goals set by the EU and to carry out projects supporting goals such as creating jobs, increasing the sustainability of fisheries, promoting innovation and research, and improving measures for asylum, integration and return.

Do these grants make a difference? And what do the national authorities in the Netherlands do to help make sure that they do? The objective of the NCA's audit was to determine the extent to which EU grants were critical for recipients in achieving their goals. For example: what difference do investment grants make for dairy farmers? And can innovative start-ups carry out projects without EU funding? We also assessed what the responsible ministers did to ensure that EU funds generated as much added value as possible.

Adding value is the *raison d'être* of the European Union. But it is also one of a challenging issue to assess, as identified in an ECA Journal issue on this topic a few years ago[1]. Using such terms as "deadweight" and "gold-plating"[2], ECA reports have identified added value, or the lack thereof, from an EU perspective. When ECA colleagues heard about a national audit institution looking at value added by EU grants, they were quick to ask us

1 See ECA Journal, *Realising European added value*, 2020.

2 Deadweight means funds supporting actions that would have taken place anyway, while with gold-plating we mean actions that are more costly than are strictly necessary, following interference at national, regional or local levels.

to share our audit experiences with them. We gladly accepted this invitation to share our expertise, realised in the framework of ECA's Cohesion Talks in February 2023.

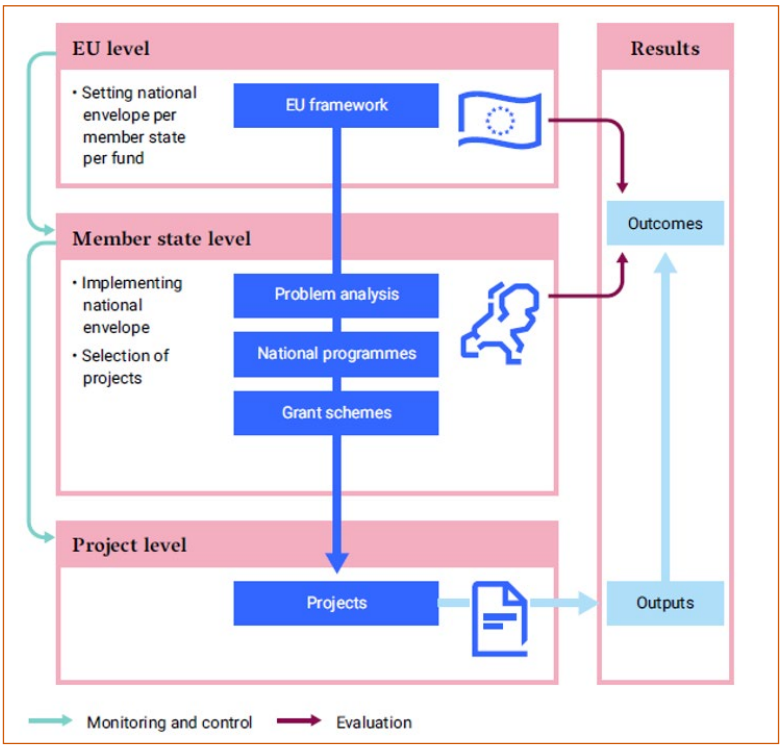
Funds involved in the audit

We investigated all EU funds under shared management in the Netherlands in the period from 2014 to 2020.[3] Four ministers were responsible for the operation of the funds concerned: the ministers of justice and security; agriculture, nature and food quality; social affairs and employment; and economic affairs and climate policy. A survey formed an important pillar of the audit. We surveyed around 1 300 businesses and organisations that had been awarded EU grants between 2014 and 2020 and had completed their projects. We also surveyed about 500 grant applicants whose project proposals had been rejected. By comparing the two groups with each other, we were able to identify the importance of EU grants to project implementation. To clarify the survey results we held in-depth interviews with both successful and rejected applicants. To assess the role of the national ministers, we analysed documents from the ministries responsible for managing EU grants to explain: (a) the choices they had made regarding the national programmes, and (b) the way in which they had prepared, implemented and evaluated the grants awarded from EU funds.

Division of responsibilities between EU and member states

Responsibility for funds under shared management lies at both EU and national level (see **Figure 1**). Our audit focused on responsibilities at national level and addressed the ministers only on matters for which they were responsible.

Figure 1 – Overview of shared management responsibilities



Source: NCA

The EU sets the funds' objectives (the goals the grants must achieve) and implementation conditions (how the member states may spend the grants) and determines the maximum amount a member state can be awarded from each fund ("national envelope"). The member states are responsible for preparing grant programmes and (after approval by the European Commission) opening up grant schemes and selecting eligible projects. National authorities are also responsible for monitoring, auditing and evaluating the results achieved by the EU funds. The European Commission uses the information it receives from the responsible authorities to monitor, audit and evaluate the EU funds.

3 With the exception of the FEAD because of its small financial size and its funding of only one project in the 2014-2020 period

Responsibilities are well defined in EU Regulations, and did not give rise to any disputes between the NCA and the ministers concerned. We did have some discussion, however, about the audit standards we used to assess the ministers' operations. Our standards went beyond the EU requirements, especially for the preparatory phase. We used the government's own assessment framework for the development of policy ("Integraal Afwegingskader"). The framework obliges the responsible ministers to make considered and substantiated choices about the allocation of public money. EU money is public money too. We checked whether the national authorities made the best possible use of public money by allocating it to tackling the most urgent problems.

EU grants make a difference, but added value could be increased

The survey and interviews we held among EU grant recipients revealed that the grants – regardless of the fund from which they were awarded – were of significant benefit for the implementation of the projects. In the survey, 85% of the grant recipients said the grants they received had been important or very important for their projects. As grant recipients may be too positive about the added value of the financial impulse – free money is always welcome – we asked what had happened to rejected projects: only 13% had gone ahead without change. Nearly half (49%) of respondents had shelved their projects when their grant applications were rejected. The remaining 38% of respondents had gone ahead with their projects but scaled them down. This confirms the impression given by the recipients that EU grants make a difference. One of the reasons why EU grants are so important is that alternative finance is difficult to find. Of the respondents whose applications were rejected only 6 % had been able to arrange alternative funding relatively easily.

At the same time, the audit revealed that national authorities could do more to ensure that the money generated as much added value as possible. In most cases except for the European Social Fund, the grant programmes' budgets were not allocated based on an analysis of national problems. More often, other factors determined the allocation, such as proportional allocation or allocation mechanisms used in the past. Our audit also pointed out that national authorities' insight into the effects of the EU funds was limited. The indicators used were input - or at the best output - orientated, generating no knowledge about effects. The mandatory mid-term evaluations of all funds were wrongly timed; they were scheduled so early that few projects had been completed by the time they were carried out. Final evaluations will be carried out in the future, three or more years after the Multiannual Financial Framework period has ended. Obviously, these evaluations cannot be used to improve the execution of the programmes, or to improve the management of the post-2021 programmes.

Is the glass half full or half empty? The NCA concluded that EU grants added value at project level. They made a difference. But we also thought the government could do more to optimise the grants' benefits for the Netherlands as a whole. For example, it could target grant allocation more accurately at the start of the financial period and obtain more insight into the effects during programme implementation. The ministers agreed with these NCA recommendations, but were reluctant to make concrete commitments to implement them.

Following our presentation to our ECA colleagues we had an interesting discussion about the methodology used, the feedback received and possible future work. We hope it will inspire colleagues in other audit institutions in member states to look at the added value of EU subsidies and how they contribute to EU goals.

ECA organising a seminar on the upcoming reform of the EU economic governance framework

By Stephanie Girard, cabinet of François-Roger Cazala, ECA Member

From left to right: Maarten Verwey, European Commission and François-Roger Cazala, ECA Member.

On 16 March, the ECA held a seminar, hosted by ECA Member François-Roger Cazala, at which Maarten Verwey, Director-General for Economic and Financial Affairs at the Commission, presented the upcoming reform of the EU economic governance framework. The EU economic governance framework aims to monitor, prevent, and correct adverse economic trends that could weaken EU member states' economies. Has this framework proved to be sufficiently effective over the years to cope with successive crises and ensure the economic stability of the EU? What are the key elements of the planned reform? These are some of the issues that were discussed at the seminar, as shared below by Stéphanie Girard, attaché in François-Roger Cazala's private office.

The current framework faces several challenges

The EU economic governance framework has evolved over the years to guarantee economic coordination and stability in the EU more effectively. However, these changes have also made the system increasingly complex. This is impacting effectiveness and damaging the level of ownership in the member states, which perceive the framework and its rules as originating from 'Brussels'.

The COVID-19 pandemic and Russian's invasion of Ukraine also created new risks and challenges for EU economic governance because of their major economic consequences both at member state and EU level. The increased level of debt that has been generated recently to cope with these consequences has also made the theoretical pace of debt reduction that was established by the debt rules unrealistic. The current framework poses a number of other challenges – such as weak rule enforcement – which are not applied across the board. In addition, the framework provides limited incentives for reforms and investment, even though there are major investment needs ahead and long-term reforms that member states should be encouraged to undertake.

The Commission launched a public debate in February 2020 on the review of the EU economic governance framework. This had to be suspended due to the COVID-19 pandemic, but was eventually re-launched in October 2021. Following this public debate, the Commission adopted a communication in November 2022[1] setting out guidelines for a reform of EU economic governance.

1 EUR-Lex - 52022DC0583 - EN - EUR-Lex (europa.eu)

Key elements of the planned reform

Maarten Verwey, Director-General for Economic and Financial Affairs at the European Commission, laid out the key elements of the planned reform at the seminar organised by the ECA. In order to overcome the challenges that were identified in the current framework, the Commission has sought to simplify the set of rules. It proposes to set more realistic budget adjustment paths, a single operational indicator that would be used for fiscal surveillance, and a revised and stricter implementing regime, while at the same time allowing escape clauses for extraordinary events.

The requirements that member states should converge towards prudent levels of debt and keep their budget deficits below the 3 % threshold of GDP in the medium term would be based on the fiscal challenges faced by individual member states. Each member state would propose its own medium-term four-year fiscal structural plan to the Commission. These differentiated fiscal paths would be framed by EU requirements translated into each member state's annual budget, and would be binding. They would take account of the initial individual fiscal situation and specific economic challenges. The plans would be discussed with the Commission and, once agreed, the Council would endorse the net expenditure path as set out by each member state.

Member states with a substantial level of public debt would be expected to complete their fiscal adjustment within the four-year timeframe, while member states with moderate public debt would be expected to complete their fiscal adjustment no more than three years after the plan. A single indicator (net primary expenditure) would be used for fiscal surveillance, the aim being for each member state's debt to converge towards prudent levels, or for member states with low public debt to maintain prudent levels.

The Commission could extend the adjustment period for putting debt on a declining path by up to three years, subject to the Council's endorsement. However, such an extension would be granted only in return for clear and major reforms and investment commitments by the member state concerned.

A tailor-made trajectory that would require a strong monitoring framework in return

For the Commission to be able to assess the content and trajectories of the national plans, and possible extension requests, it will need a common methodology – i.e. a clear framework including clear and transparent criteria – which would be endorsed by the Council. This framework needs to be further developed and agreed. Possible enforcement actions would be triggered by any deviation from the agreed medium-term expenditure path. The Commission wants to modify its sanctions system so as to ensure that enforcement is more effective. It is also reflecting on ways to track cumulative deviations over the years, with a view to informing possible enforcement actions in such cases.

Escape clauses would be envisaged, either at general level in the event of major shocks to the EU as a whole, or at member state level in the event of exceptional circumstances outside the government's control. Here again, the Council should play a role, and procedures need to be developed.

What to expect next

The Commission's communication of November 2022 served as the basis for discussions in the Economic and Financial Affairs Council, which adopted its conclusions on 14 March. In these conclusions, the Council agreed on guidelines for a reform. Member states have highlighted areas where views converge, and identified issues where further work is needed, such as on the methodology underpinning the fiscal adjustment paths, requirements for member states with current low levels of debt to safeguard their position, or the need to develop appropriate procedures and methodologies further. The Commission will continue to engage with member states in these areas, and plans to table legislative proposals with a view to adoption by the end of the year.

Special report 26/2022

Published on 29/11/2022

European statistics should better meet user needs

The European Commission provides European statistics of generally sufficient quality and fit for use by policy makers, business and the public, according to a new report by the European Court of Auditors. While the auditors give the Commission a passing grade, they also warn of a number of weaknesses. European statistics should be more useful to their users and better tailored to their needs. Stakeholders such as academia and the research community as a whole should be properly consulted on plans and priorities for European statistics. And there are data gaps in important statistical areas such as labour, business and health.

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Report on any contingent liabilities arising. Regulation for the 2021 financial year

Published on 30/11/2022

Auditors call for continued vigilance on the financial risks of the EU's bank resolution system

In 2021, risks to the EU's system for managing the orderly winding-up of failing banks within the Banking Union decreased. But this is no reason for the EU to let its vigilance slip, the European Court of Auditors warns in a report published today.

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Special report 24/2022

Published on 06/12/2022

Auditors find unequal availability of digital public services across the EU

Although the European Commission has completed its EU Action Plan to modernise the public sector and foster e-Government – providing public services to citizens and businesses via the internet – not all newly developed digital public services are available across the EU. This is mainly due to implementation delays in some member states. This is the conclusion of a report published today by the European Court of Auditors. Among other things, the auditors recommend that action be taken if there are delays in attaining digital targets at national level, and further promote e-Government services among users.

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Special Report 25/2022

Published on 08/12/2022

GNI-based payments to EU budget: auditors call for more focused checks

GNI (gross national income) data is an important basis for calculating Member States' contributions to the EU budget. The verification of this data is not sufficiently focused, according to a new report by the European Court of Auditors. Although Eurostat (the EU's statistical office) was effective overall in identifying and addressing high-risk issues for GNI data compilation, it did not systematically check high-risk issues and countries in the highest risk category first, and did not always conduct those checks early enough. For example, Eurostat did not react promptly to the issue of multinationals relocating their businesses for tax purposes.

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Special Report 27/2022

Published on 12/12/2022

Auditors expect cross-border cooperation with neighbouring countries to face a challenging future

Despite certain weaknesses, EU-funded cross-border programmes with neighbouring countries have provided generally relevant and valuable support to the regions on both sides of the EU's external borders, says a report published today by the European Court of Auditors. However, the current geopolitical context with Russia's invasion of Ukraine will have a significant impact on half of the programmes proposed for the coming years, the auditors also warn.

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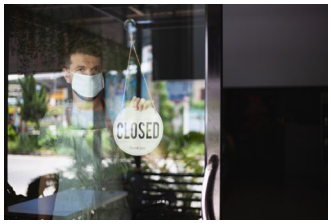
Special Report 28/2022

Published on 14/12/2022

Quick €100 billion EU response to safeguard jobs during COVID: impact unclear



The EU's €100 billion support tool for crisis-hit workers and firms (SURE) in member states was a prompt response to mitigate the risk of massive layoffs due to the coronavirus pandemic, according to a new report by the European Court of Auditors. However, SURE's impact on job-saving cannot be properly assessed because of the way the European Commission designed the novel tool, and because of a lack of good data at national level. To learn lessons for future crisis tools, the Commission should now carry out a full assessment of the SURE support. This will also be an opportunity to see how the risk of fraud was minimised, given that all but one of the countries that used SURE have reported irregularities and alleged fraud.

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Opinion 8/2022

Published on16/12/2022

EU auditors issue Opinion on the proposed rules for establishing a Social Climate Fund

The Social Climate Fund was proposed by the European Commission in July 2021 and revised by the Council of the European Union in June 2022. The European Court of Auditors (ECA) has been asked by the Council to deliver an opinion on the revised proposal.

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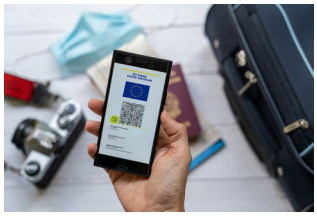
Special Report 1/2023

Published on 11/01/2023

Facilitating travel during the pandemic: the EU Digital COVID certificate worked, other tools less so



The EU Digital COVID Certificate helped to coordinate travel restrictions between EU countries and was effective in facilitating travel during the COVID-19 pandemic. The impact of other EU tools, however, was modest, a report published today by the European Court of Auditors concludes. The European Commission moved fast to propose suitable technological solutions, the auditors found. But EU countries' use of these tools varied significantly, so their impact in terms of facilitating travel was uneven. The auditors call on the EU to prepare itself better, so that it can face potential future emergencies more successfully.

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Review 2/2023

Published on16/01/2023

The amount of hazardous waste in the EU still increases

Despite EU action to reduce its generation, the amount of hazardous waste generated in the EU has continued to increase since 2004. A review published today by the European Court of Auditors sheds light on existing and future challenges in dealing with hazardous waste: improving classification, ensuring traceability, increasing recycling, and combating illegal trafficking, which is still a lucrative business..

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ECA publications in January 2023

Review 1/2023

Published on 19/01/2023

EU auditors compare COVID-19 recovery and cohesion funds

The years to come will be crucial for the implementation of the Recovery and Resilience Facility (RRF), the EU's flagship pandemic response funding, and stakeholders have already shown strong interest in its novel financing mechanism. The European Court of Auditors is gearing up to issue a number of reports on the topic. Today, the auditors have issued a comparative analysis of the RRF and the EU's cohesion policy funding to help draw preliminary conclusions to feed into the preparation of the EU's long-term budget after 2027. Payments, monitoring and cost of implementation, control, and audit.

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Audit preview 1/2023

Published on 23/01/2023

Auditors probe rule-of-law safeguards in EU funding

The European Court of Auditors is starting to assess whether the European Commission has been effective in protecting the EU's financial interests against breaches of the rule of law in member states. The auditors will examine the steps the EU executive has taken to ensure that countries receive funding from EU coffers only when they respect the rule of law. The audit will focus on the EU's cohesion policy and COVID-19 recovery funding.

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Special Report 3/2023

Published on 31/01/2023

EU auditors: progress towards an internal electricity market is slow

Despite ambitious projections and a certain amount of effort, the EU has made slow progress towards its objective of connecting electricity markets to ensure access to cheap power for citizens and businesses, according to a report by the European Court of Auditors. Delays in coupling national power markets have piled up because of weaknesses in EU governance and a complex system of regulatory tools for enabling cross-border trade, which has held back the implementation of market rules. Nor has market monitoring by the European Commission and ACER, the EU's energy agency, brought sufficient improvement. Surveillance measures to restrict abuse and manipulation have not gone far enough, meaning that the main burden of risk on the EU electricity market has been passed on to final consumers.

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Special Report 2/2023

Published on 02/02/2023

Auditors reflect on Cohesion policy as a crisis response tool

The EU swiftly adapted its rules to provide greater flexibility to member states in using cohesion policy funds in response to the COVID-19 pandemic. It also brought in significant new resources to fund additional investments. But these measures also added to the pressure to spend EU funds quickly and well, according to a new report by the European Court of Auditors. Repeatedly using cohesion policy to address crises may also divert it from its primary strategic goal of reducing disparities in development between regions, the auditors note.

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Special Report 4/2023

Published on 15/02 /2023

EU's Global Climate Change Alliance: achievements fell short of ambitions

The Global Climate Change Alliance – launched by the EU in 2007 to support poor developing countries respond to climate change – did not live up to its promises. This is the message of a new report by the European Court of Auditors issued today. The auditors found little evidence to suggest that the initiative had increased countries' resilience to climate change. In terms of efficiency, completed actions had generally delivered their outputs, but sometimes at a high cost.

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Special Report 5/2023

Published on 01/03/2023

Auditors call for further simplification of the complex EU financial landscape

Over decades, the piecemeal approach taken to set up the EU's financial landscape has resulted in a patchwork construction that is overly complex and not fully publicly accountable, according to a new report by the European Court of Auditors (ECA). Its centrepiece is the EU budget, but it includes a growing number of off-budget and hybrid instruments. The number of these newly created instruments has multiplied over the last 15 years, and the auditors recommend that further efforts be made to consolidate them.

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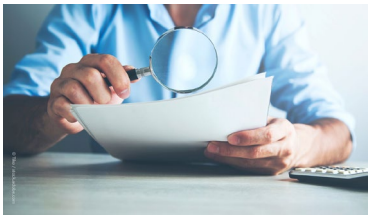
ECA publications in March 2023

Special Report 7/2023

Published on 08/03/2023

COVID recovery funds: auditors warn to 'mind the gap' in protecting EU financial interests



In a relatively short period of time, the European Commission set up a control system of checks for the EU's main pandemic recovery fund, the €724 billion Recovery and Resilience Facility (RRF). The European Court of Auditors has examined the design of this control system and found an assurance and accountability gap in protecting the EU's financial interests. Member states are obliged to check that RRF-funded investment projects comply with EU and national rules, but the Commission has little verified information through its own work as to whether and how these national checks are carried out. Without assurance that these rules are complied with, there is a lack of accountability at EU level.

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Special Report 6/2023

Published on 13/03/2023

EU cohesion and agricultural spending: gaps in measures to detect, resolve and report on conflicts of interest

Although there is a framework in place to prevent and manage conflicts of interest in EU spending, there are loopholes in promoting transparency and in detecting situations at risk. This is what emerges from a new report by the European Court of Auditors, which particularly looked at how the issue is addressed in agricultural and cohesion policies, the biggest spending areas in the EU.

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Audit Preview 2/2023

Published on 20/03/2023

Artificial intelligence on the European Court of Auditors' radar screen

The European Court of Auditors is starting to assess EU action to support the development of artificial intelligence (AI). The auditors will examine whether the European Commission's plans and financial measures are conducive to positioning Europe as a global leader in AI.

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Special Report 8/2023

Published on 27/03/2023

EU freight transport: the truck continues to rule

Long road ahead for EU intermodal freight transport: trains and barges currently cannot compete on equal grounds with trucks and lorries, says a report published today by the European Court of Auditors. Efforts to move freight off the roads have not been effective in removing the regulatory and infrastructure barriers that penalise other modes of transport. These issues need to be addressed if the EU wants to achieve its green ambitions.

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NEXT EDITION

Migration policy and the EU – an increasing barrier to address?

When it comes to security and migration the European Union has had its share of challenges in 2022. With the invasion of Ukraine by Russia various security red flags appeared, followed wave of refugees from Ukraine to EU member states. Migration numbers for 2023 do not look promising, particularly from those taking high risks to reach EU soil: according to the UNHCR, the UN Refugee agency, during the first quarter of 2023 already 27.500 boat refugees reached the South-European coasts, compared with 16.000 people arriving in the same period last year. Most often in deplorable if not clearly dangerous circumstances.

Europe has a long history of offering sanctuary to refugees, even more so since World War II, addressing refugees needs. Since then, Europe, and mostly the EU member states, have received people seeking asylum as they flee conflict, persecution and human rights violations. But also because of escaping from economic misery and aiming for a better future. And in the future another group of migrants may arrive: climate refugees.

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Europe is home to 44 countries, 87 distinct ethnic groups and in the EU a total of 24 official languages, whereas there are around 200 different ones spoken across the continent. It is also one of the richest regions in the world, offering the perspective of the 'European dream'. Or is it more the push factor which prevails - even more so than many Europeans can imagine - that leads people to do their utmost to pass the EU fence, increasingly presenting itself with barbed wire at EU's outside borders? Fact is that with common EU borders the need for more harmonised procedures and a fairer distribution of the costs and people has increased, while preserving the human rights values the EU stands for. In recent years the EU has implemented a common framework regarding migration and asylum policies. After the Syrian Refugee crisis of 2015, more collaboration between the EU member states and EU agencies was decided upon, not the least with Frontex, the European Border and Coast Guard Agency, to stimulate a more coherent and harmonious execution of EU's migration decisions.

How did the EU's migration policy evolve and what are its key elements nowadays? What does the Pact on Migration and Asylum contain? Who is responsible for what, how much leeway do member states have to differentiate? What about the agreements made so far about reception of refugees in the region? How do they reconcile with the European values the EU is so proud about? And who assesses this, who monitors, and how? What does the EU do to address root causes of migration, for example in Africa? What are the different EU funds involved to address the direct and long-term needs?

In our next edition of the ECA Journal we will try to cover such questions, including providing insights on issues where the situation can change rapidly, as it is also related to security situations evolving around the EU borders. We will go into the migration framework as developed so far, the role of the various decision makers - European Commission, Council, Parliament, member states, those who need to implement them. But we will also cover how public auditors try to contribute to a migration policy by assessing what happens through the different programmes set up, such as those for asylum accommodation, relocation efforts for irregular migrants, or Europol support to fight migrant smuggling. In short, an ECA Journal that will cover multiple dimensions of EU's migration policy and its implementation.

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