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# The Energy Price Shock—Impact, Policy Responses, and Reform Options

United Kingdom

Anil Ari and Carlos Mulas Granados

SIP/2023/048

*IMF Selected Issues Papers* are prepared by IMF staff as background documentation for periodic consultations with member countries. It is based on the information available at the time it was completed on June 20, 2023. This paper is also published separately as IMF Country Report No 23/253.

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SELECTED ISSUES PAPER

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**The Energy Price Shock—Impact, Policy Responses, and Reform Options,  
United Kingdom**

**Prepared by Anil Ari and Carlos Mulas Granados**

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**ABSTRACT:** The surge in energy prices due to Russia’s war in Ukraine inflicted a sharp terms of trade shock on the UK economy. While energy prices have since declined, the future energy price path remains uncertain, with futures-implied prices substantially above their levels prior to October 2021, when Russian natural gas imports to Europe began to be curtailed. In this context, section I analyzes the impact of the energy price shock on UK households and firms; section II describes the energy support measures introduced by the UK government; and section III provides staff’s assessment of these measures and sets out some options to optimize the policy response to a possible resurgence in energy prices. These include structural measures to ensure energy security and raise resilience to spikes in energy prices, and options to refine, especially the targeting of, support measures that could be introduced in response.

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Author’s E-Mail Address: [AAri@imf.org](mailto:AAri@imf.org) [CMulasGranados@imf.org](mailto:CMulasGranados@imf.org)

SELECTED ISSUES PAPERS

# **The Energy Price Shock—Impact, Policy Responses, and Reform Options**

United Kingdom

# THE ENERGY PRICE SHOCK—IMPACT, POLICY RESPONSES, AND REFORM OPTIONS<sup>1</sup>

*The surge in energy prices due to Russia's war in Ukraine inflicted a sharp terms of trade shock on the UK economy. While energy prices have since declined, the future energy price path remains uncertain, with futures-implied prices substantially above their levels prior to October 2021, when Russian natural gas imports to Europe began to be curtailed. In this context, section I analyzes the impact of the energy price shock on UK households and firms; section II describes the energy support measures introduced by the UK government; and section III provides staff's assessment of these measures and sets out some options to optimize the policy response to a possible resurgence in energy prices. These include structural measures to ensure energy security and raise resilience to spikes in energy prices, and options to refine, especially the targeting of, support measures that could be introduced in response.*

## A. Impact of High Energy Prices on the UK Economy

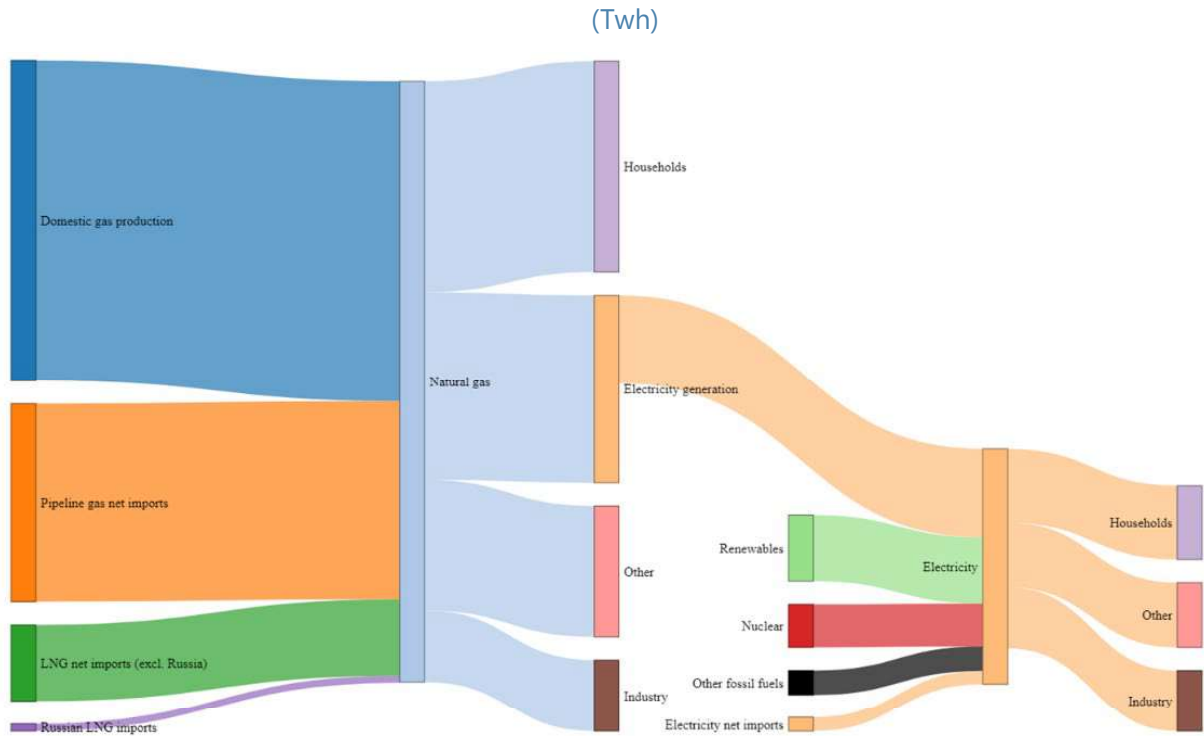
**1. Wholesale prices for gas and electricity surged in 2021 and 2022 due to Russia's invasion of Ukraine.**<sup>2</sup> Despite having limited direct imports from Russia, the UK was exposed to volatility in regional gas prices as a net importer of gas (Figure 1 and Box 1), which rose more than seven-fold between January 2021 and August 2022 (Figure 2). Wholesale electricity prices have also seen a six-fold increase over the same period, as they are linked to the marginal cost of electricity generation, with gas-fired power plants acting as the marginal supplier when electricity demand is high and/or when cheaper electricity imports are curtailed.<sup>3</sup> While gas and electricity prices have since come down substantially, futures contracts indicate they are expected to remain about twice as high as their early 2021 levels in the coming years.

<sup>1</sup> Prepared by Anil Ari and Carlos Mulas Granados (both EUR).

<sup>2</sup> This paper focuses on gas and electricity and does not cover petroleum and other transport fuels.

<sup>3</sup> Notably, shortfalls in France's generation capacity have reversed inflows of electricity from France, leading the UK to become a net exporter of electricity in 2022 (see Figure 1.2 in Box 1).

**Figure 1. Sources and Uses of Natural Gas and Electricity in the UK**

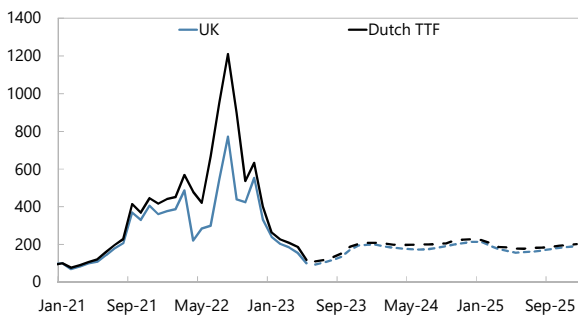


Notes: 2015-19 averages. Other includes non-household retail consumers (e.g., commercial premises and public administration), transport, agriculture, and technical gas. Built using Sankey Diagram Generator by Dénes Csala, based on the Sankey plugin for D3 by Mike Bostock; <https://sankey.csaladen.es>; 2014. Sources: Department for Business, Energy and Industrial Strategy; IMF staff calculations.

**Figure 2. Wholesale Natural Gas and Electricity Prices in Europe**

**Wholesale Natural Gas Prices**

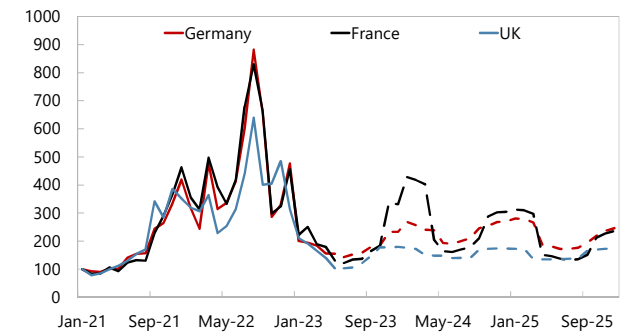
(Index, 2021 Jan = 100)



Note: Continuous and dashed lines depict historical and futures implied prices respectively. Based on futures-implied prices as of June 1, 2023. Source: Bloomberg Finance L.P.

**Wholesale Electricity Prices**

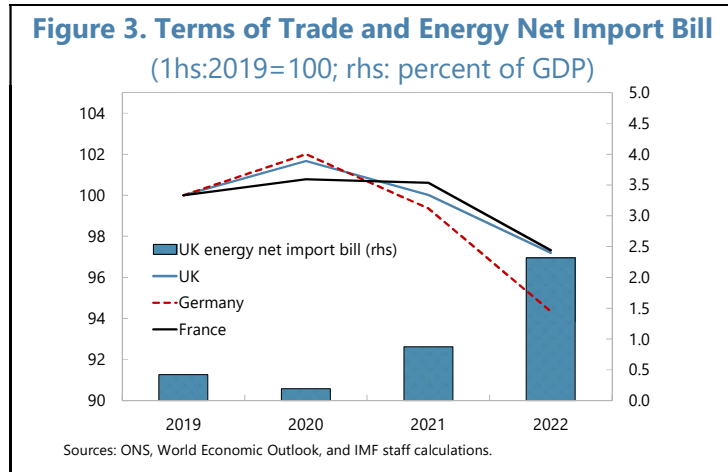
(Index, Jan 2021 = 100)



Note: Continuous and dashed lines depict historical and futures implied prices respectively. Based on futures-implied prices as of June 1, 2023 (UK); and May 31, 2023 (France/Germany). Source: Bloomberg Finance L.P.

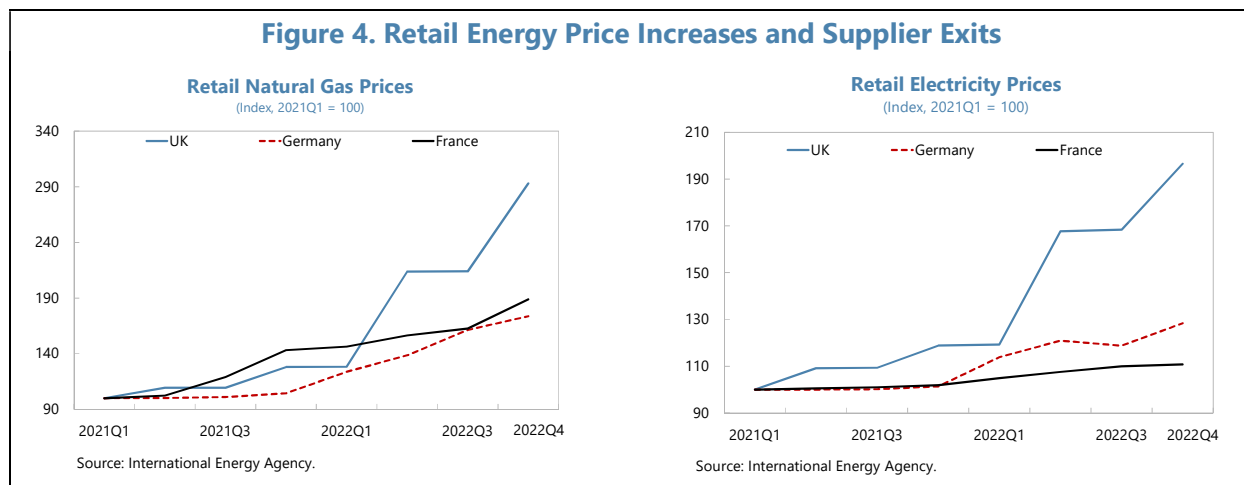
**2. Surging energy prices have inflicted a sharp terms-of-trade shock on the UK economy.**

The UK's net import bill for energy increased five-fold from 2019 as a percent of GDP, leading to a 3 percent deterioration in the terms of trade (Figure 3). A sizable portion of this shock is expected to persist over the medium-term, given natural gas and electricity futures prices.

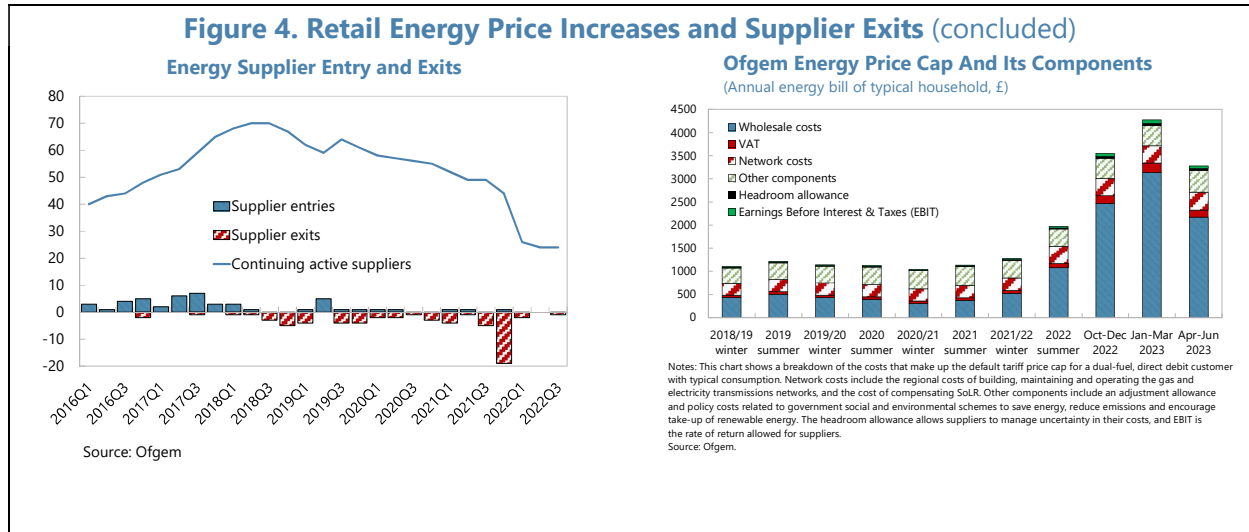


**3. Retail energy prices in the UK have seen greater pass-through from wholesale prices than in regional peers (Figure 4).**

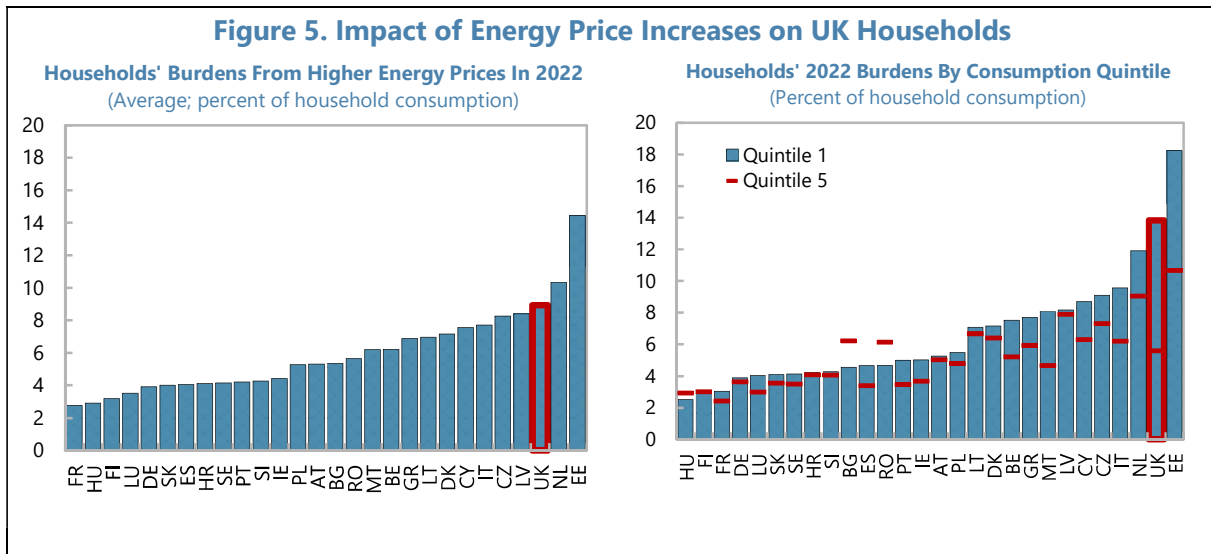
Regulated retail energy prices were updated every 6 months by the Office of Gas and Electricity Markets (Ofgem) to reflect changing costs for retail energy suppliers until the rollout of the Energy Price Guarantee (EPG) in October 2022 (see Box 1). Nevertheless, infrequent adjustment of the cap left suppliers with a structural exposure to fluctuations in wholesale prices. As wholesale prices surged, a number of suppliers which had inadequately hedged their positions and/or held insufficient buffers, have failed, with Suppliers of Last Resort (SoLR) appointed by Ofgem to take over their customers.<sup>4</sup>



<sup>4</sup> The additional costs incurred by SoLR in the process have been recovered from network charges payable by all suppliers that use electricity and gas networks, causing a (further) increase in retail energy prices through the “network costs” component when the energy price cap is revised.

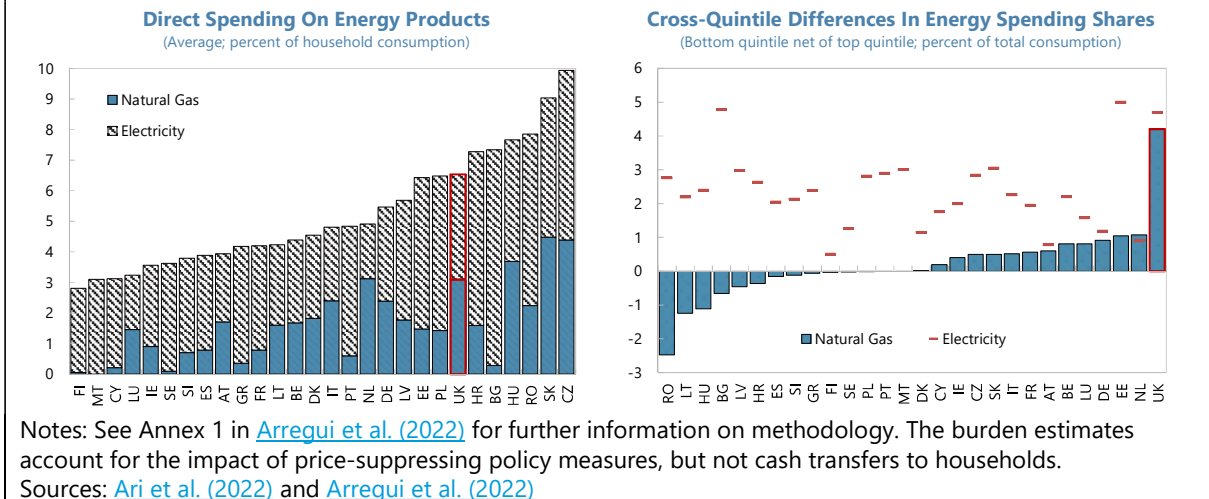


**4. Household balance sheets were hit hard, especially at lower income levels.** The burden on UK households in 2022 was estimated at about 9 percent of total consumption, and at 14 percent for households in the lowest consumption quintile (Figure 5). This impact was one of the largest among European economies, owing to relatively high pass-through to retail energy prices and a large spending share on electricity and natural gas in the UK, especially for lower income households. This is in part due to geographic factors, with lower income regions in the north of the UK typically experiencing colder winters than the European average, as well as weaker insulation in the UK’s housing stock than in some other European countries.<sup>5</sup>



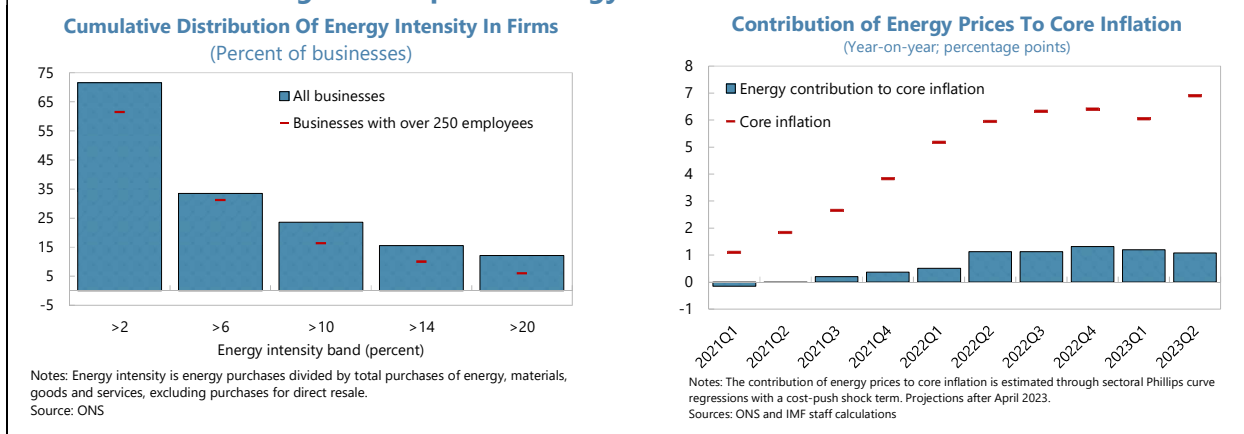
<sup>5</sup> A [study](#) on 80,000 residential buildings by home climate management company tado° has found that the UK’s housing stock loses heat significantly faster than houses in other advanced economies in Europe, controlling for differences in outside temperature. Only 43 percent of UK homes had an [Energy Performance Certificate](#) rating of C or above in 2021 ([Climate Change Committee, 2022](#)).

**Figure 5. Impact of Energy Price Increases on UK Households (concluded)**

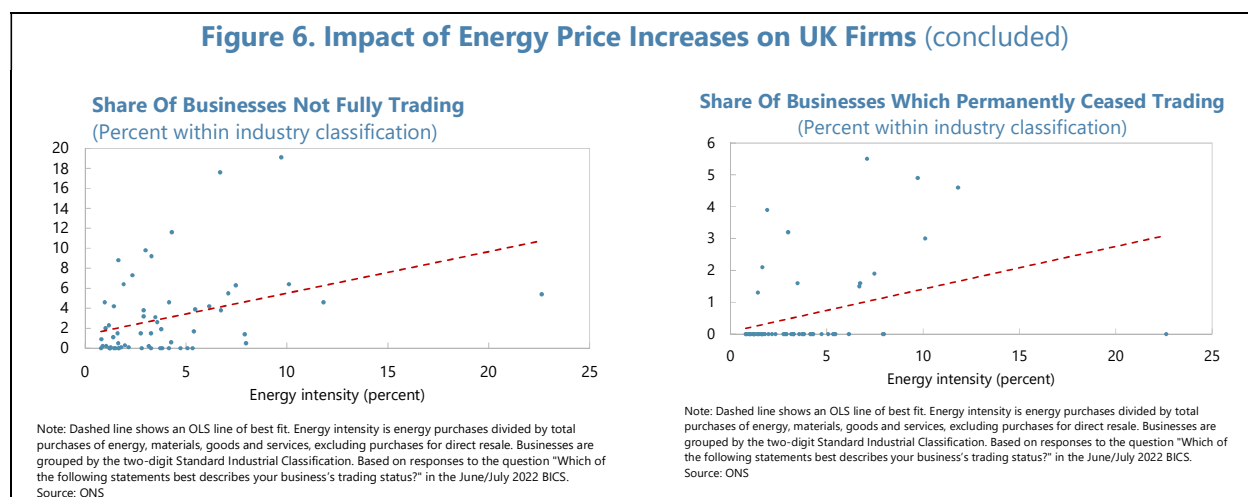


**5. Firms suffered a sizable cost-push shock, leading to higher core inflation, reduced activity, and increased business failures.** With energy costs amounting to over 10 percent of total costs in nearly a quarter of UK businesses (with greater exposure among small businesses), pass-through from high energy prices to domestic goods and services is estimated to have added about 1 p.p. to core inflation in 2022 (Figure 6). Moreover, greater energy intensity at industry level is associated with a higher share of businesses reporting decreased activity or closures, indicating that the cost-push shock from high energy prices has weighed on the supply-side.

**Figure 6. Impact of Energy Price Increases on UK Firms**





**Figure 6. Impact of Energy Price Increases on UK Firms (concluded)**

## B. Energy Support Schemes Introduced by the UK Government

**6. The authorities provided several rounds of support measures since energy prices surged (Table 1).** These combined both universal and targeted measures to support households, as well as business support measures:

- Household support measures:* In February 2022, the authorities rolled out the first set of measures, consisting of a universal household support package (EBSS) with a discount to £200 on their energy bills and a more targeted £150 Council tax (CT) rebate for households in specific tax bands.<sup>6</sup> In March, the authorities reduced the fuel duty rates for petrol and diesel and raised National Insurance Contribution thresholds. In late May, the energy bill discount was increased to £400 for all households, and new direct payments to pensioner households (£300) and the disabled (£150) provided additional targeted support.<sup>7</sup> In September, the government introduced an Energy Price Guarantee (EPG) which capped gas prices below market-implied levels for all households until March 2024 (see Box 1 for further details). In November, the government announced that the EPG cap would be increased by 20 percent in March 2023, while providing a new round of targeted support to the same vulnerable groups included in the May package. In March 2023, the rise in the EPG cap was postponed by a quarter in the context of declining wholesale energy prices.
- Support for firms in energy markets:* The authorities bailed out the failed energy supplier Bulb, which is currently under special administration. In response to this and other energy supplier failures, Ofgem switched from semi-annual to quarterly revisions of the energy price cap and began to account for suppliers' backwardation costs in January 2023. The Bank of England and HM Treasury also introduced the 'Energy Markets Financing Scheme' (EMFS) to provide loan

<sup>6</sup> The EBSS bills discount benefited about 28 million households and the CT rebate benefited around 20 million households in council tax bands A-D. For more details see: <https://www.gov.uk/government/publications/52022-council-tax-information-letter-24-february-2022/council-tax-energy-rebate-information-leaflet-for-households-in-council-tax-bands-a-d>

<sup>7</sup> The lump sum transfers to pensioners, the disabled and people on means-tested-benefits targeted about 8 million households. For more details see: <https://www.gov.uk/government/publications/cost-of-living-support/cost-of-living-support-factsheet-26-may-2022>

guarantees to commercial banks for additional lending to energy firms facing large and unexpected margin calls.<sup>8</sup> As wholesale gas prices declined, the scheme closed with no guarantees issued due to a lack of applications.

- *Broader business support measures:* The EPG was accompanied with the Energy Bill Relief Scheme (EBRS) which capped energy tariffs for businesses at the same level through March 2023. The EBRS was then replaced with the Energy Bills Discount Scheme (EBDS) which provided per-unit discounts to business energy bills for a period of 12 months, with more generous discounts offered to firms facing higher energy prices and firms in energy and trade-intensive sectors.<sup>9</sup>

**7. The fiscal costs of UK's energy support measures were substantially above the European average (Figure 7).** Amongst the measures directed at households, a sizable amount was either untargeted (71 percent) or had a distortionary impact on energy prices (45 percent). This elevated the fiscal cost of these measures above the amounts needed to fully compensate vulnerable households for the rise in their energy bills.

**Table 1. United Kingdom: Fiscal Costs of Energy Support Measures**

Fiscal year	£bn			Percent of GDP		
	2022-23	2023-24	2024-25	2022-23	2023-24	2024-25
Feb. 2022 Energy Bills Support Scheme	9.05	-	-	0.36	-	-
Fuel Duty measures 1/	2.45	4.85	2.61	0.10	0.18	0.10
May 2022 Cost of Living Package	15.53	1.21	1.21	0.61	0.05	0.04
Reversal of NIC rate increase 2/	7.07	16.69	16.54	0.28	0.63	0.60
Energy Price Guarantee	23.00	4.00	-	0.91	0.15	-
Nov. 2022 Cost of Living Package	-	12.37	1.49	-	0.47	0.05
Other energy support measures 3/	-	0.88	-	-	0.03	-
<i>Total household support measures</i>	57.10	39.99	21.84	2.26	1.51	0.80
Energy Bill Relief Scheme	7.30	-	-	0.29	-	-
Bailout of Bulb Energy	3.00	-	-	0.12	-	-
Energy Bills Discount Scheme	-	0.55	-	-	0.02	-
<i>Total energy support measures</i>	67.40	40.54	21.84	2.66	1.53	0.80

1/ Fuel duty measures refer to a 5p cut in Fuel Duty rates and suspension of the increase in line with RPI inflation in FY2022-23 and 2023-24.

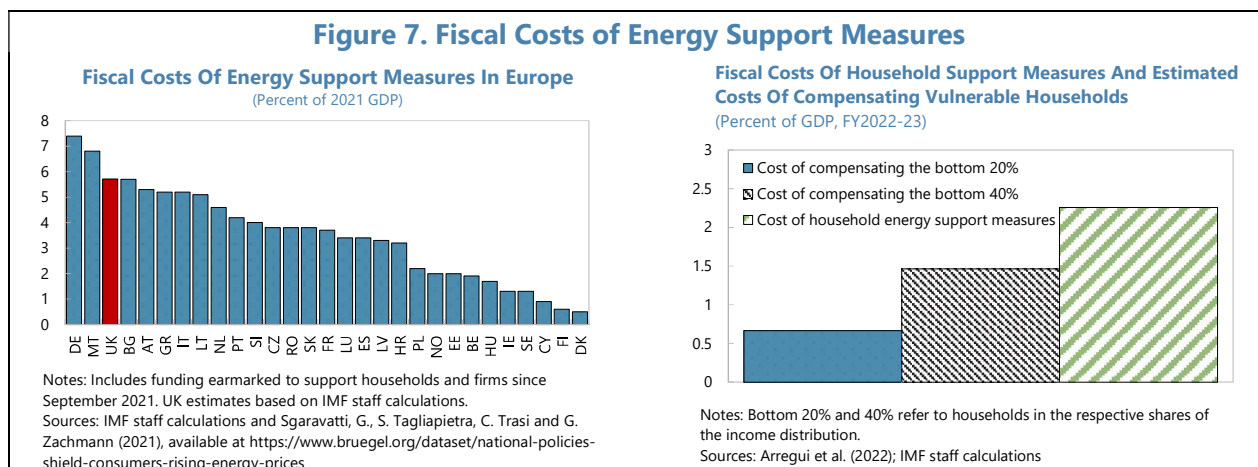
2/ NIC refers to National Insurance Contribution.

3/ These include fixed payments for users of alternative fuels for heating and a further discount for households in properties served by heat

Sources: HMT; OBR; IMF staff calculations.

<sup>8</sup> The scheme was open between 17 October 2022 to 27 January 2023 to firms of good credit quality with a significant role in UK energy markets and provided 100 percent government-backed loan guarantees for a period of up to 12 months. In the event of guarantee claims from a commercial lender, HM Treasury would settle the claim with the BoE acting as an agent in the payment, while fully indemnifying the BoE for losses arising from EMFS. For more details on this scheme, please see <https://www.bankofengland.co.uk/news/2022/october/energy-markets-financing-scheme-opens-today>.

<sup>9</sup> See <https://www.gov.uk/guidance/energy-bills-discount-scheme> for further information on this scheme.



## C. Options to Optimize the Policy Response

**8. The measures implemented by the authorities had reasonable elements, but there are aspects that could be improved.** Given lingering risks of resurging energy prices and/or supply disruptions, refining the energy support toolkit would prove useful in case support needs to be extended or, if it has expired, to be re-introduced.

**9. Policy responses should aim to preserve the price signal (Box 2).** Temporary measures that suppress retail energy price increases—such as the EPG—had the advantage that they could be implemented quickly and were easy to administer and be communicated to the public. However, price-suppressing measures have several drawbacks. Notably, they:

- *impede the adjustment to energy supply shocks* (including through energy-conserving behavior and energy efficiency investments) by reducing the marginal unit of energy used below the market price, thereby impeding the adjustment to energy supply shocks.
- *are not cost-effective.* Since the supply of natural gas is inelastic in the short run, measures that impede demand adjustments also help maintain the pressure on energy prices. Moreover, suppressing the demand adjustment to higher energy prices when energy markets are tight can also raise the risk of potential energy supply disruptions.
- *can be politically difficult to withdraw and generate adverse spillovers;* as more countries implement price-suppressing policies, others come under pressure to take similar measures.

In view of these considerations and taking into account the likely persistent nature of the energy price shock (see Figure 2), new policy measures that mute the price signal should be avoided and measures that have already been introduced should be wound down in a timely manner.

**10. Targeted transfers are the best way to protect vulnerable households while facilitating a reduction in demand for energy and containing fiscal costs.** Staff supports the targeted support measures deployed by the UK authorities but sees scope for design improvements. Ideally, support measures would target households below a certain point of the income distribution and be

phased out progressively. While the authorities have used existing social safety nets (SSNs) to provide support quickly, they have been constrained by fragmented systems, which have also had insufficient coverage given the magnitude of the increase in energy prices (i.e., a portion of vulnerable households may not have been covered by safety nets as they do not qualify for existing benefits). For future rounds of support (in the case of a new spike in energy prices), it would be desirable to expand SSNs (e.g., by inviting people to apply for the support through a dedicated online platform) and complement them with other measures (e.g., by combining income data with utility bill information to provide targeted discounts). In the meanwhile, it would be preferable to bridge the gap with other forms of less targeted relief that preserves all or some of the price signal, rather than broad-based price caps. Options include:

- *A lump-sum bonus for households*, linked to past energy consumption or other household characteristics such as household size, and the difference between the current and a reference price for energy (price wedge). The price wedge formula could be linked to the utility contract, inheriting characteristics such as frequency of payments and fixed/variable pricing. This mechanism does not tailor support by incomes but does not distort price signals, regardless of its generosity. It therefore keeps the incentive to cut consumption in relation to prices.
- *Further rounds of uniform lump-sum transfers*, can be an option when linking the support to income levels is not possible. Such measures do not distort price signals, but they could entail high fiscal costs and prove difficult to calibrate. Subjecting these transfers to progressive income taxation would help partially recoup fiscal costs and achieve a degree of targeting.
- *Block pricing*, which is a viable but less preferable option. Under block pricing, energy consumption below a minimum subsistence level would be subsidized at a guaranteed price, while consumption above that level is based on market prices. The subsistence level of consumption could be set at an absolute level or a fraction of last year's consumption volume (to capture household size). The threshold and pricing could then be calibrated to strike a balance between protecting households, safeguarding fiscal space and reducing demand.
- *Energy tax reductions—such as the fuel duty cut*—are not a desirable response as they are fiscally costly and have all the distortionary effects associated with price-suppressing measures.<sup>10</sup>

**11. Firms with a critical role in importing and distributing energy could be supported on energy security grounds.** The surge in energy prices has imposed financial strains on firms that purchase gas on wholesale markets and supply it to retail consumers. Firms that were unable to pass on high purchasing costs due to infrequent adjustments to the Ofgem energy price cap and/or had previously contracted delivery obligations have made cash losses, and those with insufficient capital

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<sup>10</sup> While energy price increases may have raised revenues from ad valorem taxes, reducing these taxes or replacing them with specific taxes is similarly undesirable. It would be preferable to, instead, recycle the additional revenues through more targeted and less distortionary support measures.

buffers and/or hedges against energy price volatility were driven into insolvency (see Figure 4). In view of these developments:

- *Maintaining cost-reflectivity in regulated prices (or compensating any deviations from it) is key to ensuring the solvency of critical energy companies and averting energy shortages that would entail sizable economic losses. Staff therefore supports Ofgem’s switch from semi-annual to quarterly price cap revisions. While this does not impact pass-through from wholesale to retail prices until the Ofgem price cap falls below the EPG or the EPG expires, it reduces deviations between suppliers’ costs and the compensation they receive from the government.*
- *Liquidity support may also be appropriate to enable energy providers to meet their margin calls while continuing energy purchases on wholesale markets. At the same time, support should be structured in a way to prevent moral hazard by management and investors. Particularly, firms which have come under financial strain due to high energy prices (including those constrained by pre-existing price regulations) have foregone past opportunities to build sufficient capital buffers and hedge their exposure to volatile in energy prices. To avoid the perception that these firms have been “rewarded” by support—which could incentivize further risk-taking at the expense of energy security—support could be conditional on appropriate hedging going forward or accompanied with more stringent regulations on the sector. Accordingly, staff supports schemes such as the EMFS which help ensure that suppliers of good credit quality do not fail due to liquidity shortfalls.*

**12. Broader business support should be targeted at viable but financially vulnerable firms and focus on limiting scarring while facilitating the adjustment to higher energy prices.** The rationale for schemes—such as the EBRS and the EBDS—that use taxpayers’ money to help firms cope with higher energy prices rests on the arguments that (i) part of the increase in prices is temporary and (ii) providing support during the adjustment to the permanent component of the increase in prices can help reduce scarring of productive potential by limiting damage to the balance sheets of viable energy-intensive firms and avoiding a wave of bankruptcies. However, determining which firms are at risk due to the energy price spike but viable in the long run is highly challenging in practice—not least because the energy supply outlook remains highly uncertain—and supporting non-viable firms risks impeding the reallocation of resources and ultimately raising the costs of adjustment, as well as being fiscally costly.

**13. Given these considerations, in case of resurgent energy prices, future rounds of business support should have the following design elements:**

- *Support should be targeted at firms which are most affected, financially constrained, and systemically important (i.e., in energy intensive industries embedded in supply chains with upstream/downstream externalities). Notably, most large, energy-intensive firms have access to working capital and can absorb or pass along a temporary cost shock. There could also be a case for supporting firms which are unable to pass-through their costs to customers due to pre-contracted prices, or competition from abroad which benefits from subsidized energy prices. In*

the latter case, however, the benefits from providing support should be weighed against the risk of generating adverse spillovers (e.g., retaliatory subsidies from trade partners).

- *Support should be strictly temporary and maintain the price signal to facilitate the exit of unviable firms* once the temporary component of the energy price surge dissipates.
- *Support should maintain incentives for energy efficiency and mitigate moral hazard.* Ideally, support measures would take the form of temporary liquidity assistance with private sector involvement (e.g., partial loan guarantees), and be conditional on hedging energy price exposures going forward and converging to industry best practices in energy efficiency and carbon emissions. In certain cases, grants and subsidies may also be appropriate due to debt overhang. Such support should not be proportional to contemporaneous energy usage (which can limit the adjustment to high energy prices) but should ideally be offered on a lump-sum basis (or linked to past energy intensity) to incentivize energy savings.

**14. A range of structural measures could be adopted to better cope with high energy prices and tight energy markets.** These include:

- *Delivering on the Net Zero Strategy and speeding up the green transition.* In response to a High Court ruling, the government published at the end of March 2023 a set of documents detailing how it intended to meet the Net Zero targets. Quantifiable measures included in those documents added up to 92 percent of the emission reductions needed to meet the UK's 2030 Paris Agreement goal, and 97 percent of the emission reductions needed to meet the UK's 6th Carbon Budget, a key milestone on the path to net zero by 2050.<sup>11</sup> Going forward, the authorities could provide more incentives for the green transition (e.g., by expanding the grant program for low-income households' heat pump installations and home insulation) and remove existing supply bottlenecks, including by setting out longer-term plans to attract private investment and streamlining planning regulations for green projects. The tax system should also help, not hinder, the transition to a low-carbon economy; some of the additional investments in energy efficiency initiatives could be financed by revenues from the windfall tax (Energy Profits Levy) as discussed in a research paper by the House of Commons Library. Also, authorities could consider the potential benefits of introducing a low-carbon investment allowance for electricity producers paying the new temporary windfall tax, so that renewable energy generators benefit from the same type of tax relief as high-carbon oil and gas installation investments. The ongoing decline in natural gas and electricity prices (as the temporary component of the energy supply shock dissipates) also provides a (political) window of opportunity to strengthen carbon taxation while maintaining a declining energy price profile.
- *Increasing gas storage capabilities* to better ensure security of supply in future heating seasons. Energy security is bolstered by the UK's status as a leading LNG hub and electricity interconnections with neighboring countries. However, the UK remains vulnerable to a "twin shock" of unforeseen supply shortfalls (e.g., due to disruptions to electricity or pipeline gas

<sup>11</sup> See <https://www.ft.com/content/c70d8e9e-e815-400b-a059-bbb78795f711>

inflows, or adverse weather conditions) and tight LNG markets (which would make it difficult to expedite additional gas imports). While measures to raise energy efficiency and increase renewable and nuclear energy generation would help limit this vulnerability, the UK is expected to become more dependent on natural gas imports as domestic gas production declines with the depletion of the North Sea basin (see Box 1). Enhancing the UK's natural gas storage capabilities, which are currently one of the lowest in Europe, would help ensure energy security both in the near and medium-term.

*Reforming electricity markets to de-link infra-marginal electricity generation prices from gas prices.* Although gas-fired power plants account for less than half of the electricity supply, wholesale electricity prices closely track natural gas prices due to pricing at the cost of marginal supply (as gas-fired power plants often act as the marginal supplier). Reforming electricity market price-setting so that prices for baseload power generation by renewable and nuclear energy sources more closely reflect costs would help curtail volatility in electricity prices and excess profits in electricity generation. However, these market reforms must be carefully designed to maintain sufficient incentives to invest in renewable and nuclear electricity generation capacities.

### **Box 1. Electricity and Gas Markets in the UK: Market Structure, Energy Mix and Outlook**

**Domestic production accounts for about half of the UK's natural gas consumption (Figure 1.1).** The remaining half is imported, largely from Norway via pipeline and as LNG from Qatar and the USA. LNG imports from Russia, which have historically amounted to less than 4 percent of total gas supply, have been eliminated following the Russian invasion of Ukraine. The main segments of gas consumption are electricity generation, households (amounting to a third of total demand each) and industry (amounting to just above 10 percent of total). Gas consumption has declined in 2022 as prices have risen, with most of the adjustment falling on the household segment. Gas storage capacity is limited to only about 30 TWh, or 4 percent of annual gas consumption.<sup>1</sup>

**Natural gas is a key component in the UK electricity generation mix.** More than a third of electricity generation is fueled by natural gas, which has replaced coal-powered generation in recent years. Renewables and nuclear power plants are the other major sources of electricity, amounting to approximately 40 and 15 percent of total electricity supply respectively. Historically, only about 6–7 percent of the electricity supply is imported, with France as a major source (along with Netherlands, Belgium and Norway as lesser sources). Households and industry account for 40 and 30 percent of electricity consumption respectively, with households accounting for most of the decline in consumption in 2022.

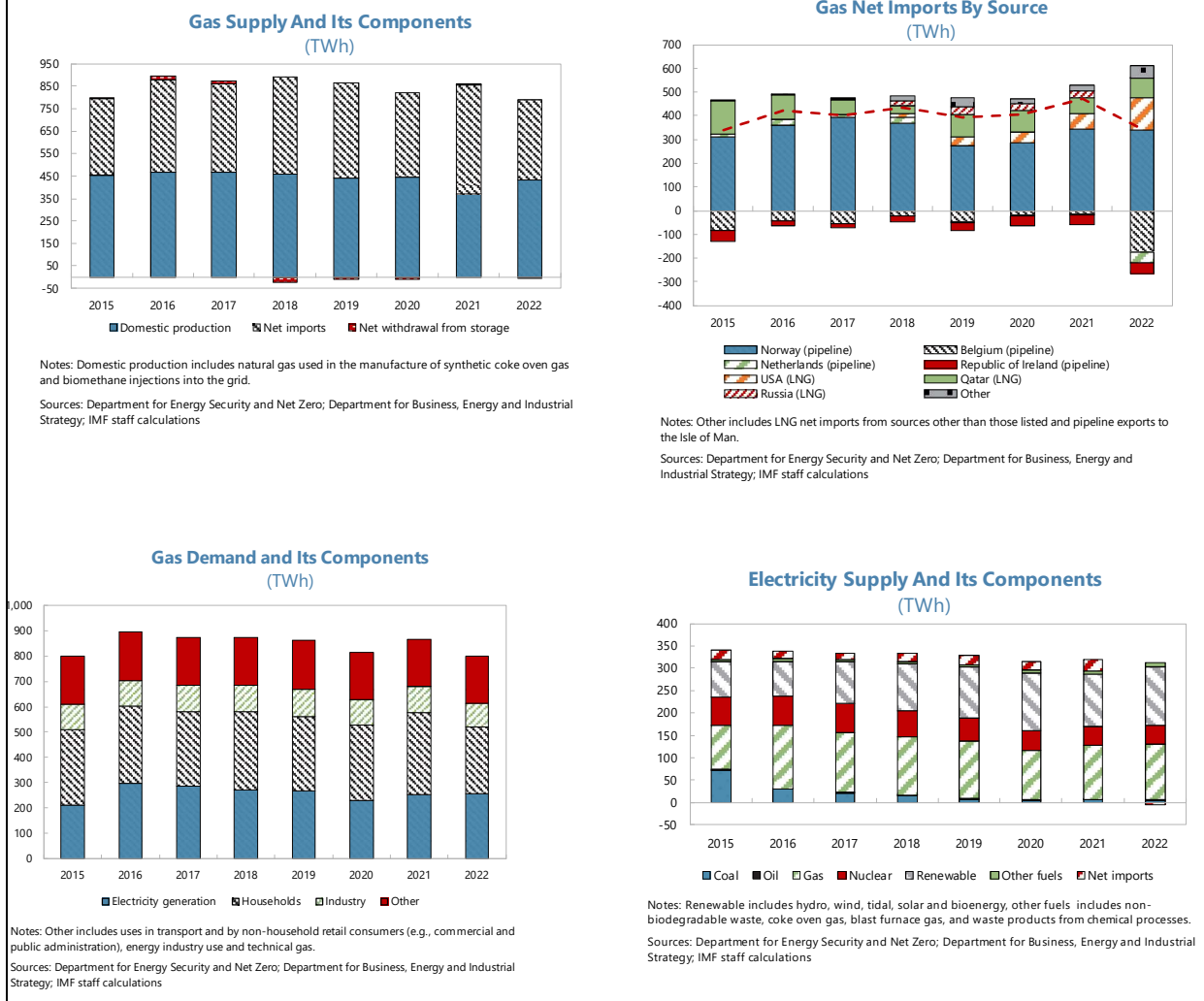
**Retail energy prices are regulated but had been cost-reflective until October 2022.** In view of market concentration and other barriers to entry in retail energy markets,<sup>2</sup> the Domestic Gas and Electricity (Tariff Cap) Act 2018 established a cap on retail electricity and gas tariffs, with the Office of Gas and Electricity Markets (Ofgem) responsible for reviewing the cap at least once every six months to reflect changing costs for providers.<sup>3</sup> In October 2022, the government introduced an 'Energy Price Guarantee' (EPG) which capped retail energy tariffs for households at a level consistent with a typical annual household bill of £2,500

**Box 1. Electricity and Gas Markets in the UK: Market Structure, Energy Mix and Outlook**  
(continued)

(about 35 percent lower than the Ofgem energy price cap for October 2022–January 2023) and an accompanying ‘Energy Bill Relief Scheme’ that capped energy tariffs for businesses at the same level as the EPG until March 2023. The government also compensated energy providers for the difference between the tariff caps under these schemes and the cost-reflective Ofgem energy price cap. While the EPG will remain in place until April 2024, declining wholesale energy prices are expected to reduce the Ofgem energy price cap to a lower level from July 2023.

**The Net Zero Strategy envisages a shift in the UK’s energy mix from fossil fuels to renewables.** The Net Zero Strategy, as recently affirmed by the ‘Powering up Britain’ policy papers, entails a decline in carbon emissions through increased energy efficiency and replacement of fossil fuels with low carbon energy sources. These include hydrogen and increased electrification of industry, transportation and heating, which are projected to reduce natural gas consumption projected by about half by 2035 (Figure 1.2). Nevertheless, the UK’s reliance on imported natural gas is expected to rise (to about 80 percent of consumption) as the depletion of the North Sea basin reduces gas domestic production.

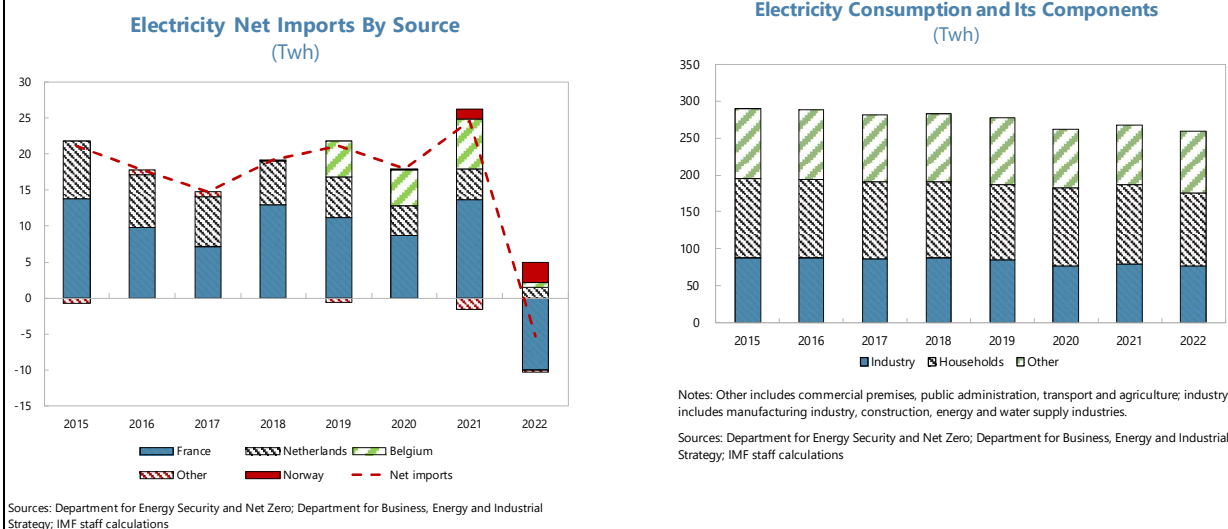
**Figure 1.1. Supply and Demand of Gas and Electricity in the UK**





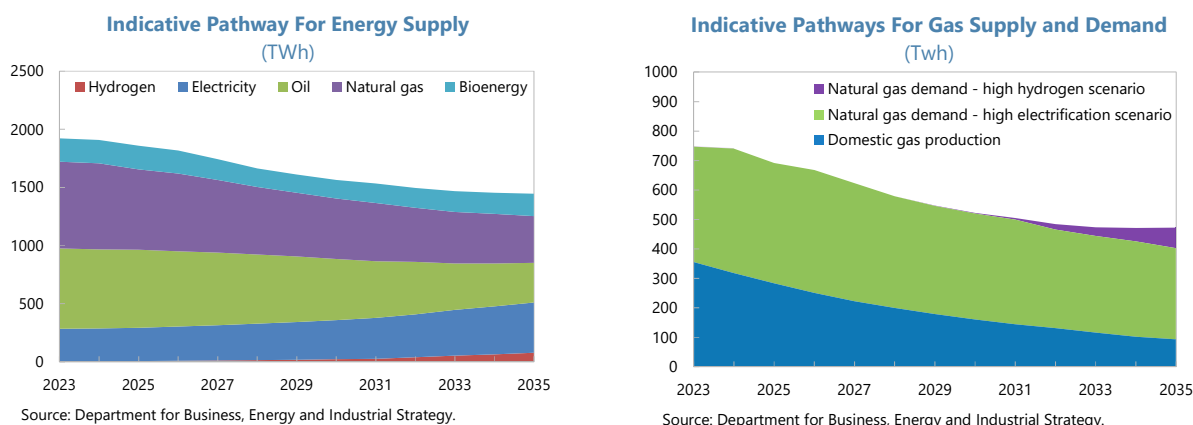
**Box 1. Electricity and Gas Markets in the UK: Market Structure, Energy Mix and Outlook**  
(concluded)

**Figure 1.1. Supply and Demand of Gas and Electricity in the UK (concluded)**



Sources: Department for Energy Security and Net Zero; Department for Business, Energy and Industrial Strategy; IMF staff calculations

**Figure 1.2. Energy Sector Outlook Under the Net Zero Strategy**



<sup>1</sup> Based on data from [Ofgem](#) and accounting for the reopening of the Rough gas storage facility.

<sup>2</sup> In 2021, the aggregated market share of the largest 3 retail suppliers was 49 percent in electricity markets and 41 percent in gas markets. Less than 10 suppliers accounted for over 80 percent of the market in both gas and electricity ([Energy Trends, September 2022](#)).

<sup>3</sup> Ofgem reviewed the cap every six months until October 2022, when it raised the frequency of reviews to quarterly intervals.

## Box 2. Design Principles for Energy Support Measures

The design of support measures needs to balance several objectives. These include:

- **Protecting vulnerable households.** Policies should aim to protect poor and vulnerable households, which spend a greater share of their incomes on energy expenses (see Figure 5) and are likely to experience substantial hardship when their costs of living spike.
- **Facilitating adjustment to the energy supply shock.** The surge in energy prices is likely to have a persistent component (see Figure 2), necessitating an adjustment in energy consumption, including through a re-allocation of production of towards less energy-intensive activities. This also constitutes an adverse terms-of-trade shock for the UK economy (see Figure 3), which will cause a decline in real incomes that economic agents need to adjust to. Adjustments to the persistent component of the energy price shock are inevitable, and policies cannot, and should not aim to postpone or offset them, as attempts to do so would likely worsen the terms-of-trade shock.<sup>1</sup> While policies can attempt to smooth the short-lived component of the shock, in practice delineating between the short-lived and persistent components is likely to prove difficult due to the exceptional uncertainty about the energy supply outlook.
- **Mitigating scarring.** Abrupt surges in the energy costs may damage firm balance sheets, which can impair new investments and lead to bankruptcies of otherwise viable firms, leading to long-term scarring. Economic adjustments to high energy prices may also inflict long-lasting structural damage on regions with concentrations of energy-intensive industries, contributing to regional inequality. Policies should aim to mitigate these without impeding adjustment to the energy supply shock (including through the exit of unviable companies).
- **Preserving fiscal space.** In view of limitations to the fiscal space available to the UK government—and recognizing that it may also be needed to address future shocks given heightened uncertainty about the economic outlook—relief measures should be cost-effective. This places a premium on providing time-bound and targeted (rather than broad-based) support and financing it through revenue-raising measures rather than debt issuance.
- **Maintaining incentives for energy efficiency and de-carbonization.** Given the UK's Net Zero Strategy and concerns about energy security, policies should preserve and support incentives for energy conservation and transitioning away from fossil fuels.
- **Supporting a policy mix that is consistent with bringing inflation back to target in a timely manner.** Policy measures should be designed with broader macro-policy objectives in consideration. Particularly, in view of currently elevated inflation rates, policies should not contribute to aggregate demand and resultant pressures on monetary policy, which faces long transmission lags and may have financial stability implications.

<sup>1</sup>For example, undermining the adjustment in natural gas consumption would further increase the UK's energy import bill.