Climate Action Tracker

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Global reaction to energy crisis risks zero carbon transition

Analysis of government responses to Russia's invasion of Ukraine

June 2022

NEW CLIMATE INSTITUTE

CLIMATE ANALYTICS

Summary

The world is going through a major energy crisis as a result of Russia's invasion of Ukraine. At the same time, the next few years are critical for climate action—a last chance to keep the 1.5°C temperature limit within reach.

So far, governments have largely failed to seize their chance to rearrange their energy supplies away from fossil fuels. Instead, we are witnessing a global "gold rush" for new fossil gas production, pipelines and liquefied natural gas (LNG) facilities. This risks locking us into another high-carbon decade and keeping the Paris Agreement's 1.5°C limit out of reach.

Fossil gas production and infrastructure expansion is planned around the globe with the argument to replace Russian gas.

- New planned LNG import facilities in the **EU**—especially **in Germany, Italy, Greece** and **the Netherlands**—could supply a quarter *more* gas to the EU than before.
- **Canada** plans to fast track new LNG projects to increase exports.
- The **US** has signed a deal to export additional LNG to the EU. **Qatar** and **Egypt** have signed similar deals with Germany and Italy, respectively. **Algeria** has signed a deal to export additional gas via pipeline to Italy.
- In **Africa**, old gas pipeline projects are being revived (e.g. **Nigeria**) and countries with previously no fossil gas exports (e.g. **Senegal**) are now encouraged to supply gas to Europe.
- Domestic fossil fuel production has increased in the **US**, **Canada**, **Norway**, **Italy** and **Japan**, and new long-term import contracts are closed or extended **in the UK**, **EU**, **Germany**, **Poland**, **Italy**.

If all these plans materialise, they will either end up as massive stranded assets or they'll lock the world into irreversible warming.

After failing to focus on climate during COVID-19 recovery, many governments look set to make the same mistake in the face of a global energy shock. Governments largely failed to make decarbonisation a focus in their post-pandemic economic recovery packages, with only a small fraction of the billions spent dedicated to accelerating the energy transition to bring down emissions. Instead, they missed a massive opportunity, spending the lion's share of those packages on maintaining the status quo. According to our analysis, governments are making the same mistake, twice over.

Whilst in some places renewables and green hydrogen expansion have been accelerated by several years, this is far from sufficient. A few governments have increased their plans for renewables as reaction to the crisis. The **EU** and **UK** have made proposals to increase their renewable energy targets. In most cases, however, this still falls short of the increase needed - or indeed what is possible. Contracts for the delivery of green hydrogen have been closed, a development that was previously foreseen as not happening for at least five years, if not longer.

Across the board, governments are compensating consumers for high energy bills, but many support fossil fuel-intensive behaviour. Almost all governments surveyed are compensating consumers and industry for high energy prices. Many governments are providing flat-rate tax cuts for petrol and diesel for all of industry as in **Sweden, US (individual states), Japan, Korea, Austria, Germany, Poland, Czech Republic, Croatia, Italy, Spain, Portugal, New Zealand, Netherlands and France**.

When energy prices begin dropping again, governments should take the opportunity to reduce fossil fuel subsidies or increase carbon pricing, both of which would drive down emissions. Decreasing energy prices would be a perfect moment to reduce fossil fuel subsidies or introduce/increase a carbon tax. It is more acceptable for consumers as it would lead to a slower price *decrease*, not a price *increase*. So far only **Denmark** has done so.

Governments could reap the benefits from taxing fossil fuel company windfall profits. The currently high fuel prices are seeing fossil fuel companies making record profits. Only a few governments have begun taxing fossil fuel companies on these additional profits (**Italy, Spain, Bulgaria, Romania, UK**). The EU provides a structure as to how it could be done, which could be rolled out to more countries. Additional revenue could be used to compensate those in need, or to expand renewables and energy efficiency.

Almost no government supports behavioural change. Immediate and low-cost options to reduce energy demand and therefore the need for Russian fossil fuels would include shifts in behaviour, such as encouraging slower driving by introducing/lowering speed limits, home office policies, restricting car access to cities, or turning down the heating in buildings. These options still seem to be very unattractive to governments: we have only found governments recommending their population to those behavioural shifts and few incentivising it. So far only **New Zealand, US (California), Italy, Germany and Ireland** have introduced new incentives for public transport.

More emphasis on energy efficiency and electrification needed. We find only a few countries putting additional emphasis on energy efficiency and/or electrification as a reaction to the current crisis. A push for heat pumps, electric cars, electrification in industry would be an adequate reaction, but is currently underdeveloped (**EU, UK, Japan**).

THE DO'S AND DON'TS OF ENERGY CRISIS RESPONSE

Key interventions for governments

	✖ DON'TS	✔ DO'S
Fossil gas infrastructure	▸ Expand fossil gas import infrastructure ▸ Expand or support fossil gas export infrastructure	▸ Halt expansion of fossil gas fuel infrastructure
Fossil fuel supply	▸ Expand domestic production ▸ Sign new or expand oil, gas and coal import contracts ▸ Purchase discounted Russian oil, gas or coal	▸ Disincentivise domestic production
Renewables & decarbonised power	▸ Relax plans to reduce emissions (incl. carbon tax, coal phase out, higher standards for industries) ▸ Invest in or promote "blue" hydrogen	▸ Ramp up deployment of renewable energy ▸ Ramp up green hydrogen production ▸ Reinvest windfall profits of fossil fuel energy revenues in renewables
Price incentives	▸ Reduce taxes on petrol, diesel or car commuting ▸ Subsidise a share of consumer energy bills ▸ Provide tax breaks for energy intensive industry	▸ Reduce oil and gas subsidies, and raise or introduce CO_2 price when prices fall
Behavioural change		▸ Incentivise slower driving using speed limits ▸ Incentivise reducing room temperature ▸ Incentivise reducing individual car use
Efficieny and electrification	▸ Loosen efficiency regulations	▸ Accelerate electrification in the transport sector / incentivise zero-emission vehicles ▸ Accelerate electrification in the industry / stir innovation / R&D ▸ Incentivise heat pumps and district heating and phase out gas boilers ▸ Enhance sector performance standards in industry and buildings

Table of Contents

1 Introduction

Russia's illegal and unprovoked invasion of Ukraine has generated price shocks that have reverberated through global energy markets and is also likely to cause substantial problems in food markets increasing the risk of hunger and malnutrition in many developing countries.

In 2020, Russia was the world's largest exporter of fossil gas—with 25% of global exports—and the third largest exporter of crude oil (11.4% of total) (BP, 2021). Since the invasion on 24 February 2022, the global demand for Russian fossil fuels has declined, as several governments have tightened economic sanctions. In March 2022, the US announced a ban on all Russian fossil fuel imports (oil, LNG, coal). The UK has announced a phase out of Russian oil imports by the end of the year, while the EU has set a partial embargo on Russian oil imports in the same timeframe. In addition, the EU plans to end Russian coal imports by August 2022 (European Council, 2022a, 2022b).

Global oil prices rose after the start of the war, while Europe and Asia experienced all-time record prices in natural gas and LNG (IEA, 2022b). Meanwhile, fossil fuel companies are making record profits, with Saudi Aramco becoming the most valuable company on the globe (Kirka, 2022). The 28 largest oil companies made a combined profit of USD 100 bn in the first quarter of 2022, with many of them recording the highest quarterly results in a decade (Milman, 2022).

Domestically, governments' first order of concern seems to be to ensure energy and commodity supplies while providing a safety net for their populations during periods of rising prices, global inflation, and recovery from the global pandemic. But governments could use the momentum to accelerate the transition to energy efficiency and renewables as required by the Paris Agreement to keep emissions on a trajectory consistent with warming below 1.5°C by the end of the century, and to close the 2030 emissions gap.

A little over a year ago governments were facing a similar choice in recovering from the COVID-19 pandemic: to support the fossil fuel-intensive status quo, or use the momentum to initiate or accelerate the transition to decarbonise their economies through increasing energy efficiency and renewable energy. Unfortunately, most governments predominantly supported the fossil fuel intensive status quo (Climate Action Tracker, 2020; Dafnomilis et al., 2020). And now there's a high risk of them making the same mistake again in coping with the current energy crisis.

In the IPCC's Sixth Assessment Report, governments and scientists reached consensus that global emissions must peak and start declining as soon as possible - at the latest by 2025 - and need to be cut by 43% by 2030 compared to 2019 levels (IPCC, 2022). It also noted that governments could close the 2030 emissions gap without a massive negative impact on their economies.

Ahead of COP26 in November 2021, the Climate Action Tracker (CAT) found a "massive credibility, action and commitment gap" regarding government net zero goals: governments' policy implementation lags behind NDC targets; NDC targets are misaligned with net-zero targets; and all commitments remain insufficient to achieve 1.5 °C.

The CAT projected that governments' policies and actions would lead to 2.7 °C of warming by the end of the century, while even in the most optimistic scenario—governments adopt announced net-zero targets and fully implement them—the world would still miss the mark and be on course for 1.8°C - at best. Seven months later, little has changed. Indeed it looks set to get worse.

The Russian invasion of Ukraine highlighted a heightened impetus for urgently accelerating mitigation action, as well as for enhanced international cooperation in the clean energy transition. Government responses to this global energy crisis could safeguard long-term domestic welfare while simultaneously advancing decarbonisation efforts — if designed well.

This briefing looks at the shocks to the global energy system and showcases what governments are doing to respond to the energy crisis, outlining clear recommendations for measures to take and avoid.

2 Global energy system shocks have strong repercussions for climate action

Russia's illegal invasion of Ukraine has generated shocks to the global energy system at local, regional, and global levels, disrupting fossil energy supply chains, and threatening the supply of fossil fuel stocks and commodities such as food, metals and fertilisers, highlighting the risks to countries of relying especially on fossil fuel imports.

These shocks have catalysed an array of critical decisions for governments and industry issuing response measures, which will have short and long-term impacts for countries' emissions and global efforts toward meeting the Paris Agreement. The impacts of such decisions will be felt long after the end of the war, at the global level.

Threat of security of fossil fuel supplies: Russia was the world's largest exporter of fossil gas (25% of total exports) and third largest exporter of crude oil in 2020 (BP, 2021). Several governments and industries realise their dependence on Russian fuel imports. Efforts to secure fossil supplies will compete with efforts to accelerate the energy transition.

Record high global fossil fuel prices: With record high fossil fuel prices, consumption and investment behaviour changes. It can lead to lower consumption of fossil fuels, but it can also make it more profitable to invest in new fossil fuel infrastructure, which can lock in new greenhouse gas emissions for decades. Energy companies are reassessing the changing investment landscape given windfall profits on fossil revenues.

Uneven weakening of low-income economies: The shocks over-proportionally weaken low-income economies, with high food, commodity and fuel prices placing additional stress. This will weaken their ability to accelerate the energy transition.

Higher investment risk: Increased risk perception and global inflation can also lead to revised strategies on foreign direct investment and emerging market debt instruments as lending countries shift to projects with less risky returns and hike interest rates and borrowing costs. However, a trend to include climate objectives within debt-restructuring agreements could aid countries financially while enhancing global public goods, as seen in the examples of Belize and Sri Lanka (Argentina and Ecuador rejected such proposals) (Gyftopoulou, 2022).

Decreased fiscal space: The downward investment pressure and international cooperation could cut further into governments' budgets and fiscal space, creating the additional risk that governments may shelve projects that would support an energy transition and/or Sustainable Development Goals.

Faced with the potential array of measures and responses available, governments should prioritise measures with a long-term outlook on investments, economy, energy sector resilience, sustainable growth, and social welfare to accelerate a just transition and delivery of climate justice.

3 How are governments reacting to the global energy crisis?

Government reactions to the energy crisis caused by Russia could determine whether they enter another decade of high carbon development or set themselves on a path toward decarbonising their economies, limiting global warming to 1.5°C, as the IPCC has firmly recommended.

Globally, government response packages to the COVID-19 pandemic were a disappointing missed opportunity to align economic recovery with climate action; the question is whether policymakers will continue to ignore the longer-term decarbonisation imperative and continue reacting with only short-term energy needs in mind, and drive up emissions in the process.

Table 1 contains a synthesis of good and bad practices that we have found in our analysis of government action in response to the global energy crisis. There are very clear interventions that would help countries transition towards secure, affordable, and clean energy.

The worsening of the geopolitical situation compels governments to react quickly. But in taking rushed decisions, they risk locking in a high carbon economy, instead of targeting interventions accurately to both ease current tensions in the energy market and satisfy short-term demand needs, but also ensure long-term secure and affordable energy supply, and getting emissions onto a 1.5˚C pathway.

Our analysis shows that government responses largely address the short-term energy supply needs and compromise their long-term climate mitigation strategies. Based on recently-passed legislation and government announcements, we identified measures that governments should take to secure a continuous sustainable energy supply and reduce their overall energy demand, who is taking them, and who is not.

Table 1 Key interventions for governments and recent announcements or implementation.

THE DO'S AND DON'TS OF ENERGY CRISIS RESPONSE

Fossil gas infrastructure

✖ **Don't - Expand fossil gas import infrastructure**

- European Union
- Germany
- Italy
- Greece
- Netherlands

✖ **Don't - Expand or support fossil gas export infrastructure**

- Canada
- Nigeria

✔ **Do - Halt expansion of fossil gas fuel infrastructure**

Fossil fuel supply

✖ **Don't - Expand domestic production**

- United States
- Qatar
- Australia
- Canada
- Norway
- United Kingdom
- Egypt
- Algeria
- Italy
- Japan

✖ **Don't - Sign new or expand oil, gas and coal import contracts**

- United Kingdom
- European Union
- Germany
- Poland
- Italy

✖ **Don't - Purchase discounted Russian oil, gas or coal**

- India
- China
- Serbia

✔ **Do - Disincentivise domestic production**

Renewables & decarbonised power

✖ **Don't - Relax plans to reduce emissions**
(incl. carbon tax, coal phase out, higher standards for industries)

✖ **Don't - Invest in or promote "blue" hydrogen**

- United Kingdom

✔ **Do - Ramp up deployment of renewable energy**

- European Union
- United Kingdom

✔ **Do - Ramp up green hydrogen production**

- European Union

✔ **Do - Reinvest windfall profits of fossil fuel energy revenues in renewables**

- Bulgaria
- Italy
- Romania
- Spain
- United Kingdom

Price incentives

✖ Don't - Reduce taxes on petrol, diesel or car commuting

- Sweden
- United States
- Japan
- South Korea
- Austria
- Germany
- Poland
- Czech Republic
- Croatia
- Italy
- Spain
- Portugal
- New Zealand
- Netherlands
- France

✖ Don't - Subsidise a share of consumer energy bills

- United Kingdom
- Greece
- Norway

✖ Don't - Provide tax breaks for energy intensive industry

- United Kingdom
- Czech Republic
- Italy

✔ Do - Reduce oil and gas subsidies, and raise or introduce CO_2 price when prices fall

- Denmark

Behavioural change

✔ Do - Incentivise slower driving using speed limits

✔ Do - Incentivise reducing room temperature

- Netherlands

✔ Do - Incentivise reducing individual car use

- New Zealand
- United States
- Italy
- Germany
- Ireland

Efficiency and electrification

✖ Don't - Loosen efficiency regulations

✔ Do - Accelerate electrification in the transport sector / incentivise zero-emission vehicles

- Japan

✔ Do - Accelerate electrification in the industry / stir innovation / R&D

- European Union

✔ Do - Incentivise heat pumps and district heating and phase out gas boilers

- European Union
- United Kingdom

✔ Do - Enhance sector performance standards in industry and buildings

- European Union

Fossil gas infrastructure

There is a dangerous rush to build new LNG infrastructure across the world, not only for European import facilities, but several gas-producing countries are also planning to either ramp up existing export facilities, or build new ones altogether. The expansion of LNG comes with a wealth of risks:

- High emissions: LNG is far from being a low-emissions energy source. When considering emissions across the entire value chain, it could even have higher emissions than coal when used for power generation (Hare *et al.*, 2021). In 2019, LNG represented 12% of total gas consumption but was responsible for around 17% of emissions linked to natural gas (ibid.)
- High and volatile costs: LNG prices have recently reached record highs in both Europe and Asia (IEA, 2022b). Already before Russia's invasion of Ukraine, LNG spot prices were high: in 2021, prices on Asian LNG markets (the continent with highest LNG imports) more than quadrupled compared to 2020 (Boccara *et al.*, 2022).
- Slowdown of a global just transition: Europe's scramble for LNG risks creating new and unsustainable economic dependency—or exacerbates existing ones. This is particularly the case for countries with no natural gas exports to date, such as Senegal, which is currently negotiating a deal to export LNG to Germany. Senegal could instead switch to expanding its vast renewables resource, creating jobs and enhancing the health of its population, and Germany could help fund that (CAT Africa gas report).

Natural gas is not a bridge or transition fuel, this is a common misperception. As with all other fossil fuels, natural gas needs to be phased out as soon as possible to meet the objectives of the Paris Agreement. Under the IPCC's 1.5°C-compatible scenarios, demand for natural gas should have peaked in 2020 (IPCC, 2018).

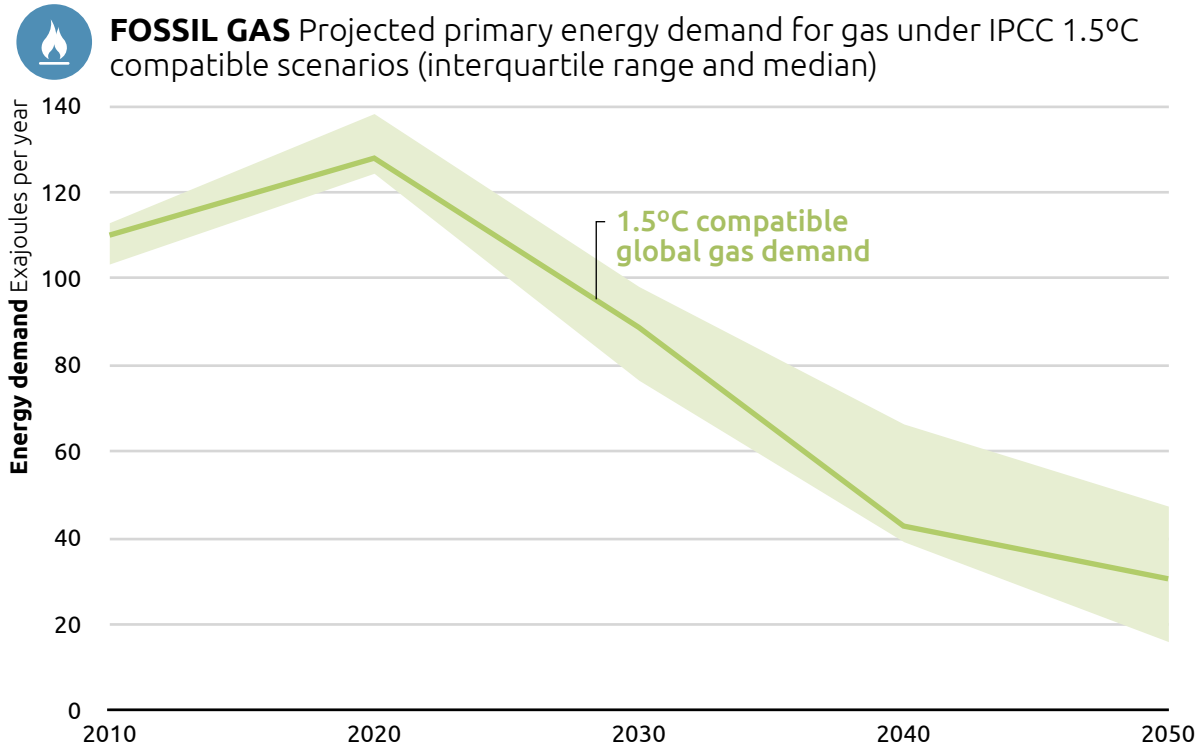

Figure 1 Total unabated fossil gas use in 1.5°C scenarios from the IPCC Spcial Report on 1.5°C.

Avoiding stranded assets

The latest IPCC report finds that if we keep warming to 1.5˚C, the global economy looks at USD 1-4tn worth of stranded fossil fuel infrastructure by 2050 (IPCC, 2022). Building additional fossil fuel infrastructure as a response to the global energy crisis will further inflate these costs, delay the necessary investments into clean energy and other mitigation options pursuing sustainable development objectives, and pose a significant economic risk.

DON'T — Expand fossil gas import infrastructure: Governments should not increase the reliance on fossil fuels by building new natural gas import infrastructure, locking in another decade of high carbon energy supply and increasing the risk of stranded assets, as new infrastructure will need to be retired before the end of its economic lifetime to align with the climate goals defined in the Paris Agreement.

- There is a wave of new plans for LNG import terminals across **Europe**, with an estimated capacity 150 bcm of additional gas as of 16 May 2022 (Aitken *et al.*, 2022), including in **Germany, Italy, Greece** and **the Netherlands**. If all these projects are built, this would lead to a significant overcapacity for gas imports. In 2020, Europe imported 115 bcm of LNG (BP, 2021)—the current plans could more than double this number.
- The **German** government has adopted the LNG Acceleration Act to fast-track the development of new LNG infrastructure and has already announced four new floating LNG import terminals, with the estimated start of operations in 2022/3 and two stationary ones operational in 2027 (BMKW, 2022b, 2022a);

DON'T — Expand or support fossil gas export infrastructure: As with the importing countries, it's equally important that countries home to large gas reserves don't see the current energy crisis as a moment to expand on gas infrastructure.

- **Canada** is considering fast tracking new LNG projects to increase their exports to Europe (Tuttle, 2022).
- **Nigeria, Niger and Algeria** signed an agreement in February 2022 to restart development of the previously dormant Trans-Saharan Pipeline (Global Energy Monitor, 2022e).
- Countries with previously no fossil gas exports (e.g. **Senegal**) are now encouraged to supply gas to Europe.
- These new LNG expansion plans come on top of an already large pipeline of LNG export projects worldwide planned before Russia's invasion of Ukraine (Reynolds, 2022).

DO — Halt development and expansion of new fossil gas infrastructure: To decrease the risk of stranded assets governments should halt any further investments into fossil fuel infrastructure as these take time to be built and therefore will fail to provide the needed short-term relief to the market.

Fossil fuel supply

In 2019, 84% of the total primary energy consumed globally originated from fossil fuels (Ritchie *et al.*, 2020). To limit global warming to 1.5°C and to ensure secure energy supply this share needs to be drastically reduced.

DON'T — Expand domestic production: Expanding domestic production facilities and exploring new sites for fossil fuel production locks in emissions for decades.

- **Italy, the UK, and Canada** have announced new mega projects to ramp up their domestic oil and gas production (BEIS, 2022d; Gorman, 2022; Weir, 2022). **The US** has allowed for oil and gas drilling on federal lands, which contradicts the Biden administration's pledge from 2021 to suspend new leases for oil and gas companies (Phillips, 2022).
- **Japan** announced it will boost its investment in upstream LNG projects (Obayashi, 2022b).
- **Norway** announced it will boost domestic gas production over the coming months to satisfy the excess demand in Europe (Adomaitis and Buli, 2022).
- **Egypt and Algeria** have signed deals with the Italian oil and gas company Eni to increase gas production, and export additional gas to Italy (Atallah *et al.*, 2022; Montanari, 2022).
- **Senegal**, which currently exports no natural gas, could see support from Germany to develop an offshore gas field and export it there as LNG (Rinke and Marsh, 2022).

DON'T — Sign new or expand oil, gas and coal import contracts: Diversifying only the supply of fossil fuels instead of shifting demand to alternative energy sources is likely to have negative consequences for the climate and future energy security, especially if such moves create new dependencies. Yet this is precisely what appears to be happening:

- **The US** has signed a deal to supply additional LNG to the EU (Renshaw and Chestney, 2022).
- Many European countries heavily reliant on Russian gas have entered new contracts with alternative fossil fuel suppliers.
  - **Germany** has signed a long-term LNG import contract with Qatar (Wintour, 2022). In parallel, **Qatar** has announced it would double its LNG exports by 2025 to meet the increased global demand for non-Russian gas (ibid.).
  - **Italy, the UK, and Poland** look to import fossil fuels from countries including Algeria, the UAE, Egypt, South Africa, United States, and Australia (Al Jazeera, 2022; Nhede, 2022; Tan, 2022; Weir, 2022).
- In December 2021, Shell pulled out of an oil drilling project in the North Sea, deeming it no longer economically profitable. However, since the surge in prices after the beginning of the war the projects became profitable again, and Shell is now reconsidering its decision (Jolly, 2022).
- IEA members have announced they will release 240 million barrels of oil from their emergency stocks over the next six months (IEA, 2022c).

DON'T — Purchase discounted Russian oil / gas / coal: The trade embargos on Russian fossil fuels have led to their oversupply in the market. However, this should not be seen as an opportunity for governments to purchase large quantities of Russian fossil fuel at discounted prices or secure good conditions for new long-term contracts with Russian fossil fuel suppliers.

- Since the start of the war, **India** has purchased at least 40 million barrels of heavily discounted Russian oil, more than double of the amount purchased in all of 2021, taking up some of the untouched oil supplies from recoiled European buyers (Verma, 2022).
- **China** has entered multiple long-term contracts with Russia as it seeks to diversify its portfolio of fossil fuel buyers (Eiterjord, 2022).
- **Serbia** has entered a new three year contract securing Russian gas imports—with "extremely favourable conditions" (Zick, 2022).

DO — Disincentivise domestic production: The global response to the war in Ukraine must lead to systemic change within energy systems and economies with decarbonisation at the heart of every decision. Governments should disincentivise an increase in domestic fossil fuel production.

Renewables and decarbonised power

Countries can **secure energy supply and strengthen energy independence** with a shift towards domestic renewable energy sources. Domestic energy production can **stabilise energy prices** by reducing supply risk. Renewables offer additional resilience—particularly in the face of energy crises—over fossil fuels as their availability and operating costs are more predictable; the increase of renewable demand also reduces the demand for fossil fuels, lowering their upward pricing pressure (CEC, 2008).

DON'T — Relax plans to reduce emissions: Governments cannot use this energy crisis as a justification to relax current emission reduction plans and foster business as usual approaches through postponing the increase of carbon taxes, delaying the coal phase out, or issuing waivers for industry standards. While coal may be able to play a crucial role and serve as a bridge to secure a continuous energy flow, preventing the construction of new gas infrastructure in the short-term, governments cannot postpone the overall coal-phase out dates.

- The G7 ministers were discussing a binding uniform coal phase out date. While Germany, the UK, Italy, Canada, and France were pushing for a coal phase out by 2030, Japan and the US are reluctant, fearing it will pose a threat to their energy security in the wake of the current energy crisis (DW, 2022). Delaying the coal phase-out will not ease any short-term tension in the energy market nor create greater energy security: the war in Ukraine should not be used as a justification to reduce ambition and delay the decarbonisation of the electricity market.
- Ten European countries including, **Germany**, **the UK**, and **Italy** are currently discussing deviating from their coal phase-out dates. **Germany**, for example plans to phase out coal by 2030, but pushing this deadline back will not help ease the current tension in the energy market (Cockburn, 2022; Nacke and Jewell, 2022).

DON'T — Invest in or promote "blue" hydrogen: Some governments promote hydrogen production from fossil gas with carbon capture and storage. Such "blue" hydrogen has higher CO_2 emissions than renewable hydrogen, and would require the deployment of expensive and unproven CCS technology (Hare *et al.*, 2021). These government should rather redirect investments meant for emission intensive blue hydrogen towards the development of green hydrogen.

- In its British Energy Security Strategy, the **UK** plans to produce at least half of its hydrogen from "low carbon" sources (renewables and nuclear), and the rest from fossil gas with carbon capture and storage.

DO — Ramp up deployment of renewable energy: Expanding investments into renewable energy developments will help countries achieve their climate goals and further reduce their dependencies on fossil fuels. Fast tracking approval processes and reducing the administrative burden of new renewable energy projects will further stimulate the deployment of solar, wind, and bioenergy.

- The European Commission has proposed to update **the EU's** renewable energy target in the overall energy mix from 40% to 45% by 2030 and several EU member states have updated their renewable targets (IEA, 2022d). However, it could go further as PV additions are increasing exponentially.
- **Germany** has recently released a green response package targeted at the expansion of solar and wind. The German government pledges to make additional sites available to renewable energy projects and remove bureaucratic barriers to speed up the planning and approval processes (BMWK, 2022).
- **The UK and the EU** have announced they will simplify their permitting policies on rooftop PV to promote self-consumption. Germany further declared it will update and expand its transmission systems to make the grids more flexible and capable to keep up with increased renewable energy flow (BEIS, 2022a; BMWK, 2022; European Commission, 2022).

DO — Ramp up green hydrogen production: The steep incline of fossil fuel prices has increased the competitiveness of green hydrogen significantly, making its production cheaper than the one of grey and blue hydrogen (Rystad Energy, 2022). While high prices make renewable hydrogen more attractive as a low-carbon energy carrier, the expansion of green hydrogen can also facilitate increased energy security. Green hydrogen can be produced more widely compared to fossil fuels which are governed by only a handful of resource rich countries, and create decentralised trade routes (IRENA, 2022b).

Policymakers should use the momentum to leapfrog fossil fuel expansion, and significantly scale up their investments into renewable hydrogen.

- The EU has announced it will expand domestic green hydrogen production by 5 Mt and increase green hydrogen imports by an additional 10 Mt by 2030 (European Commission, 2022).

DO — Reinvest windfall profits of fossil fuel energy companies' revenues in renewable energy: Since Russia invaded Ukraine, energy prices have skyrocketed as fear of sudden fossil fuel supply shortages grows. High energy prices create an opportunity for governments to tax the windfall profits of fossil fuel and energy companies, reinvesting that income into expanding renewable energy sources.

- The **EU's** response package REPowerEU contains a framework on how to tax windfall profits efficiently (European Commission, 2022). While many countries in the EU are discussing the introduction of these taxes Bulgaria, Romania, Italy, and Spain have already implemented them (Sgaravatti *et al.*, 2022).
- UK has introduced a 25% additional tax on fossil fuel company profits (James and Bruce, 2022).

Price incentives

Over the last two years, global oil and gas prices have increased drastically, a similar jump in prices was last recorded in 1973 during the global oil crisis (World Bank, 2022).

DON'T – Reduce taxes for petrol/diesel or car commuting: High gasoline prices increase the competitiveness of alternative modes of transport, making them more attractive to consumers. But many governments want to protect their populations from high energy price shocks, temporarily applying a flat rate support for fossil fuels. If this compensation applies to all it will disturb the natural demand reduction, foster business as usual behaviour, decelerate the shift to low carbon transportation, and significantly increase government expenses. These subsidies would be better targeted to support the lower socio-economic sections of society who cannot afford the high prices.

- Sweden and California announced a one-off payment for every vehicle owner (Archie, 2022; Frankfurter Allgemeine, 2022).
- Japan, Korea, New Zealand, Canada, some states in the US, and most European countries reduced petrol prices though tax cuts or fixed price limits (Archie, 2022; Frankfurter Allgemeine, 2022; Ho-Jeong, 2022; NZ Herald, 2022; Obayashi, 2022a; Sgaravatti *et al.*, 2022).
- Germany and Austria have increased the commuters' allowance to compensate for higher petrol prices (Frankfurter Allgemeine, 2022).

DON'T — Take over a share of the consumer energy bills: While it is important that governments ensure affordable energy supply, and compensate lower-income households for increasing prices, taking over a share of every household's energy cost will lead to a significant increase in state budget spending and not incentivise households to reduce their energy demand. Governments would be better to target support for the lower income household that that cannot afford the high prices - or compensate households through tax redistribution.

- The UK plans a GBP 200 automatic reduction of the energy bill of each citizen from October (BEIS, 2022b). Greece and Norway have also announced to take over a share every household's energy bill (Frankfurter Allgemeine, 2022; Handelsblatt, 2022).

DON'T — Provide tax breaks for energy intensive industry: Introducing fixed energy price ceilings, providing tax breaks and unconditional financial support to energy intensive industries will support business as usual behaviour and not lead to a reduced energy demand, so it should be avoided.

- In the RePowerEU plan the EU Commission announced it will provide additional funding to ensure liquidity to industries to compensate for high energy prices (European Commission, 2022).
- The UK adopted a financial support scheme for high energy intense industries, Greece and Norway announced tax cuts for all industries (BEIS, 2022c; Sgaravatti *et al.*, 2022).

DO — Reduce oil and gas subsidies and raise/introduce carbon price when prices fall: Governments should seize this opportunity to adopt an early phase-out of fossil fuel subsidies and/or an introduction of a carbon tax at the time of reducing energy prices from that very high level. Right now, a reduction or early phase out of subsidies - or the introduction of a carbon tax - would lead to a lower price decrease, not a price increase, making it more acceptable to the consumer. Under the new geopolitical situation policymakers should re-evaluate their phase out plans. The G7 has already pledged to phase out fossil fuel subsidies by 2025 (Gerasimchuk *et al.*, 2018).

- **Denmark** announced the introduction of a carbon tax to further support the transition into a low-carbon economy and decrease its dependency on Russian fossils (The Local, 2022).

Behavioural change

The IEA has issued a 10-point plan to quickly reduce oil demand through adapting our behaviour, finding that if its proposed actions were implemented, advanced economies could reduce their oil consumption by 2.7 million barrels a day in only four months (IEA, 2022a).

DO — Incentivise slower driving using speed limits: The transport sector is still heavily reliant on fossil fuels: 37% of the global end use emissions originate from the transport sector (IEA, 2021b). Decreasing the speed limit by only 10 km/h on highways could result in a demand reduction of 0.4 million barrels of oil per day (IEA, 2022a).

- The German government discussed introducing speed limits on highways which currently do not have them, but this measure has so far not been approved (Schröder, 2022). As a response to the 1973 oil crisis, the US had introduced a speed limit of 55 miles per hour (~90 km/h) (US Government, 1974).

DO — Incentivise reducing room temperature (private and public buildings): The IEA showed that the reduction of room temperature in Europe by 1°C can reduce the total energy consumption for heating by 10 bcm of gas, which translates into a significant reduction of energy bills (IEA, 2022a). Polices should incentivise the reduction of room temperature in private and enforce it in public buildings.

- The **EU** proposed the implementation of energy saving measure in homes including to lower the average room temperature by 1°C, but there are no concrete plans yet to enforce this proposition (European Commission, 2022).
- The **Dutch** government has announced it will reduce the room temperature by 2˚C in over 200 governmental buildings (NOS, 2022).

DO — Provide incentives to reduce individual car use: The IEA's strategy includes expanding public transport, cycling and walking infrastructure and encourages the shift away from single person transport towards public transport and carpooling. So far only a few countries have taken these options:

- **New Zealand, Ireland, Italy, individual states in the US, and Germany** announced that they will temporarily decrease public transport fares (Archie, 2022; Frost, 2022; NZ Herald, 2022).
- California looks to expand the public transportation system and invest in new cycling and walking infrastructure (Archie, 2022).

Efficiency and electrification

The IEA calls energy efficiency the "first fuel of a sustainable global energy system" (IEA, 2021a). However, improvements in energy efficiency are only progressing slowly and need to double to reach the net zero by 2050 goal defined under the Paris Agreement (IEA, 2021a). In the long term, high fossil fuel prices, if left unsubsidised, will advance the electrification process, trigger investments into research and development, increase energy efficiency and help governments move to decarbonise their economies by expanding carbon technologies.

DON'T — Loosen efficiency regulations: Rising energy prices should not be used as a justification to relax energy efficiency regulations for the private sector.

- We have not yet seen any cases of implementation.

DO — Accelerate electrification in the transport sector / incentivise zero-emission vehicles: Through incentivising zero-emission vehicles, governments can unlock benefits like reducing fossil fuel dependency, improving air quality, and reducing emissions.

- **Japan** has announced far-reaching policies to foster the electrification of their transport sector (METI, 2022).

DO — Accelerate electrification in the industry / stir innovation / R&D: Governments should also implement policies that facilitate the electrification and hydrogen use of carbon intensive industries, like low intensity heat and the steel and manufacturing sector. While high energy prices will trigger innovation and investments into R&D in the private sector, governments can play a crucial role in strengthening the legal framework and reducing the financial risks of investments.

- The **EU Commission** has proposed establishing an Innovation Fund to accelerate electrification and hydrogen use in industrial sectors and it has pledge to invest an additional EUR 300m in the acceleration of the green energy transition over the next six years (European Commission, 2022).

DO — Incentivise heat pumps & district heating and phase out gas boilers: The large share of Russian gas imported to the EU is for domestic and industrial heating, so one of the most powerful options to reduce dependency on Russian gas is the expansion of heat pumps and district heating.

- The **EU and the UK** have pledged to significantly expand the installation of heat pumps (BEIS, 2022a; European Commission, 2022).
- **Denmark** announced a ban on the installation of new gas boilers (The Local, 2022).

DO — Enhance sector performance standards in industry and buildings: High energy prices force industries to look for alternative fuels and processes that will reduce their costs to stay competitive. A study by the Augsburger Allgemeine (Augsburger Allgemeine, 2022) found that as a response to the global energy crisis 75% of German companies plan significant investments into energy efficiency measures.

Governments should raise the emission and energy standards for industrial processes, along with targeting efficiency measure in the buildings sector. Emissions in the buildings sector are increasing steadily, but to achieve the goals of the Paris Agreement these emissions need to be halved by 2030 (BPIE, 2020).

Government response packages should therefore include policies to raise efficiency standards, increase the renovation rate, and target insulation and heating. Domestic energy efficiency measures are a low-cost option to further reduce dependency on fossil fuels. This could include policies incentivising draught proofing windows, installing smart meters or switching out conventional light bulbs for energy efficient LEDs. Agora Energiewende showed in in a recent study that similar short-term measures can almost halve German gas demand for buildings (Buck *et al.*, 2022).

- The **EU's** proposed energy saving and efficiency measures are estimated to save up to 10 bcm of gas by 2030 (European Commission, 2022). The REPowerEU package provides a regulatory framework and guidance on to the implementation of these measures, and sets out an initiative that will support energy efficiency measures in sub-Saharan Africa and North Africa (European Commission, 2022).

Bibliography

Adomaitis, N. and Buli, N. (2022) Norway to supply more gas to Europe this summer, Reuters. Available at: https://www.reuters.com/business/energy/norways-equinor-raise-gas-output-major-fields-2022-03-16/ (Accessed: 30 May 2022).

Aitken, G., Langenbrunner, B. and Zimmermann, S. (2022) Europe Gas Tracker Report 2022 . Available at: https://globalenergymonitor.org/report/europe-gas-tracker-2022/ (Accessed: 30 May 2022).

Archie, A. (2022) California's governor is proposing $11 billion of relief from record gas prices, NPR. Available at: https://text.npr.org/1088711551 (Accessed: 30 May 2022).

Atallah, S., Jewkes, S. and Elhamy, A. (2022) Eni signs Egyptian gas deal to unlock LNG supplies for Europe this year, Reuters.

Augsburger Allgemeine (2022) Umfrage: Firmen verschieben wegen hoher Energiepreise Investitionen, Augsburger Allgemeine. Available at: https://www.augsburger-allgemeine.de/wirtschaft/umfrage-firmen-verschieben-wegen-hoher-energiepreise-investitionen-id62460421.html (Accessed: 31 May 2022).

BEIS (2022a) British energy security strategy, Department for Business, Energy & Industrial Strategy. Available at: https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy#immediate-support-on-energy-bills (Accessed: 31 May 2022).

BEIS (2022b) Energy Bills Support Scheme explainer, Department for Business, Energy & Industrial Strategy. Available at: https://www.gov.uk/government/news/energy-bills-support-scheme-explainer (Accessed: 31 May 2022).

BEIS (2022c) High energy usage businesses to benefit from further government support, Department for Business, Energy & Industrial Strategy. Available at: https://www.gov.uk/government/news/high-energy-usage-businesses-to-benefit-from-further-government-support (Accessed: 31 May 2022).

BEIS (2022d) Major acceleration of homegrown power in Britain's plan for greater energy independence, Department for Business, Energy & Industrial Strategy. Available at: https://www.gov.uk/government/news/major-acceleration-of-homegrown-power-in-britains-plan-for-greater-energy-independence (Accessed: 30 May 2022).

BMWK (2022a) BMWK - Überblickspapier Osterpaket. Berlin: Bundesministerium für Wirtschaft und Klimaschutz. Available at: https://www.bmwk.de/Redaktion/DE/Downloads/Energie/0406_ueberblickspapier_osterpaket.html (Accessed: 31 May 2022).

BMWK (2022b) Bundeskabinett beschließt Formulierungshilfe zum LNG- Beschleunigungsgesetz, Bundesministerium für Wirtschaft und Klimaschutz. Available at: https://www.bmwk.de/Redaktion/DE/Pressemitteilungen/2022/05/20220510-bundeskabinett-beschliesst-formulierungshilfe-zum-lng-beschleunigungsgesetz.html (Accessed: 30 May 2022).

BMWK (2022c) Zweiter Fortschrittsbericht Energiesicherheit, Bundesministerium für Wirtschaft und Klimaschutz. Available at: https://www.bmwk.de/Redaktion/DE/Downloads/Energie/0501_fortschrittsbericht_energiesicherheit.html (Accessed: 30 May 2022).

Boccara, G., Boszczyk, K., Browne, N. and Heringa, B. (2022) Reflecting on 2021 global LNG and European pipeline flows, McKinsey.

BP (2021) Statistical Review of World Energy 2021. Available at: https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html (Accessed: 4 November 2021).

BPIE (2020) Building sector emissions hit record high, but low-carbon pandemic recovery can help transform sector , Buildings Performance Institute Europe. Available at: https://www.bpie.eu/news/building-sector-emissions-hit-record-high-but-low-carbon-pandemic-recovery-can-help-transform-sector-un-report/?msclkid=a5382c24d03711ec82a0bb51a65aa7a5 (Accessed: 31 May 2022).

Brooks, C. (2022) Germany fast tracks proposal for Norwegian blue and green hydrogen pipeline, S&P Global Commodity Insights.

Buck, M., Dusolt, A., Hein, F., et al. (2022) Regaining Europe's Energy Sovereignty. Berlin. Available at: https://www.agora-energiewende.de/en/publications/regaining-europes-energy-sovereignty/ (Accessed: 31 May 2022).

Bush, M. (2022) Canada should focus on green, not blue, hydrogen, Policy Options Politiques.

CEC (2008) Renewable Energy as a Hedge Against Fuel Price Fluctuation.

Climate Action Tracker (2020) Global update: Pandemic recovery with just a hint of green. Available at: https://climateactiontracker.org/publications/global-update-pandemic-recovery-with-just-a-hint-of-green/.

Cockburn, H. (2022) UK government 'could keep coal power stations running longer' , The Independent. Available at: https://www.independent.co.uk/climate-change/news/coal-power-ukraine-russia-environment-b2035430.html (Accessed: 31 May 2022).

Dafnomilis, I., den Elzen, M., Soest, H. van, et al. (2020) Exploring the impact of the COVID-19 pandemic on global emission projections - Assessment of green versus non-green recovery. Available at: https://newclimate.org/wp-content/uploads/2020/09/COVID-19_Global_Emissions_Projections_Sept2020.pdf [accessed on 07 Sep 2020].

DW (2022) G7: Germany urges leading role in coal phaseout, Deutsche Welle.

Eiterjord, T. (2022) What Does Russia's Invasion of Ukraine Mean for China in the Arctic? , The Diplomat. Available at: https://thediplomat.com/2022/03/what-does-russias-invasion-of-ukraine-mean-for-china-in-the-arctic/ (Accessed: 31 May 2022).

European Commission (2022) Key documents: REPowerEU, European Commission. Available at: https://ec.europa.eu/info/publications/key-documents-repowereu_en (Accessed: 31 May 2022).

European Council (2022a) EU adopts fifth round of sanctions against Russia over its military aggression against Ukraine - Consilium, Council of the EU. Available at: https://www.consilium.europa.eu/en/press/press-releases/2022/04/08/eu-adopts-fifth-round-of-sanctions-against-russia-over-its-military-aggression-against-ukraine/ (Accessed: 30 May 2022).

European Council (2022b) Russia's aggression against Ukraine: EU adopts sixth package of sanctions, Council of the EU.

Frankfurter Allgemeine (2022) Hohe Energiepreise: So gehen europäische Länder vor, Frankfurter Allgemeine. Available at: https://www.faz.net/aktuell/wirtschaft/hohe-energiepreise-so-gehen-europaeische-laender-vor-17981618.html (Accessed: 31 May 2022).

Frost, R. (2022) Cost of living crisis: Italy, Germany and Ireland are the first to cut public transport prices , Euronews. Available at: https://www.euronews.com/green/2022/05/11/cost-of-living-crisis-italy-germany-and-ireland-are-the-first-to-cut-public-transport-pric (Accessed: 31 May 2022).

Gerasimchuk, I., Whitley, S., Chen, H., et al. (2018) G7 Fossil Fuel Subsidy Scorecard: Tracking the phase-out of fiscal support and public finance for oil, gas and coal , International Institute for Sustainable Development. Available at: https://www.iisd.org/publications/brief/g7-fossil-fuel-subsidy-scorecard-tracking-phase-out-fiscal-support-and-public (Accessed: 31 May 2022).

Gorman, M. (2022) New LNG developments no solution to energy security, say environmentalists, CBC News. Available at: https://www.cbc.ca/news/canada/nova-scotia/goldboro-lng-energy-gas-pieridae-environment-climate-1.6372791 (Accessed: 31 May 2022).

Gyftopoulou, L. (2022) To Avoid Default, Sri Lanka Might Need to Get Tougher on Climate Change.

Handelsblatt (2022) Europa stemmt sich mit Milliarden gegen steigende Energiepreise, Handelsblatt. Available at: https://www.handelsblatt.com/politik/international/strom-und-gasmarkt-wie-sich-europa-mit-milliardenentlastungen-gegen-steigende-energiepreise-stemmt/28074086.html (Accessed: 31 May 2022).

Hare, B., Ganti, G., Maxwell, V., et al. (2021) Why gas is the new coal. Available at: https://climateanalytics.org/publications/2021/why-gas-is-the-new-coal/.

Helgesen, O.K. (2022) Norway plans for more gas and blue hydrogen as Europe turns away from Russia, Upstream.

Ho-Jeong, L. (2022) Fuel tax cut may be taken to 30 percent from 20 percent, Korea JoongAng Daily. Available at: https://koreajoongangdaily.joins.com/2022/03/31/business/economy/fuel-tax-international-crude-price-RussiaUkraine/20220331153211664.html (Accessed: 31 May 2022).

IEA (2021a) Energy Efficiency 2021. Paris.

IEA (2021b) Transport, IEA. Available at: https://www.iea.org/topics/transport (Accessed: 31 May 2022).

IEA (2022a) A 10-Point Plan to Cut Oil Use , IEA. Paris. Available at: https://www.iea.org/reports/a-10-point-plan-to-cut-oil-use (Accessed: 31 May 2022).

IEA (2022b) Gas Market Report, Q2-2022.

IEA (2022c) IEA confirms member country contributions to second collective action to release oil stocks in response to Russia's invasion of Ukraine, International Energy Agency. Available at: https://www.iea.org/news/iea-confirms-member-country-contributions-to-second-collective-action-to-release-oil-stocks-in-response-to-russia-s-invasion-of-ukraine (Accessed: 30 May 2022).

IEA (2022d) Renewable Energy Market Update . Paris. Available at: https://www.iea.org/reports/renewable-energy-market-update-may-2022 (Accessed: 31 May 2022).

IPCC (2018) 'Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change',. Geneva, Switzerland: Intergovernmental Panel on Climate Change.

IPCC (2022) Climate Change 2022 - Mitigation of Climate Change. doi:10.1201/9781003264705-7.

IRENA (2022a) Geopolitics of the Energy Transformation: The Hydrogen Factor. Abu Dhabi.

IRENA (2022b) Hydrogen Economy Hints at New Global Power Dynamics, International Renewable Energy Agency. Available at: https://www.irena.org/newsroom/pressreleases/2022/Jan/Hydrogen-Economy-Hints-at-New-Global-Power-Dynamics (Accessed: 31 May 2022).

James, W. and Bruce, A. (2022) UK imposes 25% energy windfall tax to help households as bills surge , Reuters. Available at: https://www.reuters.com/world/uk/uk-must-pay-household-support-without-deterring-investment-minister-2022-05-26/ (Accessed: 31 May 2022).

Al Jazeera (2022) Poland to become independent of Russian oil, gas by new year: PM, Al Jazeera. Available at: https://www.aljazeera.com/news/2022/3/30/poland-to-become-independent-of-russian-oil-gas-by-new-year-pm (Accessed: 31 May 2022).

Jolly, J. (2022) Shell U-turn on Cambo oilfield would threaten green targets, say campaigners, The Guardian. Available at: https://www.theguardian.com/business/2022/mar/22/shell-cambo-oilfield-green-targets-north-sea-oil-price (Accessed: 30 May 2022).

Kirka, D. (2022) 'Shell reports record $9.1 billion profit as oil prices soar in first-quarter', The Associated Press, May.

Kurmayer, N.J. (2022) Germany, Norway agree tentative plan to build hydrogen pipeline link, Euractiv. Available at: https://www.euractiv.com/section/energy-environment/news/germany-norway-agree-tentative-plans-to-build-hydrogen-pipeline-link/.

METI (2022) Press Conference by Minister Hagiuda (Excerpt) / METI Ministry of Economy, Trade and Industry, Ministry of Economy, Transport, Trade and Industry. Available at: https://www.meti.go.jp/english/speeches/press_conferences/2022/0304001.html (Accessed: 31 May 2022).

Milman, O. (2022) 'Largest oil and gas producers made close to $100bn in first quarter of 2022', The Guardian, May.

Montanari, M. (2022) Italy's energy and Algeria oil giant strike new gas deal, Euractiv.

Nacke, L. and Jewell, J. (2022) Effects of Russia's war on European coal phase-out , Coal Transitions. Available at: https://coaltransitions.org/news/effects-of-russias-war-on-european-coal-phase-out/ (Accessed: 31 May 2022).

Nhede, N. (2022) Italy and Congo-Brazzaville sign gas supply deal, Further Africa. Available at: https://furtherafrica.com/2022/05/03/italy-and-congo-brazzaville-sign-gas-supply-deal (Accessed: 31 May 2022).

NOS (2022) Thermostat 2 degrees down in government offices, cabinet hopes citizens follow. Available at: https://nos.nl/artikel/2423569-thermostaat-2-graden-omlaag-in-overheidskantoren-kabinet-hoopt-dat-burgers-volgen (Accessed: 30 May 2022).

NZ Herald (2022) BREAKING: Jacinda Ardern's Govt slashes fuel taxes from midnight; half-price public transport , Driven. Available at: https://www.driven.co.nz/news/breaking-jacinda-ardern-s-govt-slashes-fuel-taxes-from-midnight-half-price-public-transport/ (Accessed: 31 May 2022).

Obayashi, Y. (2022a) Japan may expand fuel subsidy to curb energy costs-minister, Reuters. Available at: https://www.reuters.com/business/energy/japan-may-expand-fuel-subsidy-curb-energy-costs-minister-2022-04-03/ (Accessed: 31 May 2022).

Obayashi, Y. (2022b) Japan to boost investment role in upstream LNG projects, Reuters. Available at: https://www.reuters.com/business/sustainable-business/japan-boost-investment-role-upstream-lng-projects-2022-04-15/ (Accessed: 30 May 2022).

Phillips, A. (2022) Interior Department to resume oil and gas leasing, charge higher fees, The Washington Post. Available at: https://www.washingtonpost.com/climate-environment/2022/04/15/interior-department-biden-oil-gas-lease/ (Accessed: 30 May 2022).

Renshaw, J. and Chestney, N. (2022) U.S., EU strike LNG deal as Europe seeks to cut Russian gas, Reuters.

Reynolds, S. (2022) Now is Not the Time to Build More LNG Import Terminals in Asia.

Rinke, A. and Marsh, S. (2022) Germany is keen to pursue gas projects with Senegal, says Scholz on first African tour, Reuters.

Ritchie, H., Roser, M. and Rosado Pablo (2020) 'Energy', Our World in Data [Preprint]. Available at: https://ourworldindata.org/energy.

Rystad Energy (2022) Rystad Energy - Cheap, secure, and renewable – Europe bets on green hydrogen to fix energy woes, Rystad Energy. Available at: https://www.rystadenergy.com/newsevents/news/press-releases/cheap-secure-and-renewable-europe-bets-on-green-hydrogen-to-fix-energy-woes/ (Accessed: 31 May 2022).

Schröder, T. (2022) Nein zu kostenlosem ÖPNV und Tempolimit, ZDFheute live. Available at: https://www.zdf.de/nachrichten/politik/neun-euro-ticket-wissing-100.html#xtor=CS5-62.

Sgaravatti, G., Tagliapietra, S. and Zachmann, G. (2022) National policies to shield consumers from rising energy prices , bruegel. Available at: https://www.bruegel.org/publications/datasets/national-policies-to-shield-consumers-from-rising-energy-prices/ (Accessed: 31 May 2022).

Tan, F. (2022) Abu Dhabi crude to head to Europe, replace Russian oil - sources, Reuters. Available at: https://www.reuters.com/business/energy/frances-totalenergies-ship-abu-dhabi-crude-europe-rare-move-sources-2022-04-25/ (Accessed: 30 May 2022).

The Local (2022) Denmark announces major plan to replace gas heating in homes, The Local. Available at: https://www.thelocal.dk/20220419/denmark-announces-major-plan-to-replace-gas-heating-in-homes/ (Accessed: 31 May 2022).

Tuttle, R. (2022) LNG project in Canada's east could be sped up to supply Europe, BNN Bloomberg. Available at: https://www.bnnbloomberg.ca/lng-project-in-canada-s-east-could-be-sped-up-to-supply-europe-1.1744304 (Accessed: 31 May 2022).

US Government (1974) H.R. 11372 - An Act to conserve energy on the Nation's highways. Available at: https://www.congress.gov/bill/93rd-congress/house-bill/11372/text/pl?overview=closed.

Verma, N. (2022) India's Russian oil purchases since Ukraine invasion more than double 2021 total, Reuters. Available at: https://www.reuters.com/world/india/indias-russian-oil-purchases-since-ukraine-invasion-more-than-double-2021-total-2022-04-25/ (Accessed: 31 May 2022).

Weir, K. (2022) Italy must reduce reliance on Russian gas, lift domestic production, Reuters. Available at: https://www.reuters.com/business/energy/italy-must-reduce-reliance-russian-gas-lift-domestic-production-draghi-2022-02-25/ (Accessed: 31 May 2022).

Wintour, P. (2022) Germany agrees gas deal with Qatar to help end dependency on Russia, The Guardian. Available at: https://www.theguardian.com/world/2022/mar/20/germany-gas-deal-qatar-end-energy-dependency-on-russia?msclkid=202fa274cf-9c11ec8976bd9554093ffa (Accessed: 30 May 2022).

World Bank (2022) Commodity Markets Outlook April 2022, World Bank Group. Available at: https://www.worldbank.org/en/news/press-release/2022/04/26/food-and-energy-price-shocks-from-ukraine-war?msclkid=e58e8b44cfa111ec877ee0cde553b4ea (Accessed: 31 May 2022).

Zick, T. (2022) Serbien und Russland: Kommunizierende Röhren , Süddeutsche Zeitung. Available at: https://www.sueddeutsche.de/politik/serbien-russland-erdgas-1.5594275 (Accessed: 31 May 2022).

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NewClimate Institute is a non-profit institute established in 2014. NewClimate Institute supports research and implementation of action against climate change around the globe, covering the topics international climate negotiations, tracking climate action, climate and development, climate finance and carbon market mechanisms. NewClimate Institute aims at connecting up-to-date research with the real world decision making processes.

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