



INTERNATIONAL CENTRE FOR
SUSTAINABLE CARBON

ENVIRONMENTAL AND ENERGY POLICIES IN EUROPE

PREPARED BY DEBO ADAMS

PRESENTATION FOR JOGMEC DECEMBER 2022



JOGMEC

Japan Organization for
Metals and Energy Security

PRESENTATION OUTLINE

- EU Green Deal
- Renewable Energy Directive
- EU ETS (Emissions Trading System)
- Latest developments
- Impacts of reducing energy imports from Russia
- Alternatives to Russian gas
- Key message





EU GREEN DEAL

The Green Deal (2020) aims to achieve climate neutrality, including decarbonising the energy system by 2050

It aims to transform the EU into a modern, resource-efficient and competitive economy, ensuring:

- No net emissions of greenhouse gases by 2050
- Economic growth decoupled from resource use
- No person and no place left behind
- **Key principles:**
 - To prioritise energy efficiency
 - To develop a power sector based largely on renewable resources
 - To secure an affordable EU energy supply
 - To have a fully integrated, interconnected digitalised EU energy market
- Financed by part of the €800 billion NextGeneration EU Recovery Plan, and the EU's seven-year budget





EU 'FIT FOR 55' PACKAGE

Master plan for GHG emissions

Released in 2 parts, July and December 2021 includes drafts of legislation to underpin pledge to cut GHG by at least 55% in 2030 (from 1990). Part of aim to become climate-neutral by 2050

- **Industrial objectives:**
 - To reduce reliance on fossil fuels including coal, oil and natural gas
 - To expand the use of renewable energy sources including solar, wind and hydropower
 - To accelerate the development of electric cars
 - To spur clean-energy options for aviation and shipping

EU 'FIT FOR 55' – FIVE KEY ELEMENTS

- Tougher emission caps for power plants and factories
- Stricter national limits on GHG from 'non-ETS' sectors
- Stricter EU caps on CO₂ from cars
- Renewable energy
- Carbon Border Adjustment Mechanism (CBAM)





RENEWABLE ENERGY DIRECTIVE

- Introduced in 2009, revised 2018, proposed revision in 2021
- Target was 32% of renewable energy consumption by 2030
- July 2021 proposed revision to 40%
- May 2022, increased to 45% by 2030 as part of REPowerEU
- Adoption expected by end of 2022



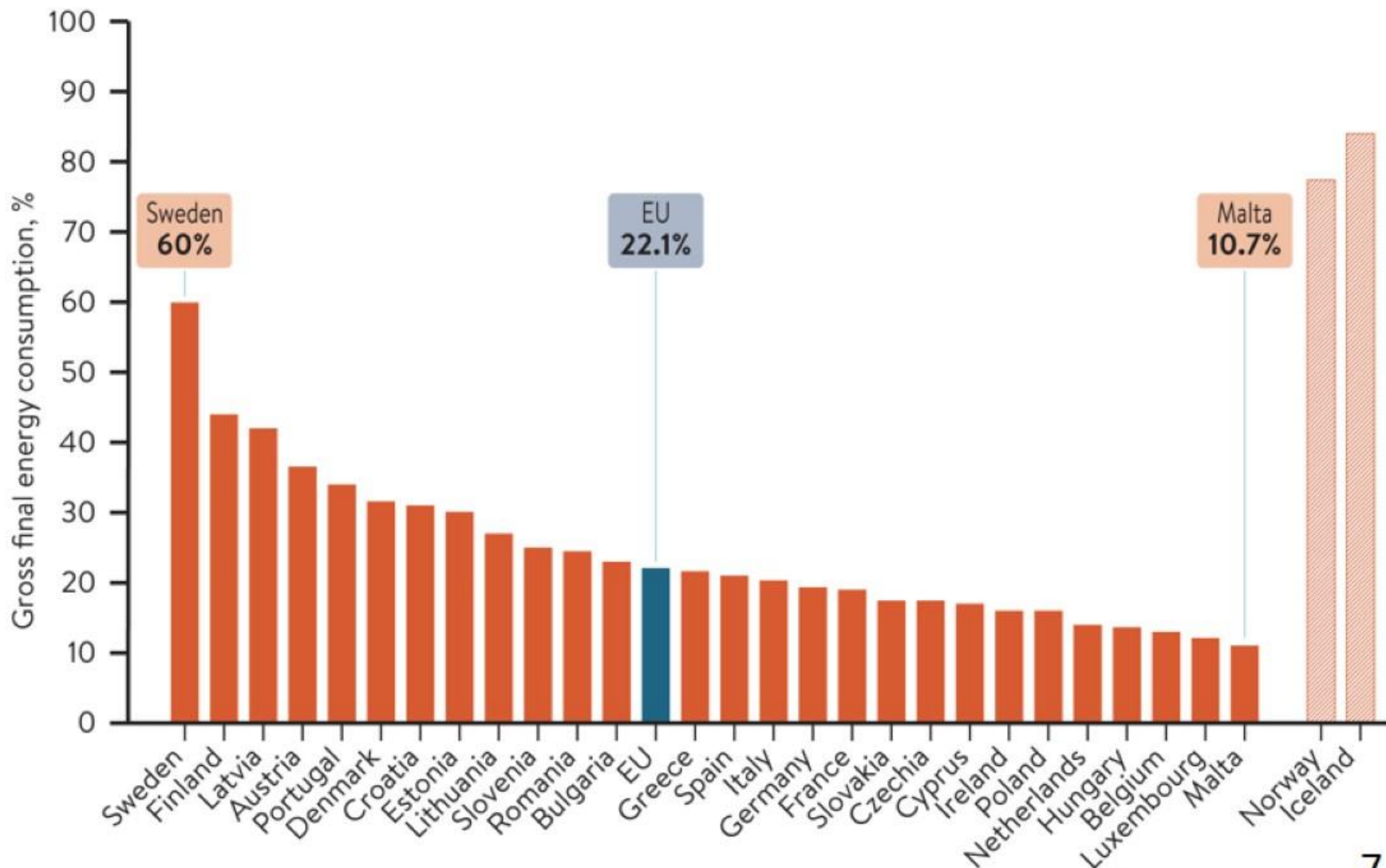


RENEWABLES SHARE BY COUNTRY, 2020

In 2019 renewables share of energy mix was 19.7%, and 22.1% in 2020, up from 9.6% in 2004

Provided by wind 36%, hydro 33%, solar 14%, solid biofuels 8%, other renewables 8%

Solar power fastest growing from 7.4 TWh in 2008 to 144.2 TWh in 2020





EU EMISSIONS TRADING SYSTEM 1

EU ETS launched in 2005. It's the first and largest carbon market. Works on the 'cap and trade' principle.

The EU ETS

- Operates in all EU countries plus Iceland, Liechtenstein and Norway (EEA-EFTA states)
- Limits emissions from 10,000 installations in the power sector and manufacturing industry, and airlines operating between these countries
- Covers 40% of the EU's greenhouse gas emissions

The EU ETS is driving emissions reductions cost-effectively

Installations covered by the ETS reduced emissions by about 35% between 2005 and 2019



EU EMISSIONS TRADING SYSTEM 2

The EU ETS covers:

CO₂ from

- Electricity and heat generation
- Energy-intensive industry sectors
- Commercial aviation within the European Economic Area

Nitrous oxide (N₂O) from production of nitric, adipic and glyoxylic acids and glyoxal

Perfluorocarbons (PFCs) from production of aluminium

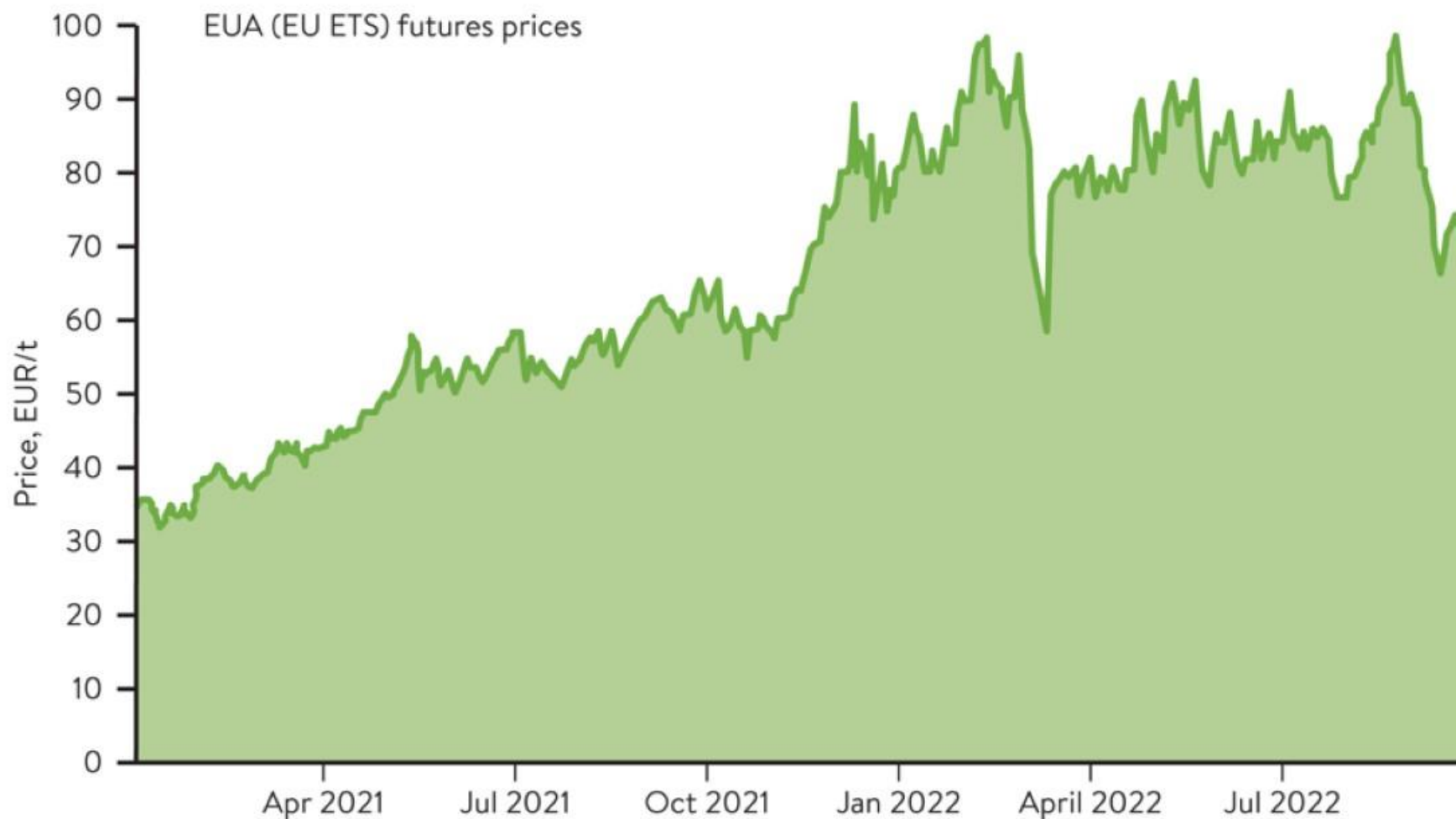


Niederaussem lignite-fired power plant, Germany



MARKET STABILITY RESERVE

The Market Stability Reserve (2019) resulted in higher and more robust carbon prices, which helped to ensure a year on year total emissions reduction of 9% in 2019, with a 14.9% reduction in electricity and heat production and a 1.9% reduction in CO₂ emissions from industry

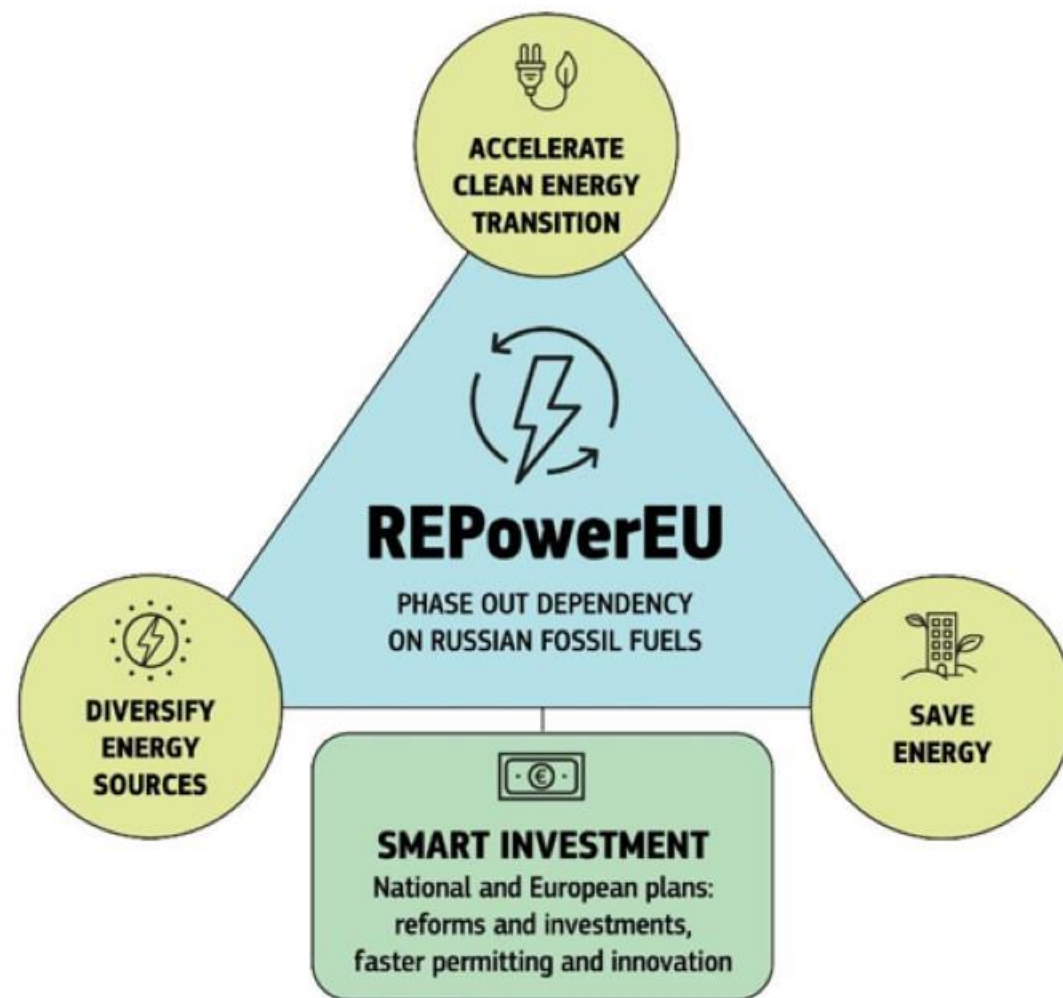




REPOWER EU PLAN

REPowerEU Plan aims to make Europe independent from Russian fossil fuels before 2030 and fast forward the green transition, while increasing the resilience of the EU-wide energy system. It is based on:

- Diversifying – to find alternative energy supplies, including gas, oil and coal
- Saving – of energy, including behavioural change and contingency measures for supply interruptions
- Accelerating clean energy – to spur massive investment in renewable energy





REPOWER EU

The REPowerEU Plan would increase total renewable energy generation capacity to **1,236 GW** by 2030 (up from the 'Fit for 55' target of **1,067 GW** by 2030)

It aims to bring online **>320 GW** of solar photovoltaic newly installed by 2025 and almost **600 GW** by 2030. This would displace of **9 billion m³/y** of natural gas by 2027

Clean Industry to cut dependency on Russian fossil fuels:

- Electrification, energy efficiency and uptake of renewables could save industry **35 billion m³/y** of natural gas by 2030, beyond 'Fit for 55' targets
- Largest reductions in gas, almost **22 billion m³/y**, could be made from non-metallic minerals, cement, glass and ceramics, chemicals production and refineries
- Around **30%** of EU primary steel production is expected to be decarbonised on the basis of renewable hydrogen by 2030

FINANCING REPOWER EU

€210 billion additional investment needed by 2027 to phase out Russian fossil fuel imports, currently **€100 billion/y**

The Recovery and Resilience Facility (RRF), provides additional funding for REPowerEU priorities

Member States can use the remaining RRF loans (currently **€225 billion**) and new RRF grants funded by the auctioning of ETS allowances, currently held in the Market Stability Reserve, worth **€20 billion**

Other sources of REPowerEU financing include: Cohesion Policy funds, European Agricultural Fund, Connecting Europe Facility, Innovation Fund, national fiscal measures, private investment, European Investment Bank





EU ENERGY PLATFORM

EU ENERGY PLATFORM set up to build mutually beneficial long-term partnerships to boost renewable energy and increase energy efficiency around the globe and cooperate on green technology and innovation

Actions:

- Increase LNG deliveries from USA and Canada and pipeline and LNG gas from Norway
- Increase cooperation with Azerbaijan
- Political agreements with gas suppliers, like Egypt and Israel to increase LNG supplies
- Restart energy dialogue with Algeria
- Continue cooperation with major producers in the Gulf - Qatar, as well as Australia
- Coordinate with gas buyers such as Japan, China and Korea
- Explore export potential of sub-Saharan African countries, including Nigeria, Senegal and Angola

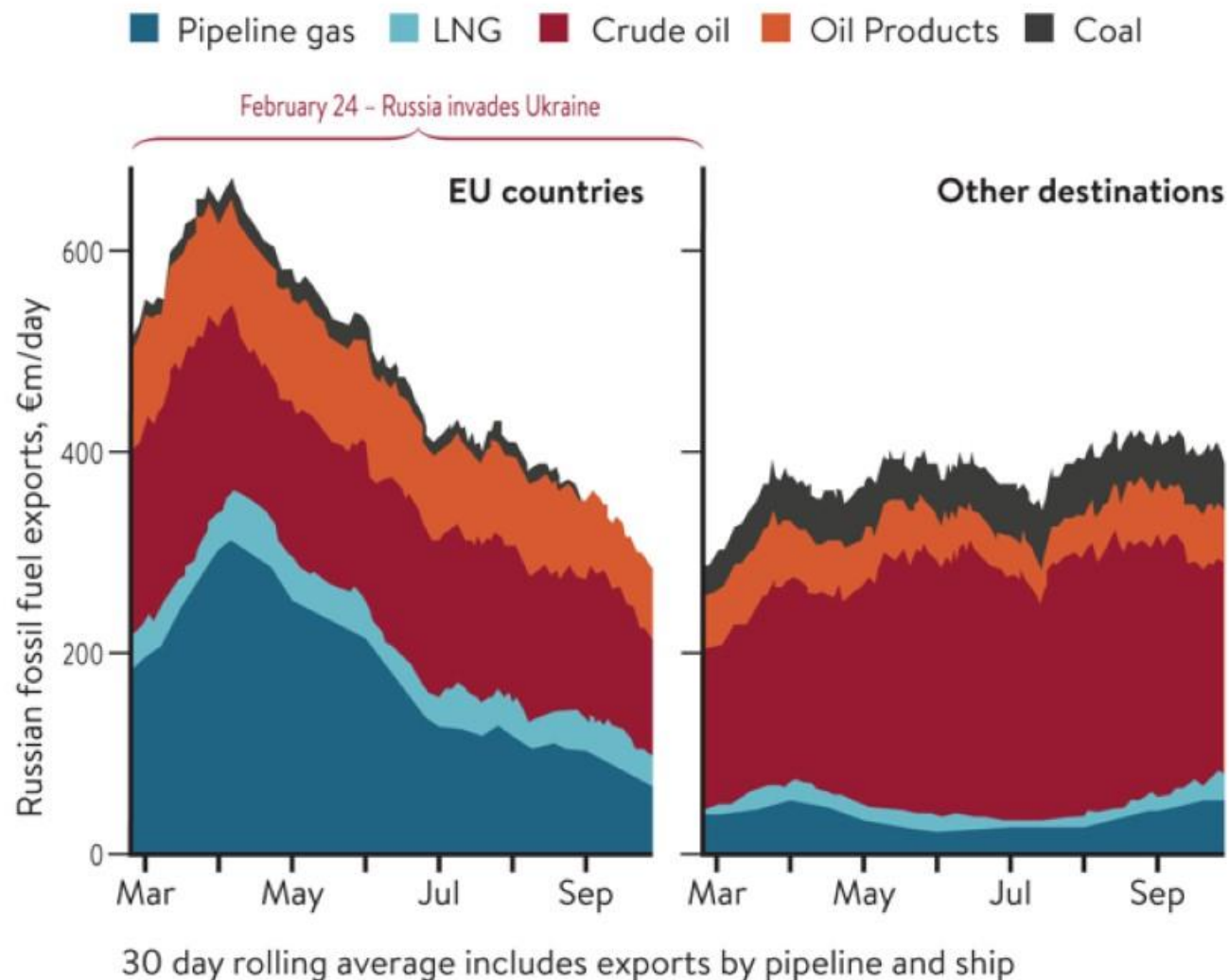


Port de Bouc, France



WHAT'S HAPPENING IN THE EU?

- EU countries have imported more than €100 bn of coal, oil and gas from Russia since February 2022 as part of the bloc's higher overall consumption of fossil fuels so far in 2022 (Oct)
- EU gas imports decreased significantly, and coal imports have ceased since 10 August. The EU still imports around €260m worth of Russian fossil fuels per day
- EU's estimated overall 11% drop in total gas consumption in the first half of 2022 was counterbalanced by an increase in the use of oil products by 8%, hard coal by 7%, and lignite by 12%
- Result is estimated increase of 2% in CO₂ emissions



Source: Centre for Research on Energy and Clean Air (Crea)



IMPACTS ON ENERGY OF RUSSIAN INVASION

- The price of carbon in the EU ETS has hit an all-time high of more than €99, as coal becomes re-embedded in Europe's electricity generation. Increased burning of coal for power generation rather than gas will probably last more than one winter
- EC has announced >€29 bn in aid available between 2021-2030 to partially compensate energy-intensive companies for high electricity prices driven up by the cost of the EU credits. The aim is to stop these companies relocating
- Very high gas prices, and lower levels of hydropower and wind power in Europe than usual, are also pushing power producers to turn to coal. This requires the purchase of more credits
- The threat of a European recession that reduces industrial output is a concern



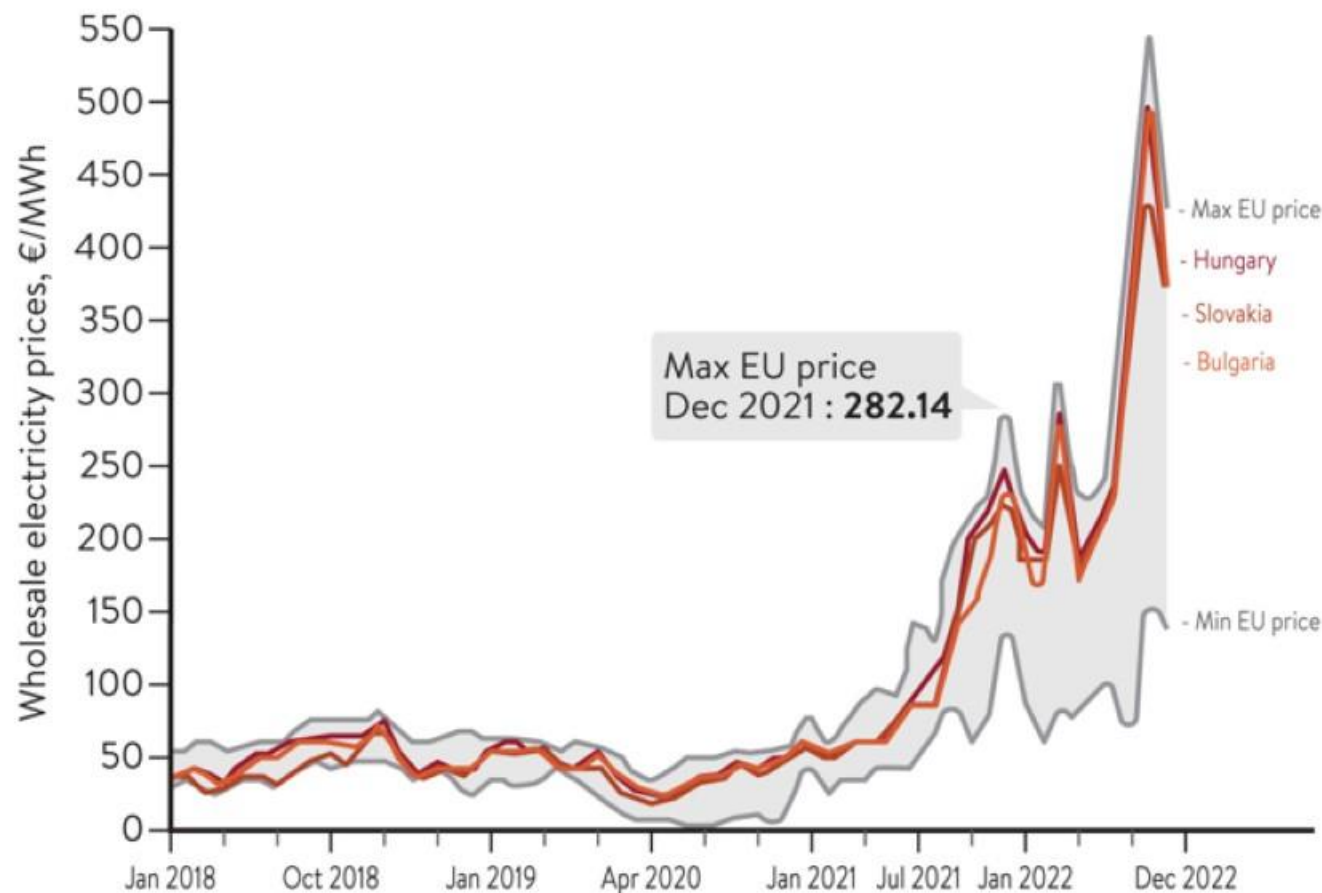
GAS

- In mid-October 2022, EU leaders endorsed plans for a price cap on natural gas. The aim is to reduce high energy costs that have fuelled inflation and threaten a recession
- Gas flows from Russia now account for about 9% of EU supply, down from 40% in 2021
- Gas prices in Europe have fallen sharply since end of August after spike of 340 €/MWh as countries sought alternative supplies to Russia
- Gas storage sites are >90% of capacity, mild autumn weather has reduced heating demand. Prices remain well above the 20-40 €/MWh range of the past decade
- Energy prices are still very high for companies. Already 70% of fertiliser making capacity and 50% of aluminium production have shut down in Europe. Concern that industry will move out of Europe



POLAND, EASTERN EUROPE

- Getting through winter is the priority
- Cost of firewood has doubled
- Relies on coal to heat homes and for 70% of electricity generation
- Has removed quality standards for burning coal. Burn “everything except tyres” to keep warm
- Govt subsidising purchase of coal and investing in natural gas
- 4 Mt coal in Polish ports, ready for distribution
- Fixed price of coal at near 300 \$/t
- Suspended a ban on using lignite in September for heating homes until April 2023
- Increasing domestic coal production
- State-owned entities told to order 7.5 Mt of coal



Wholesale electricity prices in Eastern Europe

Source: Financial Times 2022



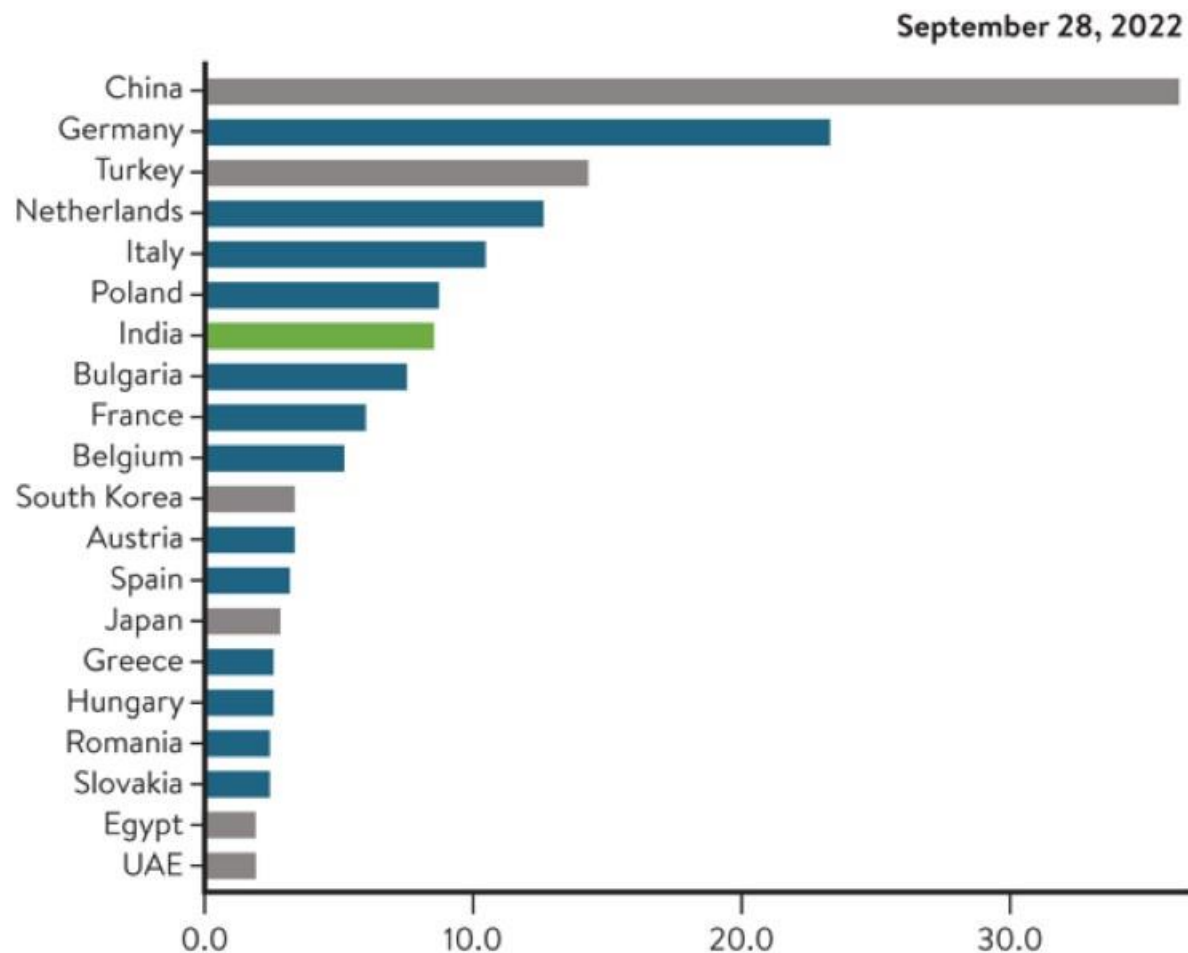
GERMANY

- All three of the country's remaining nuclear power plants (Isar 2, Neckarwestheim 2 and Emsden) will continue operating till mid-April 2023
- Government will introduce an 'ambitious' new law to improve energy efficiency, and also legislation to bring forward to 2030 the phaseout of coal in North Rhine-Westphalia, Germany's most populous state. However, several other states have rejected the idea so it is not agreed nationally. The deadline for coal use in Germany originally scheduled for 2038
- Germany's cabinet passed two decrees to prolong the operation of sizeable hard coal-fired power plants and bring back idled brown coal capacity to boost supply and network reserves. Up to 10 GW of coal- and oil-fired capacity added to mix in case of a critical gas supply situation



BEYOND EUROPE

- Indian and Chinese oil buying has offset most of the fall in Russian shipments to Europe, the biggest volume growth coming from India
- Russia's coal exports have regained about half of the loss of the EU market, with Turkey and India taking more coal
- India imported almost no fossil fuel from Russia before the invasion
- Russia is selling the coal at 30-50% discount



Cumulative value of fossil fuel imports from Russia, weekly
from February 24, €bn – Top 20 countries

Source: Financial Times 2022



FINAL THOUGHTS

The pledges and legally binding country targets to reduce greenhouse gas emissions put forward at COP26 will not be enough to limit global warming to 2°C, even if met in full. Only a few governments have strengthened their commitments since 2021

From Japan to the Netherlands, nations are building, reopening or delaying the closure of coal power stations while investing in oil and gas development abroad

Even if they are short-term, stop-gap measures, these moves inevitably take countries further from their net zero emissions targets

The energy crisis will not be 'a one winter tale', making the winter of 2023/2024 more challenging for Europe's gas procurement

Although the EU is maintaining its plans for the energy transition and has introduced new policies such as the REPowerEU, Russia's invasion of Ukraine has extended the life of some fossil-fuelled plants, while increasing the determination of much of the EU to become more energy independent and raise their ambitions to transition to renewable energy



KEY MESSAGES

- Energy security is higher up the agenda in the EU
- Policies remain in place to promote net zero emissions but more coal is being used and its phaseout is being delayed
- How long this lasts depends substantially on the Russian hostilities in Ukraine
- Longer term the emphasis will return to net zero emissions



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