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Taxes and subsidies in EU energy policy - Fit for 55?

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Abstract

In the "Fit for 55" package of July 2021, the European Commission proposed inter alia a revision of the energy taxation directive with the intent of increasing tax rates for fossil fuels that should contribute to achieving the EU's emission reduction targets for 2030. Since then, climate policy challenges in the EU have been amplified by sharp increases in electricity and gas prices mainly as a result of the war in Ukraine. Energy price spikes have led to the implementation of numerous compensation measures for households and firms in EU Member States. In this article, we provide an overview of the discussion on energy taxation in the EU and analyse compensation measures implemented during the energy crisis. We find that energy cost related compensation measures counter climate policy efforts. A stronger focus on vulnerable groups would have reduced the overall costs of measures and entailed stronger energy efficiency incentives.

Keywords: EU, energy taxation, energy cost subsidies, energy crisis

1. Introduction

The EU has committed itself to reducing its greenhouse gas (GHG) emissions by 55% by 2030 compared to 1990 and to achieving greenhouse gas neutrality by 2050 (Regulation (EU) 2021/1119). Reaching these ambitious goals requires a comprehensive set of policy instruments, including market-based and command-and-control policies.

In recent years, the European Commission in this context has put increasing emphasis on market-based instruments. In the "Fit for 55" package (European Commission, 2021a), the European Commission proposed a revision of the Emission Trading Directive – i.e., a strengthening of the existing scheme and its extension to maritime transport as well as the introduction of a new separate ETS for road transport and buildings (European Commission, 2021b, 2021c, 2021d), the introduction of a carbon boarder adjustment mechanism (European Commission, 2021e), and a revision of the Energy Taxation Directive (European Commission, 2021f).[1]

Climate policy challenges in the EU have recently been amplified by sharp increases in electricity and gas prices as a result of the war in Ukraine, as well as unfavourable weather conditions impeding electricity generation from hydro and nuclear power plants during summertime. Already in October 2021, wholesale electricity prices[2] in the EU had been almost three times as high as the 2019 average. This rise in wholesale prices reflected primarily soaring gas prices driven by higher global demand in the course of the economic recovery after the Covid-19 crisis and constrained gas deliveries from Russia, intensified by unfavourable weather conditions for renewable electricity generation. All Member States are affected by the increase in gas and electricity prices, albeit to a different degree; a larger share of gas in the energy mix, little diversification of suppliers or other restrictions in the gas supply imply higher cost increases.

Rising energy prices entail negative impacts on both income distribution and the competitiveness of the industry sector. Low- and lower-middle-income households are most strongly affected by rising prices for heating fuels and electricity, since they need to spend a significantly higher share of their incomes on these goods (Menyhért, 2022). For the industry sector – and particularly for energy-intensive industries – rising energy prices drive up production costs, which decreases competitiveness vis-à-vis other countries with more stable energy prices.

The sharp rise in energy prices has led to the adoption of numerous compensation measures in the Member States. These mainly include increases in existing social transfers, reductions in existing taxes and charges (mainly energy taxes and VAT), the introduction of new subsidies, but also direct price regulation (especially for grid-based energy sources).

[1] Moreover, the package contained proposals for the reform of five other key legal documents in the field of energy and climate policy, such as the Renewable Energy Directive, the Energy Efficiency Directive, the Effort Sharing Regulation or the regulation on CO_2 performance for cars and vans, as well as the introduction of three new regulations on fuels.

[2] Increases in retail prices were lower, since the wholesale price typically accounted for at most one third of the retail price of electricity (other components include transmission and distribution costs and taxes and levies).

In this article we provide an overview of (1) the current energy taxation framework in the EU and the proposed changes in the context of the "Fit for 55" package, (2) the EU's framework for compensation measures in the current energy crisis, and (3) the compensation measures ultimately implemented by the Member States. We then discuss the implemented measures in terms of their effect on energy savings as well as their social impact on households and their effects on the competitiveness of companies.

2. The EU framework for energy taxation and compensation measures

2.1 Energy taxation

2.1.1 EU Energy Taxation Directive

In the EU, minimum tax rates for the various energy sources have been defined by the Energy Taxation Directive (Council Directive 2003/96/EC) since 2003. Directive 2003/96/EC covers propellants, heating fuels and electricity[3]. For fossil heating fuels – natural gas, coal, and coke – and electricity, differentiated rates were defined for business applications and households, i.e. minimum excise duties for non-business users were 50% to 100% higher than for business users (see Table 1). Moreover, minimum excise duties on transport fuels were raised compared to the tax rates in Directive 92/82/EC (Council Directive 92/82/EEC): For leaded and unleaded petrol, the minimum excise duties were increased by 25% to EUR 12.7 per GJ (EUR 421 per 1,000 litres) and EUR 10.1 per GJ (EUR 359 per 1,000 litres) respectively. For diesel a stepwise increase in the minimum tax rate was scheduled: It was first raised by 23% to EUR 8.4 per GJ (EUR 302 per 1,000 litres) and in a second step, from 2010 on, to EUR 9.2 per GJ (EUR 330 per 1,000 litres), which constituted an increase of 32%. This implies that the spread between petrol and diesel minimum tax rates – when measured in Euros per GJ – was reduced from 28% to 19% between 1993 and 2010, but this differentiation is still in conflict with GHG emission mitigation objectives, since the combustion of diesel entails the same amount of CO_2 emissions per GJ as petrol and higher emissions per litre[4]. Since a higher taxation of diesel implies higher costs particularly for freight transport, however, diesel is currently taxed at a lower rate than petrol in the vast majority of the Member States[5].

Energy sources used to produce electricity, in shipping within Community waters[6] or in aviation[6] are generally exempt from energy taxation. Moreover, the Energy Taxation Directive allows Member States to apply various other exemptions or reduced tax rates: For households and/or charitable organisations, for instance, exemptions or a reduced rate might be applied on

[3] It is to be noted that especially with respect to electricity a number of exemptions existed for different applications such as chemicals reduction or in electrolytic and metallurgical processes and that in Annex 2 of Directive 2003/96/EC a comprehensive list for diverse national exceptions for different application areas and / or fuels was included.

[4] Moreover, diesel also causes other air pollution like particulate matter.

[5] Except for Hungary where diesel was taxed at a higher rate than petrol (both per litre and per GJ) as of January 2021, and for Belgium and Slovenia where diesel was taxed at the same and respectively at a higher rate per litre yet at a lower rate per GJ.

[6] Except for private pleasure uses.

electricity and heating fuels; likewise reduced rates might be used for energy-intensive businesses, provided that minimum excise duties as defined in the directive on average are met for each business. Other potential exemptions or reduced rates relate for instance to renewable electricity or energy products used in combined heat and power plants, public transport, or inland shipping.

Today, the energy tax rates actually applied differ pronouncedly between Member States and are in many cases well above the minimum tax rates stipulated by the directive.[7] Against this background, the European Commission (2011) already in 2011 had made efforts to reform the energy tax directive and to revise the minimum tax rates based on the energy content and the CO_2 intensity of the energy sources. However, these plans failed due to resistance from individual Member States due to the unanimity requirement in taxation matters. A further attempt to adjust the minimum excise duty levels on energy has been made in the "Fit for 55" package of July 2021.

[7] See also Kettner and Kletzan-Slamanig (2017).

Table 1. Minimum Excise Duties in Directive 2003/96/EC and in the Fit for 55 Proposal

	Current MED	Minimum tax rates proposed for the recast of the Energy Taxation Directive		
		Start of transitional period (2023) – non-indexed	Final rate after completion of transitional period (2033)	
			Non-indexed	Indexed
		in €/GJ		
Motor fuels				
Petrol	10.95	10.75	10.75	13.25
Gasoil	9.18	10.75	10.75	13.25
Kerosene	9.50	10.75	10.75	13.25
Non-sustainable biofuels	0	10.75	10.75	13.25
LPG	5.74	7.17	10.75	13.25
Natural gas	2.60	7.17	10.75	13.25
Non-renewable hydrogen	0	7.17	10.75	13.25
Sustainable biofuels (not advanced)	0	5.38	5.38	6.63
Low-carbon fuels	0	0.15	5.38	6.63
Kerosene (aviation)	0	0	10.75	13.25
Fuels for agriculture, stationary motors, maritime and inland shipping, and heating fuels				
Gasoil	0.58	0.9	0.9	1.11
Heavy fuel oil	0.37	0.9	0.9	1.11
Coal and coke	0.15[1] / 0.3[2]	0.9	0.9	1.11
Kerosene	0[1, 2] / 0.6[3]	0.9	0.9	1.11
Non-sustainable biofuels etc.	0	0.9	0.9	1.11
LPG	0	0.6	0.9	1.11
Natural gas	0.2[1] / 0.3[2, 3]	0.6	0.9	1.11
Non-renewable hydrogen	0	0.6	0.9	1.11
Sustainable biofuels etc.	0	0.45	0.45	0.55
Low-carbon fuels	0	0.15	0.45	0.55
Electricity and advanced biofuels				
Electricity	0.14[1] / 0.28[2]	0.15	0.15	0.18
Advanced biofuels	0	0.15	0.15	0.18

[1]) business, [2]) non-business, [3]) agriculture and stationary motors

2.1.2 The "Fit for 55" proposal for a revision of the Energy Taxation Directive

According to the "Fit for 55" proposal for a revision of the Energy Taxation Directive (European Commission, 2021f), minimum excise duties should be based on the energy content of the energy sources, distinguishing between three categories of use: (1) general fuels, (2) fuels used in agriculture and forestry, in stationary engines, construction vehicles and the like, and off-road vehicles, and (3) heating fuels. Over a period of ten years, the minimum tax rates on general fuels are to be increased or harmonised to 10.75 € / GJ (in real prices), and for the other two categories the tax rate is to be raised to 0.9 € / GJ (see Table 1). For advanced climate-friendly energy sources, reduced rates should apply within each category, and for electricity – regardless of where it is used – the lowest minimum tax rate of 0.15 € / GJ should be defined. Moreover, all minimum tax rates are to be automatically adjusted for inflation, according to the development of the core consumer price index (excluding energy and food). In contrast to Directive 2003/96/EC, the proposal also stipulates that energy carriers subject to the same minimum tax rate are to be taxed equally, which would imply for instance identical tax rates for diesel and petrol, and that the ranking of the minimum tax rates is to be followed by the Member States. This means that energy sources that are not sustainable should be taxed more heavily than sustainable energy sources and that the lowest tax rates should apply to electricity and advanced biogenic fuels.

For air transport within the European Union, according to the Commission's proposal energy tax exemptions are to be abolished and the tax rate on kerosene used in the aviation sector is to be raised to the level of other fossil fuels over a transitional period of ten years. However, the tax exemption for fuels used for pure cargo flights will remain in place. Fuels used for intra-community shipping, including fishing, are also to be taxed. In order to reduce the risk of carbon leakage by refuelling ships used for journeys within the EU with fuel from outside the EU, marine fuels are to be subject to the same reduced tax rate as, for example, in agriculture. No taxation is planned for sustainable fuels used in aviation or navigation during the transition period.

According to the proposal, electricity generated from renewable energy sources or in highly efficient combined heat and power (CHP) plants may still be exempted from taxation or taxed at lower rates. Member States would be permitted to define reduced tax rates, for example, for energy sources used in CHPs, public transport or emergency vehicles, for low-income households[8] and charitable organizations, as well as for agriculture and forestry. Moreover, Member States might also apply reduced energy tax rates for energy-intensive companies or companies that are subject to measures to increase energy efficiency or protect the environment. However, the reduced tax rates might not fall below the minimum tax rates specified. Alternative to reduced tax rates, vulnerable households might also be relieved through an exemption from taxation for a period of ten years.

2.2 Energy cost compensation measures

In the light of the soaring energy prices in the EU, the political discussion turned to the implementation of (effective) measures for mitigating detrimental effects on households and

[8] With an income below 60% of the median income.

businesses. While measures were primarily conceived at Member State level, in October 2021 the Commission presented a toolbox against rising energy prices setting out measures to be taken at EU level as well as avenues for action in the Member States, and finally, in September 2022, an emergency intervention focussing on the introduction of windfall profit taxes to finance compensation measures and on enabling Member States to temporarily set electricity prices below costs. Moreover, in its RePowerEU Plan of May 2022 (European Commission, 2022a), the European Commission put forward a plan for reducing the dependency on Russian gas, including a ramp up of investments in energy efficiency and renewable energy sources as well as diversification of gas supplies. Since the RePowerEU Plan did not include any short-term compensation measures but emphasised that a quick adoption of the proposed revision of the Energy Taxation Directive would contribute to increasing the resilience of the EU against supply disruptions, in the following we will focus on the Commission's toolbox and the emergency intervention.

2.2.1 Tackling rising energy prices: A toolbox for action and support

In autumn 2021, the Commission presented a toolbox of measures and assistance against rising energy prices (European Commission, 2021g). This toolbox drew from the existing legal framework in the EU and aimed at enabling an immediate response of the EU Member States to the effects of sudden price increases. It comprised both immediate measures to protect vulnerable groups as well as medium-term measures that should accelerate the energy transition in line with the climate targets.

For the short term, the focus was put on measures that could promptly mitigate negative effects on the vulnerable groups, but do not impede market dynamics or decarbonisation efforts. The compensation measures should be granted only for a limited period of time, and include

- direct support for consumers who are affected by energy poverty – for instance through vouchers or payment of (parts of) the energy bill;
- reductions in tax rates for vulnerable consumers;
- reductions in energy tax rates in line with the minima defined in Directive 2003/96/EC (see above) and value added taxes in line with the VAT Directive (Council Directive 2006/112/EC);
- financing support for renewable energies from alternative sources (and not via levies on electricity prices);
- encouragement of long-term renewables power purchase agreements (e.g. by aggregating end-user demand or by addressing relevant administrative barriers)
- support for companies[9] or industries in line with the (sectoral) decarbonisation objectives;
- prevention of grid disconnections; or

[9] Options for State Aid measures eligible according to the European Commission in the Temporary Crisis Framework are defined in European Commission (2022b).

- suspension of payments.

In the medium term, Member States' actions should focus on fostering energy efficiency and the resilience to price spikes as well as decreasing the dependency on fossil fuels, while ensuring affordable prices and a decarbonisation of the energy system. Measures include

- the development of options for energy storage as a central contribution to flexibilisation;
- conducting an analysis of the advantages and disadvantages of the current electricity market structure by the regulatory authority ACER[10]; or
- the further acceleration of the expansion of renewable energy sources and an increase in investments in energy efficiency and in European grids.

2.2.2 Emergency intervention to address high energy prices

On October 6th, 2022, the European Commission published the Council Regulation on an emergency intervention to address high energy prices (Council Regulation (EU) 2022/1854). This regulation was formulated against the background of continuous price increases and concerns about energy security in the European Union, due to lower levels and disruptions of gas deliveries from Russia. It stipulates targets for electricity savings in the Member States[11] and aims at setting out a uniform framework for the definition of eligible compensation measures and their financing. All measures included are of temporary nature.

The emergency intervention provides Member States for an extension of electricity price setting to small and medium-sized enterprises (SMEs). Moreover, it introduces the possibility to temporarily set electricity prices below costs, provided that (1) fixed prices are only granted for a limited amount of electricity consumption and energy savings incentives are maintained, (2) no discrimination between suppliers occurs, and (3) suppliers receive a compensation for supplying electricity below cost. Other potential compensation measures as listed in the regulation include

- direct transfers to electricity consumers, including reductions in grid tariffs;
- payments to electricity suppliers who have to deliver electricity to customers below costs in case prices are set by the Member States (see above);
- reductions in electricity bills; and
- support of investments in decarbonisation technologies, renewables and energy efficiency.

According to the emergency intervention, Member States shall tax windfall profits both in the electricity sector and in the crude petroleum, natural gas, coal and refinery sectors: For the electricity sector, a revenue cap of EUR 180/MWh shall be applied to electricity sales from "infra-marginal producers", i.e. power plants with low generation costs such as renewables,

[10] Agency for the Cooperation of Energy Regulators.

[11] Member States shall reduce their total monthly gross electricity consumption by 10% compared to a reference period (i.e. the average over the winter periods in the years 2017/2018 to 2021/2022), both in general and during peak hours.

nuclear or lignite; the choice of a lower revenue cap is possible. For the remaining energy sectors taxable profits exceeding a 20% increase of the average of the taxable profits in the last four fiscal years shall be taxed at a rate of at least 33% as a solidarity contribution. The funds raised shall contribute to financing compensation measures against high energy prices in the Member States.

3. Compensation measures against high energy prices implemented by the Member States

The EU documents provide only rough guidelines on compensation measures mitigating the effects of the current energy crisis. Since 2021 the EU Member States have adopted a broad range of measures against rising energy prices. To collect information about the measures implemented in the Member States desk research was carried out between August and October 2022. Only measures at the federal level were considered. The research used a Bruegel dataset (Sgaravatti, Tagliapietra, & Zachmann, 2021) on national policies in the current energy crisis covering the EU Member States as well as Norway and the UK as a starting point. The dataset was first published in November 2021 and has been updated several times since. On the website the measures are described qualitatively, categorized into groups, e.g., "reduced energy tax/VAT" and "retail price regulation", and their allocated funding is estimated.

In contrast to the Bruegel dataset, our research focuses on measures against energy prices differentiated by energy source. Additionally, emphasis was put on the foreseen period the measure would be in place and the targeted groups. Therefore, the dataset and its sources were extended by internet research regarding this detailed information. Sources were mainly news articles and government information where available in English or German language.

The result of the desk research was a detailed list of measures to cushion consumers against rising energy prices in the EU 27 disaggregated by the energy sources electricity, natural gas, and heating and transport fuels. Moreover, measures have been noted which do not address a specific energy source, for example household heating costs, or which address other energy sources like pellets or are directed towards reducing the demand for (fossil) energy, e.g., subsidies for renewable heating system or public transport tickets.

In a next step the measures have been classified into the following categories and sub-categories:

- tax reduction: VAT, excise taxes;
- reduction of price components: grid charges, RES-E support;
- price cap: limited[12], unlimited;
- price reduction/subsidy;
- compensation payments: proportional, lump-sum payment; and

[12] I.e., the reduced price is only applied to a certain quantity corresponding to a certain amount of a household's energy consumption.

- other measures (such as support programs for households to replace fossil fuel heating systems or to increase energy efficiency by replacing old electric appliances).

The first four categories include measures which are to reduce the respective energy price, whereas the fifth category contains compensation payments for rising energy bills and the sixth accompanying support measures to reduce energy consumption permanently.

While the trend of rising gas and electricity prices was expected to be temporary, the European Commission's toolbox of autumn 2021 proposed i.a. short-term measures to protect vulnerable groups without undesirable effects on the EU single market, incentives to reduce energy consumption or the energy transition, which should be targeted and time limited. As such measures lump-sum payments or reduced energy tax rates were proposed as well as the reduction or suspension of levies for renewables support (see section 2.2.1).

Our analysis shows that a couple of EU Member States have introduced measures as such already in mid-2021, for example, compensation payments for electricity costs of targeted households in Sweden or for heating cost in Romania. Examples for energy tax reduction on fuels are found for Portugal and Poland, which also has reduced the VAT on electricity and natural gas from December 2021.

As the energy price rise has been exacerbated by the Russian war against Ukraine, which began in February 2022, the EU Member States rolled out a variety of additional support measures to protect households and firms. Table 2 gives an overview of the measures in the EU 27 Member States classified into the five different categories. The overall picture shows a strong focus on tax reductions alongside with more targeted support for vulnerable households in the form of lump-sum payments. The Nordic countries (Finland, Denmark, Sweden) have implemented fewer instruments compared to other Member States.

Since fall 2021, taxes, levies and charges on energy have been reduced in numerous EU Member States: In around 60% of the countries, this includes reductions in the VAT on electricity and gas, but also on other energy sources (like transport fuels, district heat, firewood or heating costs in general), and in over 80% of the countries' reductions in excise duties. In 15 Member States excise duties have been reduced for transport fuels – in some cases down to the minimum rate allowed in the EU Energy Taxation Directive (see section 2.1.1). Thereby, no difference between petrol and gasoil was made. In contrast to the other Member States, in Slovenia petrol had previously been taxed at a higher rate than gasoil what has been reversed by lowering the excise duties down to the minimum rate. Other measures to mitigate the rising prices of transport fuels include price caps that have been implemented in Slovenia, Croatia and Hungary or price subsidies like the fuel discount in France. Not covered in Table 2 below are measures which intended to reduce the fuel demand by subsidizing public transport fees (e.g. the nine-euro-ticket in Germany[13]) and changes in existing schemes for commuter allowances.

The reductions in taxes or other charges were limited in time, but the period has in many cases been extended until the end of 2022, the first quarter 2023 or even longer. Moreover, in some

[13] From June to August 2022, a monthly ticket for public transport throughout Germany was offered for nine euros (except for long-distance trains and busses).

countries, the introduction of carbon taxes has been postponed (Austria[14]), the carbon tax currently in place suspended (Slovenia) or the carbon tax rate has not been increased as planned (Portugal, Germany). The reduction of taxes or levies was not targeted at any specific group. Only in Cyprus, where the VAT on electricity was in general lowered to 9%, an even lower rate of 5% applies for vulnerable household groups.

The toolbox against rising energy prices explicitly mentions the need to disconnect levies for the support of renewable energy from the electricity price (see section 2.2.1). Eight Member States have followed the Commissions' recommendation by either suspending the levy for RES-E support or by abolishing it as was the case in Germany. Approximately the same number of Member States has reduced grid charges mainly for electricity. Two of these countries have at the same time lowered the grid charges on gas (namely Estonia and Italy), and only Luxembourg reduced the charges for gas but not for electricity.

Furthermore, 18 countries have opted to cap energy prices either limited to a certain basic consumption level, as it is the case in Austria for electricity or in Germany and the Netherlands for electricity and gas, or in a consumption-independent form, i.e. the reduced price is not limited to a certain amount of consumption. Price caps have been introduced for all kinds of energy sources, foremost for electricity and gas but also for transport fuels or coal (Poland). Spain and Portugal decided to cap the price only for gas used in electric power plants, thereby decreasing wholesale electricity prices. At the time of the research, in most of the Member States which have introduced a price cap it is supposed to be in place only for a few months or until mid-2023. Only in some cases the cap will be in place until 2024 (for example in Austria or Slovakia).

The category "price subsidies" contains measures as reduced electricity or gas tariffs for particular groups, gas or electricity price subsidies (e.g. as in Latvia or Estonia) or rebates on transport fuel prices per litre (e.g. as in Bulgaria or France). Greece, as an example, primarily introduced a program to subsidize gas and electricity prices for households and businesses where the amount of the subsidy depends on the consumed quantity, which has been extended and adjusted several times.

In addition to tax cuts and price caps, nearly all the EU Member States also resorted to lump-sum compensation payments. Even though the European Commission emphasized to focus on compensation payments to vulnerable or energy poor households, lump-sum payments have also been implemented by nearly 30% of the Member States without focusing on specific household groups. In most cases, these measures are not addressing one specific source of energy but rather more generally total energy costs or heating costs.

While lump-sum payments are mostly directed towards (vulnerable) households, firms are compensated proportionally for their rising energy bills as for example in Austria, Germany, Slovenia, or Luxembourg. Thereby emphasis was put on energy-intensive firms and highly affected

[14] In Austria, the introduction of a CO_2 tax was scheduled for July 2022 but has been postponed by three months due to the increase of prices. However, this did not affect the "climate bonus", a lump-sum payment related to the social-ecological tax reform, which was even increased to 250 € for all citizens. The payment of the bonus started in September (one month earlier than scheduled).

economic sectors that had experienced a significant rise in energy costs compared to previous years or relative to their turnover.

The RePowerEU plan released in May 2022 aims at reducing the dependency on Russian gas in the EU as soon as possible. According to the EU Commission the measures against the energy crisis should support the reduction in energy demand, foster the increase in energy efficiency and protect vulnerable groups from rising energy costs at the same time. As an example, a VAT reduction on high efficiency heating systems is mentioned. Later on, also the EU emergency intervention emphasized the need to reduce electricity consumption. Measures as such have been implemented in various countries, like Greece, Latvia or Finland, and comprise different investments subsidies for more efficient energy appliances or renewable heating systems. Partly, these subsidies are provided exclusively for vulnerable households, for example in the Netherlands the program for subsidizing energy saving measures is particularly directed towards low-income households. A similar program was also introduced in Ireland or Austria. In Lithuania, subsidy programs have been further established for firms, for example for the use of renewable energy or the renovations of buildings.

Table 2: Energy tax changes and subsidies in EU Member States in the Energy Crisis

EU27	Tax reduction		Reduction of price components		Price cap		Price subsidy	Compensation payments	
	VAT[1]	excise tax	Grid charges	RES-E support	limited	unlimited		proportional	lump-sum payment
AT		E, G		E	E			E(B), G(B), T(B)	E(HH), G(HH), T
BE	E, G	T					E[5]		E(HH), G(HH), F(HH)
BG	G, HC	E, G, F				E(HH)	T	E, G	E(B)
CY	E*	T						E	S(HH[2])
CZ	E, G	T		E		E, G		E(B), G(B)	E(HH), G(HH), HC(HH)
DE	G, F	T	E	E	E, G			E(B), G(B)	E(HH[2]), HC(HH*)
DK		E							E(HH*), G(HH*), F(HH*)
EE			E, G		E(HH), G(HH)		E(HH)	E(HH*), G(HH[2]), F(HH)	
ES	E	E	E(B)			G[3], F[3]	G[5](HH*), T		E*, G(UN), HC(HH*)
FI	E	E							
FR		E				E, G	T		E*, G(UN), HC(HH*)
GR							E[2], G*, F	G	T(HH*), HC(HH*)
HR	G, HC	T				E, G(HH), T, HC	T, F		E(HH*), G*
HU		T			E, G	T[4]			
IE	E, G	T, F		E					E(HH), T(HH*)
IT	G	G, T	E, G					E(B), G(B)	G(HH*)
LT	HC								E, G, HC(HH)
LU	G	T	G	E		E, G	F	E(B), G(B), T(B)	E(HH*)
LV			E	E	E(HH)	G(HH)	G(HH), HC, F	E, HC(HH)	
MT		T				E			
NL	E, G, F	T			E(HH), G(HH)				E(HH[2]), G(HH[2]), F(HH*)
PL	E, G, T, F	E, T			E	F	G[5]		HC(HH), F(HH)
PT	E	T	E			G[3]		T	G(B)
RO		E(B)	E(B)	E(B)	E, G		T		HC(HH*)
SE		T							E(HH*), T(H)
SI	E, G, F	E, G, T, F[6]	E(HH)	E		E, G, T		E(B), G(B)	E(HH*)
SK						E			

E…Electricity, G…Gas, T…Transport fuels, F…Other fuels, HC…Heating costs, HH…Households, B…Firms
*) Recipients restricted based on different criteria; [1]) on energy products; [2]) partly restricted; [3]) for electricity generation; [4]) restricted to domestic private vehicles, taxis, agricultural machines and tractors; [5]) "social tariff"; [6]) including the suspension of the CO_2 tax (status as of 19.10.2022)

4. Discussion and Conclusions

In the long run, only a switch to renewable energy sources and an increase in energy efficiency will reduce the negative impacts of price increases for fossil fuels or electricity on vulnerable households and companies and increase the resilience of the EU's energy system. Even if the short-term potential of these measures is limited, they should be accelerated since they also constitute a key pillar for the achievement of the climate targets.

The short-term measures implemented by the Member States differ substantially in terms of the degree of targeting – i.e. the extent to which the focus on vulnerable households and companies only – as well as in terms of their effects on energy saving incentives.

While all households and companies face rising energy prices, middle- to high-income households might cope well with the additional costs as do companies that are not subject to international competition with companies from other regions not showing such pronounced price increases. Moreover, as stressed by Kalkuhl et al. (2022) "rising prices are essential in response to a tightening energy supply to quickly stimulate adjustments in both supply and demand".

Reductions in energy-related taxes and charges – that are not limited to particularly vulnerable consumers – reduce energy saving incentives, which are needed in the current energy crisis to maintain energy security. In this context, particularly measures related to gas and electricity consumption are to be questioned. However, due to the sharp rises in (gross) prices despite a decreasing tax burden, energy demand will still generally decline. From an environmental perspective, reductions of taxes on fossil fuels have more undesirable side-effects, especially for energy sources with a high carbon content, i.e. coal or mineral oil products. The price development of gas vis-à-vis oil and coal is crucial in this respect since it might lead to a switch back towards these more carbon-intensive energy sources[15]. Therefore, the European Commission and the Member States should emphasise their adherence to the mid- and long-term emission reduction targets, and design compensation measures accordingly also to avoid new investment that might lead to lock-ins in infrastructure related to fossil energy (e.g. LNG terminals).

With respect to price caps and price subsidies, similar arguments apply. Limited and unlimited price caps differ in particular with regard to their energy efficiency incentives, their social impacts, and their technical feasibility. The advantages of an unlimited price cap lie in the quick and easier technical implementation, while the energy saving incentives and the social accuracy of limited price caps are significantly higher, since incentives for saving energy due to higher prices prevail at least for final energy consumption above a predefined amount and low-income household in general consume less energy than mid- and high-income households[16]. Moreover, the costs of guaranteeing a certain price limit for consumers cannot be determined in advance as they depend on actual price development and might imply a sizeable burden to the public budget or discourage new investments in the energy sector. Compared to price caps, price subsidies leave the consumers with the price risk, whereas the public costs

[15] See also Celasun et al. (2022) or OECD (2022).

[16] See also Böheim et al. (2022).

are more foreseeable. The other advantages and disadvantages of price caps apply accordingly.

As noted above, compensation payments were the most frequently used measures for mitigating the effects of rising energy prices on consumers. Households in this context are mostly supported via lump-sum payments, while for companies a certain share of the energy costs is covered (usually related to indicators like share of additional energy costs in production value and energy intensity).

In most countries, all households benefit from the lump-sum payments; only in a few Member States these are targeted to vulnerable population groups only. While the social accuracy hence could have been improved and potential overcompensation avoided, low-income households still benefit more from lump-sum compensation payments, since their energy costs in absolute terms are lower than those of wealthier households, and therefore the lump-sum payments cover a larger part of the cost increase.

For companies, action coordinated at EU level is needed in order not to distort competition on the internal market. While in the European Council's emergency intervention (Council Regulation (EU) 2022/1854) the rules for the implementation of windfall profit taxation, i.e. the introduction of the revenue cap for electricity and of the solidarity contribution for other energy sources, have been clearly specified, the regulation provides Member States with a high degree of flexibility regarding the selection of compensation measures. Stricter guidelines on compensation measures might be advisable, not only in order to provide a level playing field for companies located in different EU Member States ensure time-limited and targeted support for firms[17], but also with respect to compensation measures for households. A higher degree of targeting of measures to vulnerable population groups would relieve public budgets and contribute to preserving energy saving incentives.

[17] As already noted by the OECD (2021) in the context of Covid-19 support schemes.

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