

The Social Climate Fund – Opportunities and Challenges for the buildings sector

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List of Abbreviations

CO ₂	Carbon dioxide
DNSH	Do no significant harm
GHG	Greenhouse gas
ETS	Emission Trading System
NECP	National Energy and Climate Plan
RR	Recovery and Resilience
SCF	Social Climate Fund
SCP	Social Climate Plan
t	tonnes

Summary

In July 2021, the European Commission published a proposal for a Social Climate Fund (SCF) to be established in parallel with the proposed extension of emissions trading to the buildings and road transport sectors (European Commission (EC) 2021a). Mobilizing €72.2 billion for the period 2025-2032, the aim of the SCF is to address social impacts that arise from this new system, by 1) financing temporary direct income support for vulnerable households and 2) supporting measures and investments that reduce emissions in the two sectors and as a result reduce costs for vulnerable households, micro-enterprises, and transport users.

The objective of this study is to analyse the SCF proposal with respect to the following questions: Is the SCF designed to fulfill this promise? Is the budget allocated in a solidary way across Member States reflecting the needs of Member States? And: will the SCF actually help to support investment in low carbon technologies for vulnerable groups? How can the EU ensure that targeted support is provided to vulnerable groups across the Member States?

To shed light on these questions, this study takes a deeper look into some aspects of the Social Climate Fund proposal.

Size and allocation of the Social Climate Fund

The Social Climate Fund presents an important solidarity element for distribution of auctioning revenues. It redistributes auctioning revenues to low-income Member States which have lower purchasing power parity and are significantly more affected per unit of energy carrier by a uniform EU-wide carbon price from the ETS 2.

The share of the Social Climate Fund in total auctioning revenues is about 25% at a price of 50 Euros/t CO₂ but significantly declines with rising carbon prices if the absolute budget for the Social Climate Fund remains fixed at 72.2 billion euros. This implies that relatively lower funding would be available to support vulnerable groups. The Social Climate Fund should thus not be a pre-fixed amount but rather be a specific and sufficient share of auctioning revenues to ensure sufficient funding with rising carbon prices.

The definition of vulnerable groups is key to assess whether size of the Social Climate Fund is sufficient for investment support and direct income support for vulnerable households. A definition is needed to identify the number of vulnerable households in each Member State and to establish tailor-made measures that those households can apply for. A uniform EU-wide definition of vulnerable groups is missing. In this study, we use the “at-risk-of-poverty”-indicator as a proxy for identifying vulnerable households.

While the CO₂ price puts the same additional cost on a unit of fossil fuels in each Member State, the additional burden itself further depends on the amount of fossil fuels used. Lower income countries generally use less energy and emit less CO₂ than higher income Member States. At the same time, lower income Member States have lower overall consumption expenditure and lower purchasing power. Thus, in relation to consumption expenditure (or income) the additional burden is more pronounced for lower income Member States.

The analysis shows that lower income households, especially in lower income Member States, are substantially more affected by CO₂ related costs than higher income households. With higher carbon prices, this effect becomes even more pronounced. Heating related CO₂ costs affect vulnerable households more than transport related CO₂ costs. The pattern is different for households with higher income where transport related CO₂ costs have a higher share. The size of the Social Climate Fund is in principle sufficient to compensate vulnerable households for their

CO₂ costs. This is the case for all Member States at low carbon prices and for low-income Member States also at higher carbon prices.

However, the key purpose of the Social Climate Fund is to not compensate households for additional costs but to provide support for investment to reduce emissions and relieve the CO₂-related burden. This will ensure that CO₂ costs for vulnerable households will be lower or not occur in the first place and households will be more resilient to future price increase.

Investment needs

We assess investment needs for replacing fossil heating systems by heat pumps in vulnerable households. The investment needs for each Member State depend on the share of fossil heating, the investment costs of the heating equipment as well as the replacement rate. Even in the most optimistic scenario the complete replacement of fossil heating systems by heat pumps would need 14 years. We assume that funding from the SCF is used to cover total costs for a heat pump, so that it is guaranteed that vulnerable households can afford the investment in a heat pump system and have stronger incentives to replace their fossil system and contribute to a high exchange rate. An early start for heating replacement reduces the need for compensation through direct income support. Incentivising high replacement rates from fossil to renewable heating systems increases support needs in the short term but is the right approach for long-term impact on emissions.

Whether funding from the SCF is sufficient can only be answered partly as investment needs in building insulation and transport are not part of this study. But it can be seen that even with an optimistic replacement rate of 7%, low-income Member States would only need between 5% and 36% of the allocated SCF budget to compensate the investment in heat pumps and CO₂ costs, while for several high-income MS the budget is reached or extended.

Eligibility and monitoring

The Social Climate Fund needs to provide a strong framework to ensure that the funding is used for measures that effectively support the decarbonisation of heating and transport and that it is directed specifically at vulnerable households: Investment support provided through the Social Climate Fund must be directed at replacing fossil heating with renewables and supporting deep renovations as defined in the Energy Performance of Buildings Directive. This criterion needs to be clearly formulated and monitored, as several Member States still provide funding for fossil heating.

A clear framework is needed to ensure that funding is targeted at vulnerable households. The SCF needs to provide clear criteria to operationalise vulnerability and to ensure that funding is directed at these households. As situations in Member States vary significantly, definitions of vulnerability might work better on Member State level rather than aiming at an EU-wide definition. The SCF framework can draw upon experiences with national programmes addressing vulnerable households, where eligibility is mainly defined based on income and/or linked to social welfare. Next to support for vulnerable households living in their own buildings, rented households need to be addressed.

1 Introduction

In July 2021, the European Commission published a proposal for a Social Climate Fund (SCF) to be established in parallel with the proposed extension of emissions trading to the buildings and road transport sectors (ETS 2) (European Commission (EC) 2021a). Mobilising €72.2 billion for the period 2025-2032, the aim of the SCF is to address any social impacts that arise from this new system, by 1) financing temporary direct income support for vulnerable households and 2) supporting measures and investments that reduce emissions in the two sectors and as a result reduce costs for vulnerable households, micro-enterprises, and transport users.

The impact assessment for the revision of the Emissions Trading System (ETS) Directive found that emissions trading for buildings will not affect households equally but would likely have a regressive impact on disposable income, as low-income households tend to spend a greater proportion of their income on heating. However, if cost-effective investments are realised, energy expenditure can be reduced despite price increases. With the SCF providing targeted support for lower-income households, the regressive effect of the ETS 2 can be translated into a progressive effect.

It is therefore important to understand how the SCF should be designed to support these investments. In this way, the revenues raised by the ETS for buildings and road transport could stimulate climate action while addressing social or distributional impacts of carbon pricing, which in itself should also contribute to the shift towards less carbon-intensive fuel use.

This study critically examines the SCF proposal with respect to its budget and Member State allocation, its size and its ability to support investment in low carbon technologies for vulnerable households. Furthermore, it considers eligibility criteria for funding schemes to reach desired target groups as well as monitoring requirements of such an approach. The study provides recommendations for an SCF that is socially just by design and that can trigger genuine structural reforms with lasting positive impact on the energetic quality and heating systems of European citizen's homes.

2 Size of the Social Climate Fund and distribution between Member States

Key findings of this chapter

- The Social Climate Fund presents an important solidarity element for distributing auctioning revenues. The Social Climate Fund will redistribute auctioning revenues to low-income Member States which have lower purchasing power parity and are significantly more affected by a uniform EU-wide carbon price in the ETS 2.
- To keep the solidarity component, the Social Climate fund should not be a pre-fixed amount of 72.2 billion euro but rather be a specific share of total revenues. A fixed amount as currently foreseen in the Social Climate Fund proposal implies a lower share of revenues with rising CO₂ prices.
- The definition of vulnerable groups is key to assess whether the size of the Social Climate Fund is sufficient for investment support and compensation towards vulnerable households. A definition is needed to identify the number of vulnerable households in each Member State and to design measures that these households can apply for.
- Heating-related CO₂ costs affect vulnerable households more than transport-related CO₂ costs as they constitute a higher share of vulnerable households' expenditures. The pattern is different for households with higher income where transport-related CO₂ costs have a higher share in their expenditures.
- The size of the Social Climate Fund is in principle sufficient to compensate vulnerable households for their CO₂ costs, at least at low CO₂ prices. However, more importantly, the Social Climate Fund is designed to support investment in climate-friendly technology so that CO₂-related costs for vulnerable households decline and households become resilient towards rising prices.

According to Article 9 of the proposal for the Social Climate Fund (SCF) the financial envelope for the implementation of the SCF shall be 23.7 billion euro for the years 2025 to 2027 and 48.5 billion euro from 2028 to 2032 (European Commission (EC) 2021a). Over the two timespans, the financial envelope amounts to 72.2 billion euro. A maximum financial allocation per Member State (MS) is specified in Annex II of the proposal, the calculation scheme for the allocation key is specified in Annex I. As outlined in Article 13, Member States may submit a request for financial allocation up to the maximum to implement their Social Climate Plans.

The Social Climate Fund is supposed to be financed through auctioning revenues from the emissions trading scheme for buildings and land transport (ETS 2). While the amount foreseen for the Social Climate Fund is fixed at an overall amount of 72.2 billion euro for the period 2025-2032, the revenues from the emissions trading scheme depend on the price development which again is highly dependent on complementary policy action at the EU level and at Member States level. The financial envelope of the SCF should, in principle, correspond to 25% of the expected revenues from the inclusion of buildings and road transport into the scope of the ETS Directive.

Within this chapter of the report, we aim to give a better understanding of the planned size and currently envisioned Member State allocation of the Social Climate Fund. We relate the Social Climate Fund to the projected price and revenue development of the Emissions Trading System for buildings and road transport. We further assess the CO₂ cost burden that would arise for

vulnerable households (and mobility users) from the ETS 2 and relate these costs to the envelope of the Social Climate Fund.

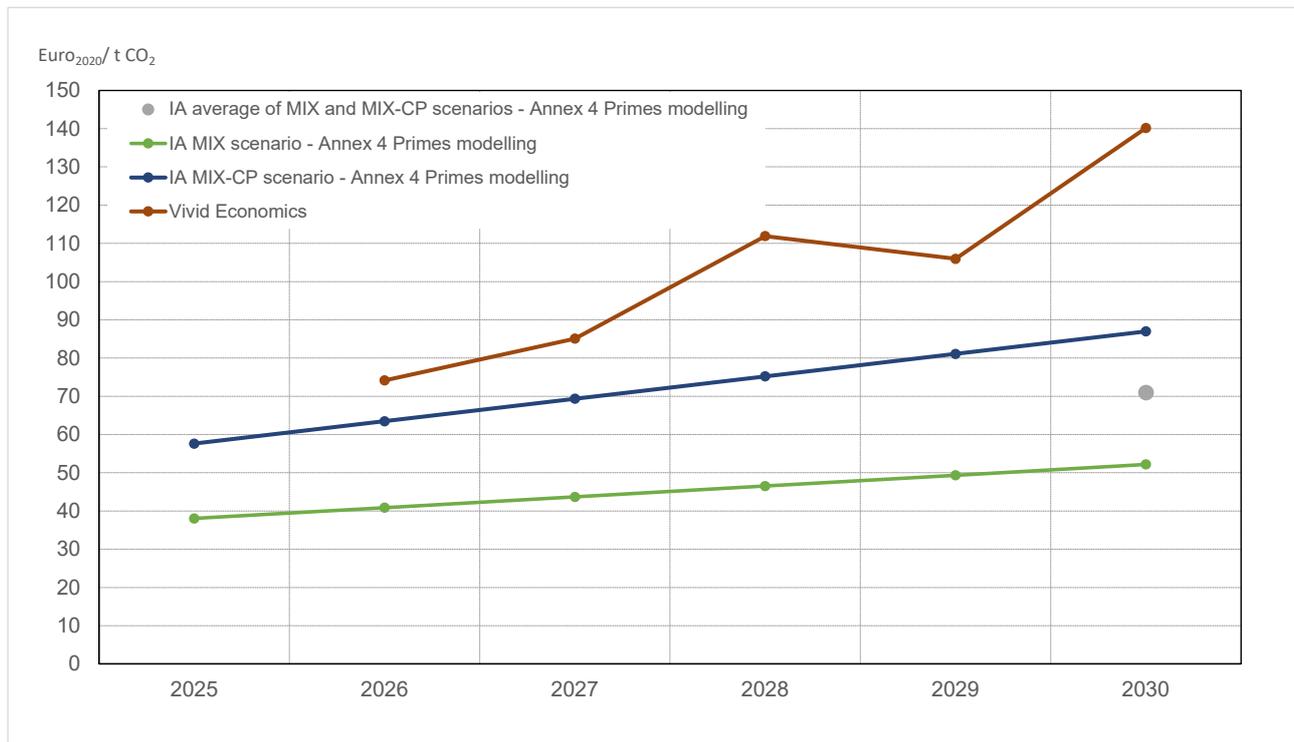
2.1 ETS 2 revenues and Social Climate Fund

The amount of revenues that will be generated from auctioning ETS 2 allowances highly depends on the price development within the ETS 2 trading scheme. The Impact Assessment accompanying the proposal for the ETS revision provides a range of price projections for the emissions trading scheme for land transport and buildings (ETS 2) as shown in Figure 1 (European Commission (EC) 2021b). Two main scenarios are considered within the Impact Assessment. They differ with respect to the underlying policy mix. The Impact Assessment's mix scenario (IA mix scenario) assumes that a broad mix of policies (regulatory, financial and market-based policies) will be implemented in the effort sharing sectors, so that the ETS 2 plays a moderate role for reaching the targets. This results in a moderate price for the ETS 2, in the range of below 40 to above 50 euro₂₀₂₀/t CO₂. By contrast, another scenario, the IA mix-CP scenario, assumes that the ETS 2 carbon pricing scheme plays a major (thus more important) role for reaching the targets and complementary policies are less pronounced. Consequently, a higher CO₂ price would result, projected in the Impact Assessment to be between around 60 to well above 80 euro₂₀₂₀/t CO₂.

Another study by Vivid Economics¹ projects prices in their default scenario (with the cap hitting zero by 2044) to be even higher, rising up to 140 euro₂₀₂₀/t CO₂ by 2030. All in all, studies show that price development is very uncertain and highly depends on assumptions about complementary policies and measures that are - or come into place - within building and road transport sectors.

¹ Unpublished study commissioned by Transport & Environment and the ECF, of which the modelling results will be available upon request

Figure 1 Price projection for the emissions trading scheme for land transport and buildings (ETS 2)



Source: European Commission (EC) (2021b), Vivid Economics (unpublished)

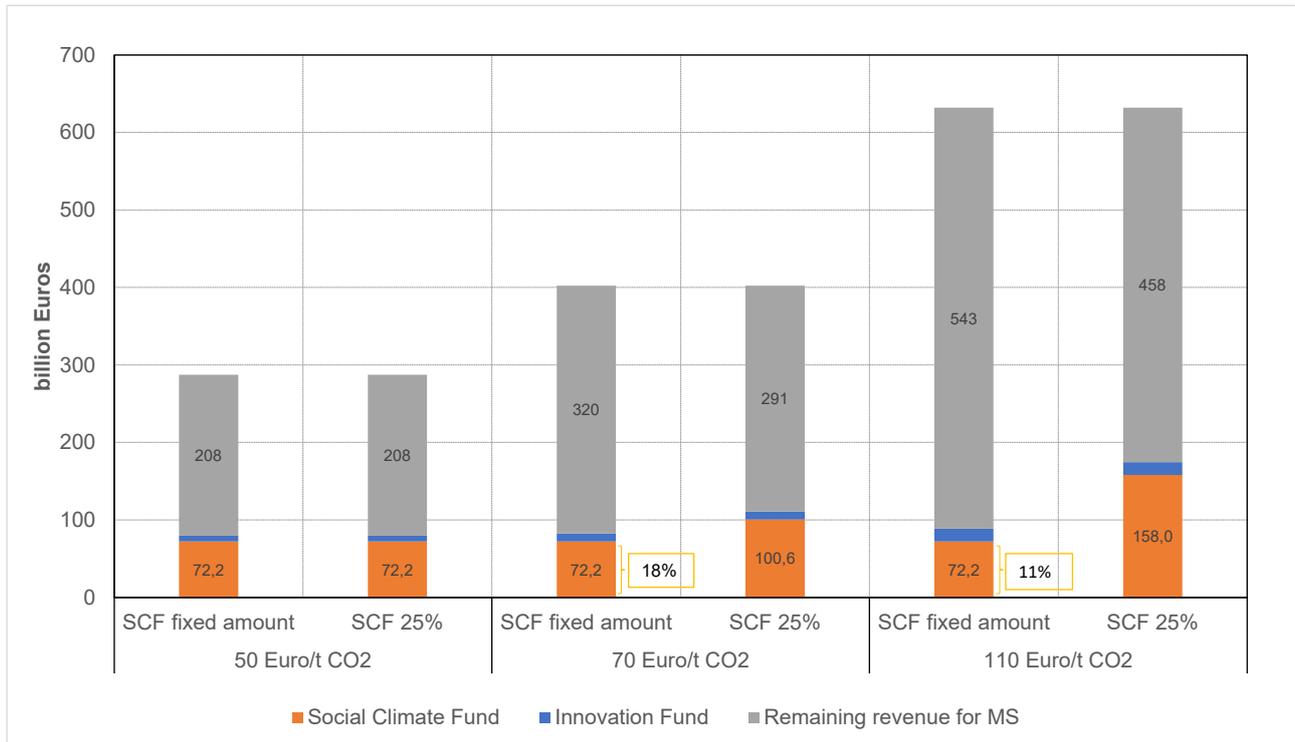
The calculations for the Social Climate Fund proposal seem to assume an average price of 50 euro/t CO₂. At this price the amount of 72.2 billion euro corresponds to 25% of the expected auctioning revenues.

As price development is highly uncertain, for our analysis, we consider three average prices for the period up to 2032: 50, 70 and 110 euro/t CO₂. Auctioning revenues are calculated based on the cap development outlined in the Impact Assessment as well as in Vivid Economics. For the period 2026-2032, it is estimated that a total of about 5,746 million allowances will be auctioned within the ETS 2, resulting in revenues of about 287 billion euro at an average price of 50 euro/t CO₂ (amounting to about 400 billion euro for an average price of 70 euro/t CO₂ and about 630 billion euro assuming an average price of 110 euro/t CO₂).

Figure 2 shows how auctioning revenues are envisioned to be used: 150 million allowances will be allocated to the Innovation Fund; the corresponding monetary value will thus increase with higher CO₂ prices. A fixed amount of 72.2 billion euro is envisioned for the Social Climate Fund. At a price of 50 euro/t CO₂ this corresponds to about 1,444 million emission allowances and about 25% of the total auctioning revenue. With higher CO₂ prices, the share allocated to the SCF will decrease, corresponding to only 18% of total auctioning revenues at a CO₂ price of 70 euro/t CO₂ and 11% at 110 euro/t CO₂. Figure 2 also shows the amount allocated to the SCF if the share of total revenues is kept at 25% (rather than a fixed amount of 72.2 billion euro). A share of 25% would allow 158 billion euro to be allocated to the SCF if the CO₂ price is at 110 euro/t CO₂.

Remaining revenues for distribution to, and use by, Member States make out the largest part of overall auctioning revenues, ranging from about 200 billion euro at an average price of 50 euro/t CO₂ to more than 450 billion euro at a price of 110 euro/t CO₂.

Figure 2 Revenue allocation with fixed amount of SCF and fixed ratio of SCF at different CO₂ price assumptions (2025/26 – 2032)

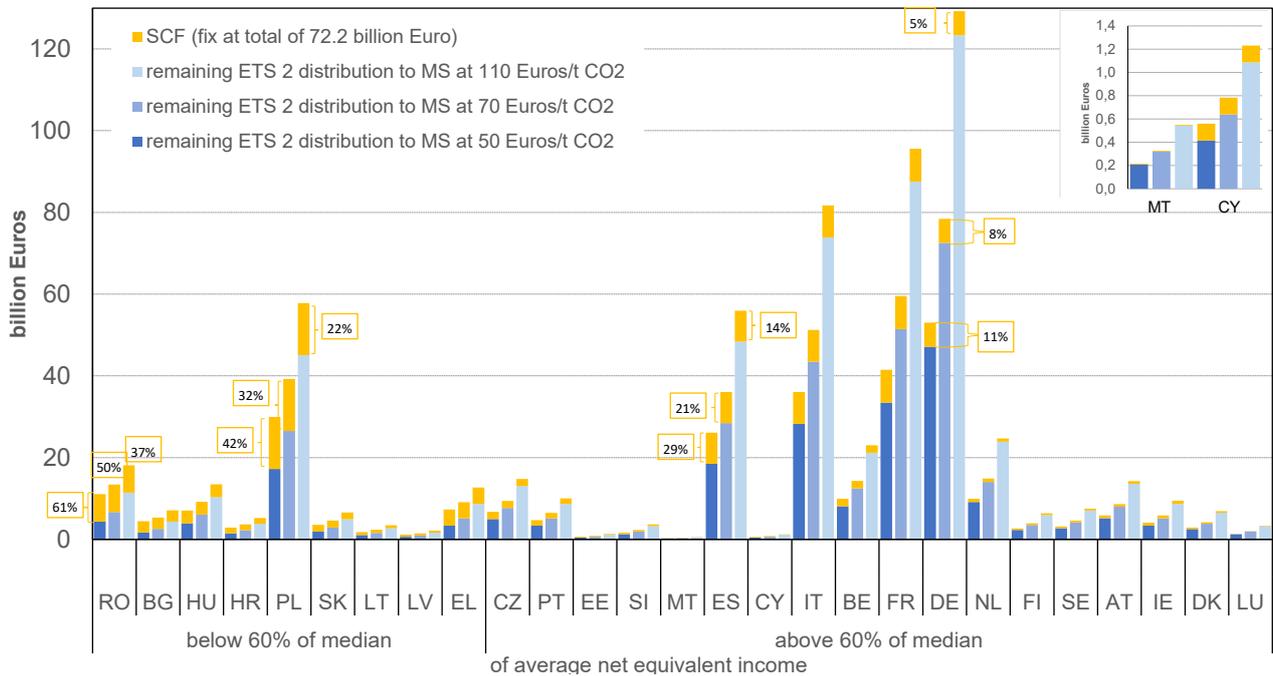


Source: Own calculation

The distribution of funds from the SCF and remaining auctioning revenues across Member States is shown in Figure 3 in absolute values and per capita in Figure 4. The figures show the distribution for a fixed total amount of the SCF at 72.2 billion euro. For each MS the three bars represent different price assumptions: 50, 70 and 110 euro/t CO₂. Each bar has two components: a) a yellow one indicating the allocation through the Social Climate Fund and b) a blue one indicating the revenue from the remaining ETS 2 auctioning, the darker blue for a CO₂ price of 50 euro/t CO₂, the lighter blue for 70 and 110 euro/t CO₂. Member States are sorted by their mean average equivalent income. Remaining revenues are allocated to Member States based on a grandfathering scheme of 2016-2018 average emissions (compare Table 77, European Commission (EC) 2021b).

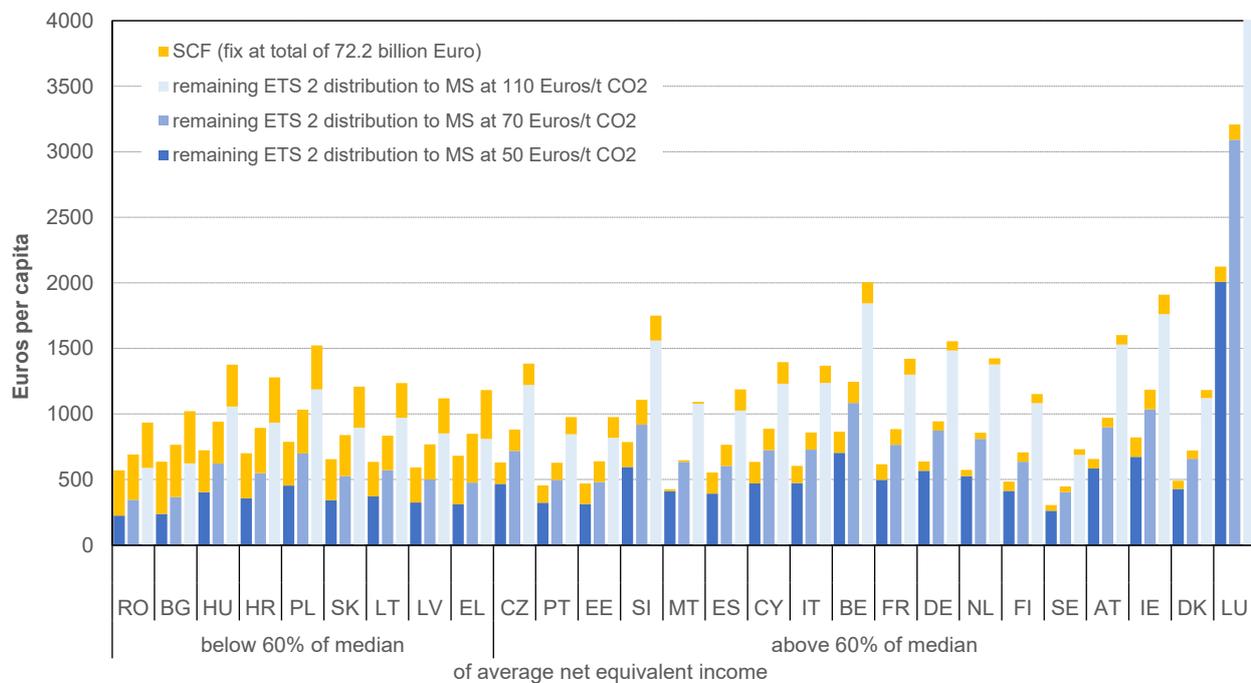
The figures confirm that redistribution through the SCF works well, as an instrument of redistribution. The amount allocated by the SCF makes out a substantial part of revenues in lower income Member States and is higher in lower income Member States than in higher income Member States. The per capita picture in Figure 4 also shows that revenue allocation through the combined approach of SCF and a grandfathering scheme for remaining allowances is relatively balanced across Member States. This is an important aspect as the ETS 2 puts a uniform price on carbon, implying that the CO₂ cost per unit of energy (litre, kWh) in absolute values is the same for each Member State. To give an example, the absolute CO₂ cost per litre of gasoline is the same in each country (approximately 15 cents per litre at a CO₂ price of 50 euro). Given that income levels as well as purchasing power parities and price levels vary greatly across Member States, the CO₂ cost presents a substantial additional burden on consumers in some Member States and a low burden in others.

Figure 3 Revenue allocation to Member States under different CO₂ price assumptions with fixed total amount for SCF at 72.2 billion euro (2025/2026-2032)



Source: Own calculation based on European Commission (EC) (2021b) and European Commission (EC) (2021a)

Figure 4 Per capita revenue allocation to Member States under different CO₂ price assumptions with fixed total amount for SCF

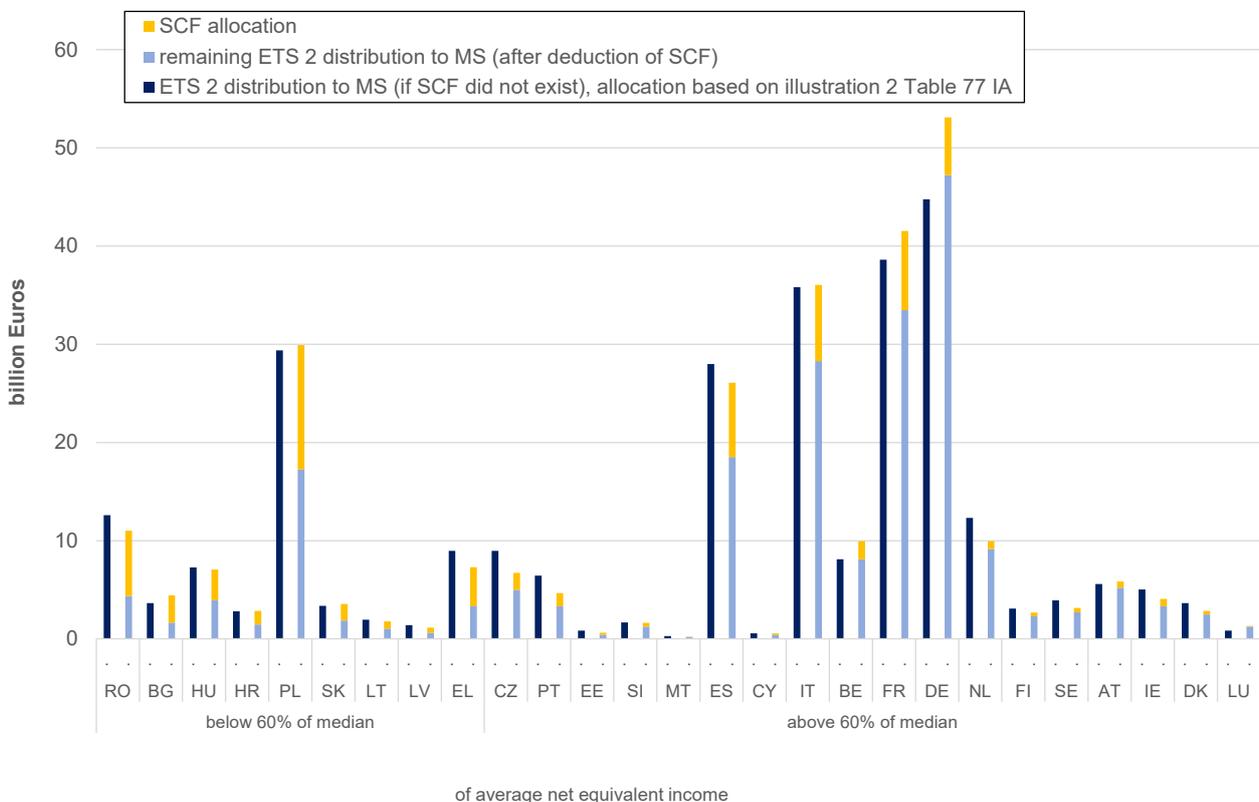


Source: Own calculation based on European Commission (EC) (2021b) and European Commission (EC) (2021a)

Figure 3 and Figure 4 also show how the redistribution effect across Member States declines for higher carbon prices in case the total amount of the SCF is not adjusted according to the carbon price (as is the case with the fixed amount of 72.2 billion euro). At a price of 110 euro/t CO₂ higher income Member States benefit substantially more from auctioning revenues than lower income Member States. This is because the share of remaining revenues not allocated to the SCF becomes larger (compare Figure 2), and remaining revenues are allocated based on historical emissions (period 2016-2018). Such a grandfathering scheme privileges higher income Member States which not only have higher income but also historically show higher emissions. It is as such a no-solidarity scheme. The combined approach of SCF and grandfathering could ensure a fairer approach and a just transition. However, it is important that the SCF is price-adjusted and kept at a share of at least 25% of the expected revenues to ensure its solidarity scheme.

The Impact Assessment accompanying the revision of the ETS Directive illustrates another alternative solidarity scheme for revenue distribution based on the distribution of the effort sharing ambition across MS to reach the 40% overall ESR target (Illustration 2, Table 77 Impact Assessment, European Commission (EC) 2021b). Figure 5 compares the two solidarity approaches at a CO₂ price of 50 euro/t CO₂. The left bar for each country illustrates the revenue distribution based on the effort sharing scheme, the right bar shows the combination of SCF and grandfathering allocation. The figure reveals that a number of higher income Member States, such as Belgium, France, Germany, are better off with the currently proposed combination of SCF and grandfathering scheme. For other countries the difference is less pronounced.

Figure 5 Current proposal: 72.2 billion euro (= 25% ETS 2 revenues to SCF) at 50 euro/t CO₂



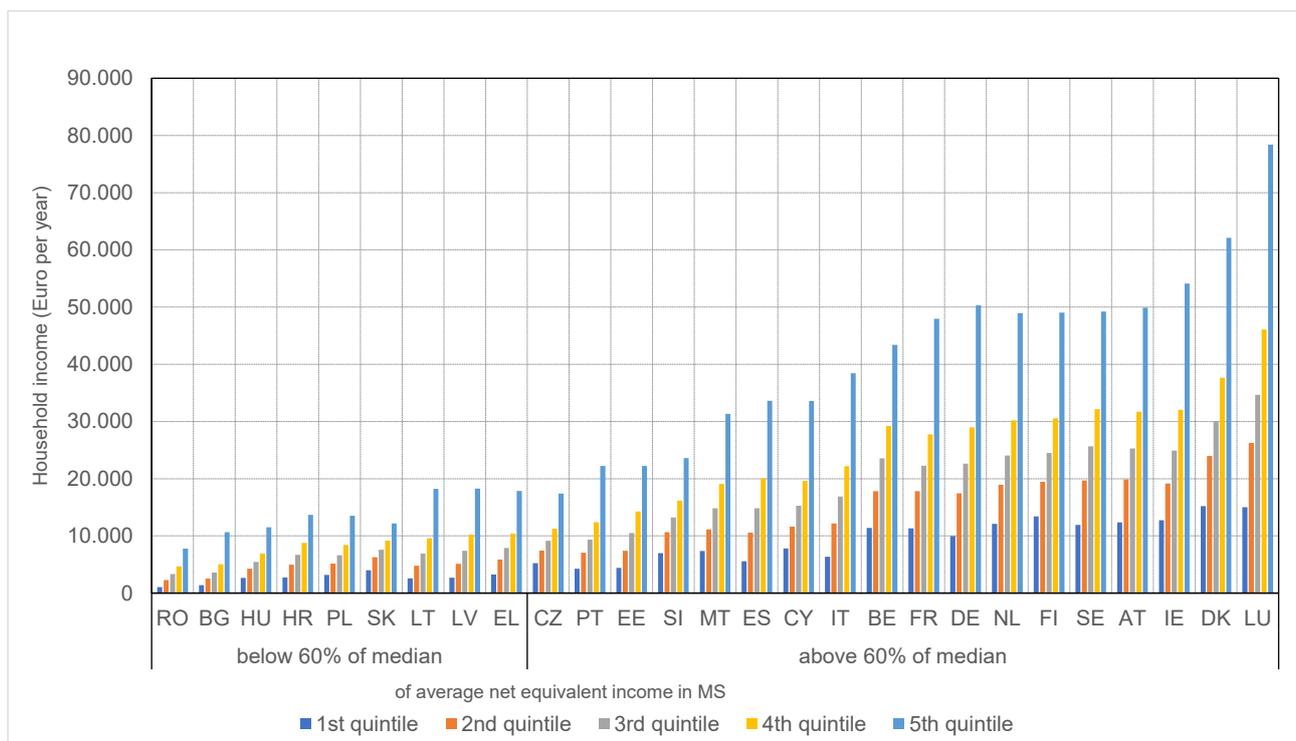
Source: Own calculation based on European Commission (EC) (2021b) and European Commission (EC) (2021a)

As indicated above, a solidarity element is a prerequisite for implementing an EU-wide emissions trading scheme for buildings and land transport. The ETS 2 puts a uniform absolute price on carbon translating to the same additional costs for a unit of energy carrier in each MS (independent of the original cost). This means that in relative terms to their income households or groups in lower income MS per unit of energy are much higher affected.

This is underlined by looking at average income levels for different income quintiles across Member States in Figure 6. It shows large differences in income across Member States, but also within Member States. Most striking: Income levels for the **lowest income** group in wealthier Member States (such as DK, FR, BE, DE) are higher than those for the **highest income** group in poorer Member States (such as RO, BG, HU). While purchasing power varies across Member States and thus affordability of goods and products, the additional cost induced by CO₂-pricing is the same for all Member States.²

This means a solidarity mechanism is needed in order to share the burden and have a fair distribution among Member States. The Social Climate Fund specifically addresses these issues by simultaneously distributing revenues to lower income Member States and supporting vulnerable groups to relieve their burden. The focus is on supporting energy efficiency and decarbonisation investment for vulnerable groups to reduce emissions and increase their resilience, in addition to providing temporary direct income support.

Figure 6 Mean net equivalent income per year across Member States and income quintiles



² For example, 10 euro per ton of CO₂ translate into about 3,12 cents per litre of diesel which would very likely be passed on to consumers and added to the prevalent diesel price within the Member State.

Source: Eurostat - Distribution of income by quantiles - EU-SILC and ECHP surveys [ilc_di01]; Mean and median income by household type - EU-SILC and ECHP surveys [ILC_DI04]

2.2 Vulnerable households (and mobility users)

To assess whether the size of the Social Climate Fund is sufficient and whether the proposed allocation of funds ensures a fair transition, it is essential to understand in how far consumers are affected by CO₂-related costs and which groups are affected most. A definition of vulnerable groups is needed so that vulnerable groups can be identified and addressed by measures within the Social Climate Plan.

Article 2 of the Social Climate Fund proposal gives a first definition of vulnerable groups:

- (11) ‘vulnerable households’ means households in energy poverty or households, including lower middle-income ones, that are significantly affected by the price impacts of the inclusion of buildings into the scope of Directive 2003/87/EC and lack the means to renovate the building they occupy;
- (12) ‘vulnerable micro-enterprises’ means micro-enterprises that are significantly affected by the price impacts of the inclusion of buildings into the scope of Directive 2003/87/EC and lack the means to renovate the building they occupy;
- (13) ‘vulnerable transport users’ means transport users, including from lower middle-income households, that are significantly affected by the price impacts of the inclusion of road transport into the scope of Directive 2003/87/EC and lack the means to purchase zero- and low-emission vehicles or to switch to alternative sustainable modes of transport, including public transport, particularly in rural and remote areas.

Following the publication of the SCF proposal, discussions evolved around a) the indicators to operationalise these definitions and b) the concrete thresholds to be applied in order to identify “significantly affected” households or micro-enterprises and those that “lack the means”.

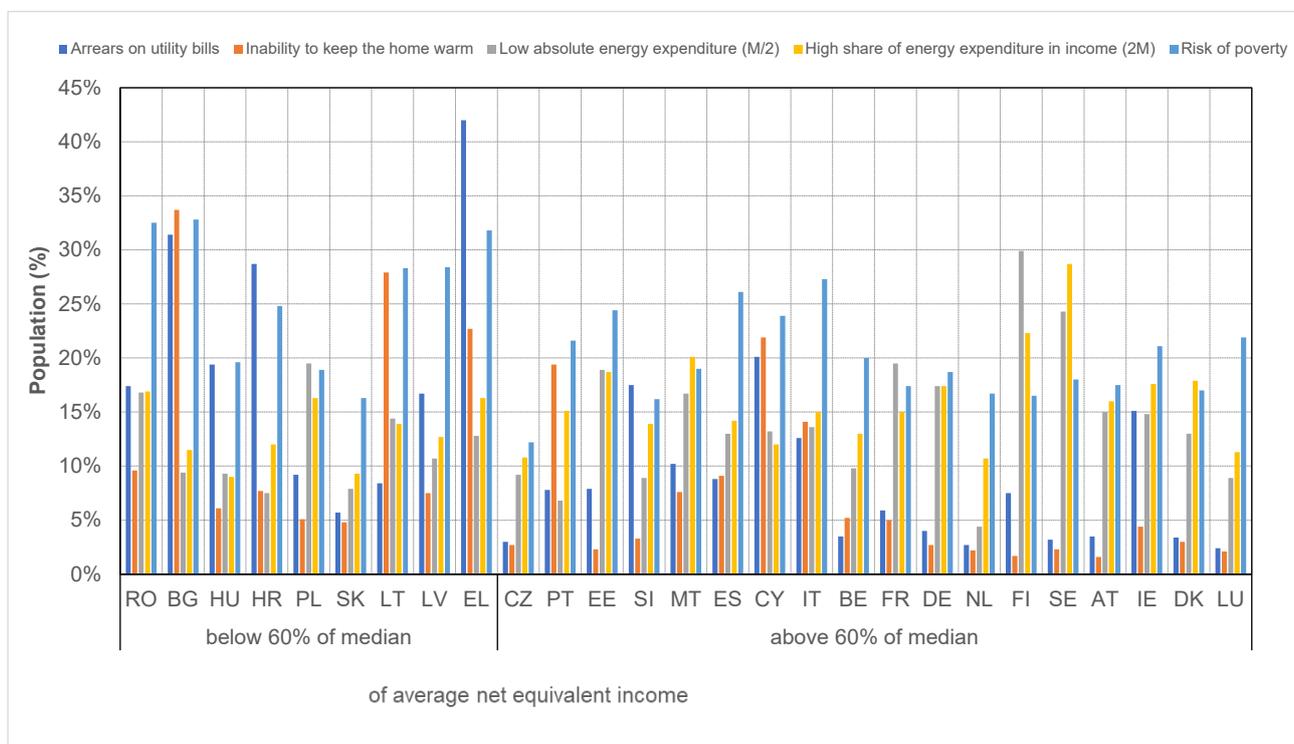
A variety of stakeholders at various levels of the decision process, including rapporteurs from the European Parliament, NGOs and researchers proposed both indicators and threshold values to identify vulnerable users. One of the more prominent and specific proposals is by the European Parliament rapporteurs Casa and de Lange in their amendments (Casa und deLange 2022). They suggest defining energy poverty and transport poverty as follows:

- **Energy poverty** defined as “households in the lowest income deciles whose energy costs exceed twice the median ratio between energy costs and disposable income after deduction of housing costs”.
- **Transport poverty** defined as “households that have a high share of mobility expenditure to disposable income or a limited availability of affordable public or alternative modes of transport required to meet essential socio-economic needs,” particularly in remote and rural areas.

While definitions and operationalisation of energy poverty have already been in focus at the European Commission for a number of years (European Commission (EC) 2020b; European Commission (EC) 2020a), transport poverty has received less attention.

Taking a closer look at the indicators laid out in the EU guidance on energy poverty and compiled by the Energy Poverty Observatory³, we see that the share of population at risk of energy poverty varies substantially depending on the indicator considered. Figure 7 shows five different indicators: 1) arrears on utility bills, 2) inability to keep home warm, 3) low absolute energy expenditure (M/2), 4) high share of energy expenditure in income (2M) and 5) risk of poverty. For exact definitions of these indicators, please refer to the Energy Poverty Observatory website, the Energy Poverty Advisory Hub⁴ and European Commission (EC) (2020a). It can be observed that indicators 1 and 2 reveal substantially lower risks of energy poverty for higher income Member States than the expenditure- and income-based indicators 3 and 4. Indicator 5 “risk of poverty” is not directly related to heating energy/electricity consumption or expenditure. It rather provides the share of people with an equivalised disposable income (after social transfer) below the at-risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income after social transfers. The indicator measures income in comparison to other residents in that country.

Figure 7 Energy poverty indicators according to the Energy Poverty Observatory



Source: Energy Poverty Observatory, data for years 2015/2018⁵

While the focus of our study is on the buildings sector, we still aim to include transport-related CO₂ costs in our assessment. In order not to create a bias towards energy poverty, we use the risk-of-poverty indicator as a compromise in the following analysis. The risk-of-poverty indicator is also

³ https://energy-poverty.ec.europa.eu/energy-poverty-observatory/indicators_de

⁴ https://energy-poverty.ec.europa.eu/energy-poverty-observatory/indicators_de

⁵ It should be noted that public data for the EU SILC based indicators (i.e. inability to keep home warm, arrears on utility bills) as well as EUROSTAT data on the risk of energy poverty is available on an annual basis, while the Households Budget Survey data that is needed for the expenditure-based indicators is updated only every five years. This provides a challenge for identifying vulnerable households in need of support. Energy poverty is very dynamic highly depending on price development and other market-based and non-market-based factors.

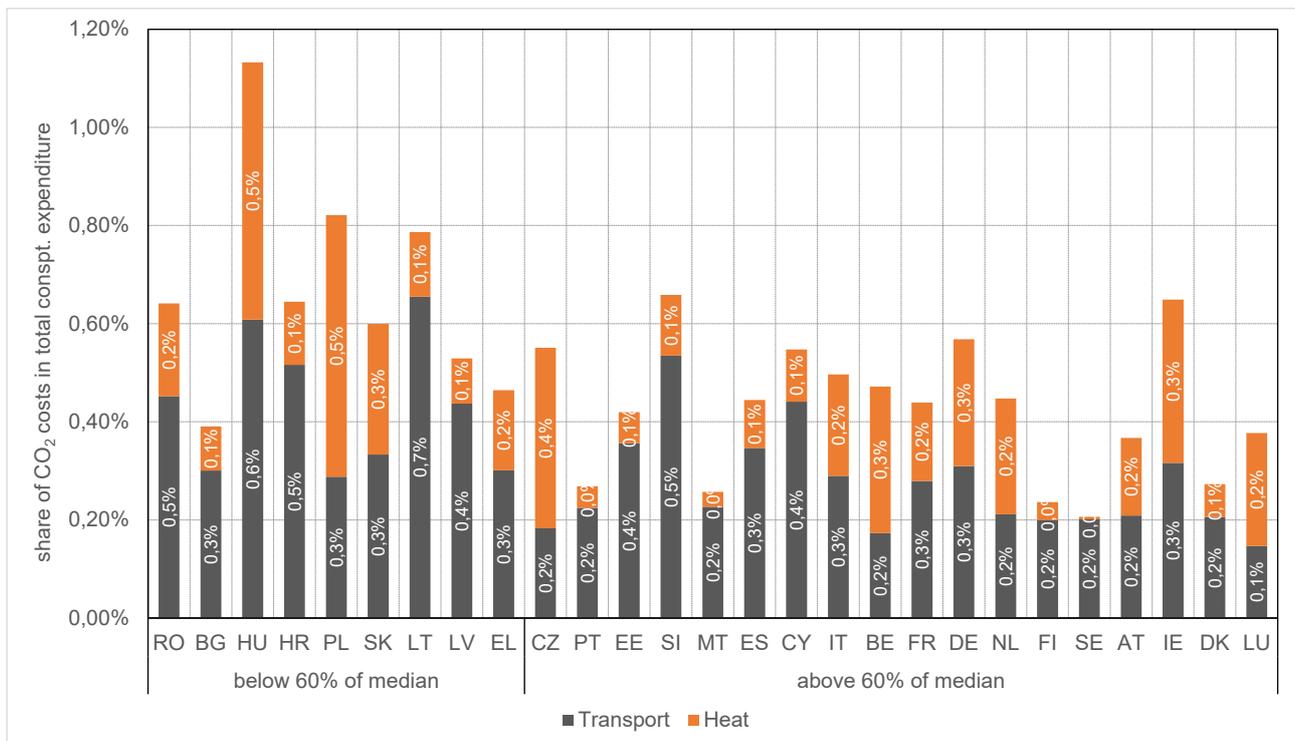
included in the allocation key of the Social Climate Fund, as one of a number of factors to define the distribution shares. The indicator is the very right bar in Figure 7, in most countries it is in the higher range compared to the energy poverty indicators.

2.3 CO₂ costs for households

While the CO₂ price puts the same additional cost on a unit of natural gas, heating oil, diesel or gasoline in each Member State, the additional burden itself further depends on the amount of fossil fuels used. Lower income countries overall use less energy and emit less CO₂ than higher income Member States. At the same time, lower income Member States have lower overall consumption expenditure and lower purchasing power. Thus, in relation to consumption expenditure (or income) the additional burden is more pronounced for lower income Member States. Figure 8 illustrates this and shows the share in total consumption expenditure that households would spend on CO₂-related costs if energy consumption patterns remained at 2019 levels. The figure is based on a CO₂ price of 50 euro/t CO₂.

The share of CO₂ costs in total consumption expenditure is in the range of 0.2% to 1.1% across Member States. In almost all cases, it is higher in lower income Member States. Except for Belgium, Luxembourg and Poland, transport-related CO₂ costs make up at least half of the CO₂ costs. Countries with higher shares of fossil fuel-based heating, e.g. Poland, Hungary, Germany, Belgium, show a more pronounced share of heating-related CO₂ costs and countries with substantial district heating supply, Sweden, Finland, Denmark, show very low heating-related CO₂ costs.

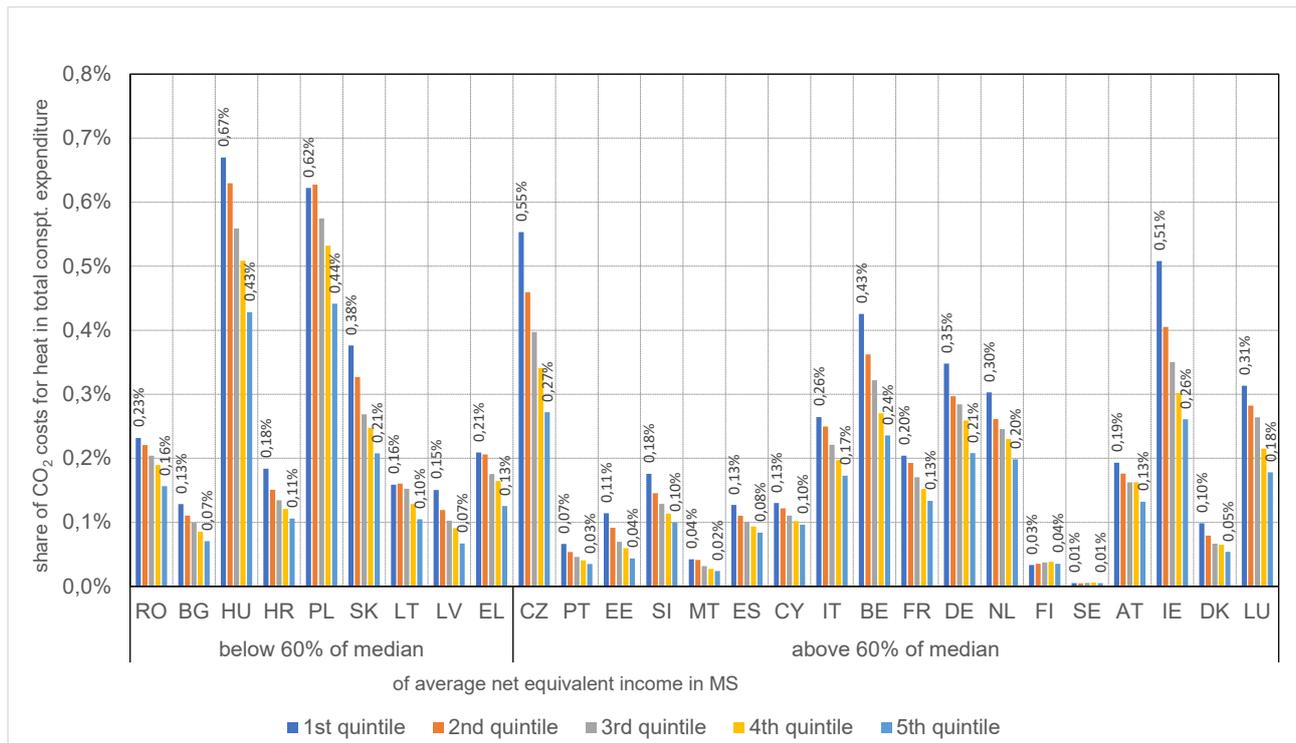
Figure 8 Share of household CO₂ costs in total consumption expenditure (CO₂ price at 50 euro/t CO₂)



Source: Own calculation based on Eurostat emissions data [env_ac_ainah_r2], year 2019

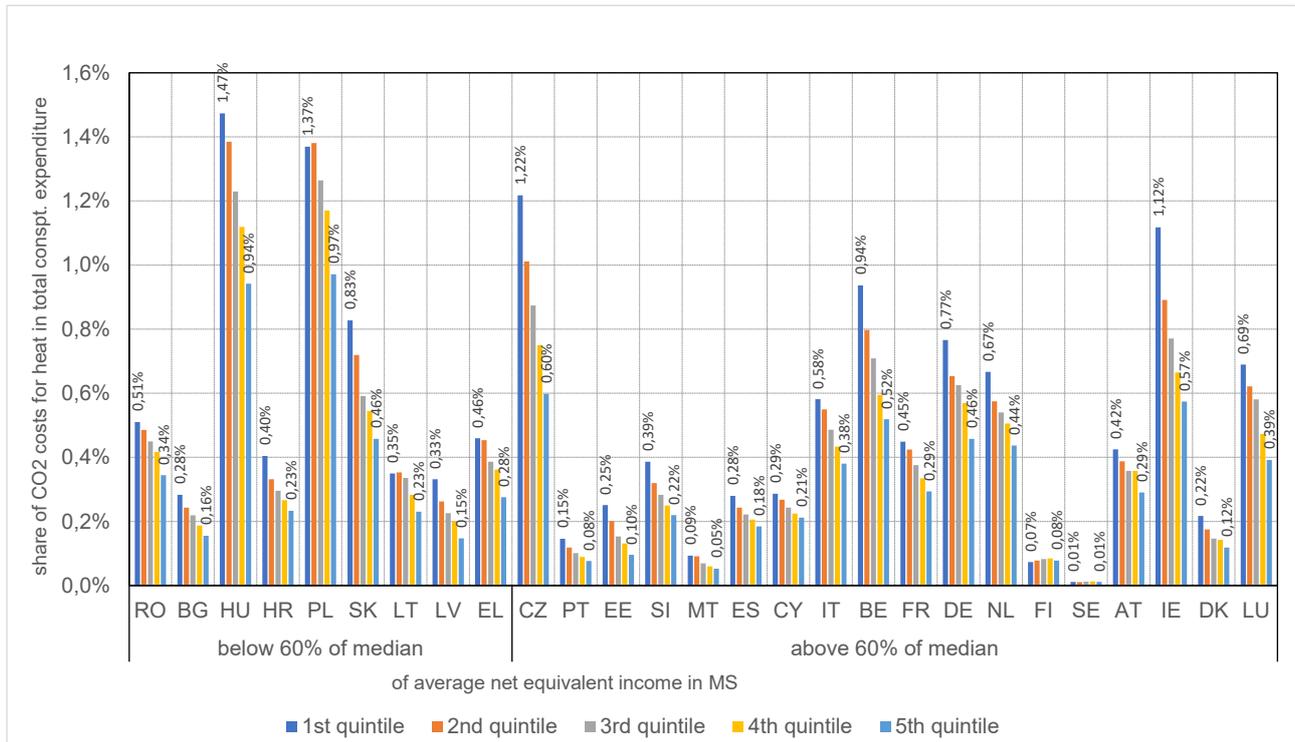
Focusing on vulnerable households shows that the burden of CO₂-related costs is distributed rather regressively among income groups. Figure 9 depicts the spread of burden for heating-related CO₂ costs among income quintiles. The range is most pronounced for households in countries with higher CO₂-related heating costs. In the Czech Republic, for example, households in the lowest income quintile would spend twice as much of their total expenditure on heating CO₂ costs compared to households in the highest income quintile. In Hungary or Poland, it would be about 1.5 times as much. It can clearly be stated that lower income households, especially in lower income Member States, are substantially more affected by CO₂-related costs than higher income households. With higher CO₂ prices, this effect becomes even more pronounced (compare Figure 10).

Figure 9 Share of household CO₂ costs for heating by income quintile (CO₂ price at 50 euro/t CO₂)



Source: Own calculation based on Eurostat emissions data [env_ac_ainah_r2], year 2019; Structure of consumption expenditure by income quintile and COICOP consumption purpose [hbs_str_t223]. Final consumption expenditure of households by consumption purpose [nama_10_co3_p3]; Mean consumption expenditure by income quintile [HBS_EXP_T133].

Figure 10 Share of household CO₂ costs for heating by income quintile (CO₂ price at 110 euro/t CO₂)



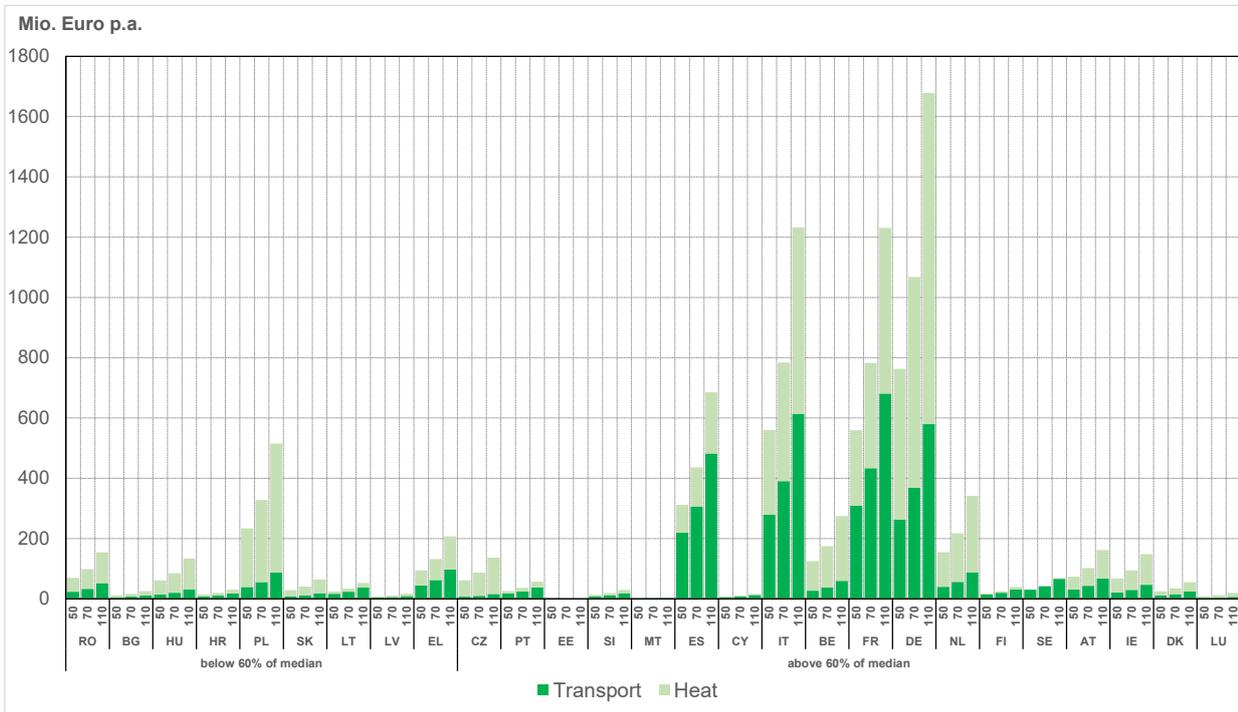
Source: Own calculation based on Eurostat emissions data [env_ac_ainah_r2], year 2019; Structure of consumption expenditure by income quintile and COICOP consumption purpose [hbs_str_t223], Final consumption expenditure of households by consumption purpose [nama_10_co3_p3]; Mean consumption expenditure by income quintile [HBS_EXP_T133].

To get an understanding of the absolute CO₂ costs for vulnerable households in comparison to the size of the Social Climate Fund, we apply the definition of vulnerable households as outlined in section 2.2 and assess CO₂-related costs that vulnerable households would be exposed to if no efficiency or climate investment were to be implemented. To recall our working definition for vulnerable households: For each Member State, all households below the poverty line (i.e. below 60% of median equivalent disposable income) are considered vulnerable households (compare Figure 7). For Romania or Bulgaria, for example, this includes households in the first and half of the second income quintile. For higher income Member States, e.g. Germany, France, Belgium, it includes only households of the first income quintile

Figure 11 shows CO₂ costs for heating and transport for vulnerable households only, at different price levels of 50, 70 and 110 euro/t CO₂. Notably, for vulnerable households heating-related CO₂ costs are far higher than transport-related CO₂ costs. This is in contrast to average households' patterns as shown in Figure 8 and reflects the fact that lower income households generally less often own a car in the first place and tend to drive less.⁶ and. Again, we see a large variation between Member States and from low income to high income Member States.

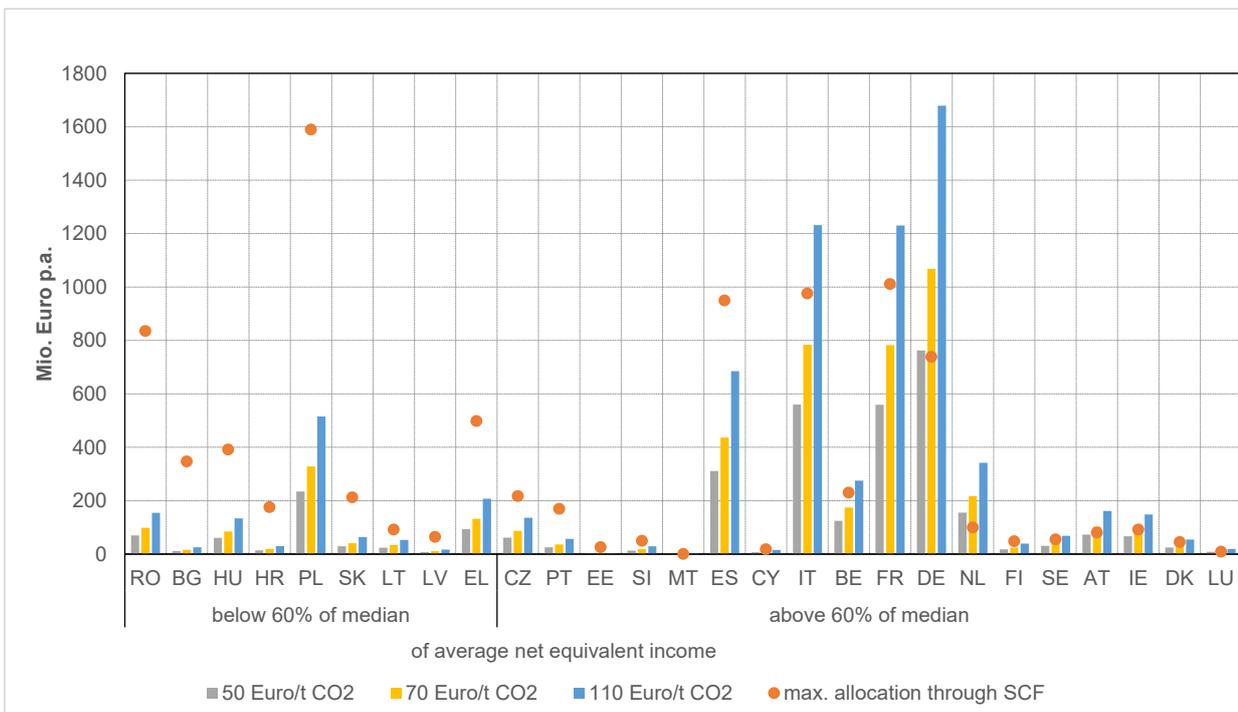
⁶ The pattern might change in the in the future as more wealthier households are able to switch to hybrid or electric cars and will be subject to less transport-related CO₂ costs

Figure 11 Transport- and heat-related CO₂ costs for vulnerable households at different prices



Weighted quintile approach: For each MS, all households below the poverty line (i.e. below 60% of median equivalent disposable income) are included. 50, 70 and 110 within the x-axes refer to euro/t CO₂. Own calculation based on Eurostat emissions data [env_ac_ainah_r2], year 2019

Figure 12 Maximum SCF allocation and CO₂ costs for vulnerable households at different prices



Source: as above

Comparing CO₂-related costs for vulnerable households to the maximum average annual budget available through the Social Climate Fund, Figure 12 reveals that the Social Climate Fund would in general be sufficient to compensate CO₂ costs for vulnerable households; in most Member States even at higher CO₂ prices. However, the key purpose of the Social Climate Fund is to not compensate households for additional costs but to provide support for investment to reduce emissions and relieve the CO₂-related burden. This will ensure that CO₂ costs for vulnerable households will be lower or not occur in the first place and households will be more resilient to future price increases.

In the following analysis, we therefore consider investment needs for vulnerable households in more detail. The study takes a closer look at the heating sector, focusing on replacement of fossil-based heating systems with renewable-based systems. This allows insights into the need for investment support in climate friendly heating technology in light of the overall size of the Social Climate Fund.

3 Investment needs: Estimation based on the example of heat pumps

Key findings of this chapter

- In the context of the buildings sector, a key goal of the SCF is to support low-income households to increase energy efficiency and the transition to low carbon and fossil free heating. With more households becoming independent of fossil energies, the need for direct income support to compensate for the impact of CO₂-pricing decrease.
- Investment needs for clean heating depend on the rate that fossil fuel heating systems can be replaced by clean heating.
- Even in the most optimistic scenario the complete replacement of fossil heating systems by heat pumps would take 14 years. Thus, in all configurations considered in this study, direct income support for ETS 2 costs is still needed to protect vulnerable households from carbon related costs.
- Incentivising high replacement rates from fossil to renewable heating systems increases support needs through investment support in the short term but is the right approach for long-term impact on emissions.
- The share of the SCF budget that is needed for direct income support varies significantly between the configurations considered in this study (18% to 65%) and depends mainly on the carbon price and replacement rate assumptions.
- Even with a fast-track replacement rate of 7%, low-income Member States would only need between 5% and 36% of the allocated SCF budget to compensate the investment in heat pumps and CO₂ costs while for several high-income MS the budget is reached or extended (not considering additional support needs for building insulation and transport).

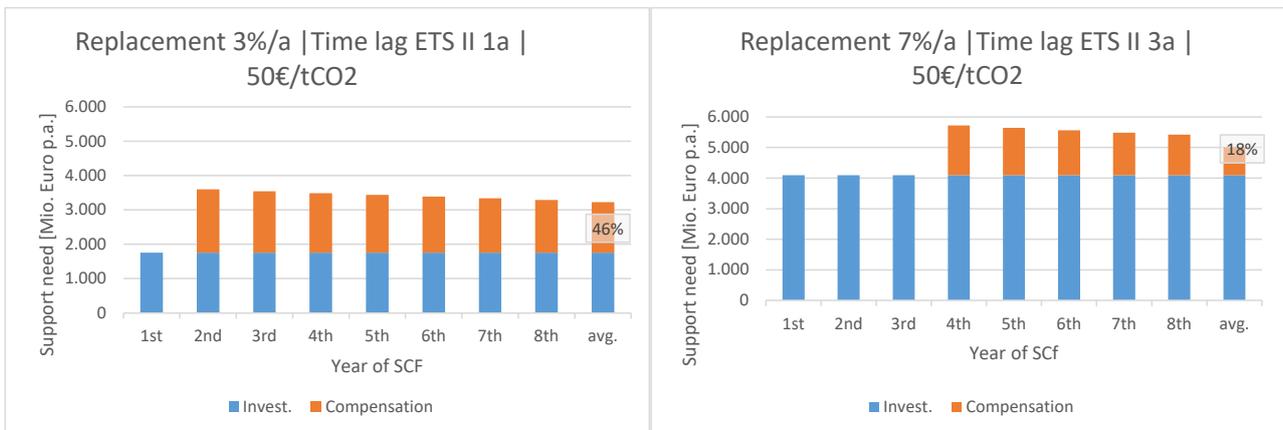
The objective of the SCF is to compensate for additional burden from a CO₂ price and to support investments into technology that is needed for the transformation towards carbon-neutrality. In this chapter we estimate the investment and support needs for heat pumps for low-income households and compare them to the financial needs to compensate their burden of CO₂ pricing. It has to be noted that the needs considered here for investments are only one part, as there are additional investments needed in both the heating (e.g. insulation) and transport sectors. However, the results can be used as a proxy to get a better understanding of the interaction and relation between the two SCF elements direct income support and investment compensation. The investment needs for each Member State depend on the share of fossil heating and the investment costs of heating equipment. We assume that funding from the SCF is used to cover total costs for a heat pump, so that it is guaranteed that vulnerable households can afford the investment in a heat pump system and have stronger incentives to replace their fossil system and contribute to a high exchange rate. There are three main input parameters that have been varied in the analysis:

- It is under discussion if the SCF should start before the introduction of ETS 2 and how long the possible time lag should be. We have examined two options, i.e. the SCF starting 1 or 3 years earlier than ETS 2.
- Exchange rates for heating systems of 3% and 7% have been considered.
- The CO₂ price was set at 50 and at 110 euro/t CO₂.

For vulnerable households, we use the definition as discussed in chapter 2.2 and applied in chapter 2.3, i.e. we consider households at risk of poverty to be vulnerable. Please note, that this is a working definition for the purpose of this study.

Figure 13 shows the yearly compensation needs for the emission costs from heating for vulnerable households resulting from the ETS 2 CO₂ price and the support needs for investments in heat pumps. The left side of the figure shows the results for a yearly exchange rate of heat pumps of 3% and the ETS 2 starting one year after the implementation of the SCF. In the right-hand figure it is assumed that 7% of the heating systems are replaced by heat pumps and the ETS 2 starts with a time lag of 3 years after the start of the SCF. In both cases a CO₂ price of 50 euro/t CO₂ was anticipated.

Figure 13 Yearly compensation and heat pump investment support needs for EU27

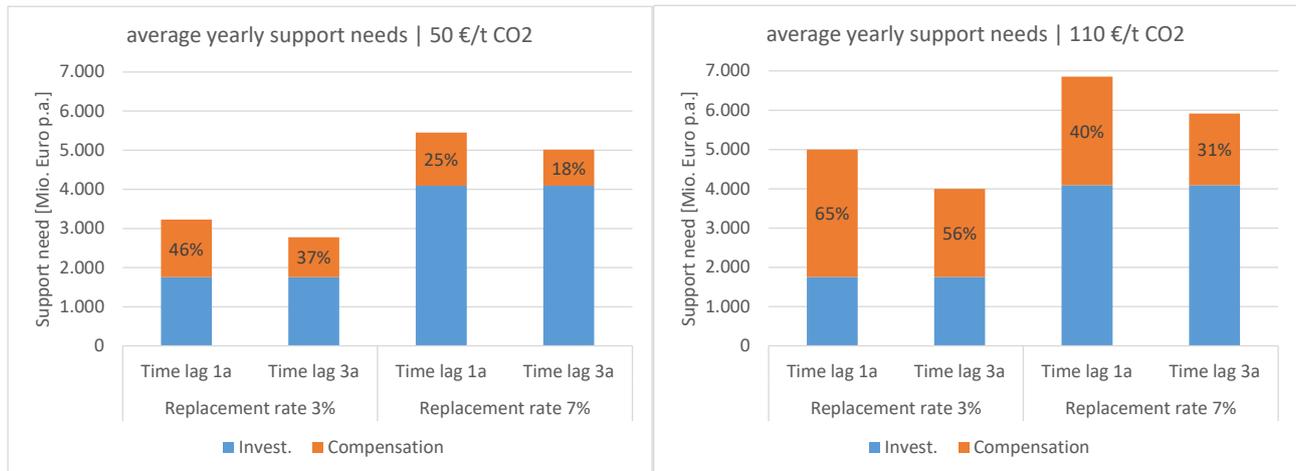


Source: Own calculation Oeko-Institut.

It can be seen that a high replacement rate in combination with a bigger time lag of the ETS 2 can reduce the share of required compensation. On average, the compensation needs amount to 46% of total support in the first case and 18% in the second case. But it also gets apparent that compensation is a very relevant element for the entire duration of the SCF.

Figure 14 shows the average yearly support needs over the first period of the SCF for different exchange rates, time lags and for two different CO₂ prices. It can be seen that higher replacement rates result in higher support needs over the SCF duration as the resulting emission reduction cannot equalise the additional needs in this period. But it would reduce the support needs in a longer perspective. If a higher CO₂ price e.g. of 110 euro emerged the share of compensation needs would increase significantly to a level of 31% to 65%.

Figure 14 Average yearly compensation and heat pump investment support needs for EU27

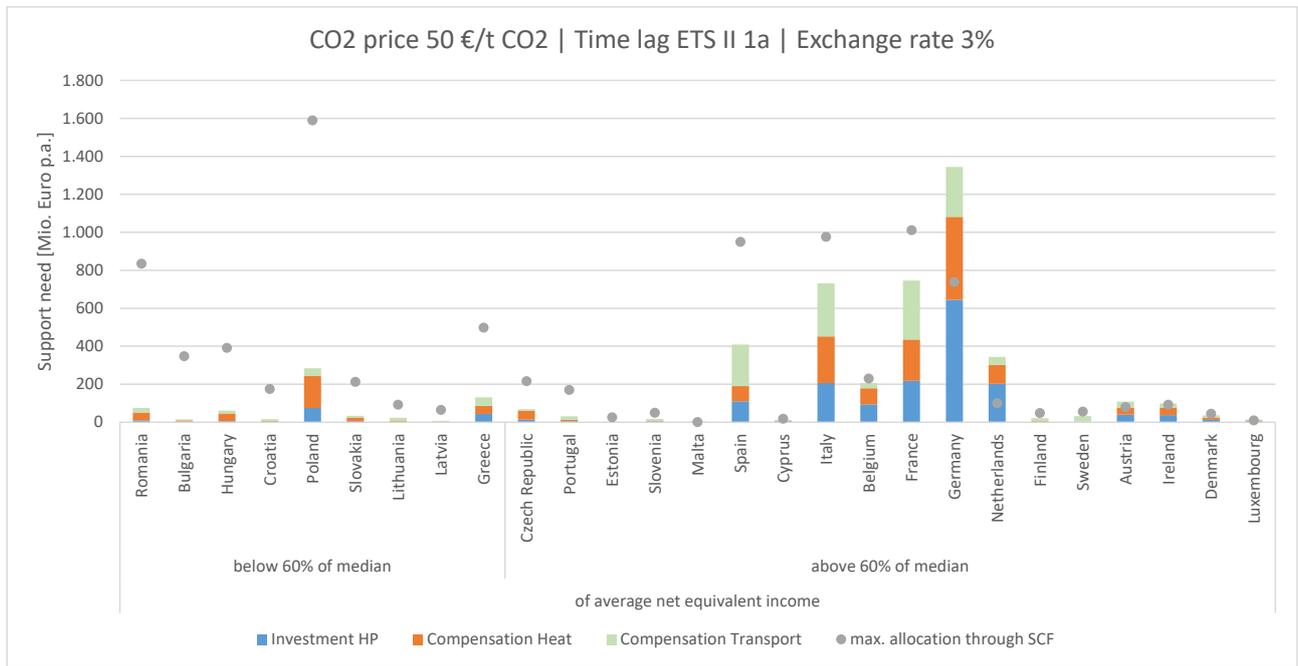


Source: own calculations Oeko-Institut.

Figure 15 and Figure 16 show the average yearly support needs per Member State considering compensation needs for heating and transportation emissions and investment support for heat pumps. In Figure 15 a yearly replacement rate of 3% is considered while in Figure 16 the yearly replacement rate is set at 7%. In both cases a CO₂ price of 50 euro/t CO₂ is considered, and it was assumed that a time lag between the start of ETS is one year. The support needs are compared with the Member State allocation of the ETS 2 revenues as derived in chapter 2.1. With a CO₂ price of 50 euro/t CO₂ and 25% of the total ETS 2 revenues dedicated to the SCF the resulting budget would be 72 billion euros in total, respectively 9 billion per year (SCF duration 2025-2032). For the comparison in Figure 15 and Figure 16 it must be kept in mind that only investment needs for heat pumps were considered and additional needs e.g. for buildings insulation and in the transport sector will occur.

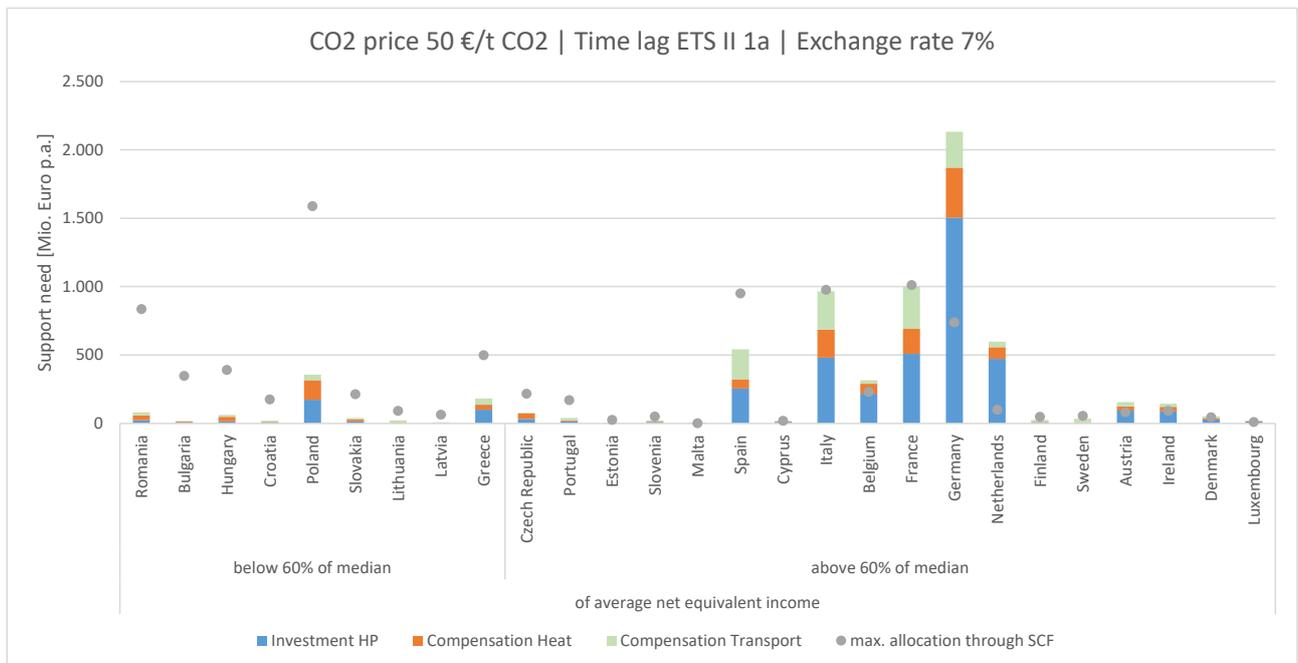
The figures show that at a price of 50 euros/t CO₂, the SCF budget is sufficient to provide investment support for heat pumps and compensate for remaining energy and transport related CO₂ costs in all low-income Member States. Even with a fast-track replacement rate of 7%, low-income Member States would only need between 5% (Bulgaria) and 36% (Greece) of the allocated SCF budget to compensate the investment in heat pumps and CO₂ costs. While in this case for several high-income Member States the SCF budget is reached or even extended (without considering the additional investment needs). In EU27 average 70% of the SCF budget is needed to compensate the here considered costs.

Figure 15 Average yearly support needs per MS including investment needs for heat pumps considering an exchange rate of 3%



Source: Own calculations

Figure 16 Average yearly support needs per MS including investment needs for heat pumps considering an exchange rate of 7%



Source: Own calculations

4 Eligibility and monitoring

Key findings of this chapter

- The Social Climate Fund needs to provide a strong framework to ensure that the funding is used for measures that effectively support the decarbonisation of heating (and transport) and that it is directed specifically at vulnerable households
- No investments in fossil heating: Moving away from fossil fuels for heating is the most direct way of avoiding paying a carbon price under the ETS 2 and important for decarbonising Europe's buildings. Investment support provided through the Social Climate Fund must be directed at replacing fossil heating with renewables and supporting deep renovations as defined in the Energy Performance of Buildings Directive.
- Targeted support for vulnerable households: The SCF needs to provide clear criteria to define vulnerability and to ensure that funding is directed at these households. The framework can draw upon experiences with national programmes addressing vulnerable households, where eligibility is mainly defined based on income and/or linked to social welfare. Next to support for vulnerable households living in their own buildings, rented households need to be addressed.

The introduction of the Social Climate Fund requires a clear framework to define and operationalise the measures to be eligible under funding schemes as well as the target group addressed by the funding. With the key objectives of the Social Climate Fund being the support of vulnerable households and micro-enterprises in reducing greenhouse gas emissions in transport and buildings and to provide income support to these households, it needs to be ensured that the funding is used to effectively and efficiently support these objectives.

The following sub-chapters discuss criteria for eligibility of measures and target groups under the perspective of climate change mitigation (Section 4.1) and the social objectives (Section 4.2).

4.1 Climate Aspects

In the Commission proposal regarding the Social Climate Fund, the climate aspects are defined in two parts. Firstly, more general, states in the preamble that the fund should be in accordance with the NECPs and the Paris Agreement as well as the EU climate targets. Secondly, regarding precise criteria, the proposal is based on the use of the “do no significant harm” principle.

According to Art. 4 of the SCF proposal, the “do no significant harm” (DNSH) principle requires the national Social Climate Plans to explain “how the Plan ensures that no investment or measure, included in the Plan does significant harm to environmental objectives within the meaning of Article 17 of Regulation (EU) 2020/852” (Taxonomy). In the taxonomy, the principle of “do no significant harm” is developed in greater detail as well as a method to assess its fulfilment. Every measure needs to be checked regarding its impact on six environmental objectives. It is explicitly stated that this assessment shall consider “both the environmental impact of the activity itself and the environmental impact of the products and services provided by that activity throughout their life cycle” (Article 17, par. 2). If any “significant adverse impact” can be found, then the measure does not respect the principle.

Recital (18) of the Commission proposal for the SCF stated that the “Commission intends to issue technical guidance to the Member States (...) [which] will explain how the measures and investments must comply with the principle of ‘do no significant harm’ “.

To understand how exactly this principle is assessed it is of interest to look at an existing fund using the same principle. One such fund is the Recovery and Resilience Facility. In the Recovery and Resilience Facility regulation, the same definition of the DNSH principle is used (Article 2, par. 6, 2020/852). The regulation is accompanied by a technical guidance notice explaining the application of the DNSH principle (2021/C 58/01).

In Annex IV of the technical guidance, examples of how to implement the DNSH assessment are given. In example 1, various energy efficiency measures in existing buildings including the replacement of coal/oil-based heating systems with gas condensing boilers are deemed as fulfilling the DNSH criterion⁷. As subsidies for gas-condensing boilers are not consistent with the EU climate targets, any subsidies for fossil fuel heating explicitly needs to be excluded from the SCF.

Looking at the assessment of the DNSH principle within the Recovery and Resilience Facility enables to understand the principle as a comparatively weak tool, highly depending on the understanding of the word “significant”. Most measures seem to solely have an insignificant impact on environmental objectives. However, there is neither a mechanism in place to quantify what indeed counts as “significant”, nor a way of assessing the accumulated impact of many such “insignificant” negative impacts.

In conclusion, if the social Climate Fund is to comply with the EU climate targets and the Paris Agreement, the application DNSH principle needs to be strengthened to clearly exclude investments in fossil heating. The guidance notice announced by the Commission within the proposal thus has an important role.

It is essential that the approach ensures that investment support provided through the Social Climate Fund is directed at replacing fossil heating with renewables and supporting deep renovations as defined in the Energy Performance of Buildings Directive. This criterion needs to be clearly formulated and monitored, as several Member States still provide funding for fossil heating⁸. Subsidies for fossil fuel heating would only perpetuate the need for compensation as well as the climate change crisis.

4.2 Social Aspects

The other crucial aspect of the Social Climate Fund is its social dimension. The specific objective of the SCF is the support of “households, micro-enterprises and transport users, which are vulnerable and particularly affected by the” extension of the Emission Trading System (Article 1).

In point (11) of article 2, vulnerable households are defined as “households in energy poverty or households, including lower middle-income ones, that are significantly affected by the price impacts of the inclusion of buildings into the scope of Directive 2003/87/EC and lack the means to

⁷ Similarly, example 4 considered in Annex IV of the technical guidance illustrates the problem on the aspect of transportation. Here, a new highway equipped with electrical charging stations is also shown to respect the DNSH principle as it contributes to transport electrification.

⁸ For an overview see e.g. <https://www.coolproducts.eu/failing-rules/mapping-europes-subsidies-for-fossil-fuel-heating-systems/>

renovate the building they occupy;” In turn, energy poverty is defined in accordance with the recast proposal of the directive on energy efficiency, meaning “a household’s lack of access to essential energy services that underpin a decent standard of living and health, including adequate warmth, cooling, lighting, and energy to power appliances, in the relevant national context, existing social policy and other relevant policies” (Art. 2, point 49, 021/0203 (COD)).

While in the assessment part of our study (chapter 2 and 3), we use a simple working definition for vulnerability, i.e. “people-at-risk-of-poverty”, a more profound but still operational and verifiable definition would need to be agreed upon that reflects both households’ needs and burden.

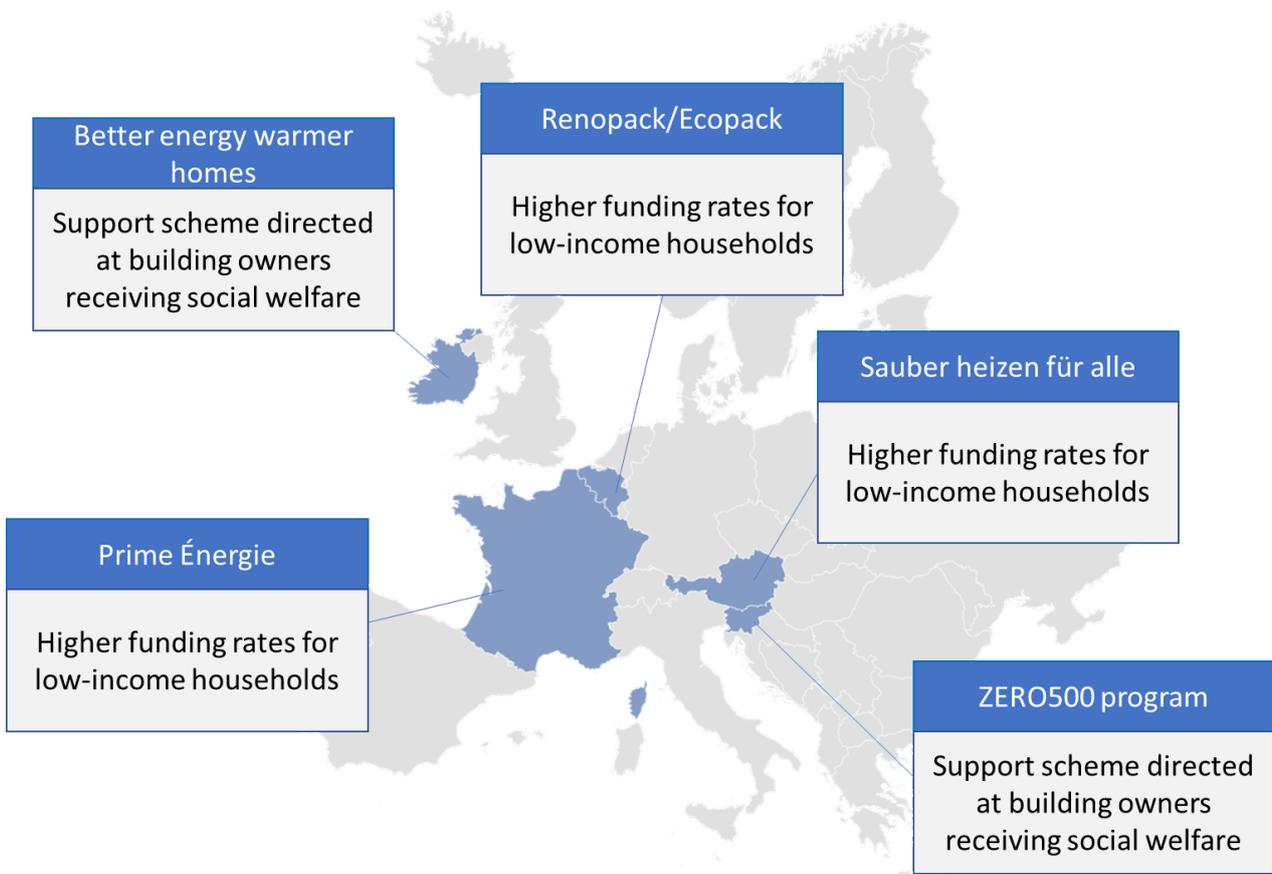
4.2.1 Comparison with other funding schemes within the Common Provision

Several funds, including the European Social Fund Plus (ESF +) and the Just Transition Fund (JTF), are regulated through the Common Provision (2021/1060). The plans laid out by the Member States for the different schemes are summarized in one document called “Partnership Agreement”. The agreements are to contain so-called “performance frameworks” for each program as well as enabling conditions regarding the specific objectives set out (Article 15 and 16). Within the annex, the methodology for both the enabling conditions and the performance frameworks is described. The performance frameworks consist of output and result indicators for the assessment and monitoring as well as of targets for these indicators in 2024 and 2029. These indicators and the enabling conditions both include social criteria. The enabling conditions for ERDF and ESF+ include a National strategic policy framework for social inclusion and poverty reduction entailing diagnosis of poverty as well as measures to prevent and combat segregation (Annex 4, 4.4). An example of social output indicators is found within the regulation on the ESF+ in the Annex 3 (2021/1057). Here, the indicators report the number of people profiting from each program as well as criteria regarding these recipients such as: age, nationality, disabilities, homelessness etc..

4.2.2 Approaches in Member States

On EU level, no existing fund addresses the same target group as the Social Climate Fund. However, on a national level, programs targeting energy poverty through direct income support and/or investment support in renovation and heating system implementation already exist. Figure 17 provides an overview of selected examples of programs focusing on investment support with targeted support specifically for vulnerable households.

Figure 17 Selected funding schemes specifically targeting low-income households



Source: Oeko-Institut.

The Better Energy Warmer Homes Scheme⁹ in Ireland finances free-of-charge energy efficiency measures for homeowner receiving social welfare payment. The Irish example shows a restrictive definition of vulnerable households aligned with social welfare criteria. Other programs include more households as the eligibility is tied to an income level. The “Sauber Heizen für Alle”¹⁰ program in Austria gives out grants to the lowest two income deciles to support specific measures: the exchange of oil or gas heaters for district heating connection, central wood heating station (Holzzentralheizungsggerät) or heat pumps. Both these programs thus do not require any kind of financial contribution by the homeowners. By contrast, the programme “Renopack/Ecopack”¹¹ in Belgium relies on a zero-interest rate loan repayable over a maximum of 30 years as financing source.

There is a lack of financial support schemes that specifically address the rented housing stock. In almost all cases ownership or co-ownership is required for receiving the financial support. One

⁹ See <https://www.seai.ie/publications/Scheme-and-Application-Guidelines.pdf>

¹⁰ See <https://www.land-oberoesterreich.gv.at/270992.htm>

¹¹ See <https://www.wallonie.be/fr/actualites/prets-taux-zero-maintien-du-soutien-au-dispositif-renopackecopack>

programme that is also open to tenants is the “Coup de pouce chauffage et rénovation” programme in France. It is a part of the program “Prime énergie”¹² and provides grants for heating system replacement.

4.2.3 Recommendation for social aspects

A clear framework is needed to ensure that funding is targeted at vulnerable households. The SCF needs to provide clear criteria to operationalise vulnerability and to ensure that funding is directed at these households. The framework can draw upon experiences with national programmes addressing vulnerable households, where eligibility is mainly defined based on income and/or linked to social welfare. Next to support for vulnerable households living in their own buildings, rented households need to be addressed.

A monitoring scheme for the Social Climate Fund needs to be designed to ensure that funding is spent according to the objectives of the fund. A similar approach as for the existing funds (see Section 4.2.1) can be used, where enabling conditions and output/result indicators could contribute to ensure that the objective of the fund is met, and the money indeed supports the most vulnerable. A key element is the definition of the target group for the funding. As a uniform definition of energy poverty and vulnerable households for all Member States would not reflect the great differences in situations across the EU, it could be of interest to use several different indicators that reflect vulnerability. Thus, the assessment could be tailored to the specific context of the country whilst still giving a clear reporting framework.

¹² See <https://www.aide-sociale.fr/prime-energie/>

5 Conclusions and Recommendations

The Social Climate Fund has the potential to be the first fund of its kind to specifically cushion the impacts of carbon pricing on vulnerable households and support them in participating in a socially-just energy transition through structural measures to decarbonise their homes and transport.

Size of the fund and distribution between Member States

The Social Climate Fund presents an important solidarity element for distribution of auctioning revenues. The Social Climate Funds redistributes auctioning revenues to low-income Member States which have lower purchasing power parity and are significantly more affected by a uniform EU-wide carbon price from the ETS 2.

To keep the solidarity component, the Social Climate fund should not be a pre-fixed amount of 72.2 billion euros as currently foreseen, but be a specific and sufficient share of auctioning revenues to ensure sufficient funding with rising carbon prices.

The definition of vulnerable groups is key to assess whether the size of the Social Climate Fund is sufficient for investment support and compensation through direct income support of vulnerable households. A definition is needed to identify the number of vulnerable households in each Member States and to design tailor-made, target specific measures that those households can apply for.

Heating related carbon costs affect vulnerable households more than transport related costs. Therefore, investment in climate friendly heating technology has high leverage for alleviating carbon cost related burden. The size of the Social Climate Fund is in principle sufficient to compensate vulnerable households for their CO₂ costs, at least at low CO₂ prices. However, more importantly, the Social Climate Fund is designed to support investment in climate friendly technology so that CO₂ related costs for vulnerable households decline and households become resilient towards rising prices.

Investment needs

The Social Climate Fund can provide much needed investment support for vulnerable households to replace fossil heating systems by renewable heating and by increasing energy efficiency. The investment needs for each Member State depend on the share of fossil heating and the investment costs of the heating equipment. We assume that funding from the SCF is used to cover total costs for a heat pump, so that it is guaranteed that vulnerable households can afford the investment in a heat pump system and have stronger incentives to replace their fossil system and contribute to a high exchange rate. Higher replacement rates result in higher investment support needed for vulnerable households. At the same time emissions are reduced so that less compensation for carbon induced costs is needed.

Due to the long investment cycles in the buildings sector, even at a replacement for heating technologies of 7% per year, it will take 14 years for all heating systems to be exchanged. This means that direct income support from the Social Climate Fund will still be needed for those vulnerable households whose heating system has not been exchanged yet. If the SCF is introduced with more lead time (three years ahead of the ETS 2 rather than one year as currently foreseen) compensation needs are significantly reduced.

It can be concluded that incentivising replacement of fossil fuel heating by renewable heating systems increases total support needs in the short term but is the right approach for a long-term

impact on emission reductions, thus reducing the need for direct income support. Even with a fast-track replacement rate of 7%, low-income Member States would only need between 5% and 36% of the allocated SCF budget to compensate the investment in heat pumps and CO₂ costs while for several high-income MS the budget is reached or extended (not considering additional support needs for building insulation and transport).

Eligibility and monitoring

The Social Climate Fund needs to provide a strong framework to ensure that the funding is used for measures that effectively support the decarbonisation of heating and transport and that it is directed specifically at vulnerable households: Investment support provided through the Social Climate Fund must be directed at replacing fossil heating with renewables and supporting deep renovations as defined in the Energy Performance of Buildings Directive. This criterion needs to be clearly formulated and monitored, as several Member States still provide funding for fossil heating.

A clear framework is needed to ensure that funding is targeted at vulnerable households. The SCF needs to provide clear criteria to operationalise vulnerability and to ensure that funding is directed at these households. The framework can draw upon experiences with national programmes addressing vulnerable households, where eligibility is mainly defined based on income and/or linked to social welfare. Next to support for vulnerable households living in their own buildings, households and micro-users with rental contracts need to be addressed.

Further research

The analysis focuses on clean heating technology in the residential sector. To assess whether the Social Climate Fund budget is sufficient to protect vulnerable groups and support their transition towards low carbon emissions, additional analysis will be needed for investment in buildings insulation as well as for investment and income support for access to zero- and low-emission mobility and transport.

6 References

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