Climate change and inequality

Introduction

Inequality is an inherent feature of the distribution of global material and resource use and its impact on environmental degradation and climate change. While developed economies with a fraction of the global population use about half of global resources and continue to cause the bulk of environmental degradation, the impact of this behaviour is overwhelmingly apparent in its effect on the rest of the world, and particularly the poor and vulnerable populations living in the societies of Asia, Africa and South America (Shah 2010). Even if the emergence of China is shifting this distribution markedly, it remains the case that a small share of the world population – the developed economies including the industrialised regions of China account for approximately 23% of this population – is responsible for two thirds of globally emitted greenhouse gases.

In quantitative terms, Raupach et al. (2007) have shown that developed countries are responsible for 77% per cent of all emissions since the mid-eighteenth century.

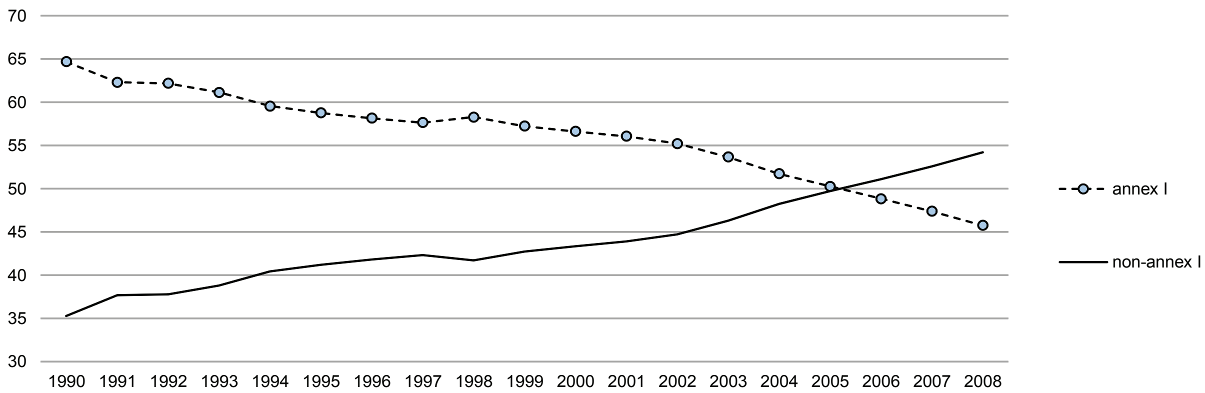
This global and historical context of inequality should be borne in mind when we refer, in this publication, to inequality in Europe. We should be aware that the build-up of income inequality in Europe during the last two decades (see Chapter 4) brought to an end the golden era of relative post-war equality in the developed industrialised world, which itself rested on these global imbalances inherent in the resource-wasting model of production and consumption (Raupach et al. 2007). We also need to see that labour's fair share of the wealth generated within that economic model was based on increasing use of resources and materials, entailing detrimental consequences for the global poor and effects that were bequeathed to the next generations. This clearly never was a sustainable model!

In this chapter we focus on the key processes of sustainable development in Europe with an emphasis on inequality within this European context. Tracking progress in the reduction of greenhouse-gas (ghg) emissions and in material and resource efficiency will be the theme of section one. Section two will focus on gaps and imbalances present in European member states' record of behaviour in terms of resource intensity and ghg emissions intensity. Section three will focus on the most readily apparent form of environmental inequality, i.e. energy poverty in Europe.

Topics

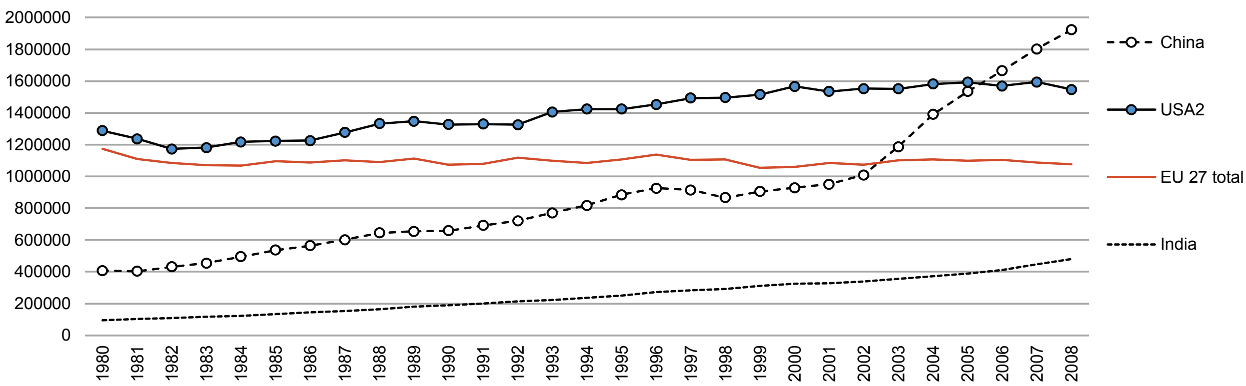
Global inequality in greenhouse gas emissions and its consequences

Figure 6.1 Greenhouse gas emissions by Annex 1 (developed) and non-Annex (developing) countries



Source: Laurent (2012) and Raupach et al. (2007).

Figure 6.2 CO_2 emissions from fossil fuels and cement in MtC/yr (TgC/yr), 1980-2008



Source: Laurent (2012) and Raupach et al. (2007).

The big picture of inequality

Developed economies (Kyoto annex I. countries), with 15% of the global population, use about half of the global resources and still cause the major effect in terms of environmental degradation (45% of ghg emissions in 2004), as Figure 6.1 shows.

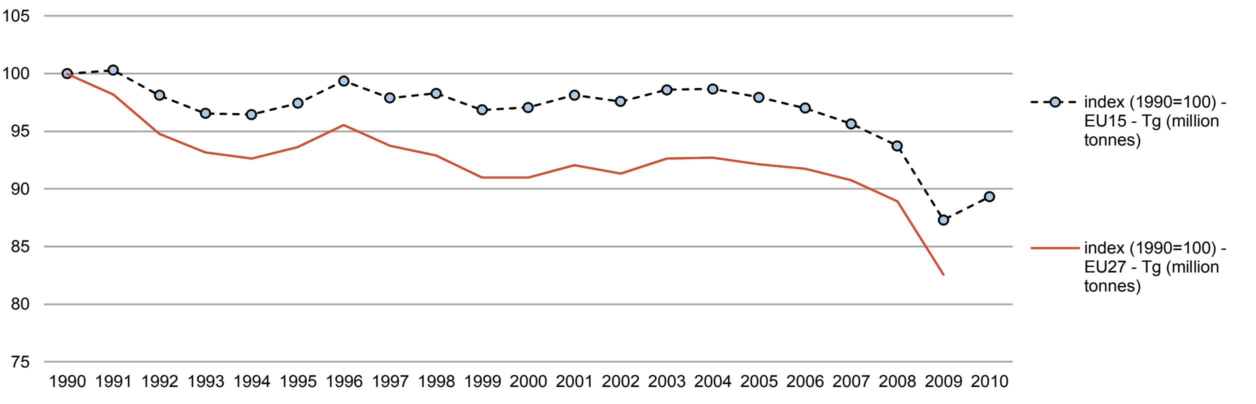
Meanwhile, the poorest 37% per cent of the world's population accounted for only 7% per cent of CO_2 emissions. In per capita terms, this indicates a factor of inequality of more than 15, when actual emissions are taken into account. As the Intergovernmental Panel on Climate Change (IPCC) has pointed out, while Africa accounts for less than 4 per cent of greenhouse gas emissions in the world, this continent may well, as early as 2020, have between 70 million and 400 million people exposed to water shortage caused by climate change. This shows the other dimension of inequality, in terms of exposure to the impact of climate change.

Figure 6.2 shows the shifting balance in global ghg emissions due to the emergence of China (classified as a developing country and thus *not* subject to ghg reductions under the Kyoto Protocol). In terms of use of the categories 'developed' and 'developing' countries, this shift would seem to indicate a decrease in 'pollution inequality' insofar as the share of 'developing countries' is growing. In fact, the opposite is true. Assuming the industrialised urban population in China to be around 600 million, 23% of the world population is now causing two thirds of global ghg emissions.

At the same time, the emergence of China also demonstrates the absolute limits of this resource-intensive development model.

European performance in reducing greenhouse gas emissions

Figure 6.3 Greenhouse gas emissions in Europe (1990-2010)



Source: EEA (2011).

'Green recession – black recovery': more ghg reduction caused by crisis than resulting from climate policy

While global greenhouse gas (ghg) emissions in 2008 were 41% above the 1990 levels and the emissions of developed countries (subject to the Kyoto Protocol) showed no decrease (Schepelmann 2009), the EU (as part of the latter group) did achieve a significant cut in its emissions during this period (while the emissions of other developed economies, such as the US or Japan, continued to increase).

For the EU27, ghg emissions in 2009 (last available data, EEA 2011) showed a substantial 17. 4% decrease compared to the 1990 base; for the EU15, however, the achievement was just -12.7%. The crisis year of 2009 showed a record decrease of 6.4% for both the EU27 and the EU15 indicating the on-off effect of the collapsing economic activity. Data available for the EU15 show, however, that the slight economic recovery in 2010 resulted in an immediate 2% increase in ghg emissions, reducing the overall cut to 10.7% for the EU15 when compared to 1990.

Even if the 2020 targets are – at least for the EU27 – within reach, this does not indicate any effective decoupling of ghg emissions from economic growth.

What the huge difference between the performance of the EU15 and the EU27 shows is that the greater reductions were made in the new member states due primarily to the collapse of their previous industrial base in the 1990s. The same effect applies to post-unification Germany with the dismantling of the polluting east-German industries (also serving to improve the EU15 performance). Out of the EU27's total 11.3% reduction in emissions between 1990 and 2008, 7.3% had already been achieved in 1994 (at the lowest point of the transformation crisis in CEE), constituting clear evidence that the bulk of the emission cuts was the result of contraction and not of climate policy (see also ETUC and ETUI 2011: 51).

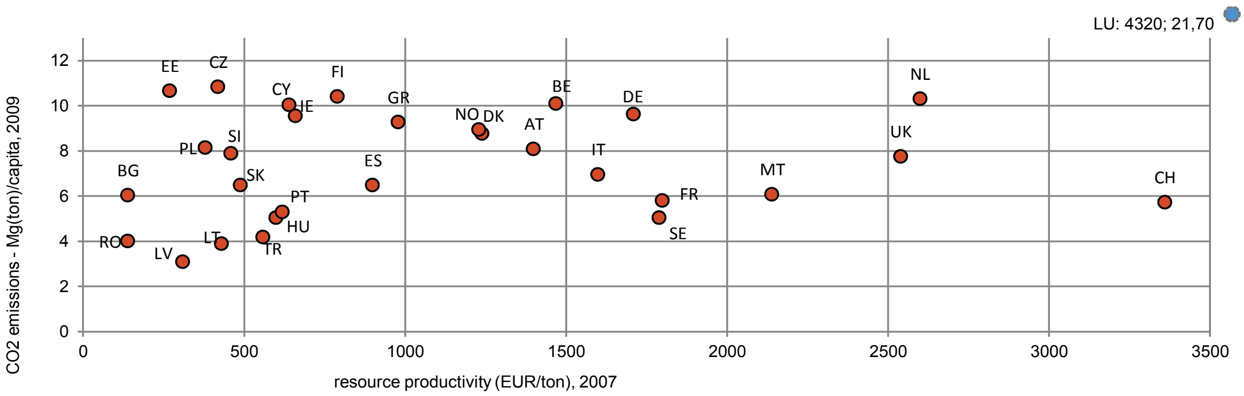
A breakdown of the examined period shows also that the overwhelming majority of the emission cuts were achieved during the first decade of the observation period, as in 1999 ghg emissions were already 9.1% below the reference level of 1990 in the EU27 and 5.3% below this level in the EU15. The period 2000-2007 saw no more than a marginal additional decrease in emissions (0.4% in EU27 and 1.4% in EU15). What is more, the single crisis year of 2009 contributed more to a larger decrease of ghg emissions for the EU15 than the preceding 18 years all together! This amounts to clear proof that the achievements so far are less a result of conscious climate policy measures and much more the outcome ad hoc events and crises.

Even if Europe has been performing better than the rest of the world, it cannot be stated that it is well on track towards fulfilment of the ambitious 2050 targets agreed at the G8 Summit in 2009 (Euractive 2009). The achievement of the 80% emissions cut target for industrialised economies by 2050 would presuppose a cut in emissions to two tonnes of CO_2 equivalent per capita per year. As the current EU27 average is 10 tonnes per capita, achievement of this target calls for a genuine paradigm shift in our production and consumption model.

The case of the CEE transformation crisis in the early 1990s, and the 2009 crisis, provide instances of how climate policy targets should not be reached. This will be a lesson for the next three decades over which the aim is to achieve four times the ghg reductions of the period 1990-2010. Europe cannot afford more recession, even if it is green. What it needs is a recovery that must be also be sustainable and green.

Divided Europe: resource productivity and per capita emissions

Figure 6.4 Resource productivity and per capita greenhouse gas emissions by member state



Source : EEA (2011) for CO2/capita; Eurostat (2011p) for resource productivity.

Inequality across member states: from 'poor and clean' to 'rich and dirty'

The differences in resource productivity and per capita ghg emission characteristics by individual member states indicate an important dimension of diversity that can also manifest in terms of actual or potential inequality.

Figure 6.4 shows the great divergence, in both resource productivity (vertical axis) and per capita ghg emissions (horizontal axis) across European countries. Resource productivity, defined as the ratio between gross domestic product (GDP) and domestic material consumption (DMC), indicates how much value added is produced by the input of one tonne of material resource in a given economy. The gaps are enormous as, for example, the level of resource productivity in Luxembourg (4320 EUR/tonne) is more than thirty-fold what it is in Bulgaria (140 EUR/tonne), this gap being far wider than corresponding gaps in per capita GDP or wages. Even if Europe as a whole is currently profiting from the huge 'emission drops' in CEE new member states caused by the collapse of their traditional industrial base in the early 1990s (see also ETUC and ETUI 2011: 51 ff), these countries face huge challenges when it comes to the need to raise their resource productivity in the future.

If, on the other hand, we look at per capita CO2 emissions, we also see huge differences, but here they are quite differently distributed among countries (CO2 emissions are responsible for the bulk of ghg emissions) .

Luxembourg, the best performer in terms of resource productivity – i.e. needing the least amount of material input for producing a unit of GDP – , has, in relation to per capita CO2 emissions, the worst result, namely, 21.7 tonnes, while Latvia has just 3.08 tonnes per capita. This shows how great are the differences even within Europe, but also how many different facets sustainable development has.

While resource productivity depends on both resource efficiency and the economic structure (in terms of the share of resource-intensive industries in economic activity), per capita emissions reflect emission intensity and are thus also linked to the amount of material wealth generated in a country. This means that for instance Luxembourg generates a unit of GDP with high resource productivity but, since there are many of those units (in terms of production and consumption), this adds up to a huge amount of emissions.

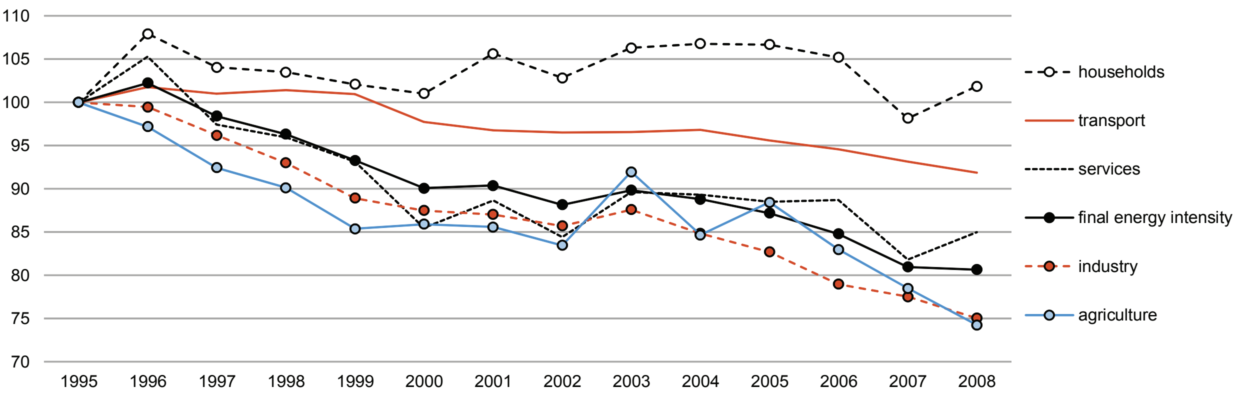
A rich country can thus have relatively high resource productivity values, but still be the highest per capita polluter, because it is not as resource-efficient as it is rich.

On the other hand, a poor country can have low resource productivity and still be a low per capita polluter because the total amount of used resources is relatively low. The targets for 2050 are 2 tonnes of CO2 emissions per capita for developed countries. The challenge for Luxembourg is to bring its per capita emissions down by more than 90%, without giving up its high income level and future growth.

Challenges are even greater for the poorer countries: they should achieve convergence with richer economies and at the same time improve their resource productivity and efficiency. Bulgaria for example would need to cut its per capita emissions by two thirds and at the same time generate 5-6 times the income it does today (there are no targets for convergence, however). This will represent a twofold challenge.

Energy intensity by broad sector

Figure 6.5 Index of final energy intensity and energy intensity by sector, EU27 (1995-2008)



Source: EEA (2011).

Energy intensity: huge improvement in industry, but not in the household sector

Economic growth has been entailing steadily less final energy consumption within the EU27 economy, although progress in this respect is piecemeal. Over the period 1990 to 2008, the total gross domestic product (GDP) of the EU27 grew at an annual average rate of 2.1 %, while final energy consumption grew by no more than 0.5 % a year (EEA 2011). In other words, final energy intensity was decreasing during this period at an average annual rate of 1.6 % – which still means that final EU27 energy consumption increased by 9.5 %.

Looking at the performance by broad economic sector, the period 1995-2008 will be examined in more detail.

Improvements in energy intensity have shown huge differences by broad economic sector as shown by Figure 6.5 for the period 1995-2008.

Over the period in question as a whole, final EU27 energy intensity decreased by around 1.6% a year on average, but most strongly during the years 1996-2000 (-3.1%/year). For the whole period this amounted to a total decrease in final energy intensity of 19%. The decoupling of growth from final energy consumption was most successful in agriculture and in the industrial sector where energy intensity decreased by 25.7% and 24.9% respectively. In the tertiary and transport sectors the final energy consumption intensity decreased by 15 % and 8% respectively compared to 1995.

Two interesting lessons can be drawn from these trends. On the one hand, industry that is often blamed as a major pollutant was one of the best performers in the reduction of energy intensity. This indicates the possibility of an alternative to deindustrialisation on the road to a low-carbon economy.

The performance of the household sector, on the other hand, was rather poor, in spite of programmes designed to raise energy efficiency.

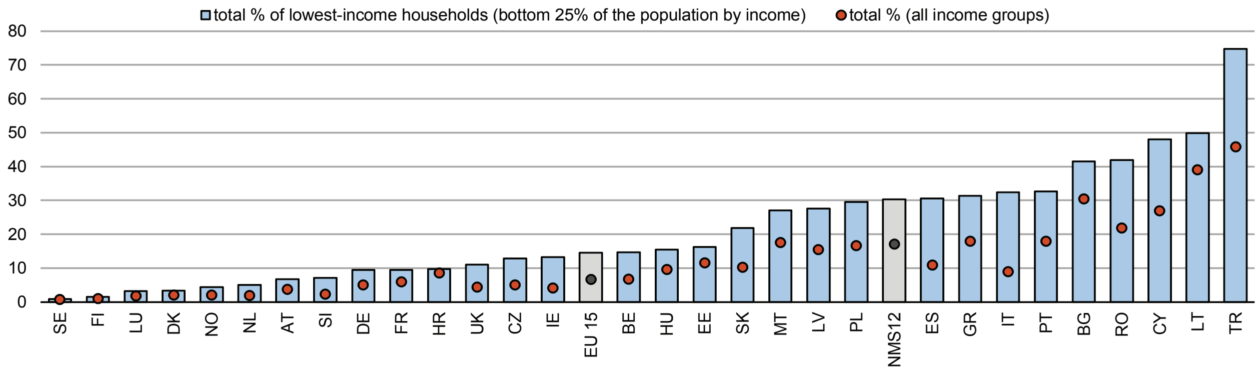
Between 1995 and 2008 final per capita energy consumption in European households increased by 1.9 %. The energy consumption of households has been influenced mainly by two opposite drivers. Efficiency improvements in space heating and in the performance of large electrical appliances have reduced consumption. Meanwhile, the size of dwellings has increased so that increased use of electrical appliances and central heating have contributed to an increase in consumption, thereby offsetting most of the energy efficiency benefits. However, CO_2 emissions per dwelling were 24% below their 1990 level in 2008, mainly because of CO_2 savings resulting from switches to fuel with a lower CO_2 content.

The relatively poor performance of the household sector in reducing energy intensity is of key importance in two respects. It shows again how great is this sector's potential for greening the economy and also that government programmes for retrofitting buildings would deserve much more attention from policy-makers.

Involved also, however, is an important inequality aspect. The data reveal two opposite processes: energy intensity grew due to larger and better dwellings and due to more and bigger electrical appliances (the populations mainly affected here are the upper income groups). On the other hand, energy-efficiency improvements, attributable to the switch to fuel with a lower CO_2 content, had a price effect that hit, above all, poorer families. Both trends – larger dwellings on the one hand, more heating efficiency on the other (at a higher price) – clearly indicate an upward pressure in the direction of greater inequality

The micro-dimension of environmental inequality — fuel poverty in the EU

Figure 6.6 Share of the population who cannot afford to keep home warm if needed, 2008



Source: Eurostat (2011p).

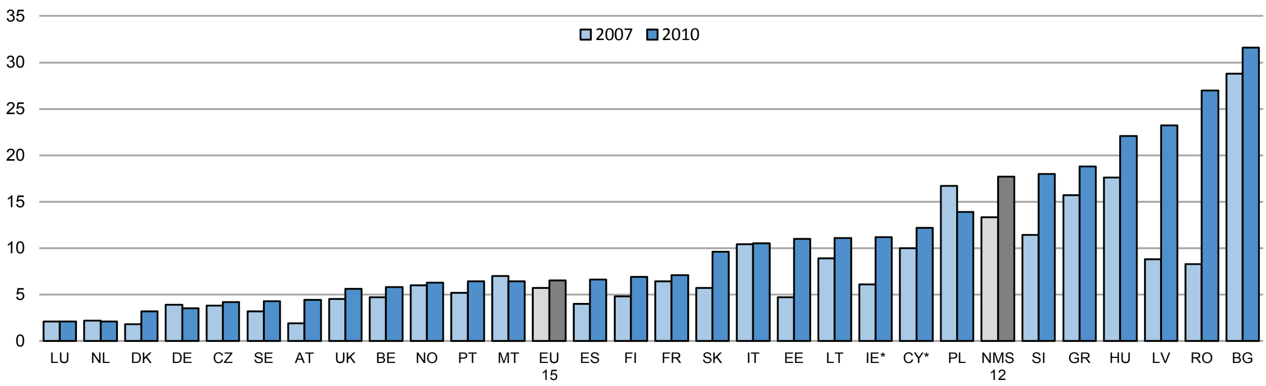
Fuel poverty on the rise in the EU

In Europe, constant increases in energy prices lead several million households to turn off their heating in winter in order to reduce their energy bills (EPEE 2010).

Fuel poverty is on the rise in the EU and has reached alarming levels in certain member states, even if the latest available data do not yet include the worst years of the crisis (European Foundation for Improvement of Living and Working Conditions 2009). Figure 6.6 shows the share of the population (for the total population and for the poor households) that cannot afford to keep their homes adequately warm when necessary. In 2008 6.7% of the EU15 population and 14.5% of poor households were affected; for the NMS12 the corresponding shares were 17.1% and 30.3%. The situation was worst in Lithuania where 39% of the total population and 49.9% (!) of the poor experienced fuel poverty.

The micro-dimension of environmental inequality – fuel poverty in the EU

Figure 6.7 Utility bill arrears in EU member states (2007 and 2010, as % of total population)



* IE and CY: data for 2010 = 2009.
Source: Eurostat (2011a).

Dramatic increase in utility bill arrears during the crisis

Figure 6.7 shows another aspect of fuel poverty: the share of the population finding it hard to afford to pay their utility bills for the year 2007 (before the crisis) and for 2010 (after the crisis).

The social impacts of the crisis are clearly visible as serious arrears with utility bill payments have increased in almost all countries. While in 2010 for the EU15, 6.5% of the population was in serious arrears with utility bill payments (in Italy 10.5% and in Greece 18.8%), in the NMS12 the average figure was 17.7%, Bulgaria being the most affected with 31.6% (!) of the total population. Increases in utility bill arrears also show the dramatic effect of the crisis. The new member states showed an increase of the population affected by utility bill payment difficulties from 13.3% in 2007 to 17.7% in 2010. Particularly alarming was the trend in Romania (an increase from 8.3% to 27.0%) and Latvia (from 8.8% to 23.0%). On the other hand, Poland saw a corresponding decrease from 16.7% of the affected population in 2007 to 13.9% by 2010. Fuel poverty is thus a serious phenomenon in the EU and, with the continuing increase in energy prices, it could take on dramatic proportions. This has important policy consequences, especially if we take account of the two-fold challenges of the coming years: increasing social tensions due to austerity programmes and rising energy prices due to increasing scarcity of resources and climate policy .

Conclusions

Avoiding green recession and green poverty

Once this protracted crisis is behind us, there will be no way back to the pre-crisis growth model that rested on credit-fuelled expansion, inequality, and imbalances. Nor can we return to the broader economic model pioneered by Western industrial civilisation. Enduring recovery will be possible only through a fundamental shift towards a resource- and material-efficiency-based low-carbon economy.

When talking about Europe's performance in climate policy targets and the effects of climate policy and resource prices on the population, we need to bear in mind the global context. The industrialised developed world of which Europe is an integral part has been the major beneficiary of the outgoing resource-wasting production model, the consequences of which are disproportionately hitting the developing poor countries. Against this background, Europe has a crucial responsibility to reverse this process and take a leading role in managing the transformation towards a low-carbon and resource-efficient economy .

We have shown some of the results that Europe has managed to achieve in this process, but these are controversial .

Reductions in ghg emissions were predominantly achieved on the back of crises. This should not be the way forward! Europe cannot afford greening through recession. Further decoupling of growth from energy and resource use should be the strategy, even if this route is a more difficult one.

Major imbalances among member states can be seen in this process and these too point up the controversial features of certain climate policy achievements. In terms of resource productivity (generated GDP value from unit resource), the gap among member states is 1:30 (Luxembourg vs. Bulgaria). Per capita ghg emissions meanwhile show an opposite picture: here Luxembourg, the worst performer, has 7 times higher per capita emission than the best performer, Lithuania. Both indicators are somewhat disturbing: the resource productivity of the national economy can reflect the specifics of an economic structure (e.g. high share of financial services or other high value/low material input activity). Per capita ghg emissions seem to be more indicative of the wealth level of a country than of its performance in resource and energy efficiency. Since poorer countries (above all the NMS) tend to have the lowest per capita emissions, but also the lowest resource productivity, the big question will be how to manage 'green convergence'. Previous experience with the catching up of south-European countries shows that the process of convergence caused emissions to increase rapidly.

Beside the big picture of inequality in environmental and resource use in the world, and the uneven performance in Europe, there is also a micro-dimension of environmental inequality.

This manifests itself in growing fuel poverty in Europe. As we have shown, this is already posing a huge social challenge. Data that reflect the effect of the crisis are not yet available, but there can be little doubt that it will have served to aggravate the situation even further. Nor do we have data to show the extent to which different forms of vulnerability combine within specific social groups. Inadequate housing and inefficient heating systems often go hand-in-hand with unemployment, mortgage problems and falling housing prices. In certain disadvantaged regions some groups in society may become 'locked in', i.e. unable to stay but unable to move either.

If we look ahead to the challenges of a just transition towards a low-carbon economy, some policy recommendations can be drawn. In sustainable development and climate policy a paradigm shift is required. Even if Europe appears to be performing better than the rest of the world, the process towards the 2050 targets is not sustainable. A more comprehensive policy framework is needed and targets must be underpinned by functioning economic tools. Climate policy, industrial policy, employment and social policy need to be based on an integrated approach. There exists a danger that the forced fiscal and financial consolidation programmes currently underway in Europe may undermine all the dimensions of this policy framework. One example is government programmes for retrofitting buildings, with regard to which there is a major risk that declared objectives will be not met due to austerity. While the housing sector represents the best potential for energy saving and for the reduction of greenhouse gas emissions, a proper design can also help the growing share of families in fuel poverty. Publicly financed programmes would have the highest return here, but if these are being cut, or discontinued, due to austerity policy the losses would be manifold.