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Policy options for a socially balanced climate policy

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Abstract

Climate policies, including removing fossil fuel subsidies or imposing carbon prices, can be designed in a way that is both efficient in addressing climate change and results in a fair distribution of the associated costs.

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Introduction

The objective of climate policy is to mitigate anthropogenic climate change. In most cases the cost burden of such climate policies does not fall evenly on households. Depending on the carbon intensity of consumption for different income groups, the direct effect of climate policy can be regressive, neutral or progressive, meaning that low-income households would pay more than proportionally, the same, or less than proportionally, respectively, than high-income households. In developed countries, empirical evidence indicates that climate policy would in many cases be regressive. This implies that low-income households would lose a higher share of their consumption than high-income households. To avoid climate policy to be regressive, a comprehensive approach can neutralize these distributional effects and turn such a policy into being progressive. Carbon pricing, in the form of a carbon tax or an emission trading system, is widely recommended by economists as a particularly suitable form of climate policy. Since almost all G20 members have started implementing carbon pricing or are considering it, this policy brief uses carbon prices as a leading example.

To be specific we identify the following five recommendations:

1. Introduce and strengthen carbon pricing to fight climate change effectively and to protect the health of low-income households.
2. Abolish fossil fuel subsidies and use the revenue to finance a modern approach to fight poverty.
3. Making climate policy progressive by compensating low-income households.
4. Invest in low-carbon infrastructure to reduce dependence on polluting services.
5. Engage with stakeholders to avoid destructive political confrontation.

These recommendations will be discussed in the following.

Proposals

Policy recommendations should be policy relevant, but not policy prescriptive (Koetz, Farrell, and Bridgewater 2012; Edenhofer and Kowarsch 2015; Intergovernmental Panel on Climate Change 2015). Following this guideline we present policy options which are socially balanced and at the same time mitigate climate change effectively. The five recommendations reflect a wide scientific consensus, but can be implemented in different ways, which reflect country-specific circumstances and political preferences. The recommendations are followed by a brief explanation and some background information referring to the related scientific literature.

1. Introduce and strengthen carbon pricing to fight climate change effectively and to protect the health of low-income households

There is a far-reaching consensus among economists that carbon pricing is a highly desirable form of climate policy (Acemoglu et al. 2012; Tirole 2012; Stiglitz 2016). The World Bank

(2015) and the IMF (Parry, Veung, and Heine 2015) also recommend it as an efficient way of combining environmental and economic objectives. As highlighted by the World Bank (2016) and by the International Carbon Action Partnership (ICAP), carbon pricing has been implemented or is planned or considered in almost all G20 countries. Still, only a small share of emissions is covered by carbon pricing. Carbon pricing offers an opportunity to design climate policy in a progressive way (see recommendation 3 below), but also has direct distributional benefits:

Climate policy affects distribution via health co-benefits

While the distributional effect of climate policy via changes in income and wealth of different households is an important dimension, it is not the only one (Fullerton 2011). Another important distributional effect is due to non-climate environmental improvements (Von Stechow et al. 2015). Climate policy often has co-benefits, such as improved local air quality. Avoiding a ton of CO_2 has been estimated to reduce health damages worth 50 to 380 US$ (West et al. 2013). Households most affected by local air pollution would hence also benefit most from climate policy.

2. Abolish fossil fuel subsidies and use the revenue to finance a modern approach to fight poverty

Fossil fuel subsidies are often considered to be a benefit to low-income households. This can make reductions in these subsidies unpopular. Empirical studies, however, show that wealthy households benefit most from fossil fuel subsidies and also that low-income households are most at risk from climate change. Reductions in fossil fuel subsidies can thus be used to finance an effective and sustainable policy for fighting poverty, in particular by providing basic infrastructure.

Climate policy, and in particular the reform of fossil fuel subsidies, is expected to have a progressive direct effect in developing countries.

The relative distribution of the consumption of carbon-intensive goods across income groups is very different in developing countries compared to developed countries. The subsidy for petrol in Nigeria for example is highly regressive (Soile and Mu 2015). A climate policy that removes such subsidies would be progressive in most cases, that is, it would affect high-income households more than proportionately (Dennis 2016). Similarly, the direct effect of carbon prices is expected to be progressive in China (Brenner, Riddle, and Boyce 2007) and India (Datta 2010). Nevertheless, the direct effect of removing fossil fuel subsidies (without considering the alternative use of government revenues) can be very harmful to low-income households (Rao 2012; Siddig et al. 2014).

A reduction of subsidies on fossil fuels frees government resources which can be used to improve the well-being of households.

In many developing countries, fossil fuel subsidies not only accelerate CO2 emissions, but also pose a high burden on the government budgets and have regressive distributional effects (del Granado, Coady, and Gillingham 2012; Edenhofer 2015; Coady et al. 2017). In cases in which removing subsidies would increase inequality, a reform package can be designed such that budgetary savings are redistributed in a way that renders the overall outcome progressive (Siddig et al. 2014; Dennis 2016). In addition, investing the public revenues freed by a subsidy reform to promote development goals, such as health, education, or access to basic infrastructure, also predominantly benefits poor household and can thus generate a "double progressivity".

3. Make climate policy progressive by compensating low-income households

Climate policy can be designed in different ways to reduce a potential regressive direct effect. Among the most evident redistribution mechanisms are the recycling of the revenue from a carbon pricing scheme through climate dividends, tax reductions, and investments in infrastructure. Depending on the specific situation of the implementing country, any of these options can be preferable.

The direct effect of climate policy in developed economies is mostly regressive.

Low-income households in developed countries display higher expenditure shares for carbon intensive goods to satisfy basic needs like heating and transportation (Grainger and Kolstad 2010; Flues and Thomas 2015). As a consequence, the direct effect of climate policy is likely to be regressive in developed countries (Bento et al. 2005; Wier et al. 2005; Bento 2013). This means that low-income households would lose a higher share of their consumption than high-income households. In addition, losing a given percentage of income is a more serious concern for poorer households, even if they pay less for climate policy in absolute terms.

Climate policy itself offers attractive options for compensating its direct distributional effects, in particular through the use of carbon pricing revenues.

Carbon prices are not only the economically most efficient policy instrument to internalize the social costs of emissions, they also generate public revenues (Edenhofer et al. 2015). These revenues can be recycled to households in a way which offsets potential adverse distributional effects of climate policy. A straightforward approach is to pay a "carbon dividend" to households, which has a progressive effect on the income distribution: as all households receive the same amount, poorer households benefit more relative to their income since they pay less carbon taxes in absolute terms. Switzerland is following this approach for the lion's share of its carbon tax revenues. In addition, well-targeted tax reductions can also result in positive distributional effects while at the same time reduce existing distortions resulting from discouraging desirable activities, such as labor (Klenert et al. 2016). British Columbia has adopted a revenue-neutral approach, which uses the revenues from carbon pricing to taxes like

income taxes. Recent research has produced new ideas to extend these approaches to non-linear tax reductions which, to our knowledge, have not yet been put into practice so far. The idea here is to reduce labor taxes most for the households with the lowest income (Klenert et al. 2016). Fullerton and Metcalf (2001) have shown that other forms of climate policy like detailed sectoral regulations ('command and control') and subsidies can also be designed such that distortionary effects are reduced.

Climate policy can be combined with smart industrial policy to avoid job losses in most affected industry

Energy intensive industries are under strong competitive pressure to move production to countries with cheapest production conditions. Although there is no evidence that climate policy does indeed cause firms to relocate to unregulated countries (Branger and Quirion 2014), the potential job loss in energy intensive industries is a concern to decision makers. Just in case there really is a threat to jobs in the energy intensive industry, several options to avoid the job loss are available. One option is "grandfathering" pollution permits to affected firms (Schmidt and Heitzig 2014). This has been implemented in the EU-ETS. A second option is output-based rebating, which would reward firms for the product and tax them for emissions (Böhringer, Rosendahl, and Storrøsten 2017). A third option is to reduce labor taxes in the affected industry to compensate firms and reward them for job creation at the same time (Schwerhoff and Franks 2017). The second and third options are new ideas and have not been tested yet.

4. Invest in low-carbon infrastructure to reduce dependence on polluting services

Climate policy works best when it is part of a comprehensive policy package. In the transport sector, in particular, incentives to reduce emissions will be accepted more easily when clean alternatives like public transport offer an attractive alternative.

In developing countries, carbon pricing revenues can be used to reduce inequality through infrastructure investments.

In developing countries, government revenues are often insufficient to provide essential infrastructure. In these countries, carbon pricing can be an attractive form of generating government revenues. As they are harder to evade than taxes on labor income, for instance, carbon taxes are found to increase economic efficiency of the tax systems in countries with large informal sectors (Liu 2013). The additional revenues could make significant contributions to the achievement of universal access to water, sanitation, electricity or telecommunication (Jakob et al. 2016), in line with the UN Sustainable Development Goals. As low-income households have least access to infrastructure so far, they would benefit most from additional infrastructure provision, such that the result of these investments would be highly progressive (Dorband 2016).

In the transport sector, the availability of low-carbon transport infrastructure determines the distributional effect of climate policy on fuel prices.

Ambitious emission reductions in the transport sector will require not only cars with lower emissions, but also a shift to cleaner modes of transport (Creutzig et al. 2015). The impact on households thus depends strongly on the availability of infrastructure for low-carbon mobility. In locations with high-quality local public transport and high-speed rail services it will be much easier to adjust to rising fossil fuel costs. This tends to be favorable to households living in urban centers and in countries with developed rail systems.

5. Involve stakeholders to avoid destructive political confrontation

Climate policy can be inconvenient for some influential stakeholders. This makes its implementation difficult, because these economic actors might use their resources to avert a policy, even when it is to the benefit of a large majority of the population. Stakeholder involvement, meaning a well-designed policy dialogue with the most relevant groups, is a proven way of addressing the challenge of a small group of actors exercising veto power. In this way a destructive struggle for private privileges can be avoided. Ultimately, it may also be necessary to compensate certain stakeholders, even though they may not be in need of distributional policies from a perspective of social welfare (as defined by the government).

Climate policy has a distributional effect not only on incomes, but also on wealth.

As climate policy affects prices of assets depending on their carbon content, it also has a distributional effect on wealth. Meinshausen et al. (2009) point out that limiting global warming would require leaving more than half of economically recoverable fossil fuel reserves in the ground. As these reserves lose value, their owners are strongly affected by climate policy. Fossil fuel reserves become "stranded assets" (Jakob and Hilaire 2015). This will be a progressive effect as ownership of fossil fuel reserves is highly concentrated among rich households. The effect, however, also explains the difficulty of implementing climate policy as these households have significant political influence.

Political veto power against climate policy can be addressed by state-of-the-art stakeholder involvement processes

The effect of climate policy on the wealth distribution, but also a "behavioral momentum" (Gifford 2011) standing in the way of reducing the carbon intensity of consumption and other effects can cause strong resistance against such a policy even though it would be beneficial for aggregate welfare. Stakeholder involvement has been identified as a promising approach to "diminish the veto power of various societal actors" (Edelenbos and Klijn 2005). By now a broad range of experiences is available and has produced important insights on the best approaches and methods (Welp et al. 2006; Hage, Leroy, and Petersen 2010; Bäckstrand et al. 2010; Luyet et al. 2012). In some cases participatory approaches have caused a "participation fatigue" (Wesselink et al. 2011). To avoid this effect and to make participatory approaches

successful, Reed (2008) recommends eight features of best practice, including the formulation of clear objectives and the need for highly skilled facilitation.

Climate policies can be designed to overcome political resistance by adversely affected interest groups.

Climate policy may affect certain highly exposed groups that are related to the extraction or use of fossil fuels in a particular manner. Workers who are affected are often concentrated in certain regions and are thus able to mobilize resistance through labor unions or politicians. Affected asset owners can use their wealth to lobby and pressurize politicians directly. Distributional effects thus form substantial political and institutional barriers against climate policy (Rentschler and Bazilian 2016). Such private interests need to be countered by effective governance acting in the general interests. In the case of workers, governments should address the transition process leading to their re-employment in other sectors. Active labor market policies may improve the skill transferability to the recipient sectors. The Ruhr area in Germany provides an example where such a transition has been implemented successfully (Mattes, Huber, and Koehrsen 2015). In the case of capital investors, lump-sum transfers, possibly financed by carbon pricing revenues, may be paid to relevant stakeholders to acquiesce their political opposition to climate policies. Alternatively, the government may mobilize public opinion to affirm the prevalence of public interests over private interests.

Implementation Overview

While climate policy has been implemented in many G20 member countries, distributional effects have rarely been addressed explicitly. There are, however, three types of implementation experiences concerning the distributional effects of climate policy. The first are fossil fuel subsidy reforms, which have been implemented in India and Indonesia in particular. As pointed out above, they can be expected to be beneficial for both the environment and distributional fairness. The second are distributional adjustments, which have been used to obtain the consent by powerful political opponents. An example for this are the free emissions certificates granted to major polluters in the establishment of the EU ETS. The third is the explicit attempt of Switzerland to achieve distributional justice in climate policy through a “climate dividend”. While Switzerland is not a G20 member, its experience could prove to be exemplary.

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