Achieving a 30 percent domestic carbon reduction target

Sharing the costs and benefits of green technology development in the European Union

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Introduction

In May 2010, the European Commission concluded, on the basis of new economic analysis, that the economic recession, together with existing EU climate and energy policies, significantly reduced the costs of achieving the EU's climate goals. The predicted ultimate EU-wide costs linked to reaching the current 20 percent EU carbon target were projected to have fallen from €70 billion to €48 billion per year by 2020. Following the Commission's analysis, upgrading the carbon target to 30 percent would cost only €11 billion more, EU-wide, than the total costs estimated in 2008 of reaching a 20 percent target[1]. These figures do not include the economic benefits the Commission has identified, such as reduced health care costs, improved energy security and job creation.

In 2010, these outcomes were calculated by the European Commission on the conservative assumption that oil will cost $88/barrel in 2020. The current trend in the market indicates cost may well rise further; one of the International Energy Agency projections indicates a nominal $130 a barrel in 2020.

According to a recent study by Sorbonne University, the University of Oxford and the Potsdam Institute for Climate Impact Research[2], upgrading the EU's 2020 emission target to 30 percent domestic reductions would have even more benefits for the EU's economy. With the right policies in place, it could boost European investments from 18 percent to 22 percent of GDP, lead to a GDP increase of up to €620 billion, and create up to six million additional jobs (i.e. net job effect) by 2020.

The opportunities of a 30 percent carbon target for the EU Member States and EU businesses and consumers are increasingly apparent. This joint project of building a green economy with competitive clean technology industries would benefit the EU as an economic and political community. However, part of what is delaying decisions on stepping up the target to 30 percent is a politically sensitive debate between the EU Member States on how to share the potential costs and benefits of more climate ambition. It cannot be assumed that the distribution of costs and benefits for a 30 percent target would follow the same pattern as when Member States agreed the 20 percent carbon target in the EU's Climate and Energy Package in 2008.

CAN-Europe, Greenpeace, and WWF engaged Öko-Institut and the Institute for European Environmental Policy (IEEP) to explore in-depth the different options for the EU Member States to contribute to a 30 percent carbon target. The institutes were also asked to assess different EU financing mechanisms to leverage additional investments in the EU Member States, and help to equally share the costs and benefits of more climate ambition[3]. The findings of the institutes and the policy recommendations of CAN-Europe, Greenpeace and WWF are summarised in this report.

What are the options to divide up additional effort?

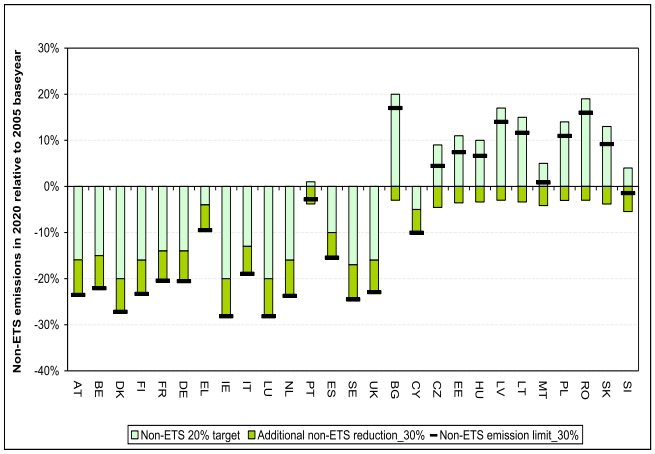
IEEP and Öko-Institut explored how work towards achieving a domestic 30 percent target might be distributed among the EU Member States and what resources could be mobilised in support of such a move. They focused primarily on EU emissions covered by the Effort Sharing Decision (legislation covering non-ETS emissions from transport, built environment and agriculture). Since the other major component of EU emissions, covered by the EU's Emissions Trading Scheme (EU ETS) would be addressed within the harmonised EU trading regime, there is relatively limited leeway for changing the distribution of costs and benefits in this policy. However, many of the financing mechanisms (listed in chapter four) assisting reductions in the Effort Sharing Decision sectors are also relevant to sectors covered by the ETS as they also could be set up to leverage private investments in these sectors[4].

It was assumed that the distribution of sectors and related emissions between the EU ETS and the Effort Sharing Decision would remain unchanged when stepping up to a 30 percent target, following the conclusions of the European Commission in May 2010[5]. Recent analysis by Ecofys[6] found that under a range of scenarios to reach 30 percent, there is a narrow range of cost-efficient ETS/non-ETS splits into which the current division falls comfortably. This confirms that it is a safe assumption that the EU ETS sectors and Effort Sharing sectors should divide effort in the same way as under the current target.

IEEP and Öko-Institut calculated that to deliver 30 percent emission reductions by 2020 compared to 1990 levels, six percentage points more reductions are required under the Effort Sharing Decision (this legislation compares to a 2005 base year). For the EU Member States this will require, for example, further investments in energy-efficient houses and offices, better cars and more sustainable food production.

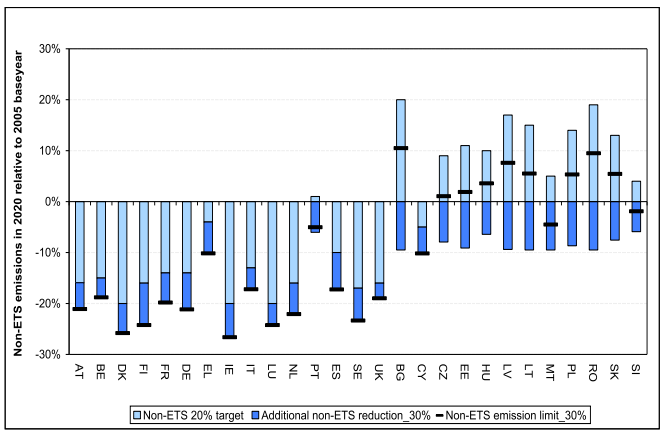
How much should individual EU Member States contribute to this additional effort? And what are the costs for the individual countries? To answer these questions, scenarios for theoretical distribution options have been developed. These scenarios show significant differences between individual targets and the related costs and benefits for Member States.

The graphs below show three important results, under four scenarios for the *additional* reductions – the distribution of current targets does not change in each case. Firstly, the non-ETS targets with a 20 percent EU target for each Member State (i.e. current



Additional non-ETS reduction: GDP/capita scenario

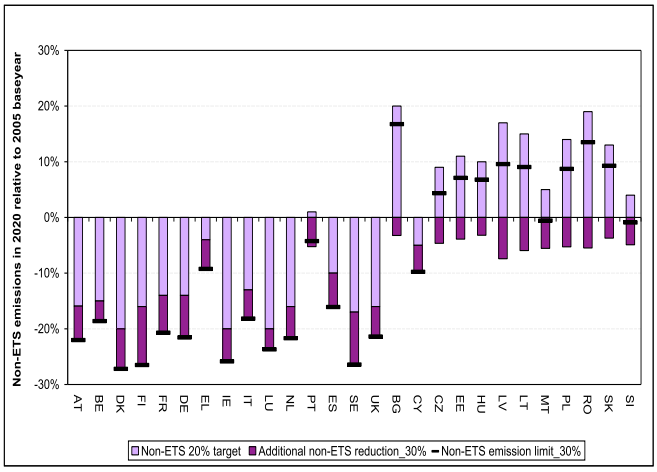
situation) is marked by the light colours in the pillars. Secondly, the darker parts of the pillars show the new reductions to be made. Thirdly, the black bars show



Additional non-ETS reduction: MAC 2020 scenario

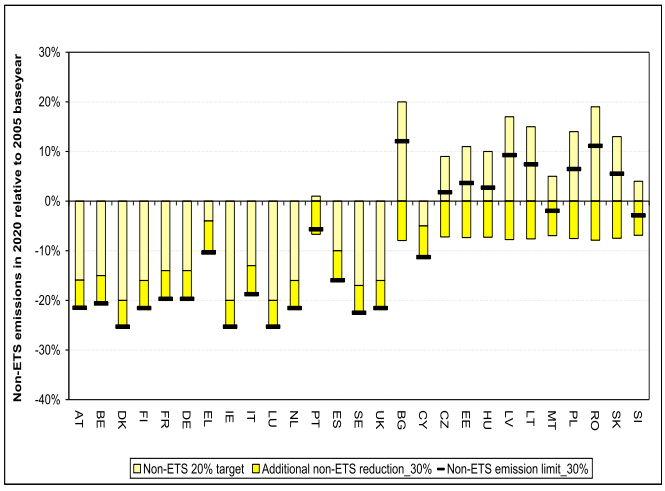
the resulting non-ETS reduction target for each Member State (under a 30 percent EU target).

In a scenario where a 30 percent EU-wide target is distributed based on GDP per capita – as is currently



Additional non-ETS reduction: Equal cost per GDP scenario

the case for the 20 percent target – Luxembourg, Austria, Sweden and Ireland receive the largest additional non-ETS reduction targets of 8 additional percentage points. In contrast, Bulgaria, Hungary,



Additional non-ETS reduction: Commission proposal (2008)

Latvia and Romania are allocated the lowest additional non-ETS reduction targets of only 3 additional percentage points. This will still enable them to increase their non-ETS emissions by more than 10 percent compared to 2005 levels by 2020 under an EU 30 percent carbon target. The benefits of emission reductions would be distributed accordingly across EU Member States. The benefits of increased fuel savings and employment would be harvested where the investments would take place, in this scenario mainly focused in the old Member States.

For estimating the reduction potential and associated costs in Member States, the POLES model was used. The POLES model is a partial equilibrium model that simulates the demand and supply of energy for 32 countries and 18 world regions.

When the distribution takes place on the basis of low-cost reduction potential in EU Member States, Bulgaria, Estonia, Latvia, Lithuania, Poland, Romania and Malta receive the most ambitious additional non-ETS reduction target of 9-10 percentage points.

According to the POLES model, these Member States have a relatively big low-cost potential for emission reductions. This confirms the finding of the European Commission that the poorer EU Member States (mainly located in Central and Eastern Europe) hold most of the low-cost potential to reduce emissions further in the mid-term. In a distribution scenario based on low-cost reduction potential, the benefits of climate action, including reduced fuel imports and increased investments, would also mainly be captured in Central and Eastern Europe.

	non-ETS 2005 emissions	20% target (ref. 2005 emission level)		Additional non-ETS reduction: GDP/capita scenario (1)		Additional non-ETS reduction: MAC 2020 scenario (2)		Additional non-ETS reduction: Equal cost per GDP scenario (3)		Additional non-ETS reduction: Commission proposal (2008) scenario (4)	
	Mt CO_2eq	%	Mt CO_2eq	%	Mt CO_2eq	%	Mt CO_2eq	%	Mt CO_2eq	%	Mt CO_2eq
AT	59	-16%	-10	-8%	-5	-5%	-3	-6%	-4	-6%	-3
BE	86	-15%	-13	-7%	-6	-4%	-3	-4%	-3	-6%	-5
BG	32	20%	6	-3%	-1	-10%	-3	-3%	-1	-8%	-3
CY	5	-5%	0	-5%	0	-5%	0	-5%	0	-6%	0
CZ	63	9%	6	-5%	-3	-8%	-5	-5%	-3	-7%	-5
DK	37	-20%	-7	-7%	-3	-6%	-2	-7%	-3	-5%	-2
EE	7	11%	1	-4%	0	-9%	-1	-4%	0	-7%	0
FI	35	-16%	-6	-7%	-3	-8%	-3	-10%	-4	-6%	-2
FR	420	-14%	-59	-6%	-27	-6%	-24	-7%	-28	-6%	-24
DE	500	-14%	-70	-7%	-33	-7%	-36	-8%	-38	-6%	-28
EL	60	-4%	-2	-5%	-3	-6%	-4	-5%	-3	-6%	-4
HU	54	10%	5	-3%	-2	-6%	-3	-3%	-2	-7%	-4
IE	46	-20%	-9	-8%	-4	-7%	-3	-6%	-3	-5%	-2
IT	344	-13%	-45	-6%	-20	-4%	-15	-5%	-18	-6%	-20
LV	8	17%	1	-3%	0	-9%	-1	-7%	-1	-8%	-1
LT	16	15%	2	-3%	-1	-10%	-2	-6%	-1	-8%	-1
LU	11	-20%	-2	-8%	-1	-4%	0	-4%	0	-5%	-1
MT	1	5%	0	-4%	0	-10%	0	-6%	0	-7%	0
NL	132	-16%	-21	-8%	-10	-6%	-8	-6%	-8	-6%	-7
PL	184	14%	26	-3%	-6	-9%	-16	-5%	-10	-8%	-14
PT	50	1%	0	-4%	-2	-6%	-3	-5%	-3	-7%	-3
RO	80	19%	15	-3%	-2	-10%	-8	-5%	-4	-8%	-6
SK	25	13%	3	-4%	-1	-8%	-2	-4%	-1	-7%	-2
SI	11	4%	0	-5%	-1	-6%	-1	-5%	-1	-7%	-1
ES	245	-10%	-24	-5%	-13	-7%	-18	-6%	-15	-6%	-15
SE	48	-17%	-8	-8%	-4	-6%	-3	-9%	-4	-5%	-3
UK	413	-16%	-66	-7%	-29	-3%	-12	-5%	-22	-6%	-23
EU27	**2,973**	**-9%**	**-276**	**-6%**	**-178**	**-6%**	**-178**	**-6%**	**-178**	**-6%**	**-178**

This table shows the four distribution scenarios assessed by IEEP and Öko-Institut for stepping up to a 30 percent target. Scenario 1 (GDP/Cap) distributes the additional reductions based on relative wealth of Member States. Scenario 2 (MAC 2020) distributes on the basis of availability of low-cost emission reduction options. Scenario 3 balances scenarios 1 and 2. Scenario 4 distributes the additional emission reductions on the basis of emissions for 2020.

Supporting reductions and creating benefits in Central and Eastern Europe

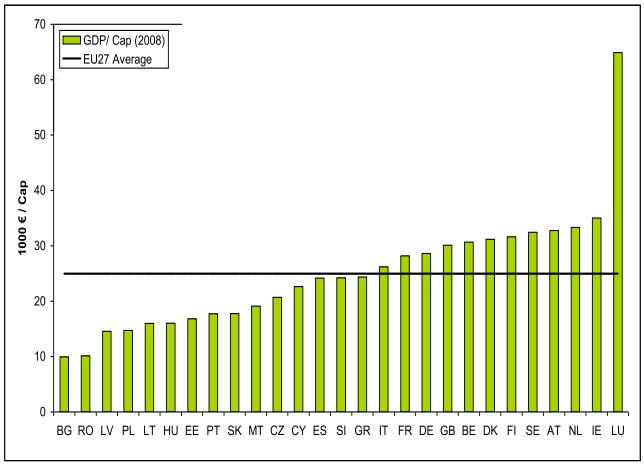
IEEP and Öko-Institut found that most of the low-cost emission reduction potential between 2013 and 2020 is available in Bulgaria, Romania, Malta, Lithuania, Latvia, Estonia, Poland, Finland, Czech Republic, Slovakia and Spain. This confirms an earlier finding of the European Commission:

"[a]s regard the geographical distribution, the emission reduction potential for moving from 20 percent to a 30 percent target is proportionally higher in the poorer Member States." (European Commission, 26 May 2010[7])

Calculations using the POLES model indicate that the total cost of additional non-ETS reductions (6 percent), would be €4,300m by 2020 for the whole EU under a GDP/capita distribution key, the most expensive option overall, or €3,500m for a least marginal abatement cost (MAC) approach, the least expensive overall. These total cost savings of around €800m is felt most significantly in the wealthier Member States. Conversely, under a MAC approach, costs increase in the newer Member States – but by far less than the amount of money saved overall.

CAN-Europe, Greenpeace and WWF do not recommend one specific distribution scenario for stepping up to a 30 percent carbon target, and underline the importance of taking into account longer term economic costs and benefits of emission reductions. However, it can be assumed that the European Commission and the EU Member States will further explore the options where the costs are projected to be the lowest for 2020. This political reality points to an explicit tradeoff between total cost savings and increased costs for Central and Eastern European Member States – even if the rise is comparatively modest.

Central and Eastern Europe's capacity to make investments in green technologies is limited, considering the GDP per capita in the new Member States is below the EU average (see the figure below). It should also be taken into account that a significant part of the abatement options, such as improved



insulation in buildings or combined heat and power, require a large upfront investment before fuel cost savings and other benefits offset the costs over time. Even options with negative net costs can still require a significant investment in the short term.

In view of the potential for cost savings, but the more limited access to capital in new Member States, Greenpeace, WWF and CAN-Europe believe that it is necessary to mobilise new EU mechanisms and additional financial sources to enhance emission reductions in Central and Eastern Europe. Such additional sources should give Central and Eastern Europe the opportunity to join a European project for green technology development, while also providing opportunities to increase investments and reduce fossil fuel imports in the old Member States too.

The next chapter outlines some of the mechanisms that could leverage the scale of finance required.

Mechanisms to leverage investments in green technology development

To achieve 30 percent emission reductions by 2020, significant public and private investments are likely to be needed across the EU on a relatively short timescale. The previous chapter shows that if the EU decided to achieve greater reductions in countries estimated to have a bigger low-cost emission reduction potential, the importance of EU financial support mechanisms for leveraging private investments is even higher. The additional cost-efficient potential is, as we have seen, often found in the new Member States. However, governments and businesses there have less capacity to put the emission reductions and related benefits into practice.

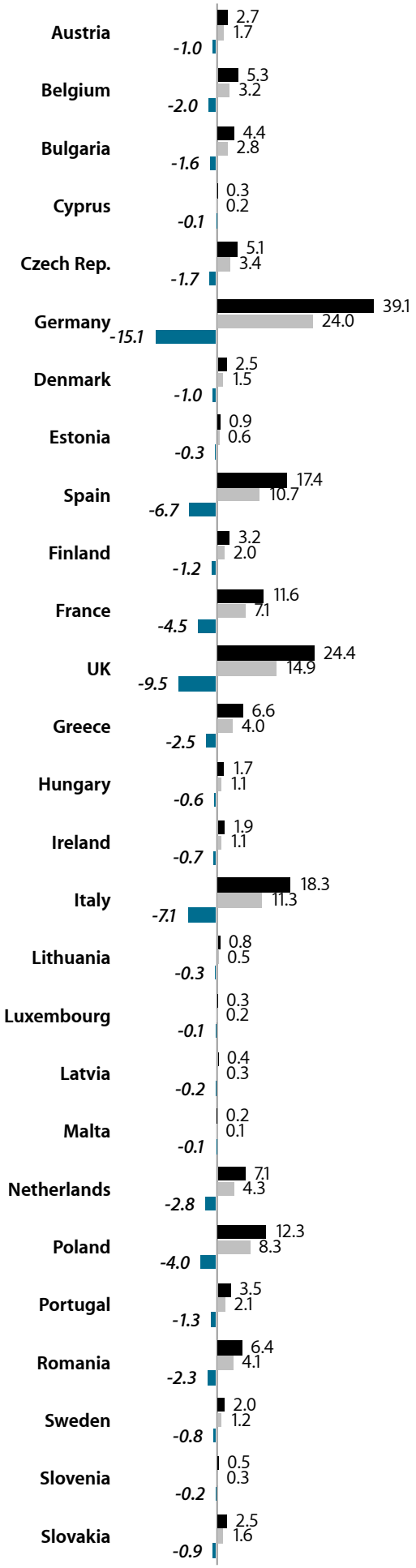
Greenpeace, WWF and CAN-Europe asked Öko-Institut and IEEP to screen EU financial mechanisms that could help leverage investments in additional emission reductions. The establishment of EU financial mechanisms is all the more challenging since it will have to take place against a backdrop, at least in the first years, of fiscal constraints.

Öko-Institut and IEEP have assessed a number of mechanisms that could leverage investments to enable the emission reductions described in the previous chapter. The most important proposals are outlined and summarised below:

Trade in the Effort Sharing Decision

Under the Effort Sharing Decision, an EU Member State is allowed to trade a part of its annual emission allocations (AEAs) with other Member States. This provides a potential source of revenue for Member States, in particular those who may find themselves with surplus AEAs, depending on the size of the surplus and the price that transferred AEAs could fetch.

As we are talking about a market 'in the making', how much AEA will sell for is uncertain. According to Point Carbon[8], while the value and volume of trade in AEAs is likely to be low with the existing 20 percent target, both could increase if the EU moved to a 30 percent target. Point Carbon suggests that in this case, the price of AEAs could rise from €4-5 to €30-55. This suggests that, while an increase in the ambition of the overall EU target would reduce the number of surplus AEAs for a given Member State, increased value of AEAs could more than compensate for this. The total value to any Member State would be affected by the distribution key employed, with GDP/capita favouring new Member States by allocating more AEAs.



EU ETS auctioning revenues

An increased carbon target would mean tightening of the ETS cap. All Member States would have fewer ETS allowances to auction – increasing the value of allowances.

The distribution method of allowances between Member States could in principle be adjusted further to favour certain countries as part of a package of measures to meet the 30 percent target.

Under the current EU ETS Directive, two percent of allowances are distributed in recognition of 'early effort' to achieve a reduction in greenhouse gas emissions.

These were allocated to the Member States that were, in 2005, at least 20 percent below their emissions in the base year applicable to them under the Kyoto Protocol – mainly countries in Central and Eastern Europe.

The countries also receive 'solidarity and growth' allowances. Both provisions could be extended to give additional finance to Central and Eastern Europe, or other Member States that put in additional effort towards a 30 percent carbon target.

Auctioning revenues under a 20% or 30% percent 2020 target

EU ETS auctioning revenues (€ Billion) under -30% scenario in period 2013-2020

EU ETS auctioning revenues (€ Billion) currently projected under -20% scenario in period 2013-2020

Difference between both scenarios (€ Billion)

Buying and cancelling of AAU surpluses

It is estimated that industrialised countries with Kyoto targets have some 10 billion surplus Kyoto credits (Assigned Amount Units, AAUs) under the Kyoto Protocol for the period 2008-2012. Europe is thought to have around three billion surplus credits.[9] The 10 Central and Eastern European Member States are together expected to collect some 2.2 billion surplus AAUs in total.

Such large excesses of credit are seen as a threat to the environmental integrity of the Kyoto Protocol. AAUs were not permitted as currency in the context of the EU's Climate and Energy Package – financially a disadvantage for Central and Eastern Europe.

An EU-level financial mechanism could be established that would buy up surplus AAUs accrued in Central and Eastern European Member States under the Kyoto Protocol. In return, these Member States would commit themselves to investing the revenues of the AAU sales in emission reduction options contributing to a 30 percent climate target.

One option would be to channel the additional revenues of the AAU sales through existing Green Investment Schemes (GIS) in the Member States. GIS were introduced to try to enhance the environmental integrity of AAU trading under the Kyoto Protocol. GIS aim to combine a transfer of AAUs with an activity that has a positive effect on emission reductions and is financed with revenues from selling surplus AAUs.

The EU's post-2013 multi-annual financial framework

The new EU multi-annual financial framework (MFF) could play a role in several ways. Firstly, the existing funds, in particular the Cohesion Funds (notably the European Regional Development Fund – ERDF), have considerable potential to address climate themes more fully, through the use of earmarked budget lines dedicated to mitigation or adaptation objectives, and through broader 'mainstreaming' of climate objectives into other expenditures. The scope for larger-scale infrastructure, energy conservation and renewable energy investment is particularly high. New and less affluent Member States' share of the Cohesion Funds will be high. Cohesion Funds are well placed to provide capital for upfront investment both in non-ETS and ETS sectors, given that they are already equipped with several financial instruments for that purpose (for example, JESSICA, JEREMIE) that could be considerably scaled up. They provide loans, guarantees and equity instead of grants.

Secondly, the allocation of certain funds and the budgets within them between different Member States is derived from a variety of criteria, most of which are socio-economic. Environmental criteria could be introduced as a more prominent element in the 'distribution key', beginning with climate-related criteria. One way of taking this forward would be to develop a 'climate investment need' criterion on the basis of a ratio between the level of investment required in a country to comply with EU climate objectives and the resources available, which could be measured with GDP per capita as a simple proxy.

Thirdly, a new fund dedicated to climate mitigation and adaptation issues could be created, whether freestanding or as part of a restructured LIFE+ fund. Such a fund could support a range of activities particularly relevant to new and less-affluent Member States, including capacity building and measures targeted at energy efficiency.

Finally, the EU should use the newly proposed Project Bond Initiative to support projects mitigating climate change. This initiative is particularly relevant for this purpose as it focuses on European energy, transport and ICT infrastructures. To clarify that purpose, Greenpeace, WWF and CAN-Europe recommend that the initiative is renamed the Green Project Bond Initiative and focuses exclusively on sustainable low carbon projects. In addition, the initiative should feature the aggregation of small-and middle-scale projects (which is technically feasible and for which there is already experience), to include energy savings projects that are currently not included in its scope.

Available financing under the EU multi-annual financial framework (MFF)

Negotiations over the MFF are still taking shape, but the following examines some of the options and amounts (assuming another seven-year period) that may be available to finance decarbonisation.

1. *Cohesion Policy*

The Cohesion Policy in the current MFF represents €348 billion. Today, only a relatively small part directly or indirectly contributes to climate change mitigation and adaptation (13.9 percent or €48.1 billion, according to the Commission. This includes support for rail – which takes up half this amount, public urban transport, risk prevention, renewable energies and energy efficiency).

It is very likely that the future Cohesion Policy will devote more financial resources to the sectors underpinning a green economy, and notably those delivering low carbon emissions, such as energy savings in the building sector, decarbonised transport, renewable energies and smart grids for renewable energies. According to WWF[10], the future Cohesion Policy has the potential to devote at least 28 percent of its resources to climate change mitigation and adaptation, essentially by supporting many more energy savings in buildings and shifting its transport funding to low carbon transport. This would represent more than €117 billion in the next MFF.

While this is not necessarily linked to the 30 percent target as such, it is important to take this reallocation issue into account because it means increased public funding for mitigation projects. If these projects are ambitious, they should contribute to going beyond the 20 percent target.

2. *The Flexibility Instrument*

The EU has four funds that are managed at the European level but are not part of the EU budget[11]:

- the emergency aid reserve, for aid requirements of third countries;
- the European Union Solidarity Fund, to allow rapid financial assistance in the event of major disasters in Member States or candidate countries (maximum annual amount of €1 billion);
- the Flexibility Instrument, to finance ad hoc expenditure which could not be financed within the limits of the EU budget (maximum annual amount of €200 million); and
- the European Globalisation Adjustment Fund, to support workers who suffer from major structural changes in world trade patterns (maximum annual amount of €500 million).

It seems likely that the European Union Solidarity Fund will be moved into the EU budget in the next MFF. This should potentially free some capacity to increase spending in the other off-budget instruments, notably the Flexibility Instrument. This fund could help finance the 30 percent domestic target. If we assume that the Flexibility Instrument is increased to up to €1 billion a year and that 33 percent is devoted to climate change, that adds up to €2.3 billion from 2013 to 2020.

3. ***MFF margins***

According to the Commission, EU budget margins 2010-2013 are €675 million a year on average, or €4.7 billion for seven years. Assuming that the same amount could be reproduced in the next MFF, a part of it could be devoted to financing the 30 percent domestic target. If we consider that 33 percent could focus on climate change, that adds up to €1.6 billion.

4. ***Performance reserves of EU funds***

According to its EU Budget Review[12], the Commission is proposing to set performance reserves in EU funds to reward best projects or programmes. Greenpeace, WWF and CAN-Europe support this approach, provided that the performance includes environmental indicators, including those relating to climate change. Actions towards going beyond 20 percent and contributing to the 30 percent carbon target should clearly be rewarded by the EU budget. Performance reserves would increase the delivery and efficiency of the EU budget and could have a real impact for climate change mitigation, notably in Cohesion Policy, CAP and research funds.

It is recommended that the performance reserve should represent 10 percent of each EU fund. Focusing on Cohesion Policy, CAP and research funds, this would be around €80 billion if we use current MFF figures or €35 billion if we concentrate on Cohesion Policy only. There are discussions on the level of this performance reserve. A level of 3 percent would represent €10.5 billion. If we consider that 33 percent could focus on climate change and sustainable energy, that adds up to €3.4 billion.

5. ***Combining several options makes the amount accessible in the next MFF***

If we combine the three options of the Flexibility Instrument, the MFF margins and a 3 percent performance reserve of Cohesion Policy as proposed above, it adds up to €7.3 billion for the next MFF. It must be added that a 3 percent performance reserve for Cohesion policy is a rather conservative prediction – performance reserves could apply to a larger share and/or to other EU funds (CAP and research funds notably).

Greenpeace, WWF and CAN-Europe believe that the EU should implement the recommendations above to ensure that the next MFF (and Flexibility Instrument) will help finance the additional effort towards the 30 percent target.

Conclusions and policy recommendations

Stepping up to a 30 percent EU carbon target has considerable benefits for the European economy. However, distributing the potential costs and benefits among EU Member States is a politically sensitive matter, which needs technically and economically robust policies.

Under a scenario where the distribution of the additional emission reduction would be based on capacity to invest (GDP per capita), most reductions would take place in the richer EU Member States, mainly the older EU Member States. However, under a scenario where distribution was based on low-cost emission reduction potential between 2013 and 2020, more of the additional reductions shift to the poorer EU Member States, mainly in Central and Eastern Europe. The costs and benefits of the reductions would in both scenarios be distributed accordingly.

Whatever the distribution of additional reductions between the Member States, significant public and private investment is likely to be needed on a relatively short timescale to help unlock additional greenhouse gas emission reductions and related economic benefits. New EU financial mechanisms to leverage investments in emission reduction options are required.

Significant EU financial support may be particularly needed in distribution scenarios aiming for more emission reductions in Central and Eastern Europe, where according to economic analysis more low-cost reduction options are available. Despite economic analyses showing that abatement potential in Central and Eastern European countries is relatively low net cost, these discount the challenges of finding capital for upfront investment in both non-ETS and ETS sectors.

There are in principle several different means by which EU financial resources may be mobilised in support of a 30 percent EU economy-wide target. CAN-Europe, WWF and Greenpeace recommend that policymakers explore the following options in more detail:

Trade in Annual Emission Allocations (AEAs): Trade in AEAs could be allowed and EU Member States would be allocated AEAs under a 30 percent target according to GDP per capita. This could create a significant asset for Central and Eastern European Member States, enabling them to support investments in low-cost emission reduction options.

Redistribute EU ETS allowances for auctioning: The distribution of ETS allowances between Member States could in principle be adjusted to favour the countries expected to take on more effort as part of a package of measures to meet the 30 percent target.

Buy up and cancel surplus AAUs: An EU level financial mechanism could be established that would buy up surplus AAUs accrued in Central and Eastern European Member States under the Kyoto Protocol. Under this approach, the Member States concerned would in return commit themselves to investing the revenues of the AAU sales in green and resource-efficient technology options contributing to a 30 percent climate target.

Explore options in the EU 2013+ Multi-annual Financial Framework: Firstly, the existing Cohesion Funds, in particular the European Regional Development Fund, have considerable potential to address climate themes more fully. Second, a 'climate investment need' criterion could be introduced as a more prominent element in the 'distribution key' for EU funds. Thirdly, the creation of a new fund dedicated to climate mitigation and adaptation issues, whether freestanding or framing part of a restructured LIFE + fund, could lend to reductions. Finally, the newly proposed Project Bond Initiative could be focused on green investments.

Notes

[1] CEC (2010) Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage. COM (2010) 265. Brussels, 26.5.2010.

[2] Jaeger, C, Paroussos, L (2011) A new growth path for Europe. Commissioned by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

[3] Schiellerup, P, Healy, S, Baldock, D, Hermann, H, and Graichen, J (2011) Achieving more climate ambition in the EU: Distribution options. A report for WWF, Greenpeace, and CAN-Europe. Institute for European Environmental Policy (IEEP), Brussels, Belgium and Öko Institut, Berlin.

[4] It is important to note that tightening the emissions cap in the ETS could, according to some, have a greater effect on the new EU Member States since these countries have on average less efficient industries than the older Member States. See: Buchan, D (2010) Eastern Europe's energy challenge: meeting its EU climate commitments. Oxford Institute for Energy Studies.

[5] CEC (2010) Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage. COM (2010) 265. Brussels, 26.5.2010.

[6] Höhne N, Hageman M et al (2011) Consistency of policy instruments. How the EU could move to a -30% GHG target.

[7] CEC (2010) Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage. COM (2010) 265. Brussels, 26.5.2010.

[8] Point Carbon (November 2010) New EU market could create huge CER demand: analysts. www.pointcarbon.com/news/1.1487660.

[9] ENDS (21 October 2009) EU fails to agree strategy for surplus carbon credits. www.endseurope.com/22438.

[10] WWF (2011) Unlocking the potential of the EU budget – Financing a greener and more inclusive economy. Volume 2 Intelligent investments.

[11] Interinstitutional agreement between the European Parliament, the Council and the Commission on cooperation in budgetary matters, (March 2010) COM (2010) 73 final.

[12] European Commission, The EU Budget Review, COM (2010) 700 final

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Achieving a 30 percent domestic carbon reduction target

Sharing the costs and benefits of green technology development in the European Union