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ICPIA – Coping with Complexity in the Evolving International Climate Policy Institutional Architecture

East-West Regional Dimensions in European Climate Policy

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Austrian Institute of Economic Research, Climate Strategies

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Abstract

Approaches to redistribute the costs of climate policy (effort sharing) have been central to EU climate change policy since its inception in the early 1990s. This is both due to the nature of the problem, which inherently involves (re-)distributing costs between sectors, jurisdictions and generations, and the nature of the EU. This paper surveys the effort sharing approaches taken over the course of EU climate policy, since its early efforts to agree to the distribution of a common EU Kyoto target among member countries to the 2008 Climate and Energy Package. In so doing, the paper aims to draw lessons learned for other jurisdictions and the EU itself as they develop and implement climate change policies. The paper comes to several central conclusions: Firstly, climate policy negotiation in the EU takes place within an enormously complex web of other policies and interests, allowing space for (implicit) bargaining that is unlikely to exist in other international settings. Secondly, a central difficulty over the history of EU effort sharing has been the harmonisation of climate policy across multiple, overlapping climate regimes, including the Kyoto Protocol, the Burden Sharing Agreement between the EU 15, and the European ETS. This overlap led to linkages and disharmonies that proved difficult to reconcile. Thirdly, the EU's climate policy has moved gradually towards more centralised modes of governance; this has facilitated the harmonisation and effectiveness of ambitious climate policies, but at the cost of derogations, which have potentially weakened harmonised instruments such as the ETS. Overall, the balance appears positive, however, as EU effort sharing approaches have allowed member countries to go further than they would in a purely domestic context. Ultimately, the EU's effort sharing policies need to be seen in the difficult context of shared competences between the EU and member countries in the energy sector, and conflicting EU principles of the internal market and solidarity, which implies a differentiated approach to fundamental economic reform.

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Thomas Spencer (University of Edinburgh/ IDDRI), Dora Fazekas (Climate Strategies), Tim Laing (LSE), Simone Cooper, Climate Strategies

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Climate Strategies is an international organisation that convenes networks of leading academic experts around specific climate change policy challenges. From this it offers rigorous, independent research to governments and the full range of stakeholders, in Europe and beyond.

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Approaches to redistribute the costs of climate policy (effort sharing) have been central to European Union (EU) climate change policy since its inception in the early 1990s. This is both due to the nature of the problem, which inherently involves (re)distributing costs between sectors, jurisdictions and generations, and the nature of the EU. This paper seeks to survey the effort sharing approaches taken over the course of EU climate policy, since its early efforts to agree to the distribution of a common EU Kyoto target among Member States to the 2008 Climate and Energy Package. In so doing, the paper aims to draw lessons learned for other jurisdictions and the EU itself as they develop and implement climate change policies. The paper comes to several central conclusions. Firstly, climate policy negotiation in the EU takes place within an enormously complex web of other policies and interests, allowing space for (implicit) bargaining that is unlikely to exist in other international settings. Secondly, a central difficulty over the history of EU effort sharing has been the harmonization of climate policy across multiple, overlapping climate regimes, including the Kyoto Protocol; the Burden Sharing Agreement between the EU15; and the European ETS. This overlap led to linkages and disharmonies that proved difficult to reconcile. Thirdly, the EU's climate policy has moved gradually towards more centralized modes of governance; this has facilitated the harmonization and effectiveness of ambitious climate policies, but at the cost of derogations, which have potentially weakened harmonized instruments such as the ETS. Overall, the balance appears positive, however, as EU effort sharing approaches have allowed Member States to go further than they would in a purely domestic context. Ultimately, the EU's effort sharing policies need to be seen in the difficult context of shared competences between the EU and Member States in the energy sector, and conflicting EU principles of the internal market and solidarity, which implies a differentiated approach to fundamental economic reform.



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List of Abbreviations

BSA	Burden Sharing Agreement
CEE	Central and Eastern European Member States
CEP	Climate and Energy Package
EIT	Economies in transition
NAP	National Allocation Plan
NMS	New Member State
RES	Renewable energy



1 Introduction

The 2004 and 2007 enlargements of the EU were unprecedented in their size and the diversity of countries they brought into the EU. The successful inclusion of ten former Socialist countries in the EU is rightly seen as one of the EU's proudest achievements. Likewise, the transfer of environmental and climate change policy to the New Member States of the EU (NMS)¹ is another significant achievement.

Nonetheless, the Europeanization of environmental policy in NMS was accompanied by ambivalent attitudes on both sides. From the perspective of the NMS, the overriding priority was on EU accession, and the attendant promise of economic and geopolitical stability in which to pursue the goals of economic development and convergence (Kramer, 2004). Environmental policy was seen as a burdensome corollary of accession, despite assessments that the long-term benefits of improved health and welfare would outweigh the very significant short-term clean up costs (Skaereth – Wettestad, 2007).

Regarding climate change, several circumstances could imply a lower level of engagement in NMS compared to the EU15. First and foremost, lower GDP may entail in a lower social valuation of environmental quality, and a lower perceived responsibility to act under the UNFCCC principle of common but differentiated responsibilities and respective capabilities. Secondly, the reduction of GHG emissions from 1990, the base year of the UNFCCC and the Kyoto Protocol,² meant that Kyoto emissions targets could be met with no additional effort. Moreover, it engendered the perception that NMS had already done their bit for the climate. Thirdly, the structural nature of the energy mix and economy in the NMS, with high shares of coal and energy intensive industry, may create large, and powerful, consistencies that could oppose climate policy.

In this context, a number of commentators^{2,3} raised concern regarding the impact of accession on EU environmental/climate policy, suggesting that it could lead to policy dilution by laggards, and poorer implementation due to lower capacities. A preliminary analysis by Skaereth and Wettested (2007) suggested that the accession process has not led to a breakdown of EU environmental policy, although enlargement may have weakened EU climate policy development. At the same time, commentators note the need to shape future EU climate policy in response to NMS interests, rather than approaching the issue the other way round (Spencer – Korpoo, 2009).

¹ The primary focus in this paper is on Slovakia, Slovenia, Poland, Hungary, the Czech Republic, Latvia, Lithuania, Estonia, Bulgaria and Romania.

² Although a number of Economies in Transition negotiated themselves alternative, earlier base years, representing the start point of the transition and hence peak GHG output.



This working paper aims to contribute to the literature on climate policy in the enlarged EU, with a particular focus on the NMS. In particular, it addresses the following two research questions:

- 1 What are the means by which the EU has sought to integrate NMS into its climate policy, in particular via the distribution of climate policy costs (effort sharing)?
- 2 What are the lessons learned for other jurisdictions as they develop their own climate policies?

However, in order to place this assessment into context, section 2 first sets out some of the key systemic differences between the EU15 and NMS, with a particular focus on the energy sector and economic divergences. A key contention here is that it is necessary to understand the economic/energy sector divergences between Member States in order to assess the rationale and effectiveness of effort sharing approaches. Section 3 then qualitatively assesses the process of effort sharing in the Kyoto target negotiation phase; in phase II of the EU ETS (2008-2012), and in the Climate and Energy Package (2013-2020). The EU has almost 20 years of history in effort sharing, and a detailed examination of the mechanisms used is of interest as other jurisdictions and indeed the EU look to further develop their climate policy. Section 4 therefore offers some lessons learned for other jurisdictions considering the development of federal/regional climate policy, as well as for the EU as it considers the next steps in its own climate policy.



2 Giving Context to EU Effort Sharing

This section describes the key factors common to NMS in terms of their energy sector and their economic situation.

2.1 General shared context in the energy sector

The NMS differ significantly with regard to size, state of reforms, economies and environmental challenges. However, they share several similarities due to their common post-socialist history. Ürge-Vorsatz et al. (2002, 2003, 2006) present in several papers the special situation of the region. They argue that NMS have ostensibly finished their economic transition with the EU accession but the following negative and positive legacies of the centrally planned economies are still present to a certain extent in their economies and energy sectors. These include:

- Negative legacies:
 - Lack of market signals led to high economic and energy inefficiencies. These have not been completely ameliorated.
 - Planned economies led to “irrational” industrial structures, with high shares of energy intensive industries.
 - Monolithic energy complexes with often highly homogenous energy mixes and high state involvement in the sector.
- Positive legacies:
 - High share of public modes of transport.
 - High share of district heating among heating modes.
 - Lower private consumption of consumer goods.

These particularities are being progressively reduced as the process of economic and social convergence with the EU15 continues. This has both positive and negative environmental consequences – on the positive side, the dramatic reduction in energy intensity, and on the negative, increasing adoption of private modes of transport and increasing private consumption. Nonetheless, these shared legacies remain, and create an energy sector context that significantly shapes perceptions and positions in NMS regarding EU climate policy.

2.2 The Energy sector of NMS vs. EU15

2.2.1 The Energy Sector Today

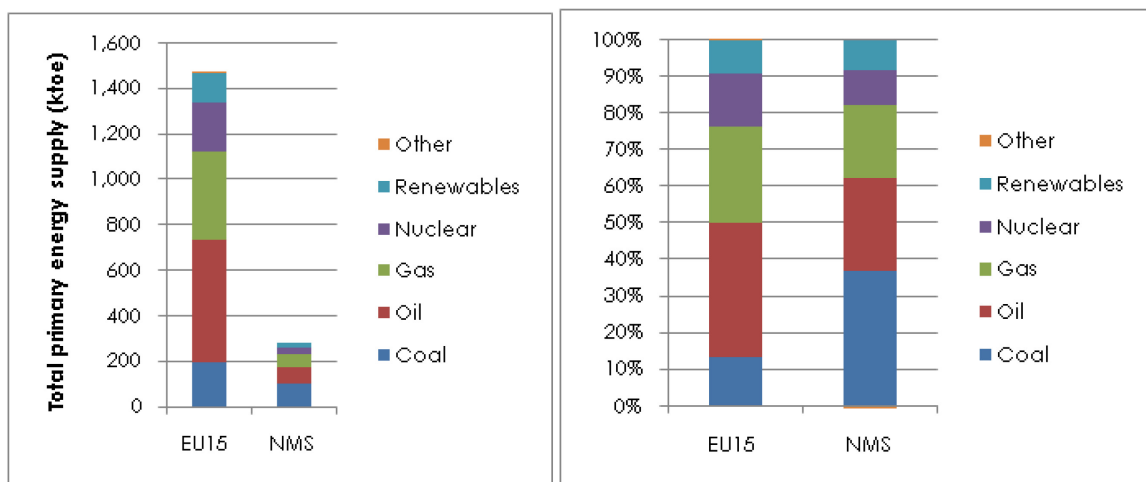
Energy use and climate policy are intractably linked. Emissions from energy dominate other sources such as industrial processes and land-use. Hence the characteristics of the energy sector, such as fuel mix and market structure, may have an impact on the willingness to

adopt climate policy and the types of policies that may be implemented. The relationship is not one-dimensional, however: climate policy, by design, will have huge implications for both energy use and energy policy.

The EU15 and NMS' energy systems differ in their size and composition. In line with their greater populations and larger economies, the EU15 has a much larger energy consumption than the NMS, consuming over 85% of the EU27's total in 2008 (IEA, 2010). Along with greater total energy consumption, the EU15 also consume a greater amount per capita, almost 50% more than the NMS.

Along with the differences in size there is also considerable difference in the energy mix of the EU15 and the NMS (Figure 1). The NMS have a much greater dependence on coal for both electricity generation, industrial production and in some cases final consumption. It makes up almost a third of NMS' primary supply, but just over 10% of the EU15's. The EU15 have a much greater share of oil consumption, representing the higher level of transport demand in these countries. The EU15 also have a greater share of gas, primarily for electricity generation, while both the EU15 and NMS have approximately equivalent shares of nuclear and renewable energy.

Figure 1: Primary energy supply of the EU15 and NMS in 2008.



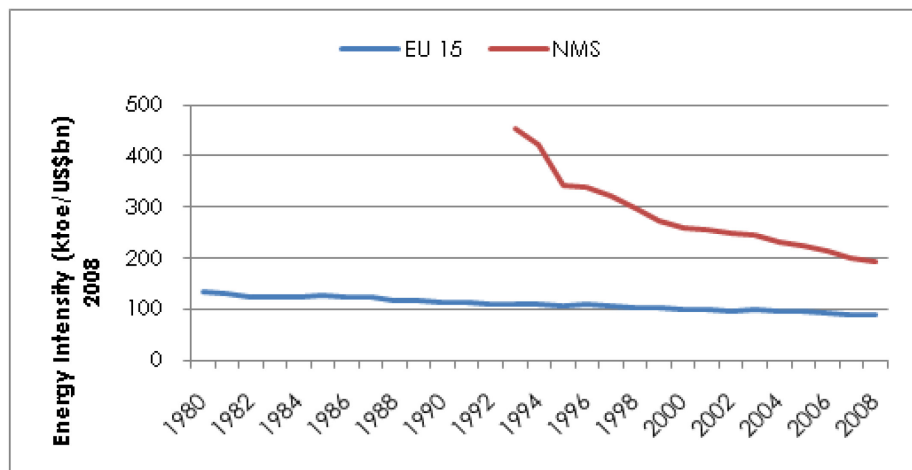
Source: IEA Data (2010).

Perhaps the greatest difference between the EU15 and the NMS concerns **energy intensity**.³ The past of centrally-planned economies left a legacy of an energy intensive industrial structure, high energy inefficiency due to the absence of market signals, and a high dependence on coal. Currently, the energy intensity of the NMS is double that of the EU15. Despite the remaining differences in energy intensity, the NMS have experienced a rapid

³ I.e. primary energy supply per unit GDP.

catch up (Figure 2); in the early 1990s they consumed almost four times as much as the EU15 per unit output.⁴ The transition to market economies, the move toward higher energy prices, and the closure of some of the most-inefficient heavy industry have helped this catch-up.⁵ Whether NMS can fully complete this convergence in energy intensity with the EU15 will help to determine their success at limiting emissions.

Figure 2: Energy Intensity of the EU15 and NMS



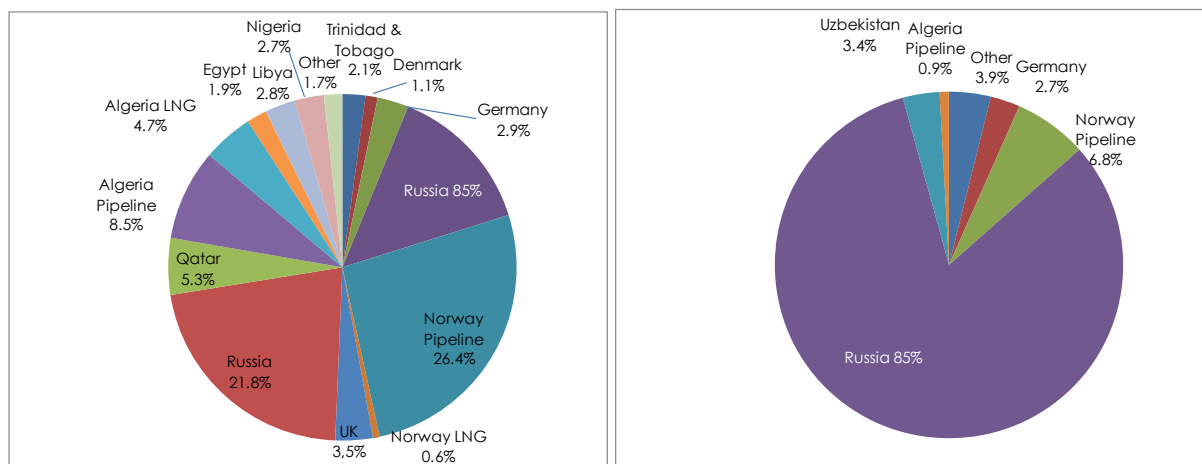
Source: IEA (2010); IMF (2010).

The external energy relations of the EU15 and NMS differ crucially in the concentration and source of imports. The NMS have a much greater dependence on Russia for primarily its natural gas (Figure 3), but also other fossil fuels.

⁴ It should be noted that the gap in energy intensity narrows significantly when measures that take into account Purchasing Power Parity are used, see for example Odyssee database at <http://www.odyssee-indicators.org/>

⁵ For a discussion of factors behind the convergence, and their limitations, see Uerge-Vorsatz et al. (2006).

Figure 3: Gas imports in the EU25 and NMS⁶



Source: BP Statistical Review of World Energy (2010).

With the exception of Austria and Greece the EU15's dependence on Russian gas is much lower, and imports have diversified recently with investment in liquefied natural gas (LNG) terminals. This implies that the threat to security of supply is much smaller in the EU15 than in the NMS.⁷ With this in mind the EU faces the prospect of designing and implementing complementary programmes for energy security and climate policy, particularly in the case of the NMS.

2.2.2 The Energy Sector Looking Forward

Looking at the EU Commission's projections we can see the differences in future growth of energy demand in the EU15 and NMS (EU Commission, 2010a). The Commission projects that the EU15 will see an absolute growth in total energy demand of 4% by 2020 compared to 2010, declining to just 2% by 2030 in the Baseline scenario.⁸ In a Reference scenario encompassing stronger policies, the EU15's total energy demand increases by just 2.6% by 2020 and returns to 2010 levels by 2030.⁹

In contrast, NMS are projected to grow by 12% by 2020 before stabilizing by 2030 under the Reference scenario. Without these stronger policies the NMS' demand is projected to surge, growing 13% by 2020 and 15% by 2030 under the Baseline scenario. These differences in growth rates highlight the fact that, even under BAU scenarios, the EU15 and NMS face

⁶ I.e. Poland, Hungary, Czech Republic, Slovakia, Lithuania, Latvia, Estonia, Slovenia. See de Jong. (2008).

⁷ For a discussion see Kaderjak (2007).

⁸ The baseline scenario is based upon economic and demographic trends up to 2009 and binding, legislated national and EU policies

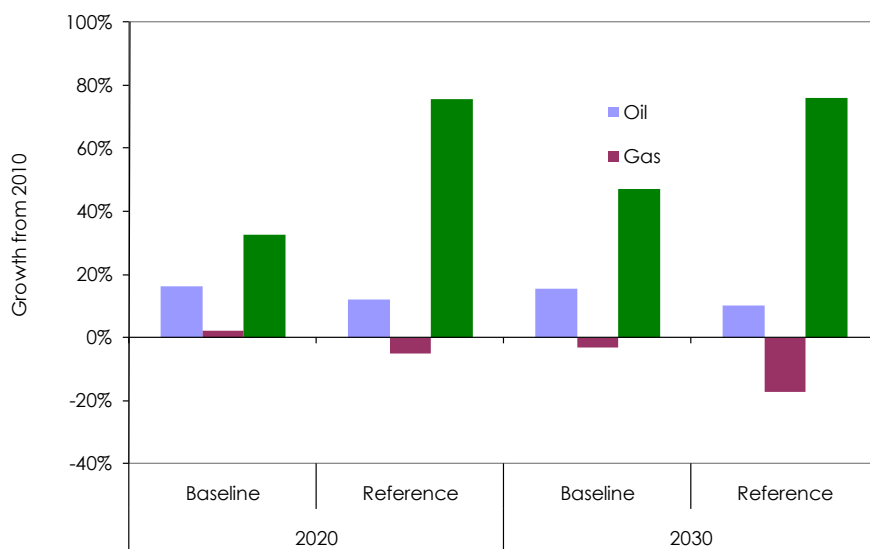
⁹ The reference scenario is based on the same trends as the baseline but assumes that renewable and GHG targets for 2020 are met.

different energy trajectories. The growth in energy demand of NMS is likely to bring increases in GHG emissions, influencing their willingness to adopt stronger climate policies.

Not only the scale of energy demand but also the fuel mix of EU15 and NMS will likely differ going forward. The Commission estimates that by 2020, even under the Baseline scenario, renewable deployment will increase by 40% in NMS, increasing by 72% by 2030. Under more ambitious policies of the Reference scenario, the potential for renewables in NMS is evident: renewable deployment increases by 87% in 2020; in comparison, deployment in the EU15 in 2020 increases by only 60% under the Reference scenario and just 26% in the Baseline.

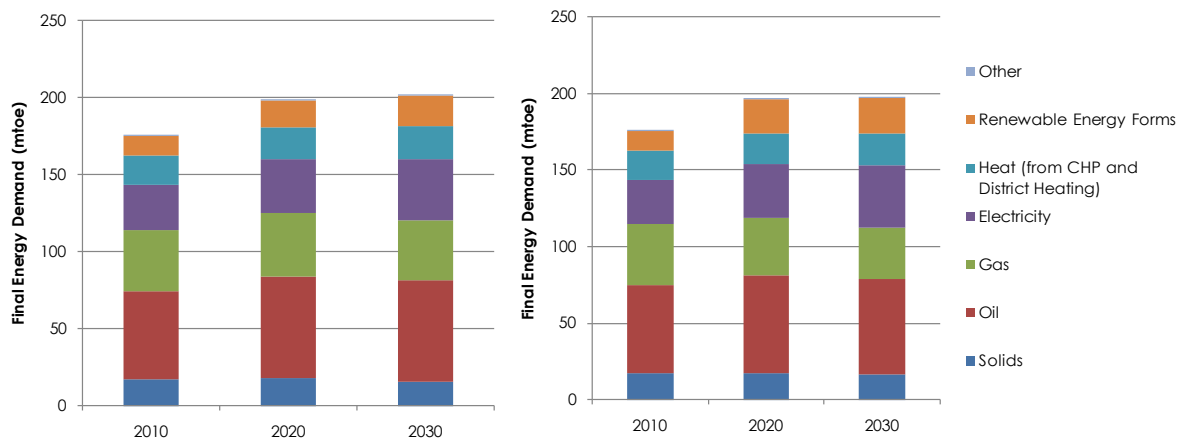
Examining the demand for oil over the next decades can highlight changes in the energy mix. The anticipated growth in demand for transportation and the modal shift towards private transport in NMS could lead to large increases in oil demand. The Commission projects that oil demand could increase in NMS (Figure 4) as a result of growing transport demand. Likewise, demand in the residential sector will increase as household appliance use converges towards Western European standards: Figure 5 below shows the increasing share of electricity in final energy demand.

Figure 4: Percentage changes in NMS' energy mix under different scenarios



Source: EU Commission (2010a).

Figure 5: NMS' final energy demand under Baseline (left) and Reference (right) scenario



Source: EU Commission (2010a).

This growth in transport demand leads to a rise in transport emissions, that is only a NMS phenomenon; projected transport emissions in the EU15 actually decline. The rapid projected growth in transport demand represents an important dilemma for EU effort sharing policies in the future.

Demand growth in some Member States (particularly NMS as highlighted) and the large amount of capital stock approaching the end of its productive life imply significant investments in the energy sector, regardless of the climate policy enacted by the EU.

Higher energy costs are not faced evenly by all Member States. The NMS are likely to face greater cost rises for a number of reasons. In many of these states the process of market liberalisation has been less profound and there are still implicit subsidies to some energy prices – liberalizing markets and removing subsidies would likely result in price increases in the short term. In addition, these states face greater increases in demand across a number of sectors, at a time when a large amount of generation capacity will also have to be replaced. These factors drive differences in energy cost projections, as can be seen in the Commission's projections, which estimate that total energy costs across the EU will rise by 59% by 2030 in the Baseline scenario, rising to 62% in the Reference scenario, representing the higher cost of renewable technologies. The rises in costs are much higher in the NMS with increases in costs of 94% by 2030 in the Baseline, rising to 96% in the Reference scenario. Reflecting GDP growth, energy-related costs only rise from 10.5% of GDP in 2010 to 11.5% by 2030 in the Baseline scenario and 11.7% in the Reference scenario. The divergent energy cost trajectories between NMS and the EU15 is a challenge for effort sharing policies in the EU.

The energy security situation of the EU is also likely to shift in the next two decades. Both the EU15 and NMS face declining domestic sources of both oil and gas. The EU15 faces declines in domestic production of gas; the NMS face smaller declines (EU Commission, 2010a). This decline in domestic production could potentially be coupled with increasing reliance on gas



as an energy source. In many Member States of the EU15 it has emerged as a major fuel in electricity generation. In the longer term, gas demand could decline if significant energy savings and longer-term climate policies are undertaken. Such policies could significantly reduce the EU's dependence on energy imports (Spencer et al., 2011).

2.2.3 Energy Sector Conclusions

NMS and the EU15 face different, albeit converging, situations in the energy sector. Salient issues in the energy sector for NMS include:

- the high level of import dependence on Russia;
- high and likely growing costs of energy relative to purchasing power;
- growth of new sources of energy demand, especially transport and domestic consumption;
- significant investment needs to replace existing capacity and meet demand growth;
- a still significant energy intensity gap;
- high shares of coal and in some cases nuclear.

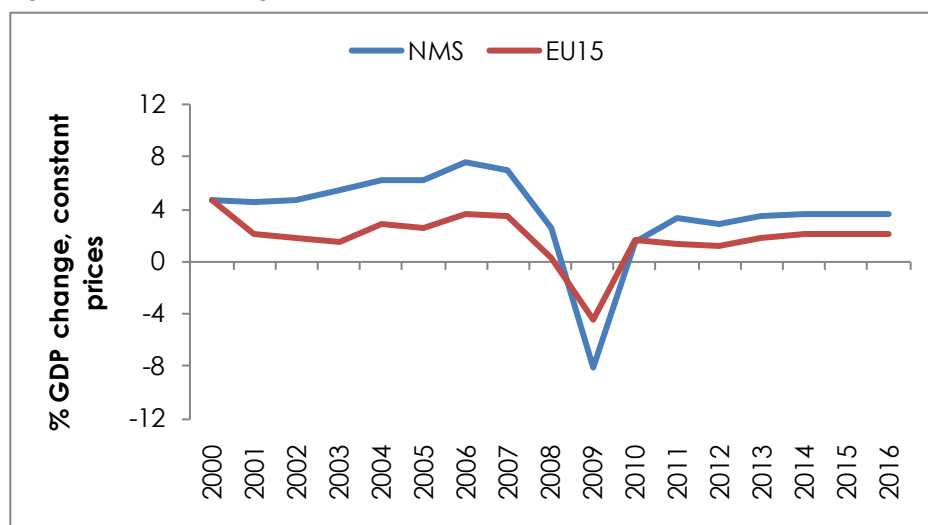
All of these considerations can influence NMS' positions regarding climate policy. Their interactions can be both positive and negative, i.e. in terms of generating support for climate policy. This suggests the need to consider these specific NMS circumstances when designing and implementing climate/energy policy, in order to construct climate policies that answer to intrinsic priorities.

2.3 The Economies of NMS vs. EU15

2.3.1 GDP, Economic Structure and Emissions

After the economic turbulence of the dissolution of the Soviet Union, GDP started recovering in most NMS during the first half of the 1990s, with the length of the recovery to 1990 levels varying from 1996 for Poland, to 2006 for Lithuania. By 2010, GDP was on average 169% of 1995 levels, with Estonia (202%) and Romania (141%) representing the upper and lower bounds (IMF, 2011). On a Purchasing Power Standards (PPS) basis, per capita GDP averaged €16,455 in NMS, compared to €23,600 for the EU27 (Eurostat, 2011). When domestic prices are not adjusted for, 2009 GDP/capita is €9,801 in the NMS, compared to €32,928.71 in the EU15 (IMF, 2011). Even after the impact of the ongoing global financial crisis, the NMS have strong growth expectations (Figure 6). Average growth over 2010-2016 is expected to be 3.4% p.a. for the 10 NMS, compared to 1.8% in the EU27.

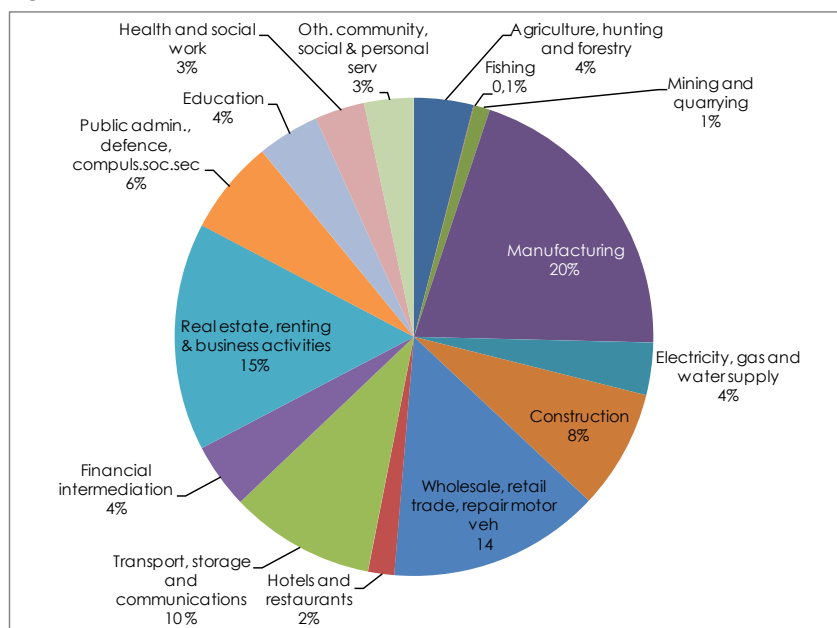
Figure 6: GDP change in the NMS, 1990-2016



Source: IMF (2011).

There are also clear differences between the EU15 and NMS regarding economic structure. NMS show a higher share of industry in total gross value added (GVA), at 23.2% compared to 18% for the EU27 as a whole. Business activities and financial services make up a lower share in NMS compared to the EU27. Likewise, the share of other services is lower (Eurostat, 2011). Eurostat GVA statistics are highly aggregated: Figure 7 presents a more disaggregated breakdown of sectoral GVA for NMS. It underscores the importance of more energy intensive sectors, such as manufacturing compared to e.g. financial intermediation. Within manufacturing, basic metals, fabricated metal products and transport equipment hold, on average, significant shares among NMS (WIIW, 2009).

Figure 7: 2008 sectoral breakdown of GVA for NMS



Source: Wiiw (2009).

The economic structure and energy sector (see section 2.1 above), of NMS result in differences in sectoral GHG emissions, compared to the EU average. In general, emissions from electricity and heat production are higher, at 32.3% for the EU and 40.8% for NMS; transport emissions are lower, 11.2% for NMS vs. 18.7% for the EU. Manufacturing emissions hold roughly equal shares. This implies that climate policies targeting various sectors will have different distributional consequences for NMS compared to the EU15.

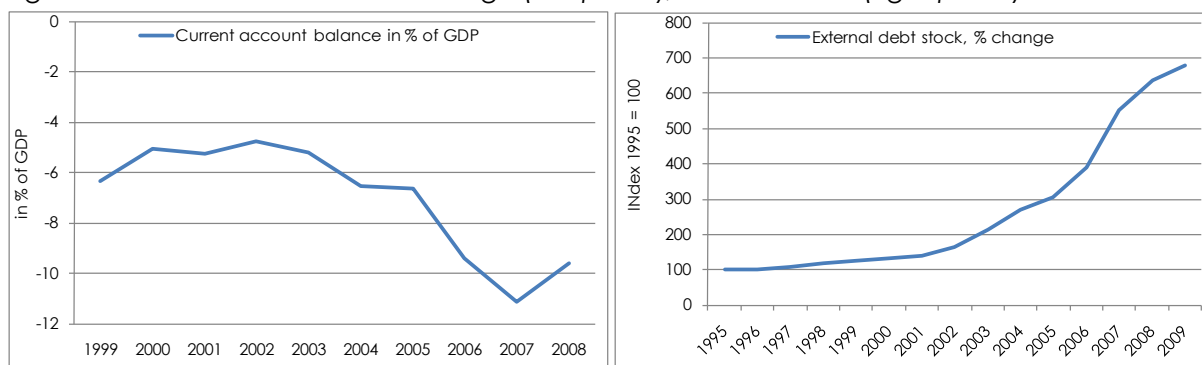
Since 1990, NMS' emissions have dropped precipitously. At the beginning of the transition period, output contraction was the dominant factor contributing to the drop of emissions, which averaged 33.5% from Kyoto base year levels across the NMS region by 1995 (UNFCCC, 2011). In the second half of the 1990s, absolute emissions declined another 7% points from base year levels, despite the return to GDP growth. Improved energy efficiency appears to have been the dominant factor, although improved carbon intensity from fuel switching also played a small role; the contribution of structural change in the economy seems to have been small in NMS, although highly aggregated sector data makes it difficult to assess intra-sectoral changes (see EBRD, 2011 and section 2.1 above). By 2008 emissions had stabilized around 36.9% below base year levels.

2.3.2 The NMS "growth model"

Since the transition, the NMS have pursued a very distinctive model of economic growth, up until the economic crisis of 2008/09 (Schadler, 2007, Fabrizio, 2009). This was based significantly, albeit to varying degrees among them, on *inter alia* the following factors:

- **Total factor productivity growth**, resulting from improved technological, labour and managerial efficiencies during the transition from a planned to a market economy. This allowed the region to grow substantially even while shedding labour.
- **High level of financial market integration** resulting in significant capital flows “downhill” from inter alia e.g. Western Europe (see Figure 8 below). Investors were attracted by high marginal returns on capital, and NMS consumers sought to smooth consumption temporally on high expectations of future growth. This led to the build up of significant external vulnerabilities in some countries, which were exposed in the financial crisis, e.g. in Hungary, Latvia and Romania (Darvas, 2009).¹⁰
- **High level of foreign trade** driven significantly by the acceleration in global demand in the period 2000-2008 and by EU integration. Between 2000 and 2008, NMS exports grew 296%. The quality and product structure of exports changed considerably, with gains seen in medium/-high-tech exports and in overall product quality (Fabrizio, 2009). Nonetheless, the technological intensity of exports remains relatively low: high-tech exports made up 7.4% of NMS exports, compared to 13.6% for the EU15 (Eurostat, 2010).

Figure 8: NMS current account average (left panel); external debt (right panel)



Source: Current account balance from Eurostat, external debt from EBRD.

For several reasons, there is concern that the NMS “growth model” may have slowed. Firstly, subsequent to the crisis capital flows and public budgets will be more constrained than previously. Secondly, the “low hanging fruits” of total factor productivity improvements may be drying up, as the technical, managerial and labour legacies of transition are progressively overcome (Allard, 2009). Thirdly, aging populations will reduce labour market competitiveness advantages. Thus, new sources of growth will be sought, including increasing labour market participation, improving worker skills and speeding technology adoption and innovation (World Bank, 2011, EU Commission, 2010b).

¹⁰ These countries received bailouts from the IMF and support e.g. from the EU and EBRD.



It is in this context that the linkages between climate/resource policy and the “green growth” agenda could be considered. However, this needs to be placed within an understanding of the social, economic and technical constraints faced by NMS.

2.3.3 Green growth in NMS?

The “green growth” agenda has become an important driver for climate/environmental policy, and is embodied in the EU2020 strategy. Governments may be attracted by the potential to unlock new, global markets; reduce exposure to resource constraints, and to reduce global savings-investment imbalances. As noted by the OECD, “[i]nnovation will be a critical driver of green economies and job creation” (OECD, 2010). It is clear, however, that the potential for the kind of high-tech, resource efficient innovation that could drive “green growth” is not spread evenly around Europe.

Looking at the patents lodged from 1988 to 2007 in the areas of clean technology and energy, we can see that NMS do not register highly in the list of top performing countries. Only Hungary, the Czech Republic and Poland make the list, 28th, 35th, and 36th place respectively (Table 1). Clearly the smaller economic size plays a role here, so it is useful to consider more refined metrics of innovation capacity.

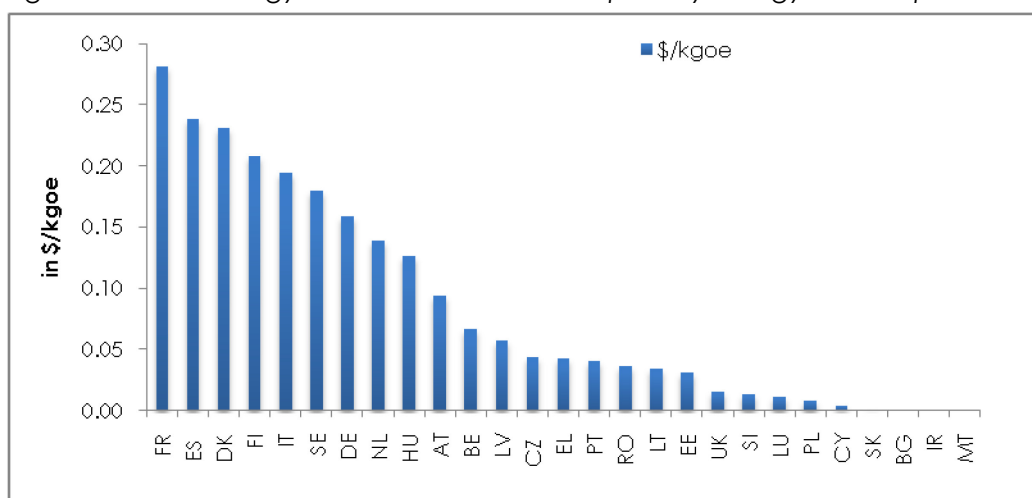
Table 1: Patents lodged 1988-2007 in selected clean energy technologies (CETs) and fossil fuels and nuclear

	Selected CETs	Fossil Fuels and Nuclear	Rank in CET patents
Japan	4672	5751	1
USA	2508	5543	2
Germany	2391	5840	3
France	607	2795	5
UK	560	1039	6
Hungary	16	32	28
Czech Republic	8	63	35
Poland	9	26	36

Source: European Patent Office (2010).

Regarding public R&D energy-related expenditure, NMS spend on average less than Western European countries relative to national energy consumption. Figure 9 below shows public energy related R&D relative to gross primary energy consumption for the EU27 Member States. Only Hungary makes it into the top 10. Regarding private sector energy related R&D, a study by the Joint Research Centre concluded “private sector involvement [in energy-related R&D] in the new Member States is generally weak” (Wiesenthal, 2008).

Figure 9: Public energy-related R&D relative to primary energy consumption 2007



Source: Eurostat (2011) and JCR (2009), own calculations.

2.3.4 Economy Conclusions

Economic conditions form the essential context for effort sharing policies. Clearly, economic differences between the EU15 and NMS run deeper than just GDP/capita. Sector or technology-focused measures, such as derogations to auctioning in the power sector of NMS, have tended to evolve out of political negotiation at the expense of the environmental integrity of the policy.

Certainly, lower per capita GDP may result in lower social valuation of environmental goods; while strong growth expectations could increase the “effort” needed to achieve emissions constraints. However, other issues, such as the technical and social capacity to implement and benefit from climate policy may be just as relevant. There may be a need for more proactive labour-market and technology policies to support the low-carbon transition in NMS. The financial crisis, having exposed the risks of the NMS “growth model”, may provide an occasion for considering the potential and required policies to integrate growth and climate objectives in the region.



3 A History of effort sharing in EU policy

3.1 Effort sharing of Kyoto targets

This section briefly surveys the negotiation and distribution of Kyoto targets among Member States, and the at that time prospective accession countries. Although the main focus of this paper is the integration of NMS into EU climate policy, an examination of the pre-accession period offers a contrast to later effort sharing approaches, and demonstrates the strong normative pull that the EU exercised on the pre-accession countries, now the NMS.

The EU had been occupied by issues of effort sharing throughout the 1990s. Member States rebuffed several early analytical attempts by the Commission to frame the negotiations on country targets (Haug – Jordan, 2010). In 1996, the Dutch government commissioned a group of experts from the University of Utrecht to develop an objective analytical basis for negotiation, in preparation for its Presidency beginning in January 1997. Under the UNFCCC, the Berlin Mandate negotiations were set to conclude at Kyoto in 1997, making the 1997 March Council effectively the last opportunity to agree on a common EU position.

The Utrecht paper (Blok, 1997) adopted a sectoral (triptych) approach to calculating economy-wide reduction targets. Member State emissions were broken down into the power generation sector; the heavy, trade-exposed industry sector, and the domestic sector, i.e. residential and light industry emissions. In each case, objective indicators were used to calculate sectoral emissions targets, which were then aggregated into a national target. For the power generation sector, the following assumptions were made to derive the sectoral allowance:

- 1% per year growth in electricity demand; 1.9% per year in poorer Cohesion countries and 0.9% per year in the rest of the EU.
- Reductions in the share of coal and oil generation by 70% from 1990 levels by 2010.
- Increase in nuclear generation in accordance with national policies.
- 15% share of CHP by 2010.
- Remainder of incremental power generation is covered by natural gas.

For the heavy industry sector, the following assumptions were made:

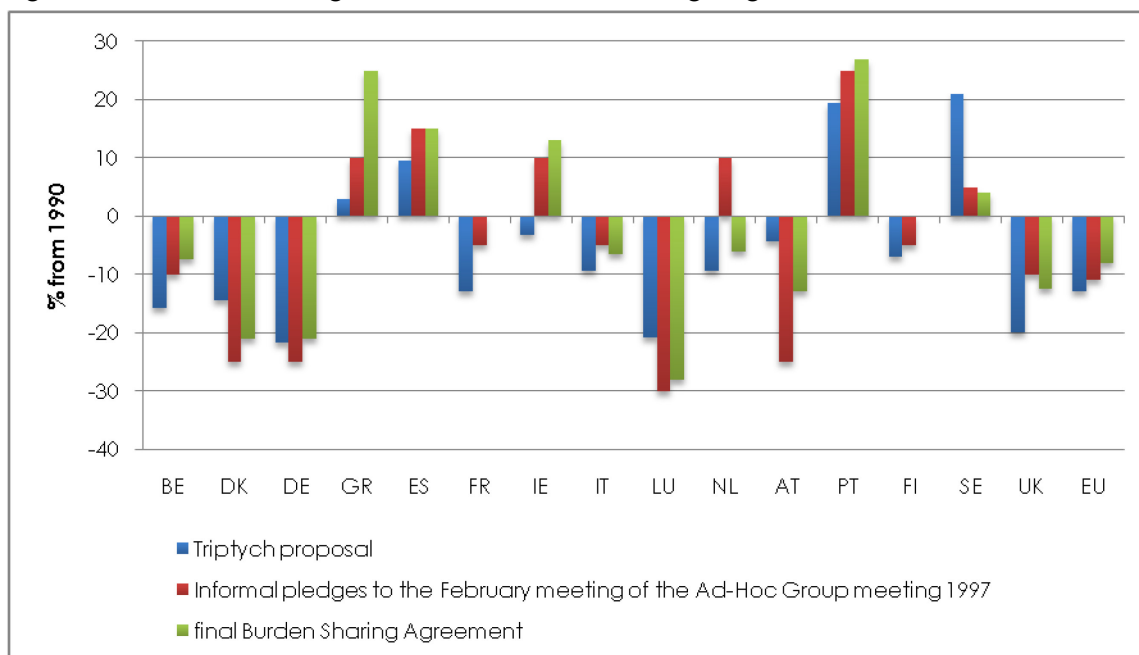
- 2.1% per year growth for Cohesion countries, 1.1% per year for the rest of the EU.
- Decarbonization of fuels by 0.17% per year.
- Energy efficiency improvements for all countries of 1.5% per year.

2010 allocations for the domestic sector were then calculated based on per capita convergence of emissions by 2030 at a level 30% below 1990 levels, with a heating degree day correction used to reflect higher demand for heating in cold countries.

Figure 10 shows the national targets suggested in the paper presented at the January 1997 Zeist workshop (Blok, 1997), and the national pledges offered at an informal meeting of Member States negotiators held in February 1997. It also shows the final Kyoto targets

ultimately adopted in the 2002 Burden Sharing Agreement (BSA) (Council Decision 2002/358/CE). It should be noted that the 2002 Burden Sharing Agreement (BSA) is for the Kyoto basket of six gases, not the original three gases proposed by the EU; the EU's aggregate target has also been revised downward from -15 to -8%.

Figure 10: Evolution of targets in the EU-burden sharing negotiations



Source: own calculations based on Blok (1998); Ringius (1999) and Burden Sharing Agreement (2002).

Several observations are worthy of note. Firstly, independent analysis to develop quantitative indicators helped to set the parameters of the bargaining space; this is a role the Commission would subsequently play in negotiations on the Climate and Energy Package (CEP) (see section 3.4 below). Secondly, the triptych approach usefully shifted the focus away from national contributions and differentiation to sectoral contributions and differentiation, allowing for e.g. increased electricity demand and industrial activity in Cohesion countries, while at the same time suggesting an equal treatment of energy and trade intensive industry. Fourthly, substantial adjustments were made to targets as a result of political negotiation, especially regarding the increase in Cohesion country targets (see Figure 11). However, as noted by Ringius (1999), EU negotiations did result in these countries adopting more stringent targets than they would have been willing to in a domestic context. Richer EU countries also seem to have been split into two relatively distinct leader-laggard groups, as can be seen from the target evolution during the negotiations in Figure 11.

During the Kyoto negotiations, the NMS were not members of the EU and were hence not included in the EU "bubble". Instead, they adopted their own targets. There is evidence that the perspective of EU membership exerted normative pull on the NMS. For example, Bhatti



(2006) regressed Kyoto targets onto various hypothesized determinants of the negotiated targets, and found support for the hypothesis that prospective EU membership led to the now NMS adopting tougher targets than other Economies in Transition. (Bhatti, 2006). As Tews (2009) notes, this process of normative and coercive policy transfer brings risks, notably that environmental protection and policy is not “socialized” in accordance with intrinsic domestic interests, but rather imposed from without (Tews, 2009). It should also be noted that NMS still received a significant over-allocation at Kyoto, which has continued to bedevil their integration into EU climate policy (see 3.2 below).

3.2 Effort sharing in Phase II of the EU ETS

The EU ETS was established in 2005 with a two-year pilot phase.¹¹ Phase II from 2008 to 2012 coincides with the first commitment period of the Kyoto Protocol, and therefore provides an interesting field of study concerning the integration of NMS across two different climate policy regimes, the EU ETS and the Kyoto Protocol.

3.2.1 Introduction and Data

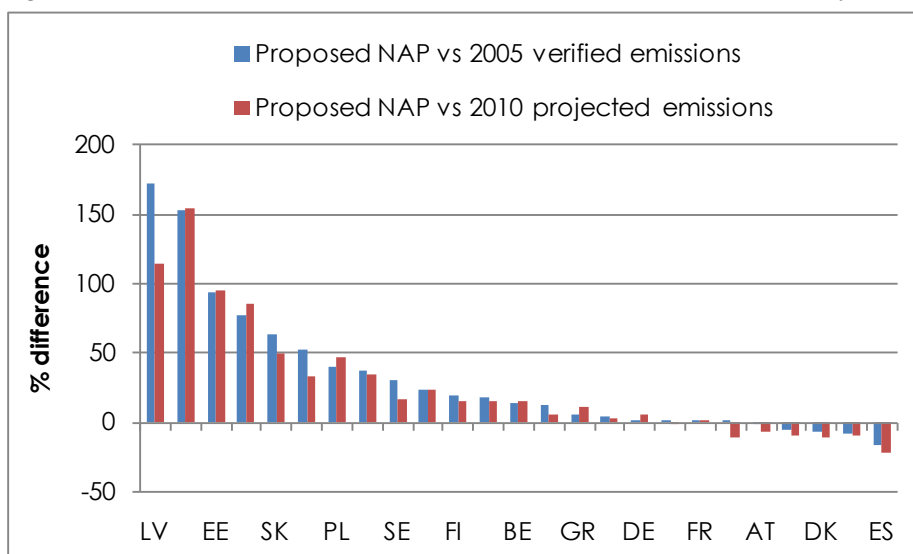
The 2008-2012 National Allocation Plans (NAPs) have been one area of particular contention in EU climate policy, with the concerns of NMS being highly salient. According to the 2003 Emissions Trading Directive, allocation was decided in a decentralized manner by Member States, who were required to notify the Commission of their proposed NAP. The Commission could reject NAPs on the basis of incompatibility with Annex III or §10 of the Directive. Annex III stated that NAPs must be consistent with, *inter alia*, Members States' targets under the Burden Sharing Agreement or the Kyoto Protocol, and with the technical potential for emission reductions (Directive 2003/87/EC). These set up potentially mutually contradictory requirements.

Figure 11 compares the proposed NAPs of NMS and EU15 Member States against 2005 verified emissions and contemporary projections for 2010 emissions, i.e. the mid-year of the ETS Phase II. 2010 projected emissions were obtained from PRIMES 2007 (Capros, 2008), disaggregated to ETS level by assuming that the 2005¹² share of ETS emissions in total emissions remains constant to 2010. As can be seen, NMS proposed NAPs, which substantially exceeded both 2005 verified emissions and projections for 2010, on average by 67.2 and 60.2% respectively (Figure 11). The EU15 also proposed NAPs which exceeded 2005 emissions and 2010 projections, by 7.3 and 3.1% respectively (Figure 11).

¹¹ For an analysis of Phase I, see Ellerman (2010).

¹² 2005 verified emissions are not available for Romania, Bulgaria and Malta. For Romania and Malta 2007 data was used, for Bulgaria 2008 data.

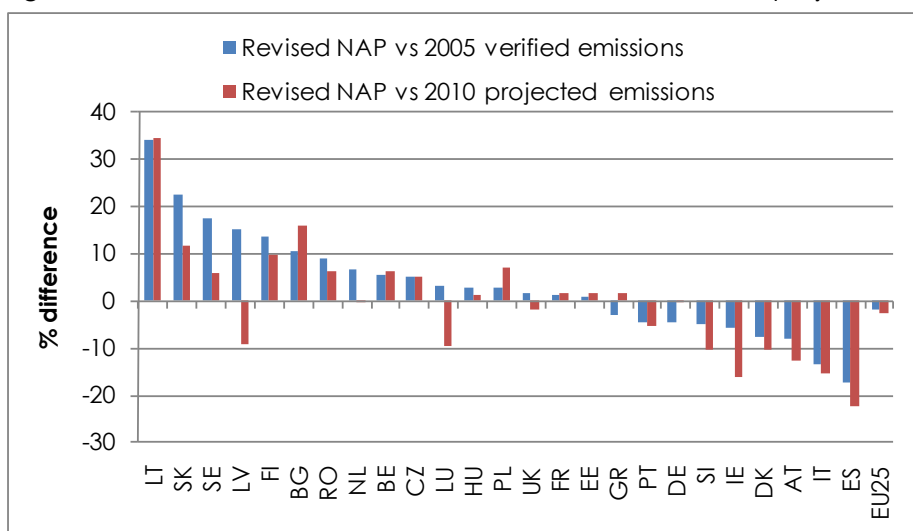
Figure 11: Proposed NAPs vs. 2005 verified emissions and 2010 projections



Source: CITL (2011); EEA (2007); Capros et al. (2008).

Early analysis of the proposed NAPs highlighted the risk of another over-allocation in Phase II (Betz, 2006; Neuhoff, 2006). In light thereof, the Commission proposed significant cuts to most Member States' NAPs. The cuts to NMS' NAPs were particularly drastic, averaging 28.9% compared to 6.8% for the EU15. The cuts imposed by the Commission reduced the total cap from 2,325 Mt CO₂e to 2,080 Mt CO₂e, compared with 2008 verified emissions of 2,075 Mt CO₂e. Revised NAPs relative to 2005 verified emissions and 2010 projections are shown in Figure 12.

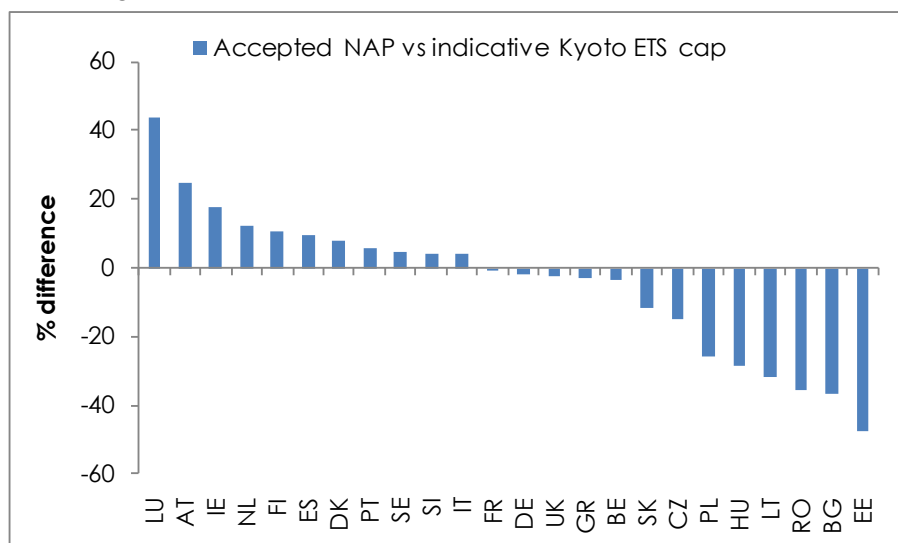
Figure 12: Revised NAPs vs. 2005 verified emissions and 2010 projections



Source: CITL (2011); EEA (2007); Capros et al. (2008).

In its assessment the Commission argued that the proposed NAPs would endanger the achievement of the EU's Kyoto commitments. Comparing the revised NAPs to Member States' BSA or Kyoto targets highlights the problematic. The 2003 ETS Directive stipulated that NAPs must be consistent with individual BSA or Kyoto targets (Annex 3, §1). In the analysis below, Kyoto targets for the ETS sectors were calculated by assuming equal contributions for the ETS and non-ETS sector, i.e. dividing each Member State's Kyoto cap by its 2005 ratio of ETS to non-ETS emissions. Figure 13 compares the accepted NAPs with an indicative Kyoto target for each Member State's ETS sector. As can be seen from Figure 13, under the revised NAPs, the EU15 were "over-allocated" by ~8.7% while NMS were "under-allocated" by ~27.5%, relative to an indicative ETS cap to meet the Kyoto target (Clo, 2009, Blachowicz, 2010). In this regard, however, it should be noted that NMS, like other economies in transition, were clearly over-allocated at Kyoto, relative to reasonable expectations of their emissions development to 2008-2012. In short, the conflict between the two criteria for NAP allocation – Kyoto objectives and technical reduction potentials – led to political conflict and legal challenges on the ETS allocations of NMS.

Figure 13: Allocation under revised NAPs relative to an indicative ETS cap for meeting BSA or Kyoto targets



Source: EU Commission (2011a); CITL (2011); EEA (2007); Capros et al. (2008).

Legal Challenges

National Allocation Plans have been among the most legally contested elements of EU climate policy. Both private companies and Member States have brought legal actions against the Commission regarding NAPs. Private companies have failed in their appeals, with the European Courts consistently arguing a lack of *locus standi* (van Zeven, 2009). In other words, complaints regarding the treatment of private entities under a Member State's NAP



fall under the jurisdiction of Member State not EU law. Several commentators note that the European Courts, in consistently sticking to a formalist interpretation of *locus standi*, were cognizant of the detrimental impact of a positive ruling on the ETS carbon market, and hence acted to protect the teleological efficacy of the ETS Directive (Ghaleigh, 2009). Secondly, it has been argued that in their "... numerous, apparently "hopeless" challenges to the NAPs, the heavy industrial sectors of the new accession member states of the EU ... have strategically deployed litigation at the European level ... to strengthen their national government's negotiating position [vis-à-vis Brussels]..." (Ghaleigh, 2010).

In contrast to their treatment of private cases, in the cases that Poland and Estonia brought against the Commission, the European Courts effectively ignored the potential deleterious impacts of positive rulings on the ETS. The Commission argued for a teleological interpretation of the Directive, i.e. that the Commission's NAP revisions had been consistent with the *purpose* of the Directive "... to contribute to fulfilling the [Kyoto] commitments of the European Community and its Member States more effectively, through an *efficient* European market in greenhouse gas emission allowances..." [our emphasis, Directive 2003/87/EC]. However, the Courts found that the Commission had overstepped its powers under the Directive by violating the division of competences between Member States and the Commission. The court argued that even if a positive ruling would damage the ETS:

"...it cannot justify maintaining the contested decision in force in a community governed by the rule of law such as the Community, since that act [the NAP revision] was adopted in breach of the distribution of powers between the Member States and the Commission, as defined in the Directive" (CFI, 2009).

3.2.2 Conclusion: Effort Sharing in the EU ETS

The essential problematic arose from over-lapping "regimes" – on the one hand, the Kyoto commitment of the EU15 under the burden sharing agreement and the Kyoto commitments of NMS, and on the other hand, the EU-wide ETS. Each EUA traded is linked to an AAU; this forms the connection between the two regimes. If the Commission had granted NMS ETS allocations in line with their Kyoto commitments, EU15 Member States would have been able to purchase these surplus EUAs (and hence their linked AAUs) for compliance with their Kyoto targets. In effect, the EU15 would have assimilated NMS "hot air" for compliance with its Kyoto target.

The example of the 2008-2012 NAPs highlights the difficulties of harmonizing climate policy across heterogeneous countries. That Member States had very different emissions trends since 1990, and growth prospects at the time of NAP negotiations, made the implementation of an EU-wide trading scheme to contribute toward the achievement of Kyoto targets technically challenging and politically contentious. It also raised ongoing legal/equity considerations, given that the revised NAPs seem incompatible with the Directive's criteria that allocation should be consistent with Member States' BSA or Kyoto targets (see Figure 13 above).



3.3 Effort Sharing in the 2008 Climate and Energy Package

3.3.1 Introduction

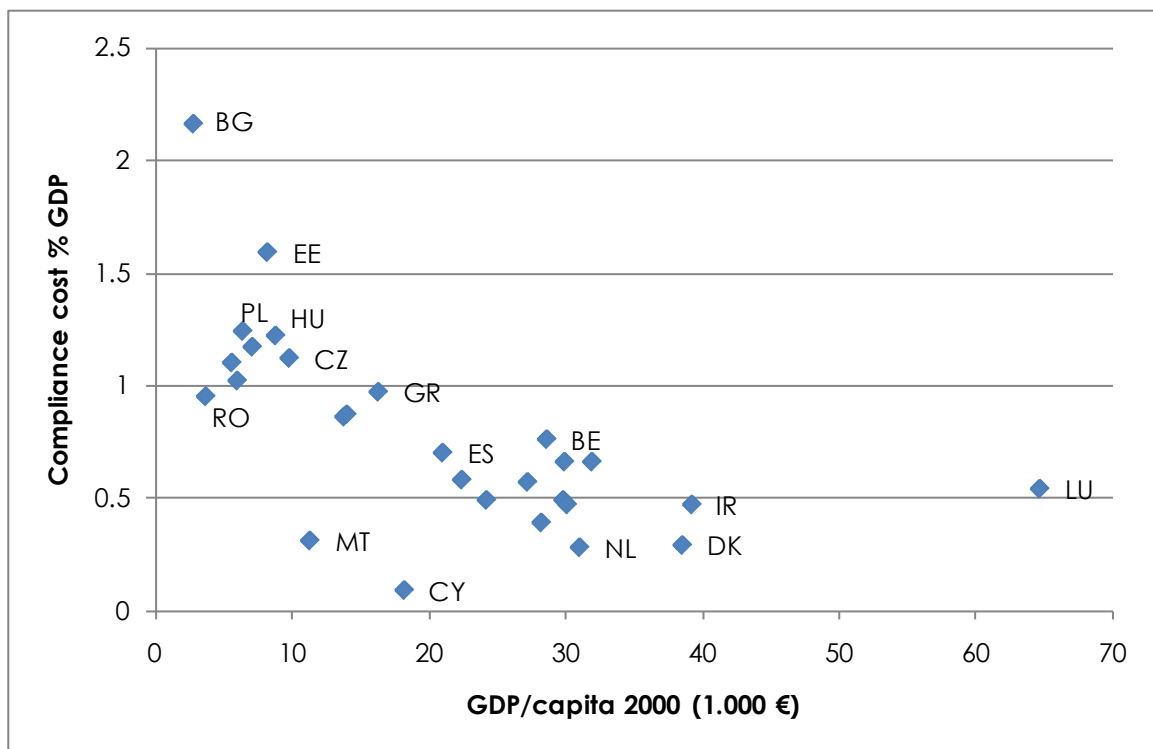
In March 2007, the European Council agreed to an integrated climate and energy policy. This included a unilateral commitment to a 20% reduction in GHGs by 2020 compared to 1990, and a 20% share of RES in final energy consumption by 2020. Moreover, the Council agreed that "... a differentiated approach to the contributions of the Member States is needed reflecting fairness and transparency as well as taking into account national circumstances and the relevant base years for the first commitment period of the Kyoto Protocol". The Council invited the Commission to immediately begin a technical analysis of effort sharing criteria to form the basis of further discussion.

In January 2008, the EU Commission came forward with a comprehensive package of legislative proposals to achieve the GHG and RES targets. This was accompanied by an impact assessment, which explicitly addressed inter-state distributional issues (EU Commission, 2008). The impact assessment was based on a number of principles, namely:

- Cost effectiveness: to achieve policy goals at least cost.
- Flexibility: to avoid excess costs arising from deviations from ex ante macro-economic/marginal abatement cost projections.
- Internal market and fair competition: to create a level playing field in the EU.
- Subsidiarity: to ensure that action is taken at the most appropriate level.
- Fairness: to take into account Member States' differing circumstances and capacities to invest.
- Competitiveness and innovation: to ensure the competitiveness of European industry, while at the same time accelerating low carbon innovation and ensuring a competitive edge in low-carbon technologies.

The Commission assessed a cost-efficient approach to achieve the RES and GHG targets, i.e. equal marginal carbon and RES values across Member States. It argued that such an approach would place an unfair burden on poorer Member States, due to their abundance of lower-cost abatement/RES potential but lower per capita GDP. This can be seen in Figure 14, which plots compliance costs in percent of GDP in 2020 against GDP/capita in 2005. The cost efficient proposal would minimize total EU compliance costs, but did not accord with the principle of fairness set out in the March 2007 Council conclusions.

Figure 14: Compliance costs against GDP per capita, cost efficient proposal.



Source: EU Commission (2011b), own calculations.

The Commission therefore looked for ways to better balance the principles of cost efficiency and fairness. In doing so, it adopted a package approach to effort sharing, which facilitated linkage across multiple policies and increased the scope for redistributing costs (Haug – Jordan, 2010). The package approach is poorly reflected in much of the effort sharing literature, which tends to concentrate solely on the effort sharing decision, i.e. the redistribution of non-ETS targets between Member States. Therefore the following sections outline the effort sharing mechanisms of the proposed package, and the final package as adopted. These were:

- The redistribution of non-ETS targets based on GDP/capita.
- The proposal to trade non-ETS allocations and CDM allocations¹³ between Member States.
- The redistribution of RES targets based on a flat 5.5% increase across all Member States, with the remaining distance to target distributed according to GDP/capita.
- The proposal to trade RES between Member States.

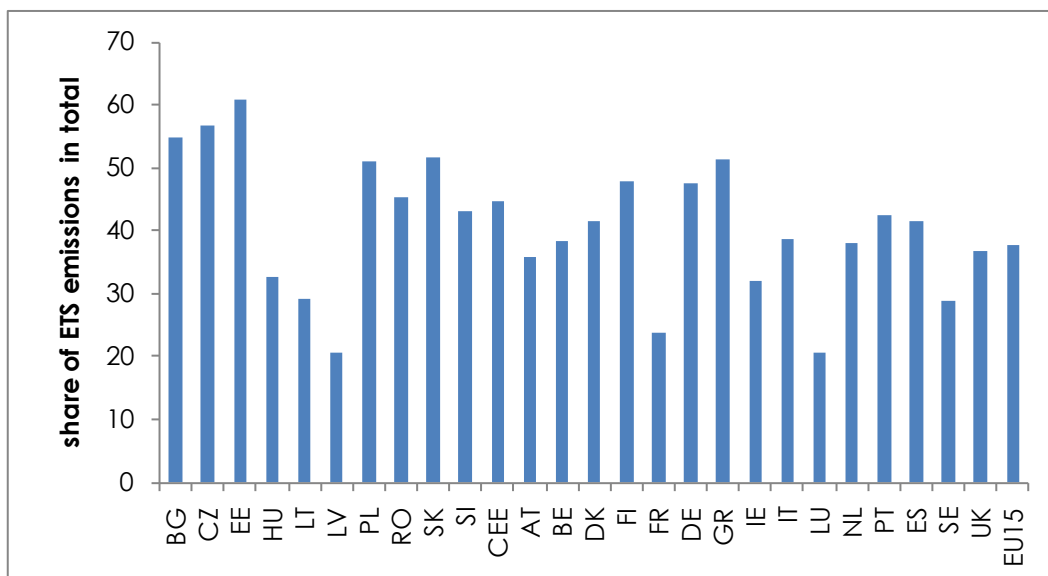
¹³ Each Member State can import CDM allowances up to 3%, or 4% in the case of some Member States, of its 2005 emissions. These allocations can be traded between Member States.

- The redistribution of auction revenues between Member States based on GDP/capita and “early action”, i.e. overachievement of Kyoto targets.

3.3.2 Redistribution of non-ETS targets

The Commission proposal separated the trading (ETS) and non-trading (non-ETS) sectors. The ETS sector was allocated an EU-wide cap of -21% from 2005 levels by 2020, in contrast to the decentralized approach of setting national caps in Phases I and II (cf. section 3.2). The non-ETS sector was allocated a target of -10% from 2005 levels by 2020. The decision to split the ETS and non-ETS sectors itself had distributional consequences, given the differences between the share of ETS and non-ETS emissions among Member States (Figure 15). NMS have on average a higher share of ETS emissions (44.6% vs. 37.7%), although there are significant differences within the group (e.g. BG, CZ, EE vs. HU, LT, LV).

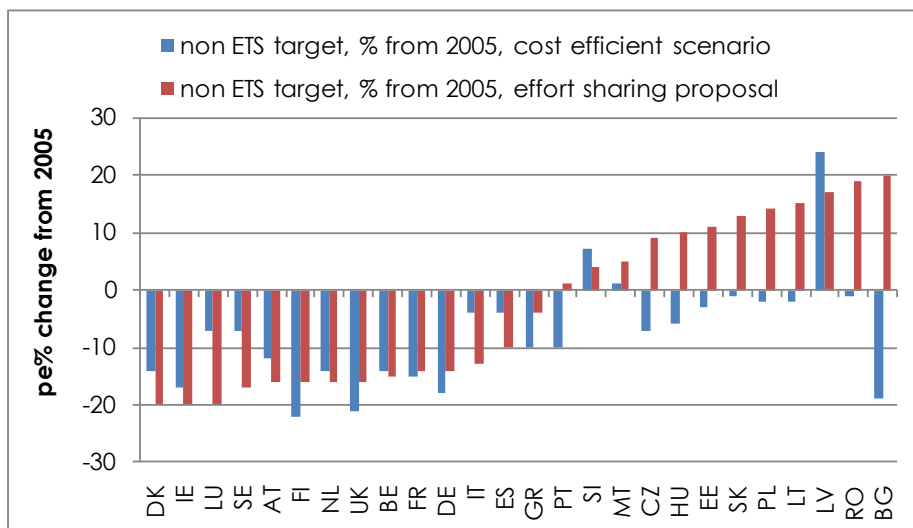
Figure 15: Percentage share of ETS in total emissions in 2007



Source: EU Commission (2011b), own calculations.

The Commission proposal redistributed non-ETS targets along a -20% to +20% continuum from 2005 levels according to GDP/capita. The proposal is therefore based on ability to pay, not abatement costs or potential. Figure 16 compares the non-ETS targets under the cost efficient and effort sharing proposal.

Figure 16: Comparison of non-ETS targets in the cost-efficient and effort sharing proposal.



Source: EU Commission (2011b), own calculations.

There are several points to note regarding the comparison presented in Figure 16. Firstly, the cost efficient scenario models the cost-efficient achievement of both RES and GHG targets, i.e. equal marginal RES and carbon values among Member States. Therefore, each Member State's non-ETS emissions under the cost efficient scenario represent the interaction of both targets. Secondly, even under the effort sharing approach, some richer Member States received less stringent targets, i.e. Finland, UK, and Germany; while Slovenia and Latvia received more stringent targets as compared with the cost-efficient scenario. This reflects the fact that the Commission approach is based on a single criterion, GDP/capita, and not on marginal abatement costs or projected emissions growth, which may be highly relevant e.g. in the case of Latvia. Finally, under the cost efficient scenario, NMS in general received targets representing reductions of just a few percentage points under 2005 levels: this reflects high BAU growth for these Member States, particularly in the tertiary, household and transport sectors.

3.3.3 The proposal to trade non-ETS targets and CDM quotas between Member States

Initially, the Commission proposed no flexibility either between the ETS and non-ETS sector, or between Member States' non-ETS targets. The lack of flexibility between the traded and non-traded sectors would mean that the allocation of effort between the sectors has different implications for different states, depending on their marginal cost curves in the traded and non-traded sectors.

During the negotiations on the Energy and Climate Package, Member States therefore made proposals on flexibility mechanisms between the traded and non-traded sectors, either from the ETS to the non-ETS sector (Ireland); from the non-ETS sector to the ETS sector (Poland), or



between Member States' non-ETS sectors (Sweden). Ultimately, the Directive adopted a version of the Swedish proposal, allowing for the statistical transfer of non-ETS emissions allocations between Member States (Decision No 406/2009/EC, §3.4 & 3.5).

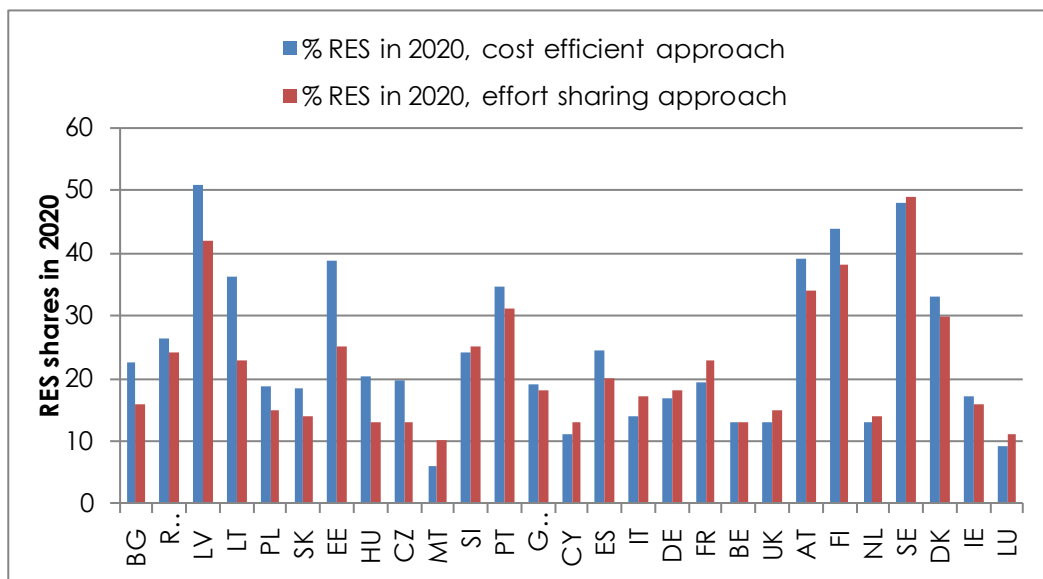
The effort sharing decision also allows for Member States to use CDM credits equivalent to 3% of 2005 emissions annually; 4% in the case some Member States with more stringent non-ETS or RES targets (Decision No 406/2009/EC, §5a-d). The decision also allows for the transfer between Member States of unused CDM allocations, and for banking thereof (§6). This mechanism may provide an avenue for arbitrage between Member States' non-ETS carbon values, and potentially between the ETS and non-ETS sector. Modelling by Tol (2009) suggests that access to CDM credits, and to a lesser extent the trade of CDM allocations, contributes toward a more cost-efficient outcome, as would the trade in non-ETS allocations. Which of these overlapping mechanisms, i.e. trade in CDM or non-ETS allocations, is actually developed remains to be seen.

3.3.4 *Redistribution of RES targets*

The Commission proposal also redistributed RES targets among Member States, in order to reflect GDP/capita. Half of the required increase of 11.4% of final energy consumption was distributed equally to Member States, the remaining distance to the target is distributed according to GDP/capita. Such an approach is based on ability to pay, not resource potential or cost. Figure 17 compares the percentage share of RES in the cost efficient and effort sharing scenario. 15 Member States¹⁴ all have reduced RES targets under the effort sharing approach.

¹⁴ Bulgaria, Romania, Latvia, Lithuania, Slovakia, Estonia, Hungary, the Czech Republic, Portugal, Greece, Spain, Austria, Finland, Denmark, and Ireland

Figure 17: Comparison of RES shares in 2020 in the cost-efficient and effort sharing proposal.

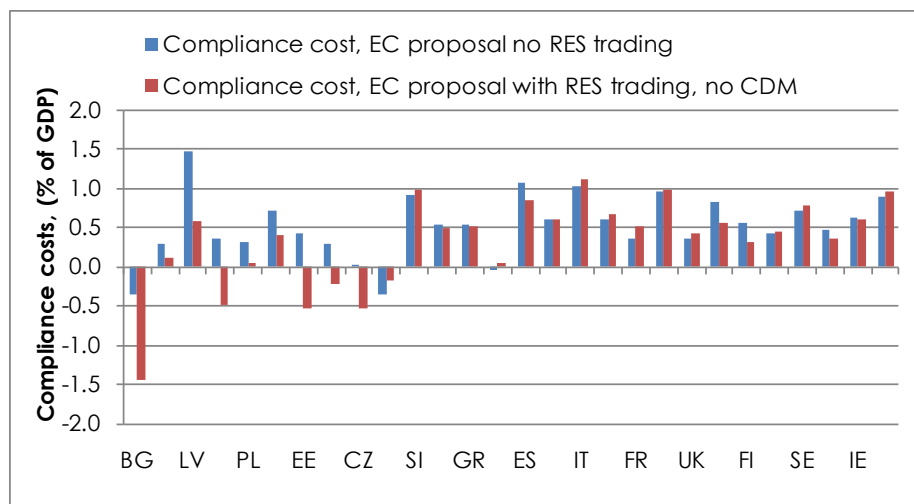


Source: EU Commission (2011b), own calculations.

3.3.5 Importance of RES trading as a distributional mechanism

In the Commission proposal, RES trading was envisaged as a solution to two related dilemmas: i) reducing the efficiency loss of redistributing targets based on ability to pay and not resource potential, and ii) further redistributing the costs and benefits of the package to ensure a politically acceptable outcome. Figure 18 shows the importance, according to the impact assessment, of revenue flows from RES trading for redistributing compliance costs. The big winners under RES trading would be Bulgaria, Latvia, Lithuania, Estonia, Poland, Hungary and the Czech Republic.

Figure 18: Comparison of compliance costs between EC proposal no RES trading and EC proposal with RES trading



Source: EU Commission (2011b), own calculations.

The Commission proposal reignited a long-running debate on the harmonization of RES support schemes across the EU.

After negotiations between Member States, the Parliament and the Commission, the directive allows for three flexible mechanisms: i) statistical transfer between Member States; ii) joint support schemes; iii) joint individual projects (EU Commission, 2009). However, in their National Renewable Energy Action Plans only two Member States, Italy and Luxemburg, foresee the use of the Directive's flexible mechanisms (EU Commission, 2011a). The Commission estimates that up to €10 billion could be saved annually in achieving the 20% RES target via trading.

In sum: RES trading was intended as a mechanism to enhance cost-efficiency, and improve fairness via trading revenues (Figure 18 above). However, the principles of subsidiarity and competitiveness/innovation trumped these considerations, with Member States particularly concerned to retain sovereignty over RES development and protect domestic RES industries. Nonetheless, the debate on further harmonizing RES support measures is unlikely to go away, as both considerations of internal market development and effort sharing in the *implementation* of targets will likely keep it on the agenda.

3.3.6 Redistribution of auction revenues

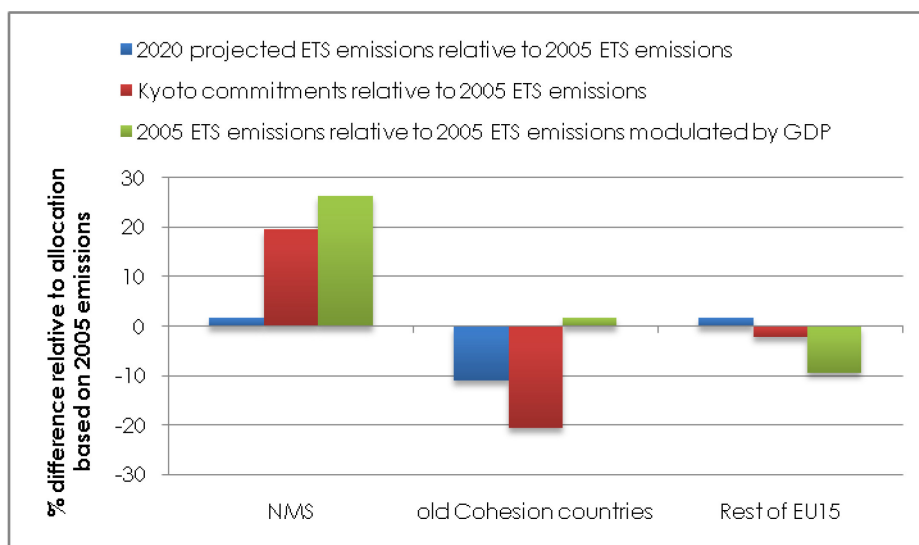
The Commission assessed four methods for distributing auction revenues. These were:

- Proportional to Member States' projected emissions in the ETS in 2020
- Proportional to Member States' commitments under commitment period one of the Kyoto Protocol.
- Proportional to Member States' EU ETS emissions in 2005.

- Proportional to Member States' EU ETS emissions in 2005 but modulated by GDP.

Figure 19 shows the results for three groupings of Member States, the old Cohesion countries,¹⁵ the NMS and the remainder of the EU15. The figure shows the auction revenue for the allocation methods 1, 2 and 4, relative to method 3, i.e. assuming allocation according to 2005 emission levels as the "default".

Figure 19: Different auction revenue allocation methodologies relative to allocation based on 2005 ETS emissions



Source: EU Commission (2011b), own calculations.

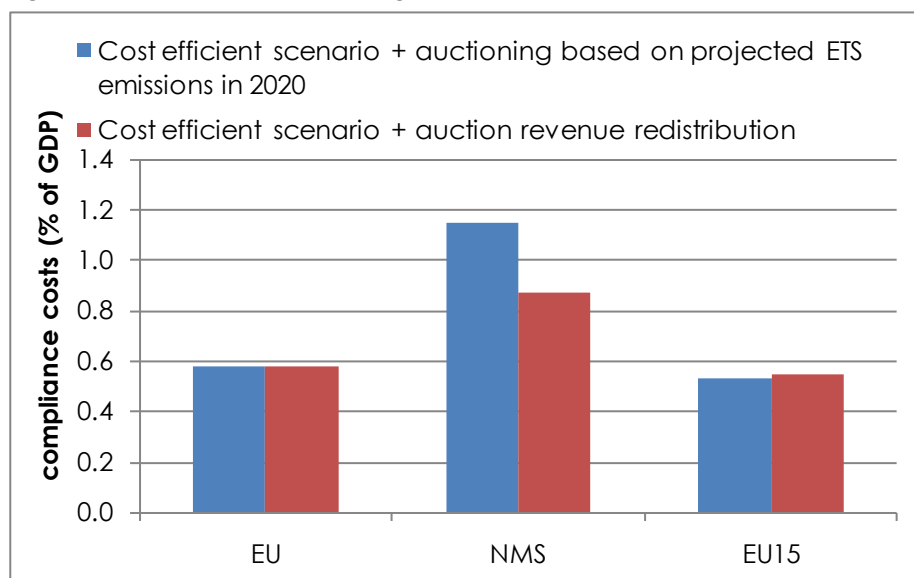
As expected, old Cohesion countries would lose out under an allocation based on Kyoto targets; NMS would benefit, but not as much as under the Commission's proposal to redistribute 10% of auction revenues according to the principle of GDP. Under the Commission proposal, old Cohesion countries also slightly benefit, relative to allocation based purely on 2005 ETS emissions.

Figure 20 shows the impact of auction revenue redistribution on compliance costs for the EU, New Member States,¹⁶ and the EU15. Due to the way the impact assessment modeled auction revenue recycling (lump-sum payments to households), the impact of auction revenue redistribution is ambiguous (see below for a further discussion).

¹⁵ i.e. Portugal, Ireland, Greece and Spain.

¹⁶ i.e. this includes Cyprus and Malta alongside the CEE Member States.

Figure 20: Impact of auctioning on compliance costs



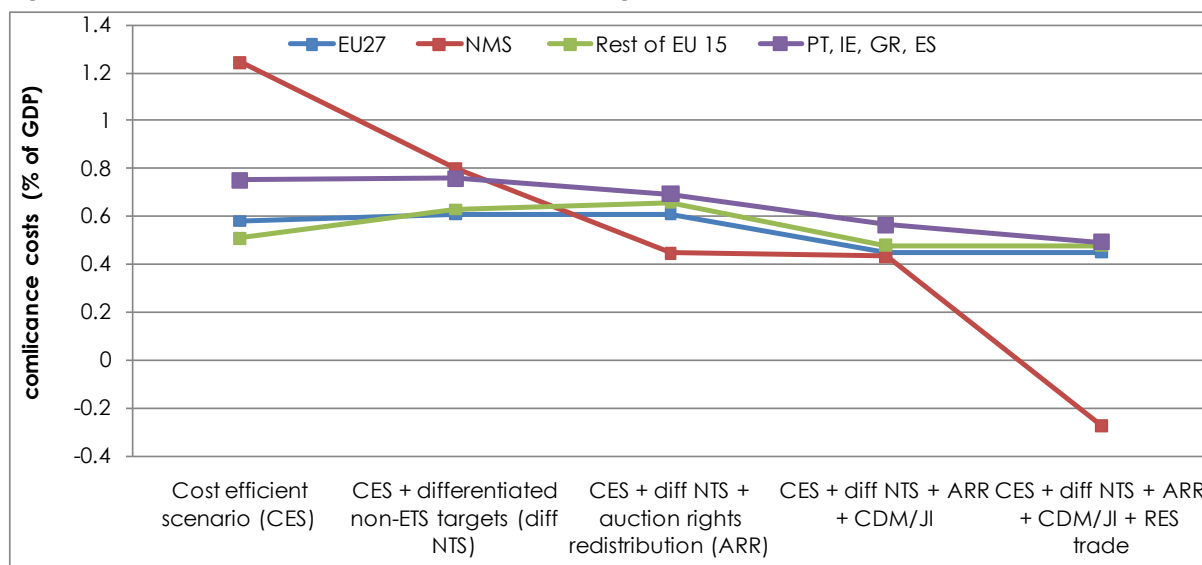
Source: EU Commission (2011b), own calculations.

3.3.7 Welfare impacts and efficiency implications

Figure 21 below shows the change in compliance costs across four groups of Member States as the effort sharing mechanisms of the impact assessment are progressively implemented. As can be seen, compliance costs drop significantly for NMS, with both the redistribution of non-ETS and auction rights having a roughly equal impact. Compliance costs rise slightly for the rest of the EU15¹⁷ as non-ETS targets and auction rights are redistributed; the introduction of CDM/JI plays a significant role in reducing their compliance costs. This step has an ambiguous role within the NMS grouping, as it reduces the ETS price and hence the gains from auction revenues. The redistribution of auction rights and the introduction of CDM/JI reduces compliance costs for cohesion countries (Portugal, Ireland, Greece and Spain). Figure 21 also brings out the significance of RES trade in further reducing compliance costs for the old Cohesion countries and NMS. As discussed above, Member States agreed to RES trading mechanisms, which are highly unlikely to facilitate the degree of RES trade envisaged in the Impact Assessment. Absent RES trading, compliance costs average 0.43%, 0.48%, and 0.56% of GDP for NMS, rest of EU and the old Cohesion countries, respectively.

¹⁷ i.e. excluding Portugal, Ireland, Greece and Spain, which are dealt with separately.

Figure 21: Compliance costs across effort sharing mechanisms



Source: EU Commission (2011b), own calculations.

There have been relatively few independent quantitative assessments of the Climate and Energy Package, due probably in part to the modeling capacity required. However, there are several, which can enrich this qualitative assessment (Böhringer, 2009, Bernard – Vielle, 2009, Tol, 2009). The results of studies of the welfare impacts of various scenarios under the Climate and Energy Package are presented in Table 2.

Table 2: Welfare impacts of different scenarios under the Climate and Energy Package.

Study	Scenario	Welfare impact
Böhringer et al. (2009)	Uniform carbon price across sectors and countries	- 0.45% to -1.98% ¹⁸
	Differentiated non-ETS targets	-0.25% to -0.34% ¹⁹
	Differentiated non-ETS targets and RES target	-0.42% to - 1.90% ²⁰
Bernard and Vielle (2009)	Uniform carbon price across sectors and countries	-0.6% ²¹
	Differentiated non-ETS target	-0.9%
	Differentiated non-ETS plus RES	-1.3%
	Full directive (i.e. with trading)	-1.25%

The results above should be interpreted with some care. Alongside inherent differences in modelling approaches and baselines, the use of different metrics for welfare loss impedes direct comparison. The general caveat to modelling results applies: modelling for insights, not numbers. Nevertheless, a number of conclusions relevant to this study of effort sharing can be suggested.

Firstly, the division of effort between the ETS and non-ETS sectors seems potentially suboptimal, implying excessive effort for the non-ETS sector and vice versa for the ETS. In this regard, Capros et al. (2011) recently responded to Böhringer et al. (2009) noting that in the latter's modelled gains from RES and non-ETS trade are smaller than modelled by Capros et al. in the original 2008 impact assessment. They attribute this to the lack of detail in Böhringer et al.'s modelling of RES technologies and non-CO₂ abatement options, and "...the lack of (policy induced endogenous) technical progress in [their] models". However, the absence of liquid trading mechanisms may imply smaller gains of trade than suggested by Capros et al. (2011). In this regard, the trade in CDM allocations may be a more effective mechanism in bringing the package closer to a cost-efficient outcome.

Secondly, the overlapping of regulation and target differentiation between Member States seems to imply a greater level of efficiency loss than modelled in the impact assessment. However, it is important to note the existence of other policy goals alongside GHG mitigation, i.e. energy security and low-carbon industrial policy. For example, in the pure GHG scenario modelled for the Commission's impact assessment, fuel switching from coal to gas plays a

¹⁸ Hicksian Equivalent Variation in DART and PACE; Hicksian Compensating Variation in Gemini-E3.

¹⁹ I.e. additional to the uniform carbon price scenario.

²⁰ I.e. additional to the uniform carbon price scenario.

²¹ I.e. consumer surplus loss.



greater role than in scenarios where the RES target is overlaid. This may be undesirable from an energy security perspective. Nonetheless, it seems that the pursuit of fairness has indeed had efficiency consequences, potentially exacerbated by the absence of liquid trading mechanisms intended to ameliorate these.

3.3.8 *Intrastate distributional issues*

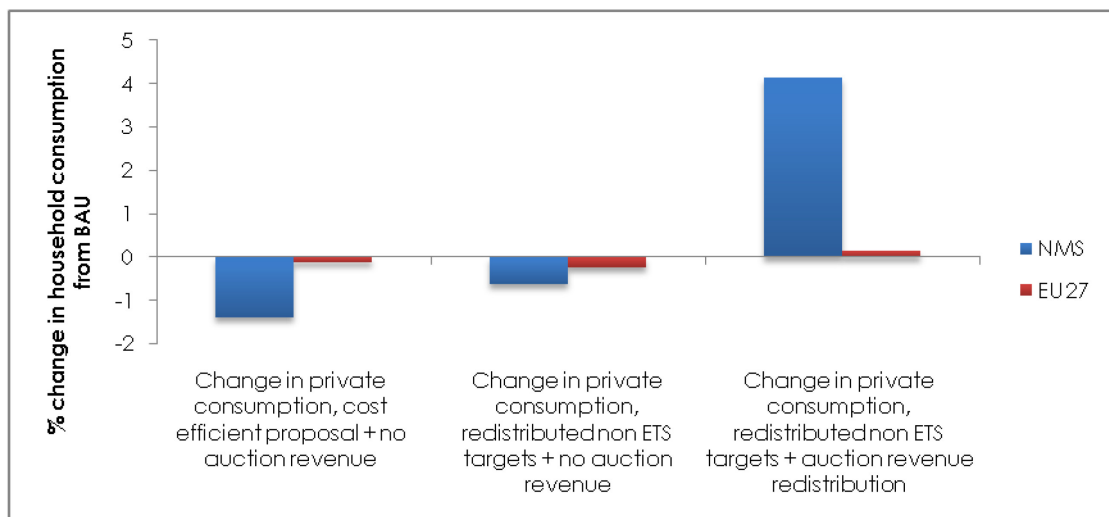
Macroeconomic indicators may not provide a full picture of distributional issues within states. This may be of particular interest to NMS, given the higher incidence of fuel poverty; greater economic reliance on energy intensive industries, and greater carbon intensity of energy generation. Examining the impact of the Climate and Energy Package within states is therefore of interest.

Figure 22 shows the change in household consumption relative to the baseline for three scenarios:

- cost efficient achievement of the RES and GHG targets with no auction revenue generation and recycling.
- redistribution of non-ETS targets according to GDP/capita with no auction revenue and recycling.
- redistribution of non-ETS targets according to GDP/capita, redistribution of auction rights within the ETS and auction revenue recycling.

There are several points worthy of note. Firstly, the cost efficient scenario does seem to impact poorer states disproportionately, with the largest reductions in private consumption occurring in Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Poland and Romania. Secondly, while the redistribution of non-ETS targets contributes to the amelioration of the regressive distribution, a far more significant role is played by the redistribution and recycling of auction revenues from the ETS. Thirdly, it is highly unlikely that auction revenues would be recycled solely to households via transfers, as this scenario assumes. Therefore, the positive impact of auction revenue redistribution on household consumption in poorer Member States is likely to be reduced compared to the model results.

Figure 22: Percentage change in private consumption under various distributional mechanisms



Source: EU Commission (2011b), own calculations.

The redistribution of non-ETS targets has a similar effect in ameliorating the regressive distribution of negative employment changes under the cost-efficient scenario (Figure 23). Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania and Slovakia see reduced negative employment impacts relative to the cost efficient scenario. Due to the fact that the GEM-E3 model simulates the recycling of auction revenue as a lump-sum transfer to households, resulting in increased household welfare and decreased labour supply, auction revenue recycling has ambiguous impact on employment in this model. Alternative methods of recycling, e.g. reduction in corporate/income taxes, would have different macroeconomic/employment effects.

To summarize this section: the Climate and Energy Package does seem to go some way in reducing negative impacts on household consumption and employment in NMS. The recycling of auction revenues could potentially play a key role in alleviating impacts on vulnerable domestic groups in NMS. Given competing interests regarding the use of auction revenues, and the monitoring mechanism implemented in the Directive, how these revenues are spent is likely to be politically a high salient issue.



4 Conclusions – lessons learned for climate policy in other jurisdictions

This paper has surveyed the inter-state distributional challenges and mechanisms in EU climate policy (so-called effort sharing). 20 years of experience on effort sharing in the EU offer a rich ground for analysis of lessons learned for other jurisdictions as they seek to implement climate policy. However, some caution should be taken regarding applying the lessons learned to other jurisdictions, given the hybrid nature of the EU as neither a fully-fledged federation nor a grouping of fully independent states.

4.1.1 Implications of EU experience for other jurisdictions

It can be questioned to what extent the EU experience with negotiating and redistributing targets internally (e.g. EU bubble, Climate and Energy Package) can be transferred to the international negotiations under the UNFCCC, or indeed to other multilateral forums on climate change. Generally speaking, complex redistributive arrangements in environmental agreements require two pre-conditions: i) a small number of parties; ii) close and repeated diplomatic, economic and cultural interactions between the parties.²² The literature on the transfer of environmental policy to EU accession countries indicates the importance of these conditions (Massai, 2007, Boda, 2000). In particular, two factors seem most relevant:

The enormous opportunity of joining the EU, in terms of economic and geopolitical security, was a crucial driver of the willingness to adopt stringent environmental policy, including climate policy. Adopting the EU's climate policy was seen as an "acceptable price" to pay for the benefits of acceding to the union.

The eternal process of negotiating numerous EU policies between Member States and the Commission gives opportunity for implicitly or explicitly linking issues and thus developing consensus on climate change policy in the EU. Climate policy negotiation in the EU takes place within an enormously complex web of other policies and interests, allowing space for bargaining that is unlikely to exist in other international settings.

In this context, the EU experience of effort sharing in climate policy is somewhat unique internationally. It provides anecdotal support for the hypothesis advanced by scholars of international relations that small, like-minded "clubs" of countries may be more successful at distributing the costs and benefits of climate policy than larger groups of heterogeneous nations, and therefore at maintaining a more ambitious policy than each country would commit to alone.²³ However, it should also be underscored the extent to which EU policy has both responded and shaped the multilateral negotiations on climate change. The interaction of both levels of governance – the quasi-federalist level in the EU and the international level –

²² For a comprehensive analysis see Barrett (2005).

²³ For recent advocacy see Victor (2011).



points to a more complicated relationship than either the “multi-lateralist” or “mini-lateralist” schools of international climate policy are able to capture.

4.1.2 Implications of EU experience on target negotiation

Nonetheless, some important lessons for target negotiation can be learned from the EU experience. *Firstly*, much of the EU's success has been grounded on the ability of credible, but neutral, actors to reduce the bargaining space and develop consensus on basic principles of effort sharing. This role was played by the analysis commissioned by the Dutch Presidency in 1997, and by the Commission during the proposal and negotiation of the impact assessment of the 2008 Climate and Energy Package.

This relates, *secondly*, to the need to balance comprehensive criteria for effort sharing with simplicity and transparency. In this regard, a comparison between the allocation of Kyoto targets within the EU bubble and effort sharing in the 2008 Package is instructive. In the former, a sectoral approach was adopted, based on the informal analysis of Utrecht University. In the latter, an instrument-based approach was adopted, with the contribution of each instrument (non-ETS target, RES target etc) aggregated and presented numerically using a suite of econometric models. The efficacy of the latter approach is witnessed perhaps by the speed with which the package was adopted. However, its transparency and relevance for actual implementation may be more limited (witness the contribution of – currently non-existent – RES trading to the nominal compliance costs in the Commission's impact assessment).

Thirdly, agreed, differentiated targets may contribute to, but by no means guarantee, successful implementation – as the experience of compliance within the EU bubble demonstrates. Indeed, it can be argued that a normative process of policy transfer can supplant the development of intrinsic domestic interests in environmental policy (Tews, 2009). The external, negotiated imposition of environmental policy perhaps needs to be complemented by a more two-way process to take into account the domestic interests of participants. Indeed, it seems that EU effort sharing approaches have been largely focused on equity in the design and allocation of targets; there seems to be little focus on the subsequent implementation phase. Cooperation on implementation and the nurturing of domestic interests in climate policy may be just as important as negotiating agreed targets for the long-term stability of the policy coalition.

4.1.3 Implementing an ETS across heterogeneous jurisdictions

An emissions trading scheme is the preferred market instrument for addressing GHG emissions due to its ability to redistribute the costs and benefits among economic actors through the system of allowance allocation. However, designing an ETS across heterogeneous jurisdictions brings technical and political difficulties, as indeed the experience of the EU highlights.



In theory, the extension of ETS across multiple jurisdictions has several justifications. Firstly, it reduces overall compliance costs, and hence potentially increases the scope for more ambitious targets (Frankhauser – Hepburn, 2010). Secondly, it reduces the risks of carbon leakage by harmonizing the carbon price across the covered jurisdictions. Finally, it can serve as a means to offer side-payments to reluctant parties through the allocation and subsequent trade of permits.²⁴

There are several considerations in designing ETS across jurisdictions:

- The use of an ETS as a side-payment instrument
- Implications of a common carbon price between states
- Competitiveness and harmonization concerns

The allocation and trading of emissions permits as a distributional mechanism was one of the central principles of the Kyoto Protocol, evident in the over-allocation of permits to Economies in Transition and the inclusion of International Emissions Trading in the Protocol. The EU ETS was substantially modeled on the Kyoto Protocol. However, it is interesting to note that the EU has not significantly used the allocation and trade of permits as an *international* effort sharing mechanism, i.e. between Member States, due likely to concerns of competitiveness and maintaining a level playfield in the internal market.²⁵ The closest analogy is the reallocation of auction rights to poorer Member States, and those that significantly overachieved on their Kyoto targets. This amounts to a significant transfer in Phase III, of between 18-37 billion €, depending on the carbon price (Cooper, 2011). The reallocation of auction revenues, rather than emissions permits directly, circumvents several concerns. Firstly, there is the issue of market power that could arise if surplus countries are few. Secondly, the allocation of valuable emissions rights could have undermined the EU internal market, raising subsidy and competitiveness concerns between Member States. Indeed, the experience with NAPs in Phase II demonstrated such risks in decentralized allocation; reallocation of auction revenues rather than permits was perhaps seen as more compatible with the Phase III principle of centralized allocation based primarily on auctioning. Finally, the reallocation of auction revenues maintains the *positive sum* implications of allocating emissions permits, i.e. it creates a large stakeholder group with a vested interest in maintaining the carbon price.²⁶

Complex proposals regarding the allocation of allowance values appeared in the Waxman-Markey bill and the Kerry Lieberman Bill, for RD&D, international cooperation and domestic

²⁴ This is the approach adopted within EU Member States towards the industrial sector in the EU, in particular through the national allocation plans in Phase II. However, the EU experience highlighted that decentralized permit allocation leads to a race-to-the-bottom to protect, and even subsidize, national industry.

²⁵ Although there were significant inter-state permit flows in Phase I (Trotignon – Delbosc, 2008).

²⁶ For example, finance ministers in Central and Eastern European Member States have been keenly involved in the national debates on the use of the derogation to full auctioning, and in the fiscal implications of a tighter EU cap.



re-distribution purposes, e.g. for low income consumers.²⁷ By comparison, the EU, as an incomplete fiscal federation (for now at least), has no competence over the domestic usage of auction revenues after their redistribution. Effort sharing therefore remains at the national level in the EU; a future challenge may be to harmonize approaches at the domestic level, e.g. towards low-income consumers.

A central economic justification of the linking of schemes across jurisdictions is economic gains of trade from harmonizing marginal prices. In theory, after linking, jurisdictions with more ambitious policies benefit from lower carbon prices, while jurisdictions with less ambitious policies benefit from selling allowances into the higher-price system. However, harmonized marginal prices have important political economy considerations.²⁸ Essentially, it requires agreement between parties concerning the marginal price derived from linking: this needs to be acceptably high for the ambitious jurisdiction, but not too high for the less ambitious jurisdiction. More fundamentally, the imposition of a (long-term) ETS requires a high level of agreement among covered jurisdictions as to the essential direction of the energy system.

These political economy considerations are clearly evident in the EU. Ostensibly, an ETS represents a "hierarchical" mode of governance, i.e. the top down imposition of objectives and the instrument to reach them (Jordan, 2010). However, it is clear that contention remains among EU Member States regarding the objectives of the ETS within the framework of EU policy. This can be evidenced by the increasing number of countries considering complementary policies to supplement the insufficient investment signal sent by the ETS, led by the electricity market reform in the UK (UK Department of Energy and Climate Change, 2011). On the other hand, more reluctant countries, such as Poland, have recently challenged key principles of the ETS in EU courts concerning the free allocation of allowances based on benchmarks. The benchmarking proposal of the Commission is based on the top 10% of efficient firms in the given sector (Council Directive EC/29/2009). Poland lobbied for a *fuel based* benchmark, which would take into account its heavy dependence on coal. This highlights a fundamental tension in EU climate/energy policy: according to the Treaty on the Functioning of the European Union, Member States retain sovereignty over their energy mix (TFEU). However, measures such as the ETS and the benchmarking regulation adopted by the Commission will likely increasingly shrink Member State's sovereignty over their energy mix.

The history of EU effort sharing and harmonization of climate policy highlights the difficulty of achieving consensus on objectives and instruments, particularly for the long-term. Laying a harmonized instrument over these fault lines leads to conflict. However, it does appear that this harmonized instrument facilitated the negotiation of effort sharing in the Climate and Energy Package. In comparison with negotiations on the EU bubble and with the bottom-up

²⁷ For a summary of the two bills, see <http://www.pewclimate.org/federal/analysis/congress/111/comparison-waxman-markey-and-kerry-lieberman>

²⁸ For a good discussion, see Victor (2011).



process of cap setting with the NAPs, the dramatic policy innovation of a harmonized EU-wide cap reduced the bargaining space in the Climate and Energy Package negotiations.

4.1.4 *Effort sharing across heterogeneous regimes*

A central difficulty over the history of EU effort sharing has been the harmonization of climate policy across multiple, overlapping regimes. At the international level, the EU15 and NMS had their respective burden sharing agreement or Kyoto commitments. At the EU level, these were translated into the EU ETS. Finally at the national level, NAPs defined the national cap during phase II, the sum of which formed the ETS cap during the Kyoto first commitment period. This regime overlap created political and technical difficulties for EU effort sharing, in particular when overlaid across very heterogeneous Member States. The EU's experience provides a practical demonstration of the real technical and political difficulties of linking climate policy regimes and trading systems.

It appears likely that trading schemes will evolve from the bottom up, as an increasing number of countries look to price carbon domestically. Early indications suggest that these schemes are being designed with reference to linking eventually, especially with the EU ETS. However, domestic political economy considerations will likely lead to potentially significant differences in regime designs. Equally, very different national economic circumstances, historically and in the future, will make more difficult any eventual international linkage of domestic evolved trading schemes. Regime designs need to be constructed *ex ante*, to the extent possible, so as to be compatible; *ex post* adjustments are likely to be political fraught and technically difficult, as indeed the EU experience with NAPs demonstrates.

4.1.5 *Conclusion*

The EU's experience with effort sharing has been, in balance, positive: it has allowed Member States to go further than they would in a purely domestic context. The EU's success, and its difficulties, are profoundly shaped by its nature. The EU shares competences with Member States in the energy field, a disparity that could increasingly start to create discord as climate policy shrinks the room for domestic sovereignty in the energy sector. The EU's principles of solidarity and the internal market can conflict, e.g. in the requirement to maintain the internal market while adopting differentiated approaches to Member States. In this context, the EU's adoption of a harmonized climate policy across 27 very different Member States should be seen as a success that further challenges await.



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