UKERC

Improving energy efficiency in a New Europe: Leveraging the Kyoto Flexibility Mechanisms – past, present & future

Workshop Report

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Reported by:
Aleksandra Novikova, Central European University

Edited by:
Sarah Keay-Bright, UKERC Meeting Place
Jane Palmer, UKERC Meeting Place

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A key supporting function of UKERC is the Meeting Place, based in Oxford, which aims to bring together members of the UK energy community and overseas experts from different disciplines, to learn, identify problems, develop solutions and further the energy debate.

CORE ORGANISING TEAM

Diana Urge-Vorsatz - Central European University
Cameron Hepburn - Oxford University
Brenda Boardman - Oxford University
Jane Palmer – UKERC Meeting Place
Rudra V Kapila - UKERC Meeting Place

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Workshop Background

Compared with the pre-enlargement EU15 Member States, the Central and Eastern European (CEE) countries generally have greater and cheaper potential for energy efficiency improvements and greenhouse gas emission (GHG) reductions. However, numerous barriers hamper the unlocking of this potential, particularly in the building and transport sectors. The flexible mechanisms of the Kyoto Protocol could provide an important vehicle to capture opportunities in energy-efficiency throughout the CEE region. At the same time, the mechanisms can provide low-cost options for investors to comply with various GHG targets. Moreover, reduced energy bills through improved efficiency can help the new Member States become more competitive, improve social welfare, as well as increase energy security.

But to what extent could the flexible mechanisms deliver these promises? What could help the Joint Implementation (JI) tool boost energy-efficiency in the new EU Member States? Beyond JI, do other policy architectures such as the Green Investment Scheme (GIS) under International Emissions Trading (IET), offer additional opportunities for investments in energy-efficiency? Beyond 2012, could the flexibility mechanisms work more effectively in sectors with greater cost-effective potential in the region, including energy-efficiency in buildings? Which regimes being considered for post-2012 would energy-efficiency in a New Europe benefit from most?

The workshop aimed to shed light on these questions, highlight key issues and provide an opportunity for in-depth discussion and debate between UK and CEE delegates. To achieve this, the workshop brought together key individuals from the CEE countries, leading figures in the UK energy research community and wider stakeholders involved in investment schemes, the flexible mechanisms and local emission trading. The key messages of the meeting and results of the discussions are reflected in this meeting report.

Abbreviations

EU	European Union
CEE	Central and Eastern Europe
GHG	greenhouse gases
JI	Joint Implementation
GIS	Green Investment Scheme
IET	International Emissions Trading
CDM	Clean Development Mechanism
EU ETS	European Union Emissions Trading Scheme
	NEU-8 countries joined EU in May 2004, namely Hungary, Poland, the Czech Republic, Slovakia, Slovenia, Latvia, Lithuania, and Estonia
ESCOs	energy service companies
AIJ	Activities Implemented Jointly
AAUs	assigned amount units
CERs	certified emission reductions
ERUs	emission reduction units
EUAs	EU allowances
NAP	national allocation plan
IRR	internal rate of return

MORNING SESSION

Welcome and introduction

Dr. Brenda Boardman from **the UK Energy Research Centre and University of Oxford** opened the workshop and welcomed the participants. She explained that the workshop aimed to explore how the flexible mechanisms of the Kyoto Protocol could better capture the large energy efficiency potential in the CEE region. While implementation of the mechanisms in the region is desired, in practice it is likely to be a challenging task. Brenda emphasised that the UKERC Meeting Place is not only a place for discussions but also a place for learning. The workshop has made it possible for two interested groups to meet and learn from each other: one group being participants from the CEE region seeking knowledge transfer and capacity building, and the other group being carbon trading specialists.

The problems and prospects of the Kyoto flexible mechanisms in the new EU Member States

Aleksandra Novikova, on behalf of **Diana Urge-Vorsatz,** both from the **Central European University,** gave a presentation on "Energy efficiency and the Kyoto Protocol in an enlarged EU: will they make a difference?" Despite significant efforts to improve energy efficiency as part of the *acquis communautaire* required to join the EU, the eight new Eastern European Member States (NEU-8)[1] are still highly energy intensive in comparison with the pre-enlargement EU-15. Resources for further energy efficiency improvements are not easy to obtain. All NEU-8 countries experience budget deficits peaking in Hungary at around 10% of GDP in 2005. Thus state budgets are generally not healthy enough to finance further energy efficiency improvements. At the same time, these countries have removed subsidies from utility tariffs and increased taxes to such an extent that introduction of further taxes to subsidise energy efficiency is unlikely. As a result, market-based instruments which promise to attract investment - and the Kyoto flexibility mechanisms in particular – are keenly welcomed by Governments. The question is whether these mechanisms will be able to deliver this promise and capture the energy efficiency potential.

The potential for emission reductions through Joint Implementation (JI) is high. The high energy and carbon intensities of the NEU-8 countries - compared with the pre-enlargement EU-15 - translate to a high economic potential for GHG mitigation, estimated at 20%. There is also significant potential for fuel switching due to a heavy reliance on high-carbon fuels in countries such as Estonia and Poland. There are also many opportunities to introduce renewable energy. However, additionality of JI projects delivering reductions through renewable energy is questionable as EU renewable energy targets are reasonably ambitious.

The highest mitigation potential is associated with energy efficiency improvements in the buildings sector and use of biomass and biofuels. Realising energy efficiency improvements in the domestic building sector would help tackle social problems, such as fuel poverty, and help people to cope with increasing tariffs. It would also improve energy security by reducing energy imports. Greater use of biomass would help tackle agricultural problems in the region. Policies already in place to promote energy efficiency and use of biomass and biofuels have been not very effective so far due to significant

[1] Hungary, Poland, the Czech Republic, Slovakia, Slovenia, Latvia, Lithuania, and Estonia

barriers in the building and agricultural sectors. Even market tools such as energy service companies (ESCOs) are not working effectively in the residential sector. It is clearly important to strongly promote the implementation of the flexible mechanisms in these sectors.

The inventory of Activities Implemented Jointly (AIJ) showed that the pilot stage of the project-based mechanisms did include demand-side energy efficiency projects. However, experiences of projects during this stage were not always as positive as hoped for. Thus some stakeholders are not wholly enthusiastic about the JI mechanism. Moreover, there were few large-scale demand-side energy efficiency projects. Very high transaction costs for small-scale projects have been the greatest barrier for JI initiatives.

Following implementation of the *acquis communautaire*, additionality has been harder to achieve due to improved environmental baselines. Moreover, the Linking Directive placed the EU Emissions Trading Scheme (EU ETS) and JI into direct competition. This resulted in JI being used mainly for non-CO2 projects and projects in sectors not covered by the EU ETS. These barriers resulted in a reduction of JI activity throughout the CEE region. Many approval decisions on JI projects were postponed for various reasons including the uncertainty of double counting, elections in many of the CEE countries and a summer slow-down of activity. This left little time for JI projects to be implemented and so contribute to emissions reductions for the 1st commitment period.

Some experts recommend 'project bundling' which would allow small-scale projects to undertake steps in the project cycle at the same time, so reducing costs per unit to an economically feasible level. There is very little experience so far of project bundling in the CEE region. One example is the bundling of nine biomass projects in the Czech Republic. Another is the bundling of small railway energy efficiency projects in Hungary. However, many project developers are sceptical about bundling because it requires projects to be of the same type, and at the same stage of development. Additionally, it is difficult to effectively manage the bundle when the various projects have different managers/owners. The question is whether it is feasible to fund special facilities to provide bundling services for such small-scale projects.

Another pressing question is whether the countries with economies in transition that have recently joined the EU will comply with the requirements of the EU ETS - which are very similar to JI Track-1 requirements - early enough to deliver emission reductions through JI in the 1st commitment period. Such delay also creates uncertainty for buyers who may switch to other activities. Track-2 JI is already framed but is very expensive and does not have political support. Therefore, it is likely to be substituted by other more flexible approaches.

The second part of the presentation was devoted to investigation of the potential for sustainable energy promotion through international emissions trading (IET). GHG emissions in the NEU-8 countries heavily declined during the 1990s but now they are on the rise. According to projections of GHG emissions in 2010 as compared to the Kyoto target, Hungary, the Czech Republic, Slovakia, Slovenia and the Baltic States have a large amount of "hot air" to sell. Therefore, their participation in IET will not result in additional emissions reduction, but will be a trade with surpluses of assigned amount units (AAUs). Nevertheless, emissions trading could deliver real emissions reductions if revenues from such trade would be targeted at energy efficiency and renewable energy projects through the Green Investment Scheme (GIS) mechanism. GIS-related research carried out by the World Bank in Bulgaria in 2004 identified such opportunities. The World Bank is also interested in GIS design studies for other countries such as Ukraine, Romania, Poland, the Czech Republic and Slovakia. The Hungarian government has started designing a GIS scheme and building a legal framework, with a proposal to be submitted to Parliament shortly.

To be successful in delivering the Kyoto commitments, the GIS should be designed to avoid repetition of poor JI experiences. Presently, it could be argued that the GIS is biased towards the state. This could lead to an inefficient selection of projects that the GIS could be linked to. It is also important to learn from the JI experience and to minimise transaction costs for the GIS mechanism so that small-scale projects do not suffer.

In conclusion, the region has a very high cost-effective CO2 mitigation potential, especially in the buildings, biomass and biofuels sectors. JI (Track-1) promises to play a remarkable but quite limited role. The IET mechanism is not likely to lead to emissions reductions in the NEU-8 countries in the 1st commitment period. However, if revenues from such emissions trading would be targeted towards energy-efficiency measures or projects, such policy architecture could work. The question is how to design the mechanisms without repeating the poor JI experiences.

Discussion

Clarification was sought as to why and how Track-1 and Track-2 JI differ. Track-2 is more institutional and closer to CDM. At the same time it is more expensive giving countries a good reason to prefer Track-1. For buyers, Track 2 is less risky as it removes the possibility that a country will withhold AAUs for random reasons. Application for Track-1 requires complying with a list of eligibility criteria including the national GHG inventory, registry, etc. All CEE countries are Track-2 now, but some might move to Track-1 JI in 2007-2008.

A participant queried how large a JI project should be so that its transaction costs are not prohibitive. For example, projects delivering below 20,000 tCO2eq. annually are often subject to transaction costs higher than 1 USD/tCO2 which is not economically feasible. One JI deal is estimated to have approximately 50,000 EUR of transaction costs associated with it (this must be paid before final delivery of the project). JI projects involve risky expenditure because various approvals are required before the deal can be concluded. The small projects mainly involve photovoltaics, energy efficiency, small and mini hydro projects, and boiler conversions.

Small scale projects should only be bundled if they have the same owner. Otherwise it is very difficult to manage and monitor the bundled project. It will be also difficult to calculate and split emissions reductions for separate project units with different owners.

A Bulgarian project has bundled 20,000 households to overcome transaction costs. The project involves switching from electricity to natural gas and from solid to liquid fuels for heating. The project is conducted by an authority which sells the emissions reductions. Such heating becomes 50% cheaper for households. However, the transaction costs are still quite high despite bundling. The explanation is that fuel switching requires significant capital investments which are slow to pay back.

Energy conservation and carbon mitigation from lighting and appliances

Dr. Brenda Boardman of Oxford University delivered a presentation **on behalf of Bogdan Atanasiu and Paolo Bertoldi of the Joint Research Centre of the European Commission** entitled "Residential Lighting and Appliances in New Member States (NMS), Acceding and Candidate Countries". Electricity consumption per capita in Cyprus, Malta, Slovenia, the Czech Republic and Croatia is close to the EU-15 average and is expected to reach it in the next decade. The electricity price growth in NMS and candidate countries can curb growing demand for electricity and can foster electricity

savings in the residential sector. However, if electricity prices in purchase parity terms for this region are compared to those in the pre-enlargement EU-15, they are already higher than in almost all the EU-15 Member States. Is electricity price growth feasible?

An analysis of penetration levels of refrigerators and washing machines in 2004 showed they were significantly lower in NMS and candidate countries as compared to the EU-15 that year. In the next 10-15 years the growth of ownership levels of these appliances is expected to reach 100% (at least one appliance in each household) for almost all the NMS and candidate countries closing the gap between these countries and the EU-15. However, in NMS and candidate countries the level of sales of high efficiency A and A+ energy class appliances is very close to the EU-15 average. Moreover, there is a bigger legacy of old inefficient appliances in the stock of NMS and candidate countries. These facts result in an expected increase of electricity consumption in NMS and candidate countries in the near future. Recently manufactured appliances consume 40%-60% less electricity than those produced in 1985. New equipment should replace old appliances to reduce electricity and GHG emissions growth. Policy measures such as a fridge saver scheme can help achieve this. In this scheme, utilities fund the provision of a more efficient appliance at discount prices to replace old, working equipment (which is collected).

The second part of the presentation explored the state-of-play for residential lighting. Based on a recent survey, lighting consumption was estimated at 77 TWh for the EU-15 and 13.6 TWh for the ten new Member States. A scenario involving the replacement of one to three longer burning lamps with a CFL in each household was used to estimate possible savings. Total savings estimated by these means are approximately 18 TWh for the twenty-eight countries covered by the research. An interesting fact is that adding one CFL per household results in a larger number of CFLs used in the EU-15 than in the NMS and candidate countries, but lower electricity consumption through lighting. This is due to dominant rebound effects in the NMS and candidate countries.

To conclude, the appliance stock in NMS and candidate countries is outdated and inefficient. Appliance penetration in these countries is lower than the EU-15 level, but is expected to grow – this growth will be accompanied by increased electricity consumption. Quick and substantial electricity savings can be achieved by replacing outdated appliances with efficient ones. However, this would be a big financial burden for households already experiencing high energy prices. Therefore policies are needed to stimulate appliance turnover. Increased penetration of CFLs can also deliver quick and significant savings. Mandatory standards could be introduced e.g. use of dedicated fixtures that commit consumers to using low-energy lightbulbs. The UK is currently discussing whether to ban incandescent bulbs. Also needed is promotion of CFLs and their price reduction. Other new technologies such as light emitting diodes (LEDs) can also deliver major savings.

Interaction among climate policy tools

Camilla Taylor from EEA Fund Management Ltd. discussed "Policy Issues Affecting Carbon Investment Decisions in CEE". Since 1990, emissions of the NMS have fallen substantially below the Kyoto target. Thus there are large opportunities for the participation of the NMS in international emissions trading (IET). At the same time, carbon intensities of CEE countries are very high compared with the pre-enlargement EU-15. This is why opportunities to improve energy efficiency in the CEE countries and participate in emission-reduction projects are also considerable. Camilla gave a short overview of the Kyoto flexibility mechanisms and compared the carbon instruments applicable in the CEE region. She explained the differences between the Kyoto flexibility mechanisms and the EU ETS.

The JI tool is applicable in Annex-I countries and covers all GHGs and all sectors. Experience to date shows that JI is quite complex and bureaucratic which makes it difficult to implement. In order to overcome the high transaction costs covering complicated administrative procedures, a JI project should typically deliver emissions reductions of over 20,000 tCO2eq. annually. Some JI countries require a Memoranda of Understanding between buyer countries and governments – others do not (e.g. no MoU between UK and Romania and Bulgaria).

IET involves voluntary government trading of AAUs. For some governments it is ethically unacceptable to buy "hot air" without real emissions reductions taking place. Green Investment Schemes (GIS) is a tool which links the emissions trading to real emissions reductions. An advantage of GIS is that it can aggregate small scale projects. GIS schemes are flexible and can provide different "greening" options. It can be "hard greening" when every ton of AAU must generate a ton of reduction at some point afterwards, or "soft greening" when cash for AAUs should be spent on environmental or green issues. For instance, Romania is close to having a framework for GIS developed, with percentages set for hard greening and soft greening. IET has huge potential to deliver energy efficiency improvements, but it is not contributing at present because there are not yet ways to extract funds to support energy efficiency projects.

CDM allows an Annex-I country to implement a project in a non-Annex-I country and use obtained emissions reductions (CERs) for its Kyoto target compliance. The CDM mechanism, similarly to JI, covers all sectors and all GHG emissions. The scope of CDM is much larger because the opportunities to find projects are larger and institutional structures are better established in CDM countries. JI and CDM tools were placed in competition with one another but CDM is currently much more effective than JI.

EU ETS covers the most energy intensive industries of EU countries. Installations get EU allowances (EUAs) under national allocation plans (NAPs). Participants of the EU ETS can sell any excess allowances. Double counting needs to be avoided. Power generators currently receive credit for emissions reductions produced by people in their homes. The question is who should benefit from such emissions reductions: households or power generators? To eliminate this double counting effect, governments will need to carve out allowances for JI separately from what they would have given to power generators under the EU ETS. The EU ETS and JI mechanisms are in direct competition with one another for emissions reductions. EU ETS is a mandatory mechanism within the EU, whereas JI is a voluntary tool of the Kyoto Protocol. Compliance with the requirements of EU ETS is a major mandatory burden on institutional capacity - the voluntary JI mechanism therefore receives much less attention in comparison with the EU ETS mechanism.

Further barriers to implementation of the JI and IET mechanisms include a lack of certainty post-2012 which is a concern for investors. There is a lack of clarity regarding certain compliance and enforcement issues relating to the Kyoto Protocol (because post 2012 has not been resolved), thus there is no urgency to buy AAUs. Additional uncertainty is added by a JI reserve to carve out ERUs from EUAs if the JI and EU ETS mechanisms overlap, but Governments do not know in advance how large this reserve could be.

In conclusion there is significant interaction between the JI, EU ETS and IET tools. While JI is the only developed option at present, it is not the most effective mechanism for capturing emissions reductions in the EU. Contracting AAUs under GIS schemes promises significant opportunities. Using EU ETS would require an interaction between generators and energy end-users. The year 2008 is approaching fast, and uncertainty following the 1st commitment period is a significant barrier to successful implementation of the mechanisms.

Attractive energy efficiency projects

Sebastian Foot from **Carbon Capital Markets Ltd** gave a presentation titled "Making energy efficiency projects attractive to investors". Carbon Capital Markets Ltd was launched in 2005 with €16 million of equity investment and since the start of EU ETS it has negotiated over 16 million tones of EUAs.

There is currently a growing interest in the JI mechanism because much capital has been directed into the CDM market so it is harder to find cheap reductions there. Carbon Capital Markets Ltd deals with energy efficiency projects such as energy management systems, cogeneration, waste-heat recovery, and combustion control. Some 15% of JI projects are attributed to energy efficiency - however, they deliver only 5% of total expected ERUs.

Investors are attracted to JI energy efficiency projects because of quick implementation rates and short payback periods. Applying the JI instrument will typically only provide a small additional boost to the internal rate of return (e.g., 0.5-3%). Payback periods for energy efficiency projects will be lowered by 1-2 years though implementation of JI mechanism. ERU delivery is relatively small because the main GHG reduced is CO2 rather than more potent GHGs such as methane.

Large financial return is not the main factor of consideration for investors. In developing countries it is risky to invest in projects which payback over a long timeframe. In developing countries, JI wind energy projects which have a payback of 10-15 years are risky and therefore rare, whereas methane projects which have a much shorter payback period and have higher IRR are more common. Opportunities for energy efficiency gains may follow growth in energy prices. As Russia increases market rates for energy, so there is a growth in the number of "energy managers" in companies devoted to reducing energy consumption (and hence emissions). There is often poor internal communication of project opportunities within companies and many projects do not find funding. Despite the attractive quality of energy efficiency projects they tend not to be focused on as investment does not impact top line profits.

Among the projects which will be available, investors will seek large-scale projects to minimize management costs. For example, it would be more effective to monitor one large installation rather than 100 small boilers. Old plants requiring upgrades will be of particular interest for investors; such projects will yield quick emissions reductions with lower capital investments compared to other projects. Countries that employ old industrial energy technologies will be of greatest interest e.g. Ukraine, Russia, Bulgaria, Czech Republic.

Future investment is likely to take place through:

Private JI investors: will seek large projects in heavy industrial and power generation sectors for targeted JI investments

Institutional banks**:** such as Caisse Des Depots and HSBC with a climate change focus may chose to provide preferential loans for energy efficiency projects in return for carbon credits

Green Investment Schemes**:** which 'green' Assigned Amount Units (AAUs) provide a natural source of capital for energy efficiency projects of all sizes without realising carbon credits

Governments: More projects in Central and Eastern European Countries will be undertaken as their value is better promoted by governments

New business approaches to a low carbon future

Jonathan Churchman-Davies, ICF International gave a talk on "Pointers to Unlocking Domestic Carbon Value". Jonathan gave an overview of the climate change science and the challenges faced. Deep technological emissions reductions need to be combined with emissions reductions associated with lower energy consumption. According to the European Environment Agency, more than half of the reductions required to bring emissions to a sustainable level are available in energy efficiency improvements.

Jonathan discussed ways of monetising GHGs to regulate carbon consumption. While the price signal could work theoretically, the carbon price currently contributes too little to the fuel price so does not affect carbon consumption. For example, the carbon cost as a fraction of the petrol price is about 3%.

There is also a discrepancy between mitigation goals and present market patterns. The business approach of companies is to maximise visits to petrol stations and to maximize petrol consumption. This needs to be reversed which requires a new approach to business. It is necessary to combine a good business reputation of reducing GHG emissions with company activities and actions. In an energy constrained world, energy efficiency becomes a key component of competitiveness. At the same time, companies will also try to avoid unnecessary costs, including those relating to additional complexity and administrative costs. There is a need for mechanisms to help reduce or cover such costs and monetise emissions savings.

In conclusion, it is the case that current energy efficiency programs are inflexible and complicated and do not wholly allow the market to drive savings. This results in higher risk profiles and therefore higher IRR thresholds. Current regulatory approach is mainly based on sticks which has reduced the political appetite to strengthen signals. It is important to have not only "sticks" but also opportunities to allow business to pick up carrots. Businesses need more mechanisms to allow monetisation of domestic emissions reductions from more energy efficient consumption.

Discussion

A participant queried the use of AAUs for investors. Buyers are looking for compliance to the EU ETS NAPs. They are looking for EUAs, as well as ERUs and AAUs which could be converted to EUAs for governmental compliance. Presently this system does not work, but might work later.

Some discussion focused on additionality. One question related to whether projects with short pay-back-periods would be additional? If a country does not have a technology to transfer, the project is recognised as additional. Another question related to how a changing baseline might affect additionality. For example, Ukrainian cement plants have started using coal because of high gas prices. So now coal consumption will form the baseline instead of gas. The rules of additionality are stipulated in the Marrakech Accords.

Afternoon Session

The afternoon session involved brainstorming in two parallel breakout groups followed by plenary discussions. One group discussed post-Kyoto regimes, with a focus on those which could deliver most energy-efficiency benefits for CEE. Another group focused on designing Green Investment Scheme architectures which could capture the energy efficiency potential of the building sector.

Group 1 explored how the Kyoto flexible mechanisms could better deliver energy efficiency improvements in buildings. The group mentioned discussed GIS and opportunities in the building sector to a considerable extent. The group was unclear whether the "magic" tool delivering energy efficiency in buildings would be GIS or another policy architecture. The group concluded that the best areas where EU ETS and CDM would be leveraged are transport and energy-efficiency. There is a problem of double counting through both the Kyoto flexible mechanisms and EU ETS which needs to be addressed. Strong lobbies are presently on the side of the EU ETS mechanism because it is a mandatory tool. This reduces the attention paid to JI and this could also be the case for GIS. The numerous benefits to be had from installing insulation in buildings justify its importance to be included on the list of GIS priority projects. As it is difficult to know where IET revenues go to, buyers might be interested in the reliability of the GIS mechanism. Countries should also take steps to ensure that "hot air" is not green-washed through intermediaries and it is really linked to investments in energy efficiency.

Group 2 considered realistic outcomes of post-Kyoto negotiations and estimated their likelihood according to a 10-point scale. The group concluded that it is almost certain that countries such as China, India, USA, and Australia will reject new targets (10/10). At the same time, there is some probability that countries such as Canada would leave Annex-I of the Kyoto Protocol due to high targets and therefore high costs of Kyoto compliance but also because of weak or non-existent efforts of other important countries like China or USA (2/10).

The group also agreed that voluntary dual targets might exist (0-6/10). With voluntary targets a country could sell an excess of allowances if it meets its target. Such an approach could work for non-Annex-I countries like China and India. At the same time, voluntary targets suffer the attitude problem: for some countries "voluntary" means almost mandatory and for others it means nothing. Also some countries may be given almost business-as-usual targets and this might upset other countries.

The group also considered technology-based approaches. These approaches include bilateral agreements such as the agreement between large car manufacturers and the European Commission to improve fuel efficiency (10/10). Alternatively, an approach setting sectoral targets (e.g. for aviation) could also work (8/10).

Countries could also use a trade policy and, for instance, introduce a carbon tariff to reduce competitiveness of imports (7/10). Additionally, this architecture can encourage participation and "carbon price inlands" through the World Trade Organization (10/10). The next alternative is repetition of the pre-2012 Kyoto regime keeping the same flexible mechanisms and local carbon trading such as provided through the EU ETS (9/10). Finally, the option of "nothing, no actions" was estimated with zero probability (0/10).

The group also agreed that it is likely that the arrangements for the post-Kyoto regime will not be set until 2011 or so. The group thought that if Russia would leave the Kyoto Protocol, there would be a 50% that there would not be any climate regime, therefore no

JI. In this case, EU would negotiate a new EU scheme, but it would be difficult to get countries to agree with it.

The key conclusions are that the EU influence remains strong. No global binding agreement can work. However, sectoral targets and technology standards can be efficient. JI is likely to stay in some kind of form with "wealthy" Europe continuing investments.