A Smart EU Energy Policy

The Green Package in relation to the internal energy market design and the 2nd Strategic Energy Review

Workshop organised by the Clingendael International Energy Programme in collaboration with the Loyola de Palacio Chair, Robert Schuman Center for Advanced Studies European University Institute, Fondazione ENI Enrico Mattei and Wilton Park Conferences

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Summary and Conclusions

The Smart EU Energy Policy workshops look at the European energy package from three angles, investigating possible inconsistencies and developing proposals to increase effectiveness. Four workshops, organized by the Loyola de Palacio chair at the European University Institute in Florence, the Fondazionre Eni Enrico Mattei in Milan, Wilton Park in the UK and the Clingendael International Energy programme (CIEP) in the Netherlands investigate the three angles of European energy policy. Competitiveness (the third package) and sustainability (the green package) set a next step in 2007-8. The Commission has also taken an initiative to improve security of supply, but this is yet an ongoing debate.

The first workshop has been held in April and considered integration from the competition viewpoint. Now we have the second one, organized by CIEP, looking from sustainability to the other aims. In September we will meet in Milan and start our investigation with security of supply. The final workshop will be organized in December in the UK and will discuss the outcomes with policy makers and deliver input to the new Commission.

Session 1: The RES-Directive and the Efficiency Programs

The first session looked at the overall sustainability package in two parts. Of the three green targets, the CO2 reduction with 20% is the strongest as it has a financial penalty of 100 Euro/ton CO2 in case of not achieving the target. The 20% renewable target is binding but without penalty, the 20% efficiency improvement target is not binding. The renewable target might lead to some 35% renewable power (incl. large-scale hydro) and will benefit from priority access to the grid. Transnational trade is subject to strong conditions, which might be suboptimal (this comes back in the second part). Looking at the grids, the renewable target raises two questions: the impact of offshore wind in the North Sea/Baltic area and CSP in North Africa. Denmark shows that a higher share of wind power can be managed, but this is due to strong interconnection that is not available elsewhere. Texas offers a good example of how such

a situation has been solved elsewhere. CSP might be another stimulus for a new European back bone grid.

Renewable and efficiency ambitions have an important industrial policy aspect. At first sight this is more evident for renewable energy, which brings immediate employment in exchange for national subsidies. But energy efficiency also needs local skilled jobs and it might be that the Danish and German renewable industry experiences are more exception than the rule. It could be argued that it makes more sense to import gas from Northern Africa than to import electricity as gas is increasingly consumed nationally. However, only Europe will be prepared to pay the higher CSP prices and Northern African countries are not prepared to export substantially more gas. A European smart Super Grid will only develop by means of strong regulatory intervention and a clear insight into who will benefit (and accepts to pay) and which impacts on prices may be expected (because those who have to pay more without benefits will try to block progress). This is no easy job.

The second part of the first session looked at national experiences with renewable energy policy, and effectiveness and efficiency of different instruments. Although the EU has triggered progress with regard to renewables, the real activities have been national. The first wave (1989-91) has been led by Denmark, the second (1993-2001) by Germany and after an intermezzo in which Spain showed the largest increase, growth did spread to a couple of other countries as well. In 1997-2007 we observed impressive growth in both renewable power (from 1.4 to 5.2%), heat (from 9 to 11%) and biofuels (from 0.2 to 2%). To answer the question which instrument fits best depends on the exact policy objective (e.g. short or long-term target, whether trade is allowed or not due to industrial ambitions). Looking at effectiveness and efficiency criteria the first impression is that feed-in tariffs have delivered more against lower costs than quota. However, some convergence of these instruments takes place, with 'banding' of the quota, and premium systems instead of full feed-in tariffs. Countries generally are suspicious of high producer surpluses – often coined windfall profits – although it might be argued that they sometimes play a useful role in stimulating new approaches. Combating non-economic barriers by means of e.g. adequate spatial planning might be a useful approach to diminish unnecessary surpluses. Countries might also benefit from a clever combination of specialization in some types of renewables but not neglecting too many other options.

Session 2: The role of RES and Energy Markets

The second session looked at the role of trade in renewable power. Trade is possible because of the existence of two separate markets: the market of electricity and that of Guarantees of Origin which are a proof of the origin of the source. Guarantees of Origin are issued (production), registered and cancelled (on behalf of the user). The European Commission had proposed a system in which international trading would be possible but member countries could opt-out if they were against the idea. The final decision was the other way around: no trading allowed but possibility for opt-in. Guarantees of Origin are not used for target counting, but for disclosure only. However, the possibility of Joint Projects in different countries still exist that could be useful if standardization of different projects is possible. The final decision also includes a review clause: progress, pros and cons of trading will be looked at in 2013. As differences in marginal costs of larger shares of renewable energy will tend to increase, this review makes much sense from an economic point of view. It still is a fundamental question

what the driving forces for renewable energy are: if they are mainly national industrial policies it will take some time before a real common approach is possible; if they are especially looking for cost-effective solutions progress might be quicker. This debate is still open.

Session 3: The role of biomass and imports into the EU market for supply security

The third session dealt rather extensively with the role of biomass for the EU energy system, looking at the global potential for bio-energy, the possibilities for bio-energy deployment in Europe, the role of international biomass markets and certification, and finally the requirements for policy and governance in order to guide these developments.

First of all, the case is made for the large potential of energy derived from biomass. Common misperceptions about the role of bio-energy are based on the following (debatable) assumptions: land and water availability constrain bio-energy to marginal levels, endless subsidies are needed to make bio-energy commercially attractive and other alternatives are more sustainable and have a better GHG balance. One of the most important critiques is that large-scale bio-energy deployment is a threat for food security and the price hike of international food prices in 2008 has been caused to a large extent by increasing biomass production for energy. Yet it is argued that research results on this correlation have not been very convincing and political issues play a role in the debate.

Certainly, population growth and increasing welfare levels are driving up food demand and putting up pressure on land use. Crucially, agriculture and poverty are very much interlinked: 70 percent of the world's poor are situated in rural areas, often leading to low agricultural productivity and inefficient/unsustainable land use. Moreover, subsistence farming and fuel wood collection also attribute more than 70 percent to greenhouse gas emissions deriving from land use change—an emissions sector larger than global transportation. Regarding the main sectors of emissions (energy supply, transport, buildings, industry, agriculture, forestry and waste) bio-energy can—and will have to—play a role in all of them. In the end, successfully addressing the energy and climate change challenge can only be done by deploying a portfolio of all options available, *including bio-energy*.

Fortunately, the potential for bio-energy deployment is huge and does not need to clash with food production requirements. Modeling shows that in a hypothetical optimal case with highly efficient land use globally, the bio-energy production in 2050 could be 1545 EJ, almost four times the current world energy demand, taking into account future demand for food production. In particular, the use of current in-productive surface areas, accounting for 32 percent of total land area, could yield large benefits in combination with low-cost perennial crops. Of current crops, sugar cane and palm have high energy yields, but are expected to be surpassed by new energy grasses and second generation energy crops. In the supply projections, these yet-to-be commercially introduced second generation biofuels will quickly dominate the market, yielding much more energy at a lower price than current crops. One crucial technology is the production of ethanol from lingo-cellulosic biomass, for which major demonstration projects are underway in the U.S., Canada and the E.U. Another promising avenue is integrated gasification synfuel power generation fueled by biomass, which offers a relatively advantageous opportunity for the application of carbon capture and storage.

Overall, there is a large potential role for bio-energy, which might satisfy about one third of the future global energy demand in 2050. major energy deployments are seen more in the areas of liquid fuels than in power generation. In addition, large opportunities in feedstock-deployment exist as well. However, it all depends strongly on the following factors: improvement of agricultural management, choice of crops, food demands and human diet, use of degraded land and solving the competition for water. Most importantly, on a global level bio-energy development cannot be tackled separately from overall development and land use efficiency, given the link between poverty and agriculture.

For the EU, large opportunities also exist. Most interesting potentials for biomass production exist in Central and Eastern Europe (CEEC), which could be one of the main bio-energy supply centres in future. Agricultural capabilities are present and there is a unique policy umbrella. The RES Directive with its thrust on certification and second generation fuels is positive, but integration of EU policies between Transport and Energy, Agriculture, Environment and Trade will be necessary to harvest the full potential of bio-energy development in EU27.

Session 4: The role of non-RES and the need for an EU fuel mix policy

Within EU 27, there are major differences in the fuel mix. At the level of EU27 however there is at present and up to 2030 a balanced diversification over the various fossil and non-fossil energy sources. Focussing on regional levels, there are some interesting points to make. One regional market is far bigger than the rest: North-Western Europe (Benelux, France and Germany). This market is dominated by nuclear energy (50%). The 5 smaller markets have approximately the same magnitude. Of these markets, the United Kingdom and Ireland as well as Spain and Portugal are dominated by coal and gas. Eastern European countries markets are almost fully coal based. Italy, Austria and Switzerland together rely mostly on hydro and gas, whereas the Nordic countries have large shares for hydro and nuclear.

Europe is diverse not only with regard to the fuel mix used in its regional markets, but also in its national fuel mix policies. Most countries are lacking such a comprehensive policy despite some interesting results in the past. Germany is especially important in this respect, with its strong policy focus on renewable energy, but it lacks a clear policy on coal and on nuclear. This leaves member states less able to consider options for an overall EU fuel mix policy, putting that even in a formal way by exempting this aspect of energy policy making from the new Lisbon Treaty.

Currently the ETS is seen as the main instrument at EU level to influence the power market. If the ETS does not have the desired impact on adjusting fuel mixes towards a comprehensive low-carbon energy system and when there is still considered to have too little scope for improvement, an alternative may be sought at the national or regional level. If top-down policies will not work, more bottom-type of approaches would be more effective. Approaching this at regional levels might be a solution, as some interesting developments are already occurring in integrating cross-border electricity markets in the EU. The so-called concept of market coupling is an example of this, where Germany, France and the Benelux countries are cooperating. Market coupling in the region has already resulted in lower, comparable prices. Further market coupling within the region and with the UK and the Nordic countries is expected in the nearby future. These regional developments favour for instance the development of an

offshore wind grid in the North Sea and could lead to a further and well-balanced fuel mix for electricity generation.

It can also be argued that there is an implicit EU-policy to encourage a switch from coal to gas. As Eastern European countries depend heavily on coal, even close to fully in the case of Poland, the "coal-to-gas odyssee" could create an exceptional problem to regional security of supply, as exemplified by the January 2009 gas crisis. What could help would be better gas network interconnectivity, especially at regional levels. In terms of infrastructure and technologies a successful transition from the Soviet electricity system to the European one was already achieved in the 1990s under UCTE leadership. The gas system would benefit from a similar 15 years programme, hence allowing a more diversified and stable role of gas in regional fuel mixes.

A comprehensive fuel mix policy, accepting gas as a fuel of consequence as alternatives for gas-to-power remain in uncertain policy domains, has consequences for the EU's external supply security. We will have to accept our reliance on 1 or 2 major producers, and in order to maintain stable and steady gas flows, they would need clear indications of the amounts of gas to be imported. Without such security-of-demand, Russia for instance will not make the huge investments needed to produce for and transport the gas to the European market. A clear cut commitment and assurances are needed from European power generators. This also means clear and stable policies on the fuel mix, with the necessary incentives to market parties to orientate their business strategies.

Overall, it seems regional fuel mix approaches would be more effective than one EU fuel mix policy. As liberalization has strengthened consolidation of Europe's power generators, their role will increase and their cross-border activities have strong regional dimensions. They cannot, however, do more than is allowed by members states, especially in the case of nuclear energy. It would be useful therefore to start discussions in the wider EU framework on how to approach national and regional fuel mix policies for the future.

Session 5: The interaction of ETS with the internal electricity market, its designs and regulatory frameworks and its impact on level playing fields in energy markets

After 1996 a new paradigm emphasised the importance of one integrated, competitive EU electricity market. The fuel mix would be decided by the preferences of consumers and producers. The market mechanism would decide on quantities and prices. An EU wide legal framework for market design was put in place, with national implementation of market rules, limiting day-to-day policy interventions and ample room for market forces.

Meeting concerns of climate change and limiting carbon emissions, the EU wide cap-and-trade ETS was designed and accepted as a market-based policy, consistent with this new paradigm. While there were policy alternatives such as a carbon tax and technology norms, ETS was and still is considered to be the most effective and efficient option. Implementing ETS and designing it for the post 2012 era, multiple problems and challenges are on the table. The external trade question when EU industrial competitors are not subject to carbon restraints, issues around windfall profits for non-carbon emitting power generators, stability and predictability of CO2 prices, in order to justify new investments in low-carbon options. Based on

these and other issues it could be argued that ETS alone will not make the necessary transitions to a low carbon future.

ETS therefore will have to be approached in a somewhat wider context. Technological innovation in the field of renewable energy, CCS and nuclear power, as well as effective energy efficiency policies are needed. An ETS with no clear longer term road map on carbon prices and on the market values for emission allowances. Accepting political requirements for making important exemptions through and within ETS-sectors are also preventing ETS to adequately deliver. Market-based approaches therefore could probably not give the full answer and regulatory approaches such as emission performance standards for large sources could be considered as bottom-up instruments to be added to the basically top down approaches of a cap-and-trade system.

The power sector itself is indicating several requirements for the post 2012 ETS, during which the cap on emissions and allowances will steadily decrease, increasing the value and the price of allowances. First of all strong and long-term price signals are needed, because investments in the power sector are based on long-term price estimations. Secondly, a cap needs to be defined beyond 2020, as price signals beyond 2020 are crucial for today's investment decisions. Thirdly a trajectory of emissions between 2013 and 2020 needs to be defined. Uncertainties about the trajectory of emissions until the results of the Copenhagen negotiations may hamper investments. Furthermore, price transparency would be key, limiting market distortions and price volatility, enhancing therefore reasonable certainty and stability. Harmonized approaches for the auctioning designs and process would greatly facilitate an EU level playing field for ETS and add to its abilities.

Session 6: Three strikes and out?
ACER and the Ends, Means and Limits of Regulatory Coordination

The sixth session discussed the role of energy regulators in the European context, historical developments and prospects, and the role of the E.U. Agency for the Cooperation of Energy Regulators (ACER) in particular.

Parallel to the development of an internal E.U.-broad energy market, the design of the regulatory environment has gone through several stages. The first stage was marked by the heterogeneous implementation of the 1996 Directive and the establishment of National Regulatory Authorities (NRAs), which could voluntarily join the Council of European Energy Regulators (CEER) that was created in 2000. This forum, based on an *exclusive* regulatory network model, was the first step in the direction of a body for European inter-NRA coordination. It was followed up by a second stage in which the European Regulators' Group for Electricity and Gas (ERGEG) was created: a consultative organ, based on an *inclusive* regulatory network model. While this offered a platform for all players that wished to move forward, decision making was based on a consensus model, watering down its effectiveness. Hopes are now put at the third 'strike', which should resolve lingering problems by the establishment of an Agency for the Cooperation of Energy Regulators (ACER).

ACER will consist of a Board of Regulators with decision making competence and NRA/MS mandates, ruled by a two-third majority vote system. For the sake of continuity, the

Board of Regulators would have the same composition as the present ERGEG. A separate ACER Administrative Board will have planning and monitoring responsibilities and comprise of 9 members with 4-6 year terms, 2 appointed by the Commission, 2 by the European Parliament and five by the Council. The Agency's Director functions as the legal representative of ACER, also being appointed on a 5 year term. The Agency's Director will be appointed by the Administrative Board, proposed from a short-list created by the Commission, and ex ante accepted by the Regulatory Board. A separate and independent Board of Appeal will review ACER's rulings and consist of six members. Finally, staffing will have to be made available for 48 fte in addition to seconded NRA staff. Essentially, ACER will have to draw heavily on NRA resources in order to do its job.

ACER's job would consist of providing a framework for national regulators to cooperate, much in the same vein as ERGEG and CEER did previously. This would entail regulatory oversight on the cooperation between transmission system operators (TSOs), i.e. monitoring of the two ENTSO's, and wielding decision making powers on cross-border trade issues. As ACER's formal role and mandate is legally limited by Treaty provisions, it could, despite its shortcomings, fulfill a unique role in resolving multi-lateral issues. Apart from vertical coordination among ACER and the National and Regional Regulatory Authorities, ACER could also be well-suited to enhance horizontal coordination along E.U. agencies/regulators in other sectors affecting energy operations, such as Environment, Competition and Research. Carbon capture and storage infrastructure could be such a prime issue in which ACER could have a unique and complementary role in coordinating regulation.

The nascent European regulatory environment has offered chances for industry to influence matters, as there is a clear early-mover's advantage. In recognition of this, TSO's have founded already a European Network of Transmission System Operators for Electricity (ENTSO-E) in December 2008 and started working on several technical issues (e.g. grid codes), making proposals for regulatory implementation. The future interaction between ACER and ENTSO-E, which is currently gaining a head-start, will be a key factor in shaping European regulation. An effectively operational ENTSO-E clearly has already advantages on ACER, that is still awaiting final implementing decision making on crucial aspects, such as its leadership and siting.

For the effective functioning of the proposed ACER, the behaviour of the underlying NRAs will be of crucial importance. Possible outcomes have been analysed on the basis of a model incorporating three different 'types' of NRAs: the "Good", i.e. regulators with an interest in low household/industry prices; the "Bad", i.e. regulators with an interest in low household/industry prices as well as producer surpluses (to a certain extent); and the "Ugly", i.e. regulators with an interest in promoting national champions. In the proposed decentralized regulatory model, ACER will only function with side-payments for the "Bad"; yet ACER has no capacity to enforce such side-payments. For the situation under discussion, this implies that ACER will still be very much dependent on a core of benevolent ("Good") NRAs to implement successful policy.

Concluding remarks

In wrapping-up, some notions were expressed that could be considered as useful inputs into the overall reporting on the project:

1. On renewable energy sources (RES), four issues could be mentioned:
   - There is a need to address new business models for TSO's, with its impacts on policy and regulatory agenda's.
   - The policies of "feed-in-tariffs" could generally be considered as success-stories, but some final "wait-and-see" views are expressed as well.
   - The development of a "green market" for electricity, such as Guarantee of Origin systems and Renewable Energy certification, is loaded with uncertainties and could be further explored.
   - There are huge potentials within the EU for the deployment of bio-energy and biofuels but a integrated policy is necessary linking agriculture, trade, energy and environment. The European policy umbrella on agriculture could be a strong advantage in promoting bio-energy.
2. On fuel mix, an EU-vision and strategy seems appropriate, but questions are raised about the viability of an overall EU-policy. Since many member states lack comprehensive policies on their national fuel mix, an integrated EU-policy seems to be out of reach. Looking at developments within national energy systems however, the role of natural gas seems to remain/become a key element.
3. On the Emissions Trading System (ETS), the point of no return has been passed, but ore clarity is needed for the post 2012 longer term framework. Especially from industry there is the message that ETS in its current form is insufficient to drive an energy transition and change the fuel mix in Europe. ETS as such is necessary but not sufficient as complementing policies would be needed such as a system of EPS (Emission Performance Standards).
4. On the European Agency for the Cooperation of Energy Regulators (ACER), the basic structure has been defined, although some question marks still remain. One of the key observations is that the successful implementation will strongly depend on the "regulatory behaviour" and cooperativeness of National Regulatory Authorities (NRAs). Second, the TSOs are quite active in using their early-mover's advantage to influence regulation through the European Network of Transmission System Operators for Electricity (ENTSO-E), established in December 2008.
5. On regional issues, more focus and attention on the development of regional markets seems to be necessary, including effective EU mechanisms on assuring coherence and consistency.

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