Reflections on a Common European Energy Policy

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Abstract

This document provides some 'reflections' on a Common European Energy Policy, made by the *European Energy Institute* Academic Council. After having been communicated to the European Commission, these 'reflections' are now published in the EEI's Journal, *European Review of Energy Markets*. Towards the end of 2006, the EEI will finalize its 'opinion' on a Common European Energy Policy.

This 'reflection' document is organized in four parts. In a first Section, we offer considerations on the *desirability of a Common European Energy Policy (CEEP)*, and start doing this by questioning the need for it, so as to be able to clearly identify the boundary conditions of such policy. Next, in Section 2, we offer some general guidelines to be kept in mind before defining a European energy policy. Before then moving to a practical implementation of a CEEP, a *general framework and structure* is offered to situate the Common European Energy Policy in a broader context of vision and strategy. This is done in Section 3. Finally, the fourth section offers ideas for a *practical implementation* of a Common European Energy Policy.

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1. Is there a need for a European energy policy?

Up till now, outlining and implementing energy policy has mainly been the prerogative of the Member States (MS). National energy policies have paid little attention to a common strategic and comprehensive European background. A notable exception is the ongoing process towards an integrated European market for "grid-based" energy carriers, electricity and gas, although the real driving force for this has been the overall European common market paradigm, related to economic competition within the EU[3] (much the same as the communications market, and now also for postal services, railway transport, etc., in general referred to as network economies), rather than to more specific energy-related elements. Regardless of its original intention[4], the common electricity and gas markets are becoming a fact of life and have to be considered as a firm boundary condition for a European energy policy.

A fundamental question to be addressed first is whether there is a need for extending the European energy policy to areas beyond the Directives for common electricity & gas markets[5], as mentioned above. Only in case of a positive answer, is it meaningful to provide ideas on its development and implementation. Furthermore, the following questions deserve a response before launching into a CEEP. Has something been lacking so far, no CEEP being in place? What goes wrong or is less efficient without such a common energy policy? A positive way of addressing the same question is to find out '*what would be the added value of a Common European Energy Policy*?

It is a healthy principle in all organized societies (country groupings, countries, and every other 'organization') that decisions should be made at that level where it can be done *most efficiently and effectively* such that the outcome of the actions is *optimal* (in the broad sense that the best use is made of all resources, everywhere and both in the short term and in the long run).

[3] In most cases in this document, 'EU' is meant to include the states belonging to the European Economic Agreement (EEA), which includes Norway, Iceland and Lichtenstein. See e.g. http://europa.eu.int/comm/external_relations/norway/intro .

[4] But *energy* (especially electric energy) is a very special "commodity" which, despite being subject to a market, deserves a special treatment. Security of supply, in the short, medium and long term, is a major reason which is not that relevant in the markets for most other commodities. Other issues, like environmental implications and a minimum equity in universal access, are other special characteristics of energy provision.

[5] See the initial 1996 Directive concerning common rules of the internal market in electricity (96/92/EC) as recently amended by 2003/54/EC (European Union, 1996), plus Regulation EC No. 1228/2003 on conditions for access to the network for cross-border exchanges in electricity (European Union 2003b).

This subsidiarity[6] philosophy applies to the EU level; the national MS level; country regions/Länder/provinces; counties; municipalities. A CEEP must respect subsidiarity and should only cover domains where a common *central policy is justified and necessary to defend public interest of the whole union (and even broader, of society world wide).*

Establishing a CEEP implies enlarging the EU's competences in certain aspects of energy provision[7]. Such enlarging should be evaluated on the basis of a *cost-benefit analysis* comparing a CEEP versus subsidiarity-oriented approaches by MS, taking into account 'security, adequacy and reliability of supply' and costs of environmental burdens.

Intuitively, a CEEP appears defendable, if not 'required'[8], if it is centered on the following two elements:

1. *get rid of and prevent 'individual-country failures' (in the sense of 'market failures');*
2. *take advantage of economies of scale and scope.*

1.1. Avoid 'individual-country failures'

Similarly to 'market failures', so-called *'individual-country failures'* arise from the fact that actions of one EU Member State (MS) negatively affect 'the welfare' of other MS, without proper compensation. I.e., if 'individual-country failures' exist, the overall EU energy market cannot function in an optimal configuration, leading to an 'inefficient' EU situation.

An important contribution of a CEEP should be to better *coordinate* and *make compatible (or even harmonize) policies* across the MS, improving also the *stability of the regulatory framework*, being essential for investments.

[6] Art. 5 TEC on subsidiarity stipulates that for "areas which do not fall within its exclusive competence, the Community shall take action, in accordance with the principle of subsidiarity, only if and in so far as the objectives of the proposed actions cannot be sufficiently achieved by member states and can therefore, by reason of the scale or effects of the proposed action, be better achieved by the Community. Any action by the Community shall not go beyond what is necessary to achieve the objectives of the Treaty".

[7] With 'energy provision' we mean effectively the overall energy issue, i.e. it includes both the supply side and the demand side.

[8] In the sense that not implementing it, would be a missed opportunity for the EU.

Typical 'individual-country failures', to be prevented by a CEEP could be:

i. Imperfect competition;
ii. Bilateral negotiations by MS with non-European energy-export countries;
iii. Negative externalities;
iv. Inappropriate use of public goods.

These elements are now considered.[9]

i. Imperfect competition in the energy area within the EU.

The abuse of dominance by one or more market players in the energy market, in particular countries, is to be avoided. This relates to state-owned companies, state aid, or state-colored regulation that would favor 'own' companies.

For a common EU market for electric energy and gas, this aspect of a CEEP is currently in progress through the Directives on electricity and gas [1]. Further implementation of these directives, along the intended lines is necessary. For other energy carriers, the rules of 'normal trade' apply and this falls under the usual competences of the EU for fair intra-EU competition.

Appropriate rules and regulations for cross-border trade of electric energy and gas are to be agreed upon. *To some extent, the Regulation on Cross-Border Exchanges [2] takes care of this issue provided the Comitology process is able to deliver guidelines in due time which can also be implemented by the concerned parties. Should this not be the case, then further Regulation could be 'necessary'.*

Better coordination of European wide system operation and network planning should be strived for. Especially issues like authorization for building/operating new infrastructure should be part (or a consequence) of a CEEP, as one would otherwise remain in the current situation with insufficient interconnection capacities, and, e.g., major RES[10] development without adequate network infrastructure in due time.

This is currently attempted by Associations of market players (ETSO, GIE, EFET …) on the one hand, and Regulators (CEER and ERGEG), on the other hand, but

[9] In this delineation, statements are made in regular print; *comments or explanations are provided in italic*.
[10] RES = Renewable energy sources

most of the time on a voluntary basis. It must be reflected upon whether a differently (more enforced) structured consultation is desirable. However, not more 'red tape' is called for; it only makes sense if this would improve the functioning of the energy market.

Harmonization of the underlying rules that influence energy costs, such as taxes and subsidies (direct on indirect) and (environmental and other) regulations for investments (including RES support schemes and cross-border infrastructure) is called for.

This is a largely unplowed terrain, but is nevertheless important. Amongst others, support schemes for primary energy sources and particular technologies (renewables, CHP, coal,…) should be made more compatible or better harmonized on a European scale.

ii. Individual negotiations with energy exporters outside Europe

(especially OPEC, Gasprom …).

This type of bilateral agreements might lead to a market distortion for other MS.

There is a need for a EU common vision and implementation strategy, similar to avoiding individual protectionism behavior. This requires 'solidarity' as well as 'vision' on the European level, also under difficult circumstances (and crisis situations). This common negotiations issue will be revisited below under the "pooling of resources" aspect.

iii. Negative externalities[11]

Often, negative externalities are environmentally related: clean air & pollution, climate change, radio-active discharges & waste …). Clearly, the energy mix of one country could have effects on other countries (especially if e.g., coal or nuclear is used).

- **climate change & clean air**

On climate change, the EU is acting largely as one block. It is important to keep one line in Kyoto implementation and post-Kyoto negotiations. The EU should strive to draw-in other blocks such as the US and developing countries to accept some kind of cap on GHG emissions. The principle of bubble within the EU is to be applauded, as it intends to reflect GHG abatement at an equi-marginal cost. Furthermore, the European ETS[12] [3] initiative is seen as very positive.

[11] In principle, a 'similar' reasoning could be developed (at least in principle) for positive externalities.
[12] ETS = Emission Trading Scheme

On clean air issues, EU regulations are becoming more and more established. A common approach and vision seems to exist. [4]

For both, climate-change and clean-air issues, the common EU policy needs to look simultaneously at environmental, energetic and economic aspects so as to strive for the 'most optimal' overall outcome.

- **protection against ionizing radiation & nuclear-safety aspects**

Common minimum standards and norms have been set for protection against ionizing radiation [5] and are in the process of being set for EU-wide nuclear safety standards [6].

The issues raised so far under heading iii are part of a European (energy-related) Environmental Policy. A good coordination between the Commission's services for 'energy policy' and 'energy-related environmental policy' is called for.

A further 'negative-externality' issue are the negative cross-border effects due to unpredicted power flows; i.e., forced 'equilibrium adjustment' due to actions in other MS (as e.g., balancing due to massive wind-power fluctuations, but also non-contracted flows).

Strict EU regulation is needed here to avoid decreasing the reliability of the power system and hampering of cross-border transmission capacity for trade, as well as to foresee adequate compensation. Otherwise, MS may be tempted to enforce rules increasing their import/export transmission capacity so as to favor their local market or policies. Such situation could induce neighboring TSOs installing flow control devices such as phase-shifting transformers or more advanced FACTS devices to protect the reliability of their power system.

iv. Inappropriate use of public goods

The inappropriate use of public goods by some MS to the 'detriment' of other MS, falls to some extent under what we called 'negative externalities' above. We mention here that one should guarantee an appropriate abatement of climate change, air pollution etc.

As explained above, these issues are to be taken care of in the Environmental Policy of the EU (preferentially after consultation with the energy-related decision makers and actors, and in strong accord with the EEP).

1.2. Take advantage of economies of scale and scope

By pooling resources, a common EU-wide approach will be advantageous to all MS. The weight of the EU as a whole, as a major economic block, and as a de-facto (albeit sometime 'fragile') political entity, should also be exploited in the context of a CEEP, to the maximum benefit of all MS.

Typical issues of 'economies of scale and scope' to be dealt with for a CEEP are (but not limited to):

i. Strategic security of supply;
ii. Nuclear-energy-related issues;
iii. Energy-related research & development;
iv. Cross border infrastructure and capital-intensive facilities.

These issues are now considered.

i. Strategic security of supply in terms of primary fuels.

The EU should use its economic 'weight' to negotiate as one block (or at least to supervise) EU-wide 'appropriate' commercial deals (with guarantees on a secure supply at reasonable prices) on the primary world-energy market mainly controlled by oil & gas exporting countries. This applies to the fuels as well as to transport infrastructure. The MS should avoid bilateral deals without EU-wide consultation and consent (through the EC bodies).

The EU should use one foreign policy when dealing with energy exporting countries (Middle East, Russian Federation, Iran…) or large energy-consuming countries (USA, China, India …). This is a touchy subject, but it is part of daily reality. The idea is similar to above: avoid being split up into divided and internally 'economically competing' entities, played out against each other, guided by political motives.

The EU should organize and coordinate the setting up of common fuel-storage infrastructure to guarantee a minimum of strategic reserves (especially for gas, but also for oil; this seems less important for coal and uranium, although one could think about it).[13] The use of this common fuel storage by one or more MS should be part of the EU policy.

[13] Clearly, this effort must be related to, or harmonized with, the IEA guidelines to have a minimum of strategic reserves.

ii. Nuclear-energy

The EU should consider the set up of a limited number of nuclear waste management facilities (especially repositories), to keep waste management affordable.

The principle remains that the waste management is to be paid for by the producer of it, but it does not make sense to have 25 repositories, large and small. (The logic to burry waste nationally makes little sense; e.g., why not per province or 'Land', or even per county or municipality?)

The EU should consider the set up of common enrichment/reprocessing facilities and at the same time guarantee a strict control on proliferation issues (cfr. safeguards and Euratom).

The EU should consider establishing a European wide insurance fund, fed by nuclear generators (in proportion to installed nuclear capacity). Such fund could be managed by a nuclear generator's association and should act as a complement to the limited nuclear liability of individual nuclear generators and at the same time limit public-money spending from tax-payer's money.

iii. Energy-related Research & Development

Although this is not specific to only 'energy', the EU should favor EU-wide energy R&D to set up large experiments or to favor extensive R&D interaction. A typical example of joint action is 'nuclear-fusion research', but others could be innovative RES, large-scale meteorological research for wind energy, CO_2-capture and demonstration facilities etc.

This issue is part of a European Energy Research Policy. Reflections to define a common European Energy Research Policy are underway [7], [8]. Implementation of those ideas is needed. Furthermore, better coordination between the Commission's services for 'energy policy' and 'energy-research policy' is desirable.

iv. Cross-border infrastructure and major capital intensive facilities in a regulated environment

The EU should take the initiative for cross-border energy transport infrastructure or for large facilities located somewhere, but under joint ownership by the EU MS.

The issue here is again oil & gas pipelines, but also (innovative) high voltage connections different from existing technologies, perhaps future capital-intensive facilities (e.g., superconducting storage ring, space-based technologies, large water basins, underground facilities, etc), which would be too expensive for local consumers who would not be able to benefit from it.

2. General guidelines for the implementation of a CEEP

2.1. EU authorities should act as good housefathers and not regulate for the sake of regulation

The EU should carefully observe the evolutions of, and the behavior within, the energy markets. On the one hand, a healthy supervision is recommended to avoid commercially driven excesses, on the other hand, *the EEI advises against unnecessary intervention* in the electricity and gas market *leading to an incoherent regulation*. Because of the dynamics of the markets this last aspect may yield unexpected and unpleasant effects on the medium and long term, while maybe looking attractive on the short term.

2.2. Effective regulation and good policy rely on a long-term vision

The European authorities should outline the appropriate route towards a *sustainable energy provision*. The EEI advises the EU authorities to develop a *long-term strategy* that offers sufficient *regulatory stability* to all players, required for investments. The introduction or tolerating of all kinds of ad-hoc short-time measures such as (hidden or not) taxes or levies and (seemingly increasingly popular) price interventions is pernicious. The EU authorities must set course for a *coherent policy*, based on careful and high-quality (i.e., critically reviewed) *research and studies*, sufficiently ambitious, while remaining realistic. Once that (possibly difficult) course has been set, everybody is supposed to stick to it, subject to supervision of the EU authorities.

2.3. A long-term vision relies on correct cost-benefit or cost effectiveness analyses

The European energy policy should be founded on correctly evaluated *cost-benefit or cost-effectiveness analyses* for all options to secure the energy provision. These analyses should be considered from a broad viewpoint, *including external and/or shadow costs* (environmental burden, back-up cost, costs in grids) and an effective *risk premium for security of supply*. Also, for every major measure introduced, an *impact analysis* should be undertaken. This applies to the supply side, the demand side, and environmentally-related and market-oriented measures. *The EEI recommends the EU authorities to have the necessary simulation models developed towards that end.*

2.4. Commission services must operate in an interdisciplinary way for interdisciplinary problems

Sustainable energy provision, i.e., energy provision that is reliable, clean, affordable and that strives to achieve universal access, within the EU and abroad, is fundamentally *interdisciplinary* in nature. Consultation within the Commission services (and common decision making) is highly important. This applies in particular to energy use in the transportation sector linked to the mobility issue; energy use in industry & enterprises related to competition issues (also with extra-EU trade blocks); energy conversion consequences for the environment and vice versa; energy law and overall legal issues; and finally, strategic energy supply and international affairs and geopolitics. Also a common policy on energy-research issues between the responsible research DG and the Energy DG is highly recommended.

2.5. Support for particular energy conversion methods can be justified but in a well-thought through manner

Renewables and cogeneration should be supported, but in balanced way. Support should be justified by cost-benefit analyses, whereby all identified externalities should be accounted for. Appropriate distinction is to be made for security of supply in 'energy' terms (i.e., reducing our fuel dependency from energy exporting countries), adequacy of energy supply (i.e., sufficient conversion capacity — refineries, electric-power plants, gas vaporization plants for LNG) and grid stability in terms of continuous 'power' delivery (i.e., reducing blackouts). Rather than supporting mechanisms and setting

minimum quotas, the EEI recommends an appropriate 'taxing' of the burdens caused by all energy-conversion methods (i.e., some sort of internalization of the external costs for fossil-based, nuclear and also renewable plants/units).[14] Attention for the competitiveness of industrial actors (both in the energy sector and in the industrial energy users) is called for.

2.6. Liberalized markets require clear, transparent regulation and common sense

A stable and consistent regulatory framework for a European liberalized market is a precondition for its good functioning. This consistency needs to remain valid on all levels (EU level, MS, sub-regions of MS, etc). This assumes good legislation (to be checked by the Commission services), but also competent national regulators (ready to make constructive agreements with each other and with the market players). There is no immediate need for a European Regulator as such, but the national regulators should be supervised on the EU level, when dealing with questions that have directly or indirectly an EU impact (whether at the regional or full EU level).

2.7. Research & development is the key to our future energy provision

The EEI calls for a 'comprehensive' energy-research policy, dealing with energy-conversion technologies (supply and demand side) up to a complete systems integration, taking into account environmental and economic aspects. No energy-conversion technology should be excluded *a-priori*. Again future oriented cost-benefit analyses should help prioritize and guide the allocation of research money and effort (albeit that sufficient freedom is left for 'creative' and somewhat more daring thought). Public funding should be devoted to mid- to long-term research and systems integration; the short-term research should be left for the private players.

[14] Although internalization of these costs would cause a stiff increase in the price of energy within the EU, just paying for direct subsidies to renewables or cogeneration is less elegant. Granted, the latter would lead to far less implications on energy prices (because the subsidies are often paid for by the whole population or by particularly targeted groups). But if the EU accepts market *transparency* as a fundamental choice, it should consequently internalize all identifiable externalities. Indeed, the actual full social cost will not change because of a more open and transparent price-system, it is only a transfer from hidden shadow costs into market prices.

3. General framework and structure for defining a CEEP

An CEEP should be a management tool on a macro level, that figures in the following decision-making chain.

First, an analysis of the *current situation* ('as is') related to energy provision for Europe is to be made in a contrasting fashion (what is perceived to be 'bad' or 'lacking' and what is perceived as being 'good' or 'favorable' for the EU; in other words, what are our '*weaknesses*' and what are our '*strengths*'?)[15].

Second, the issuer of the policy (i.e., the EU Commissioner for Energy and in the end the EU Community triumvirate[16]) has to formulate an energy *vision* ('to be'): what should the energy future for Europe look like?

Third, the issuer of the policy paper must identify his/her corresponding *mission* (appropriately phased over the time horizon considered).

Fourth, to realize the energy vision, and in line with the mission, a set of strategic goals or objectives (as well as tools and approaches for measuring them) must de defined, taking into account the stretch between 'as is' and 'to be' for each issue defined[17].

Fifth, **the energy policy is the strategic road map to allow satisfying the goals & objectives**.

In addition, and at a yet finer level, further steps such as 'action plans' of 'tactics' can be formulated to implement the defined policy.

These five steps toward the genesis of a Common European Energy Policy are now made more explicit.

i. Analysis of the current energy situation in Europe

The weaknesses and strengths of Europe regarding the current energy-provision situation can be summarized as delineated in the following table (non exhaustive enumeration).

[15] One could consider this as part of a so-called SWOT analysis, to identify the 'strengths', the 'weaknesses', the 'opportunities' and the 'threats'. However for our purposes here, the 'SW'-part suffices.
[16] By 'EU Community triumvirate' we mean the EU Commission, the EU Parliament and the EU Council.
[17] So as to avoid setting goals that are not achievable in practice, before some other issues have been developed or corrected.

–	– ***Weaknesses (bad)***	– ***Strengths (good)***
– 1	Lack of conventional primary energy resources in EU	Member states master all energy technologies: 'Even if we do not have energy, we have know-how!'
– 2	*Oil* is a *monopolistic* world market with 2/3rd of the reserves situated in the politically unstable Middle-East	All technology is available to produce synthetic motor fuel out of EU resources (but at a higher price)
– 3	*Gas* becomes a *duopolistic* world market, 36% of reserves situated in Russia, and 36% in the Middle-East	Extensive pipeline network and storage facilities (that can be extended further if desired)
– 4	*Coal* is struggling with a low social acceptability for environmental reasons; USA has technological advance in clean coal use	Experience with Fischer-Tropsch synthesis[18] of motor fuel out of coal; experience with advanced electric power generation from coal
– 5	*Nuclear fission* of 2nd generation is not sustainable (recycling of Pu^{239} and U^{238} breeding are somehow necessary).	3rd generation nuclear fission plants are available. There are original ideas for 4th generation plants (gen iv [9], HTGR[19], or perhaps ADS[20], etc.)
– 6	*Nuclear fusion* is still a research project, 50-70 years away from commercial applications	ITER[21] will be built in the EU (Cadarache)

[18] The Fischer-Tropsch synthesis is a chemical synthesis process used for coal liquefaction, but also for gas-to-liquid conversion, so, the production of liquid engine fuels from coal or gas.
[19] HTGR = High Temperature Gas reactor, perhaps of the form *Pebble Bed*, or Gas *Turbine Modular Helium Reactor (GT-MHR)*
[20] ADS = Accelerator Driven Systems
[21] ITER = International Thermonuclear Experimental Reactor http://www.iter.org

– 7	*RES*[22] potential is depending on local geographic and climatic conditions	EU is world leader in wind power; HDR[23] research is promising and top-level research
– 8	Lack of *energy market* transparency and structure	Market experience is developing
– 9	Some identifiable *externalities* are not yet internalized	Thanks to the ExternE project [10] (initially in common with DOE), EU acquired top-world experience in externalities and full social cost

A broader analysis could be made including the different energy-consuming sectors: industry, transportation, service & commercial sector, residential sector.

ii. Europe's Energy vision

A EU *vision* for energy provision could be (similar to French & UK white paper/book):

"A reliable, affordable and socially acceptable energy supply to all citizens, compatible with future sustainability (that can become sustainable in the future)"

iii. The EU Commission's mission concerning energy provision

The following *mission* could e.g. be made explicit (to be defined by the Commission):

- To become the most energy-efficient region in the world (and define the method to measure it).

[22] RES = Renewable Energy Sources
[23] HDR = Hot Dry Rock (Granite); see http://www.soultz.net

- To realize a share of overall energy independency ≥ 50% (percentage that can be negotiated).

- To diversify the mix of primary energy sources imported in the EU and to diversify the supply patterns, so that cut of one source or one transport way[24] can no longer affect total primary energy supply of the EU as a whole by more than 5% during 6 months.

- To realize internal energy-market transparency and adequacy to promote energy convergence and GDP convergence within the EU.

iv. Strategic goals & objectives (strategy)

The strategy, expressed as overall goals and objectives, could be formulated as follows:

- To economically 'conquer' and to bring major energy market decision centers to the EU, and to oblige suppliers adopting the € as reference currency instead of the US$.

- To continue and accelerate technological innovation through top-world energy research and technological development in well-defined advanced energy technologies: nuclear fusion, nuclear advanced fission, wind generation, HDR , clean-coal use etc.

- To convince other world regions adopting Kyoto and Post-Kyoto agreements on GHG emissions

- To achieve a mobility share of at least 50% with dependable resources that cannot be cut off.

- To fix common criteria and methodology for judging about energy problems and solutions in the EU (e.g. uniform book keeping of energy stocks and flows; homogeneous energy reporting and energy statistics).

[24] E.g., pipeline out of service, blocking of strait of Hormuz, etc.

v. What is a Common European Energy Policy?

A Common European Energy Policy should thus be the *road map* for implementation of the *mission* concretized by the *strategic goals or objectives* set by the EU authorities towards the sort of energy future desired for the Union (i.e., to make the energy *vision* of the EU become a reality).

A CEEP must define measures for implementation, and as such, it must provide *'constraints or boundary conditions*', on the one hand, and '*incentive*', on the other hand, to satisfy the set strategic goals and objectives (as well as how to measure their achievement at EU and MS level).

These ideas will be translated into some practical suggestions in Section 4 below.

4. Practical elements for the implementation of a CEEP

In this section, some practical suggestions for implementation of a CEEP are provided. Some elements have already been mentioned above in the 'soul searching' exercise of Section 1 and in the guidelines of Section 2. In addition, some new possible road map routes are suggested.

4.1. Common market for electricity and gas; legal & regulatory affairs

- Guarantee that national legislation and regulation is compatible with the EU directives and regulations (also in 'spirit');

  - supervise **transposition** of legislation, and intervene and correct if deemed necessary;

  - do not change directives for the sake of changing, but do not hesitate to **adjust directives or regulations if deemed necessary** to close loopholes or correct imperfections.[25] Further **harmonization** of regulatory rules may be appropriate (network charges, taxes & subsidies, congestion management, decision-

[25] Reflections on regional mergers and acquisitions, and on minimum information transparency rules, are recommended.

making procedures concerning RES support schemes, cross-border network investments,…).

- Establish (e.g., licensing) procedures at the EU level that ensure that all technically and economically 'justified' (and environmentally 'acceptable') energy **network infrastructures** (including gas storage) will be built economically and on time, with the goal of attaining a sufficiently interconnected network in a prescribed time horizon. This applies even more for cross-border transport investments.

- establish a **clear framework for investors**. Some kind of **indicative planning** at EU level may be necessary which, without interfering with the functioning of the competitive market, results in the definition of the incentives and constraints that should supplement the Internal Energy Market in some kind of **normative approach**, so that there is a common (or at least consistent) purpose and target in these crucial energy matters beyond the merely nationally oriented approaches. Such normative approach[26] must be understood to be an indispensable tool to **harmonize** the otherwise inconsistent **measures** to achieve a sustainable energy model: **taxes, renewable targets, targets for emissions of greenhouse gases, limits to subsidies of domestic fuels, magnitude of effort in energy savings and efficiency**, etc. E.g., in the electricity market, a large volume of the presently existing generating capacity will need replacement shortly; it is therefore essential that the potential investors may have an indication of the long-term objectives of the EU regarding energy matters, such as the existence of a common strategy regarding nuclear energy, energy dependency or objectives of renewable penetration.

- assure better harmonization between national **regulators** and reflect upon a more stringent supervisory structure at EU level with decision power (especially for cross border issues taking into account practical issues facing TSOs).

[26] A normative approach, takes into account 'values' and 'interests'; it reflects a 'preferred' future; sometimes it is also called a 'prescriptive' approach, describing a pre-specified situation.

4.2. Harmonization of total EU energy market (beyond electricity & gas, and including the environment).

- **Compatibility**, or even better, **harmonization** of the underlying rules that influence energy costs, such as **taxes and subsidies** (direct on indirect) and (environmental and other) regulations for investments (including cross-border infrastructure) is called for. Amongst others, support schemes for primary energy sources and particular technologies (renewables, CHP, coal…) should be harmonized on a European scale.

- To find the right balance between prerogatives for national energy-related taxes and subsidies, and the need for EU-wide harmonized taxes and subsidies, a major **comprehensive study** (by neutral economists-scientists; Commission representatives and some MS representatives) to expose the impact of the different measures on the EU market. All types of taxes and subsidy mechanisms should be included in this study.

4.3. Security of supply and geopolitical energy matters

- The Commission should reflect carefully on its 'Advisory' role on the **EU fuel-mix diversification and security of supply**. It should act as a watch dog in this context and draw attention whenever deemed necessary. Official advisories should be published.

- The Commission should insist on common EU negotiations with energy exporting countries outside the EU or EEA. Avoid bilateral agreements.

- The Commission should take the same EU political line towards foreign governments; make sure not to be divided.

- The Commission should use Europe's diplomatic leverage to **influence the international scene**, directly or indirectly **linked to energy matters** must be reinforced.

The link between energy, environment and economic development is a global problem. Countries of the south need access to energy, which is basis for economic development. This, however, will strain the increasing world-energy demand even further. Also, all countries of the world have to protect the environment (including especially the Climate). More generally, there is a need for a stronger world regulation regarding not only climate change

but access to natural resources, security of supply, environmental regulation, prosecution of polluters, financial transparency, fight against crime and corruption. In these areas, Europe has a role to play because 25 countries share the same vision which clearly corresponds to the world perspective of sustainable development.

Europe has a very important diplomatic role toward the large energy consuming countries (United-States, China, India, and Brazil), the large oil and gas rich countries, the poorest developing countries threatened by high energy prices and climatic change.

4.4. Climate Change (actually EU energy-related Environmental Policy)

- Further develop the European **Emission Trading** Scheme (ETS) with strict monitoring of the national allocation plans. It must be assured that all sectors contribute 'fairly' (in the sense of lowest marginal abatement cost). One should reflect seriously on **auctioning of the allowances** as opposed to grandfathering. If auctioning is retained, it should be phased in over a sufficiently long period of time to allow adaptations.

- To ease the implementation of Joint-Implementation and Clean-Development-Mechanism projects, the EU should provide an administrative support vehicle.

- The EU must strive for an **ambitious but nevertheless realistic post-Kyoto cap on GHG**. It should try to draw in countries such as the USA and China, each with reasonable caps (e.g., reduction for the USA, while limiting the increase in China). If EU stands alone, it is recommended that the EU first does an **impact study**, to find out what a sole GHG cap for the EU would mean for international competitiveness.

- Good **coordination between the Commission's services** for 'energy policy' and 'energy-related environmental policy' is necessary.

4.5. Energy Efficiency

- Implement 'well-thought through' measures to **increase energy efficiency** and decrease energy demand.

- A major study should be undertaken to find out the effect of **high energy prices** on the economy (GDP).

A very important driver of energy demand that manifests (strong) negative elasticity is the energy price to the final consumer. Countries with the highest energy prices, like Japan, Switzerland, Denmark, etc., do not suffer at all from low incomes. On the contrary, they range between the countries with the highest incomes. There exists a positive regression of GDP to Energy Price. (The USA is a notable exception to this; it has low energy prices and still a very high GDP.) One of the priorities of DOE in the USA is "to study the impact of high energy prices on American economy". High prices are pushing to dematerialization and higher added value. Such a study seems to be of strategic importance for the future of the EU, and the conclusions should be implemented in EU energy-policy. If the conclusions confirm aforementioned statements, they should become the basis of future EU energy-policy.

4.6. Energy-related Research & Development

- A **'comprehensive' energy-research policy**, dealing with energy-conversion technologies (supply and demand side) up to a complete systems integration, taking into account environmental and economic aspects is urgently needed. No energy-conversion technology should be excluded *a-priori*. Again future oriented cost-benefit analyses should help **prioritize** and guide the allocation of research money and effort Public funding should be devoted to mid- to long-term research and systems integration; the short-term research should be left for the private players.

- The EU should favor EU-wide energy R&D to set up **large experiments** or to favor extensive **energy R&D networking** ('nuclear-fusion research', large-scale meteorological research for wind energy, electrical storage, innovative RES, CO_2-capture and demonstration facilities etc.).

- Good **coordination between the Commission's services** for 'energy policy' and 'energy-research policy' is desirable.

4.7. European Energy Observatory

The set up of a European Energy Observatory (or 'Assistance Agency') is urgently needed for (amongst others):

- Development of simulation models (for scenario analysis, impact analysis, etc)

- Establishing energy statistics and information center (fossil fuels, energy demand, electricity, gas, infrastructure, etc)

- Run an Energy R&D chamber (to interact with DG Research; launch studies)

- Supervise and document energy-related subsidies and taxes

- Set up a (sliding in time) document on energy situation cfr. European Energy Outlook (similar to WEO [11] of the IEA, or the AER and IEO [12] of the US EIA).

4.8. Energy education and information programs

- Programs of education in and information about energy matters are badly needed, so that public opinion is informed and may support a comprehensive package of specific measures that may be derived from the adopted EU energy policy. The public must understand the magnitude of the challenges we are facing, the role of the EU and that some significant level of effort and involvement will be needed.

- This role could be played by the European Energy Observatory.

5. References

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