Energy efficiency policy in an enlarged European Union: the Eastern perspective

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Abstract

In May 2004 eight former communist countries of Central and Eastern Europe joined the European Union (EU), ending the era of economic transition. During the accession process their energy sectors had to undergo fundamental reforms and restructuring, and after having to adopt European legislation, the main framework of their energy policies now should be up to speed with those of the EU-15.

However, the legal harmonization process was entirely one-way. How well do the present EU energy efficiency policies cater to the needs of the new member states? What is the end result of the transition and accession process in this field? What has the ambitious restructuring schedule delivered in these countries from the perspective of energy efficiency? Where are these countries in terms of energy efficiency policies today, compared to the old member states? How should EU energy and environmental policies change or be strengthened to accommodate the different settings in the accession countries?

These questions were answered as a part of a study commissioned by the European Parliament and completed by the Central European University. The paper will portray the development of energy intensity during the accession process, and catalogue the policies in place today influencing the efficiency of energy use. The paper then provides recommendations on how the efficiency of energy consumption could be promoted further, and what EU-level policies could be introduced to facilitate these changes. Among other suggestions, the paper points to the importance of policy integration and the decentralisation of policy implementation to the municipal level.

Introduction

The fall of communism has left one of the most environmentally polluted regions in Europe behind in the former socialist countries. The single largest contributor to this pollution problem was, clearly, the energy sector with its environmentally negligent, inefficient and obsolete energy production, its transmission and distribution sectors with some record high losses, and finally also its highly inefficient, obsolete and polluting energy end-use. The result was not only a destroyed landscape with acid-rain damaged forests and dissolved architectural beauties, but also a heavy health toll. For instance, in the 90's, life expectancy in the so-called "Black Triangle", the areas of heavy industry and coal mining of Poland, former Czechoslovakia and East Germany, was 3 to 6 years below the average for Europe (Moldan and Schnoor 1992).

Experts agree that, beyond the general socialist disregard for the environment and emission control, at the core of environmental problems related to the energy sector were caused by the inefficient energy production and use, manifesting itself in world-record energy intensities (EBRD 1998; Kramer 1990; Urge-Vorsatz *et al.* 2003b; Urge-Vorsatz *et al.* forthcoming; Chandler 2000; Cornillie and Frankhauser 2002).

The economic transition to a market economy and the social transitions to a democratic society have resulted in a major restructuring of the economies, including their energy

sectors, which have brought improvements in many aspects of the energy sectors of these eight countries. A paper presented at the previous Summer Study of the ECEEE (Ürge-Vorsatz *et al.* 2003b) has reviewed the legacies of the centrally planned economy, and how these have been removed during the period of economic and social transitions. The next important impetus for change towards more sustainable energy sectors in the region was provided by the process of EU accession which has provided a major further incentive for restructuring and environmental improvements in the energy sectors.

However, the process of EU integration was an entirely one-way process. The new member states (MSs)[1] had to adopt the "*acquis communautaire*"[2] in their legislation, with the only possibility for taking local conditions or preferences into account being to request a derogation, or a delay in the implementation of certain legislative elements. On the other hand, due to their different historic development pathways, framework conditions in these countries are often very different from those in old EU member states. These different conditions may require different, new, or modified instruments or approach in the new MSs from those that work best in the old MSs.

The study commissioned by the European Parliament on Sustainable Energy Paths in Central and Eastern Europe (CEE)

Recognising these shortcomings of the enlargement process, in 2002 the European Parliament has issued a tender titled "*The impact of structural changes in the energy sector of CEE countries on the creation of a sustainable energy path. Special focus on investment in environmentally friendly energy and the impact of such a sustainable energy path on employment and access conditions for low income consumers*". The intention to understand the impacts of structural changes in the energy sectors of these countries and the possibilities for sustainable energy transitions represents an important step towards gaining an insight into how present and future EU policies could and should provide a better recognition of this region's needs, and how the entire enlarged EU can benefit most from the sustainable energy transformation opportunities provided by the accession countries.

An international team, led by the Central European University, has won the tender and completed the project in December 2003 (Urge-Vorsatz *et al.* 2003a). The team included experts from a wide range of institutions from 7 countries, representing academia, consumer associations, consulting and government.

The *general objective* of the study was to analyse the process of structural change in the energy sector of accession countries and the impact of these changes on a sustainable energy path. The *aims* of the study were to: (i) review the status of structural changes in the accession countries; (ii) identify the potential for a sustainable energy path integrated with the present restructuring processes in CEE countries; (iii) within this, provide an understanding of developments and sustainable energy paths in the following areas: end-use efficiency, efficiency in energy production, and energy policy; and finally to foresee the possible implications of these sustainable developments for relevant fields such as security of supply and for social aspects such as fuel poverty.

The report concentrated on the following components of a sustainable energy economy: (i) efficiency of energy end-use (buildings, industry, electricity); (ii) efficiency of energy production (with a main focus on the electricity generation and district heating sector and problematic areas: coal, combined heat and power); (iii) renewable energy generation; (iv) the impacts of the Kyoto flexibility mechanisms which affect the energy sector; (v) the future of the nuclear power industry.

The methods used in the study to answer the research questions included the review of the key national and international studies, analysis of energy and economic data, stakeholder interviews, expert consultations, and the initiation of debates among specialists in certain controversial aspects. The tender did not call for, and the funding was not sufficient, to carry out original research or primary data collection.

While the countries of Central and Eastern Europe share a common past and therefore a common set of economic and energy sector legacies from the centrally planned system, their economies have followed very different development pathways since the fall of communism. Some countries embarked upon an ambitious agenda to restructure their economies, including their energy sectors, while others followed less dynamic development paths. Therefore, the energy sectors in the region of Central and Eastern Europe are also on different development trajectories and drawing a common picture could be misleading. The presently described study, thus, pursued an overarching analysis of general trends in the energy sectors from a sustainability perspective in the eight former communist new Members States from CEE: **Hungary, Poland, Czech Republic, Slovakia, Slovenia, Estonia, Latvia and Lithuania**. However, for the in-depth analysis aimed at achieving the key goals of the study the research focused on a group of countries following a similar development pattern: the so-called Visegrad countries: Hungary, Czech Republic, Slovakia and Poland, abbreviated as "V4".

The present paper review **the findings of the study which relate to** the area pointed to as the key to sustainable energy development by the study: **end-use energy efficiency**. The paper also presents some of the general conclusions and recommendations from the study, since they also apply in this field. The full report (Urge-Vorsatz *et al.* 2003a) is available on the project's website: http://www.ceu.hu/envsci/research/ep.htm and in hard copy from the authors.

1. The 15 countries constituting the European Union until May 2004 are referred to as "old Member States", while the 10 countries joining at that date are referred to as "New Member States". The 8 post-communist New EU Member States are at places abbreviated as "NEU-8".
2. "*acquis communautaire*" is the body of common rights and obligations that are binding for all EU MSs.

Background: Economic And Energy Transitions

In 1989 CEE countries ended the era of state socialistic administration of the economy and society. The whole region experienced a severe recession, exacerbated by serious indebtedness. The economic restructuring in the discussed countries has encompassed (i) the transformation of the once state administered and bureaucratic business units into market based corporate entities, (ii) the privatisation of the state owned companies, and (iii) liberalisation of the economy, moving it from a centrally planned, monopolistic and regulated system towards a more market-oriented, entrepreneurial one.

By the beginning of the new millennium the most successful countries were able to stabilise their economies, and meet the Maastricht criteria for joining the EU.

Since the primary contributors to the high energy intensities prevailing in these countries were the result of the legacies from the centrally planned economy (Urge-Vorsatz *et al.* forthcoming), the expectations were that the economic transitions, and profound ownership and structural reforms in the energy sector would remove these legacies, and therefore largely close the energy intensity gap.

Let us then review the development of energy intensities during the economic transition.

Figure 1 and Figure 2 above show the development of energy intensities in the NEU-8 in comparison to the EU-15, measured both at real exchange rates and in purchasing power parities (PPP)[3].

What is clear from the figures is that there is still a wide distribution in energy intensities within these countries. Calculating at real exchange rates, in 2002 five of the countries in the group are over four times as energy intensive as the EU average, while the best performing, Slovenia, is 50% worse than the EU average. Measured at PPP rates, the spectrum is even wider. Hungary and Slovenia performed only 23% and 29% worse than the EU average in 2002. In

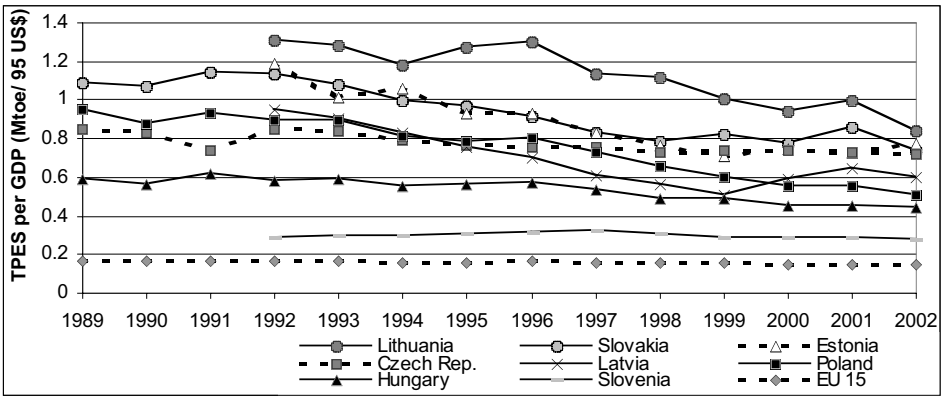

Figure 1. The development of energy intensities* (measured at real exchange rates) in CEE and the EU 15.
Sources of data: IEA 1999a, 1999b, 2001a, 2001b; 2002b, 2002c, 2004a, 2004b.
** Energy intensity is the total primary energy supply (TPES) per unit of gross domestic product (GDP) measured at real exchange rates or at purchasing power parities (TPES/GDP or TPES/pppGDP)*

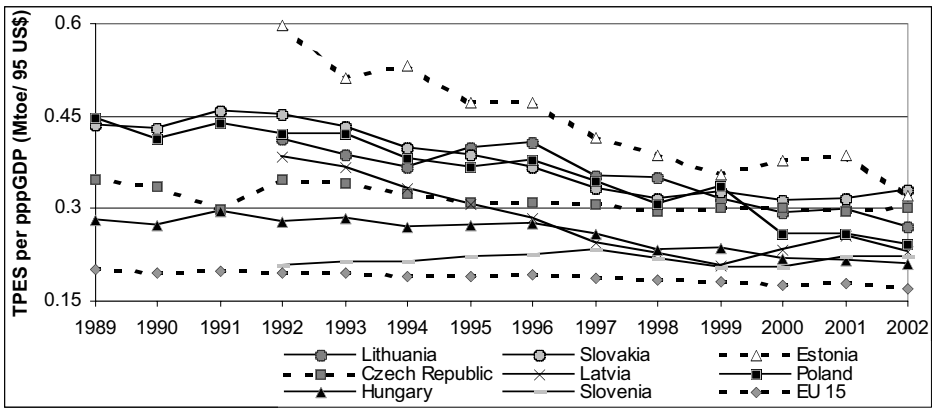

Figure 2. The development of energy intensities (measured at purchasing power parities) in CEE and the EU-15.
Sources of data: IEA 1999a, 1999b, 2001a, 2001b; 2002b, 2002c, 2004a, 2004b.

3. According to possible overestimates of PPP rates, GDP measured at PPP rates possibly overvalues the real wealth and living standards of these societies, thus the reality is most likely in between the two figures for a single country. The choice of one or the other energy intensity indicator varies with author. For instance, in the EBRD report, Cornillie and Frankhauser (2002) choose to conduct analyses of energy intensities for the transition economies at real exchange rates.

contrast, Slovakia's and Estonia's energy intensities are about twice as much as the EU average even at PPP rates. The other four CEE countries are between 41% and 80% more energy intensive than the EU average. The present "ranking" in energy intensities measured at PPP is Hungary < Slovenia < Latvia < Poland < Lithuania < Czech Republic < Estonia < Slovakia. The ranking is very different if measured at real exchange rates, with Lithuania doing worst. None of the rankings can be easily explained based on climate, level of development, fuel structures, or the status of reforms implemented.

Not only is there a broad diversity in the values of energy intensities among these countries, but there is also a large variety in the development of their energy intensities. While Estonia's and Latvia's energy intensity has been halved if measured in purchasing power parities since 1992, Slovenia has not achieved any improvement at all during this period. Again it is not possible to give an easy explanation for the reasons why some countries achieved major improvements and others have achieved little.

The European Bank for Reconstruction and Development (EBRD) has conducted an analysis (Cornillie and Frankhauser 2002) aimed at the identification of the main factors that have driven the changes in energy intensity in CEE and the Former Soviet Union (FSU) at macroeconomic level. Energy intensity changes, were broken down into four components: changes in industry, transport, the rest of the economy (agriculture, services and domestic), and structural changes. One of their important findings which is probably contrary to some expectations is that *structural changes although having positive impact in most of the countries in transition have not contributed in a significant way to the reduction of energy intensity*. The energy intensity of transport has virtually stayed constant during the examined period (1992 – 1998). In three countries, **Hungary, Latvia** and **Slovenia, industrial energy intensity came down sharply**, while that of the rest of the economy remained constant or decreased less[4]. The reverse was true for **Poland**, the **Slovak Republic, Estonia and Romania**, where the **energy intensity of industry remained constant**, but that of the rest of the economy improved. In **Latvia, both industrial and other energy intensities declined**. These countries' heavy industries typically contribute a large share to their GDPs. However, even after this breakdown it is difficult to draw a clear picture about why some countries have improved significantly in certain areas while others have not.

Nevertheless, a few general conclusions can be drawn. First, the level of energy intensities among these eight countries is converging. Second, while it is converging, there is still a major gap between EU levels and CEE levels: the average intensities measured at PPP for CEE is still 50% higher than for the EU. This striking difference suggests that 'substantial inefficiencies remain, whatever the differences in socio-economic conditions there may be' (Cornillie and Frankhauser 2002). Third, it is clear that **economic and energy sector reforms** alone are not the key drivers towards energy intensity improvements (i.e. countries which embarked upon more ambitious reforms have not necessarily performed better in improving their energy intensities). As the EBRD states, 'while there is a clear correlation between enterprise restructuring and energy use, there is little evidence that privatisation, on its own, will reduce energy intensity'. Fourth, after 14 years of economic and energy sector reforms, it is today clear that the transition to a market economy and energy sector restructuring **is not sufficient to close the energy intensity gap** between the new and the old EU.

In conclusion, *the closing of the energy intensity gap undoubtedly requires targeted efforts towards the improvement of energy efficiency*.

The present section has outlined the economic and energy sector reforms in CEE since 1989. While recession has been the key determinant for these economies during this period, all of them have resumed economic growth for a number of years. Energy consumption declined in the first part of this period, and then more or less stayed constant, translating into a decoupling in most of these countries between growth and energy use. While most countries have embarked and are embarking upon ambitious corporate and energy sector restructuring to align their legislation with the EU *acquis*, the pace of reforms and achievements has been diverse. Similarly, the present level and past developments in energy intensities have been diverse.

However, the most important conclusions from the economic and energy sector review are the following. First, due to the high level of energy dependence in these countries, mainly on FSU imports, **the promotion of sustainable energy pathways is a key strategy to enhance energy security in the enlarged EU. Second, corporate and energy sector reforms alone will not close the energy intensity gap with the EU-15**; rather, a concerted effort is needed towards further improving energy efficiency levels through targeted energy efficiency policies.

Potentials for the improvement of energy efficiency

It was concluded that even after a decade and a half of economic and energy sector transitions, still the key vehicle towards increased energy sustainability in CEE is the improvement of energy efficiency. The previous chapters have analysed in detail to what extent energy intensities have improved over the period of transition until today.

The present section will go into detail regarding further possibilities to improve end-use energy efficiency.

The high energy intensity levels in the countries of the CEE region discussed above imply that there should be a high potential for the improvement of energy efficiency. Unfortunately, detailed, publicly available studies on end-use energy efficiency potentials, especially those which are still relevant and not outdated, are rare in the region. Perhaps the

4. In fact other research contradicts these findings. For instance, the Energy Charter Secretariat (2003) found came to slightly different conclusions regarding the decline of energy intensity of industry which over the period 1994-2000 was calculated to be about 7%, while the impact of the changes of the intensity of the residential sector were calculated to be about 4%.

key reason for this is the **lack of consistently collected end-use energy data,** which makes such research difficult and imprecise. From among the countries in focus, the most comprehensive in scope are the studies the authors were able to identify[5] on the total energy efficiency potential for the Czech republic, prepared in cooperation with the Energy Research Centre of the Netherlands (Maly 1999) and for the Slovak Republic, prepared by Energy Centre Bratislava (ECB 2002). Other studies cover different sectors only, most commonly housing and industry. Some of them include calculations about the market and achievable potential, but usually only the technical and economical potential is estimated. Unfortunately, the available information about Hungary and Poland is very scarce and out of date, despite the research team's best efforts to obtain data[6].

TOTAL ENERGY EFFICIENCY POTENTIAL

The summary of total energy efficiency (EE) potential in the three Visegrád countries about which relevant studies are available is presented in Table 1. In most of the countries energy savings can be achieved by no-cost/low-cost measures such as correct energy management practices. However, there is undoubtedly considerable scope for further savings to be achieved through investment in energy-efficient technologies.

While comparing the data in Table 1 it should also be taken into account that the figures for Poland claim to be 'conservative', or low, because they are based on old studies (OECD 1997).

The **technical potential** for the Czech Republic and Slovakia represents a considerable fraction (over 40%). For the Czech Republic it was calculated that the total investment needed to implement fully the indicated technical potential would be 118 billion Euro, which represents over 200% of the annual Czech GDP in 2001 and 650% of the state budget (18 billion Euro in 2001). The average relative cost of implementation of energy saving measures is 105 Euro / GJ; it is highest in the transport sector (395 Euro / GJ) and lowest in the industrial sector (77 Euro / GJ) (Maly 1999).

The **economic potential** is about 20% for all three countries. Again, more precise economic estimates are found for the Czech Republic. According to these the total investment needs are only 4 - 6% of the investment needs calculated for the technical potential, and are equal to roughly 10% of annual Czech GDP and 33% of the state budget. If a 10 year realisation period is considered for the economic potential of energy savings, this would require an annual investment of about 1% of Czech GDP, i.e. 3.3% of the Czech state budget.

The **market potential** varies for the three countries from 10.7% to 18%. It is roughly 80% of the economic potential, for the Czech Republic and 50% for Slovakia. For Poland the so-called 'achievable potential' is calculated, which is 12% of the final energy demand. It is based mainly on expert estimates and represents two-thirds of the economic potential. As the majority of Polish heat and electricity is produced from coal (96%) it is estimated in the study that this will lead to about a 12% decrease in CO_2 emissions (OECD 1997). Other calculations about Poland have shown that a potential saving of 15 - 20%, perhaps even 25% on average in all sectors of the economy is a very realistic possibility (Skoczkowski 2001).

Since there is a large potential even for **no-cost measures**, the Czech study also estimated this figure. According to Van Wees et al (2002), **6% of end-use demand can be saved without investment**.

Achieving their energy efficiency potential could significantly lower the energy intensity of these countries. Calculations carried out in the study for Slovakia (ECB 2002) showed that the realisation of technical potential could lead to a 62% decrease in energy intensity by 2012, and for the economic potential this figure is 50%. Even when the market potential is considered the intensity could be reduced by 44%, which is still very high (ECB 2002).

There are measures that can be realised at relatively low cost and can lead to a large reduction of energy consumption. For example, study the GKI-EGI (1998) on Hungarian energy efficiency potentials showed that regarding the ***industrial sector*** more significant opportunities for energy sav-

Table 1. Potential for improvement of total energy efficiency as a share of selected indicators.

	Czech Republic	Poland	Slovak Republic
Indicator	End-use energy demand in 2010	Final energy consumption in 1997	Expected end-use energy consumption in 2012
Indicator value	1 129 PJ	N/A	537 PJ
Technical potential	47.5%	26%	43.9%
Economic potential	21.7% (d.r. 5%) 18.8% (d.r. 10%)	18%	19.8% (d.r. 5%)
Market potential	13.0% (PBP 3 years) 18.0% (PBP 6 years)	12%*	10.7% (PBP 4, 5, 7 years**)
Source of data	Maly 1999	OECD 1997	ECB 2002

d.r. – discount rate, PBP – pay-back period, N/A – no information available.

** achievable potential; ** the pay-back time is as follows: 4 years for households, 5 years for the industrial and private tertiary sectors, 7 years for district heating companies and the public tertiary sector*

5. The identification of the studies took place in the first half of 2003. Therefore, this paper does not review any studies published after this time.
6. According to a Hungarian Ministry official (Szerdahelyi pers. comm.), the latest study (from 1999) should not be used because it is outdated: and since then the design of energy efficiency action plans and financial support allocations, have been based on back-of-the-envelope style calculations, leaving no documentation behind.

ing appear not in the energy intensive fields, but in the decreasing the relatively high consumption of the auxiliary areas (space heating, kitchens etc.) (GKI-EGI 1998). It is important that some of the upgrades in this field can be implemented at insignificant cost, or in some cases through behavioural changes In the same sutdy measures like improvement of energy awareness through campaigns and labelling were also discussed. The pay-back time is very short (about 0.4 years) for advertising electricity conservation measures and the energy savings potential (4.4 PJ per year) relatively high.

Energy efficiency policy in CEE

It is clear from the discussion of cost-effective Energy Efficiency (EE) potentials above that EE should be a key priority for CEE governments. In addition to the untapped profitable investment opportunities, EE can deliver several other crucial benefits for these economies. Increasing EE **improves** general **economic efficiency** and therefore **competitiveness**. **Reducing energy bills** through the improvement of EE can compensate for some of the burden of drastic energy tariff hikes causing severe social problems in some countries, and can **ease** soaring **fuel poverty**. In the countries in question many households are fuel poor. For example in Slovakia in 2002 households spent 11% of their total income on their energy bills on average and this percentage was about 18 to 19% for the poor (Voll and Juris 2002). EE can and has caused the decoupling of growth and energy demand, therefore eliminating the need for increased energy imports, and capital-intensive capacity expansions, **releasing** badly needed **capital** for other important investments. Since energy imports constitute a heavy burden on export/import balances, reduced needs for energy imports will **improve foreign account deficits** as well as **improving** the **political sovereignty** of some highly energy-import dependent countries in the region. Since EE measures are typically labour and know-how intensive, promoting EE projects **creates employment**, mobilises engineering expertise and creates **new business opportunities** for the local EE industry. Finally, improving EE (both on the supply and the demand sides) is the most effective method of energy-related **environmental pollution control**.

The improvement of energy efficiency has already been recognised among the key priorities in the energy policies of CEE countries (IEA/OECD 1997; IEA 1994, 1995, 2003d). However, for a long time this goal remained largely at the rhetorical level rather than moving to the level of action. The accession process has provided an important impetus towards the translation of strategic goals in energy efficiency into real government actions, i.e. concrete policy tools, action programs, and earmarked funds.

Some countries have adopted ambitious targets to close the energy intensity gap with the EU. For instance, Slovenia adopted a program in 1996 aiming at improving energy efficiency by 2% annually (IEA 2003a). Hungary has indicated a target of a 3.5% annual reduction in energy intensity by the end of 2010 according to its Energy Saving Action Programme of 1999 (Energy Charter Secretariat 2003).

Table 2 reviews the main policy instruments applied in the first half of 2003 affecting energy efficiency in the Visegrád countries. As demonstrated by the table, the countries mainly have the instruments in place that are required by the *acquis communautaire* of the EU and further measures are exceptional. Despite these efforts, the *European Commission has evaluated the progress of* **the Czech Republic, Poland, Romania and Slovakia** *as* ***unsatisfactory*** *in the field of improving energy efficiency* (Energy Charter Secretariat 2003).

However, there are a few examples of good practice in individual energy efficiency initiatives taken by governments. For instance, the *Czech Republic* has **an energy audit obligation** for buildings, production sites and all facilities consuming energy above a specified limit and an *obligation to implement low-cost recommended measures*; it also allowed tax reductions in 2003 for energy efficient goods and services (unfortunately some of these had to be ceased after EU accession). *Poland* has an **excise tax on electricity**; and the Energy Law allows energy companies to include the costs of end-use energy efficiency measures in tariffs (Energy Charter Secretariat 2003). The *Slovak Republic* has **energy efficiency provisions in its public procurement laws**. The problematic areas are the universal lack of utility demand-side management programs (DSM) – these used to exist until liberalisation but were discontinued recently in all countries; the absence of energy efficiency provisions in public procurement; the lack of or obsolete energy efficiency standards (IEA 2003b, 2002a); and the lack of funding for energy efficiency related research and development (while there are large sums cited in Table 2), these amounts are typically directed at supporting the realisation of actual projects rather than any research or real development). For instance, Hungary adopted very strict mandatory building codes in 1992, comparable to the strictest standards in the EU, but enforcement and quality control are lacking. As standards were not respected, the government made these standards voluntary in 1994 (IEA 2003b).

While the table suggests a picture which is quite supportive of energy efficiency improvements, the reality is often different due to poor implementation, such as appliance labelling in Poland, as found by Soehl (2002); lack of enforcement (IEA 2003b; Energy Charter Secretariat 2001); outdated specifications (such as the Hungarian building codes); and the lack of funds assigned for the implementation of the programs and policies (such as the Czech auditing obligation) (IEA 2003a).

General problems with energy efficiency (EE) policymaking in the CEE region are:

- a general lack of real political commitment towards EE: EE is still lower on the priority lists of governmental agendas than supply-oriented policies (often conflicting with EE interests)
- the lower environmental awareness of the population than that in the EU-15
- while, primarily as a result of EU accession, legislation of most countries supports energy efficiency, these are often not translated into the necessary secondary legislation, action plans, concrete and measurable targets, ideally on the sectoral and regional levels.

Table 2. Summary of energy efficiency related policy instruments in the Visegrád countries, 2003

	Hungary	Czech	Poland	Slovak Republic
Types of taxes on electricity, gas and heat	VAT - 12% (1)	VAT - 22%	VAT - 22%, but excise tax on electricity of 4.65Euro/MWh	VAT - 14% (1)
Tax incentives for EE	NO (2)	YES (Lower VAT - 5% - on certain EE goods and services until the end of 2003)	NO	YES (Tax exemptions) But disincentive extra fee for electricity produced in CHP for backing electricity supply (2, 3)
Performance standards in industry	YES (qualitative standards for supply industry and other planned in the future) (3,4)	NO	YES (minimum efficiency standards apply for some industrial equipment inc. motors, welding and bonding, etc.) (4)	YES (As in Large Combustion Plants Directive) (4)
EE building codes	YES (only for insulation, updated in 1994, but not sufficiently enforced)	Yes, but specified insulation standards are insufficient (2)	YES (1,2)	YES (5)
Appliance labelling	YES ((5)	YES	YES (3)	YES (6)
Other performance labelling	NO (4)	YES (for many technical components in the energy production and distribution sector) (1)	YES (Heating boilers, electric engines)	YES (Air conditioners, electric ovens are planned to be labelled) (6)
EE provisions in public procurement	NO (3)	NO	NO (2)	YES (2)
Preferential loan schemes for EE	YES (6)	YES	YES	NO (In the past - yes. Now a new scheme is waiting for approval) (3)
Provisions on performance contracting/ facility management	NO (2)	YES (energy audits obligations) (1,2)	No information available	NO (7)
Mechanisms to support ESCOs	YES (2,7, 8)	NO	YES (Energy delivery contracting, Performance contracting) (2)	NO (7)
Existing utility DSM programs	Only ripple control (not real DSM) (3)	NO	NO (but in 2000 tariffs could include DSM costs) (4)	NO (2), but they used to be run by Slovenske Electrarne (7, 8)
Public benefit charges	NO (4)	NO	NO (2)	NO (Planned for brown coal) (8)
Subsidy programs	Yes (according to the National Energy Program) (6) (7)	YES (State Program for EE, started in 1998 but its budget was significantly reduced (for example in 2001 to 5 million Euro instead of 37 million Euro)	NO (2)	NO (8)
Research and development for EE	YES (governmental support - 12013 million Ft (46 million 2002 Euro) for the period from 1997 to 2003) (6)	YES (about 17 million 2002 Euro/year for the period from 2002-2005. (1)	Not available	YES (governmental support – 7.4 million 2002 Euro for EE and renewable energy sources for 1992 to 2001) (3)

Sources of data: **Hungary:** (1) Barka pers. comm.; (2) Kovacsics pers. comm.; (3) Szorenyi pers. comm.; (4) Pal pers. comm.; (4) CLASP 2000; (5) Poos pers. comm.; (6) Elek pers. comm.; (7) Energy Charter Secretariat 2001; **Czech Republic:** (1) IEA 2003c; (2) IEA 2002a; **Poland:** (1) Robakiewicz 2003; (2) Koj pers. comm.; (3) Ministry of Economy 2001; (4) Energy Charter Secretariat 2000; **Slovak Republic:** (1) Strelka pers. comm.; (2) Bella pers. comm.; (3) ECB 2002a; (4) Rousek pers. comm.; (5) Hadzhiivanov pers. comm.; (6) CIT 2002; (7)Energy Charter Secretariat 1999; (8) Energy Charter Secretariat 2003

- implementation and enforcement of ambitious legislation is often compromised
- the fragmentation of EE policy-making among several institutions
- lack of coordination between different institutional actors
- lack of sufficient resources and capacity for the energy efficiency agencies (for example Polish Kape has a staff of 20 to cover 39 million inhabitants compared to 500 at the Dutch Novem for 16 million inhabitants) (Bergasse pers. comm.)
- lack of integration of EE priorities into sectoral policies
- lack of research and development in EE. Most CEE countries have closed or sold their energy-related research institutions (such as EGI in Hungary), and currently there is extremely limited capacity for research supporting the design of energy policy-making in the field. In addition, support for EE research has been minimal.
- end-use data collection and statistical reporting is limited
- access to existing data and information is constrained.

Specific problems with energy efficiency policy include the following concerns:

- Energy efficiency standards are non-existent or obsolete, and are often not enforced (IEA 2003b, 2002a).
- The tax regimes of some countries do not create a level playing field for economic competition between energy efficiency investments and supply (i.e. taxes favour supply purchases as opposed to efficiency investments). The worst case for this is Hungary with a 13% disparity in VAT rates between supply (electricity and gas) and efficiency equipment and services.
- Voluntary agreements are uncommon in CEE countries (Energy Charter Secretariat 2003), even though they could relieve some of the burden from cash-strapped governments in the implementation of energy efficiency. This may be the result of a *general lack of a tradition in markets and* therefore *market-based instruments*. Since cultural changes have a large momentum and may require generational changes in the corporate elite, such tools may take longer to be become integral parts of energy efficiency instruments.

General summary: sustainable energy policy in NEU-8

In this section we summarise those general findings of the European Parliament report which have implications for EE policy. The analyses in the report have demonstrated that EU candidate countries have undergone profound and often painful structural changes as a result of the accession process. Considering the relatively short period since the start of the economic transitions, they can also document considerable improvements in their efforts and achievements towards more sustainable energy sectors. It is very important to understand that the 8 post-communist accession countries are very diverse in terms of their wealth and the depth of their economic recession; the dynamics of their market and energy sectors reforms; their achievements in cutting energy intensities and relying on renewables; and the introduction of sustainable energy policies. However, it is clear that there is still considerable need for further improvement even in the most advanced of the New MSs, and that there still exists an important gap between the levels of energy sector sustainability of present and future EU member states, as well as between the ambitions and commitment of their energy policies to promote sustainable energy pathways in comparison with the old MSs.

At the same time, many aspects of sustainable energy pathways are extremely beneficial for these countries from other perspectives as well, as demonstrated above.

Perhaps one of the most important barriers to more ambitious efforts towards sustainable energy paths in these countries is rooted in the low level of environmental awareness and the relatively low priority of environmental goals on personal and political agendas. Due to the economic recession and the low social and financial security of the population compared to that enjoyed under the socialist regime, people attach little importance to the sustainability of development and environmental progress, as compared to economic, financial and social improvements. Therefore, if their constituency does not place a large emphasis on these issues, it is unreasonable to expect governments to be aggressive about environmental and sustainability objectives beyond levels required by international commitments and the EU.

There are two ways to break out of this vicious circle (no demand from voters – no actions by governments – no increase in awareness). One of them is consciously and aggressively to **improve the environmental awareness of the population** through education and information programs. It is also hopeful that the economic and political integration with the EU will also slowly have an impact on people's priorities and values. With a gradual change in public thinking and moral values, combined with further economic and social stabilisation, voters may exert more pressure on their political representatives to act in the direction of more sustainable development. However, due to the considerable inertia in people's attitudes and thinking, this path is going to take a long time.

The second option to influence CEE governments in adopting environmentally more ambitious policies is the top-down way: external pressure. The EU accession process has demonstrated that the EU is a (if not the) key force in shaping energy policies of CEE countries.

Therefore, **in the short-term EU-level policy-making to promote sustainable energy pathways in new member states will remain essential, as opposed to national initiatives in this direction (such as in old MSs)**.

However, the key issue is the effective implementation of EU-level energy policy in these countries. For instance, with regard to the Directives related to energy: the formal transposition of directives into national legislation has often proved insufficient in CEE countries to ensure their effective implementation. Appropriate secondary legislation, clear and measurable action plans, and adequate institution-

al and financial resources for their implementation need to be established (see below).

While the situation is very different in the different countries, and the report's scope has not extended to all 8 CEE New Member States, the most important policy-relevant conclusions based on the analysis of four Visegrád countries are summarised in the following section.

Summary of key recommendations

This section summarises the key recommendations of the report which have an influence on EE policy.

OVERARCHING RECOMMENDATIONS

- As discussed above, the low level of environmental awareness is one of the key barriers to national government-level initiatives to foster sustainable development. Therefore, **increasing environmental awareness, environmental education targeting all groups of the population, and transforming the value systems of the inhabitants** are steps which would be instrumental towards the introduction of sustainable energy pathways as well. There should be a more concerted effort on the part of the EU to improve awareness and to transfer the environmental values (more) established among the societies in the old MSs to the new ones. A good example of such an EU-level measure is the disclosure clause of the new electricity market directive and the energy efficiency labelling directives.
- Since these governments are typically cash-strapped and constantly struggle with high budget deficits; and since taxes are typically already extremely high, and energy prices have already been raised significantly, **it is difficult to expect a drastic increase in public** (revenues and thus) **spending on sustainable energy** transformations. Therefore, **market-based instruments** and **private sector actors** to promote such pathways **should receive a special emphasis** as vehicles towards sustainable transformation in this region, and should be supported by all possible means, such as the legal framework, incentives, and designated programs. Such instruments and actors include performance contracting and ESCOs, market transformation and information/labelling programs, as well as corporate social responsibility programmes. However, it is important to recognise that *market-based instruments do not have strong traditions in these countries* and face significant cultural and institutional barriers, thus their facilitation requires innovative policy-making. The case studies described in the report (Urge-Vorsatz *et al* 2003a) demonstrate that this is possible.
- While CEE governments are spending considerable (but far from sufficient) amounts on supporting sustainable energy projects (renewable energy sources,, energy efficiency and cogeneration), mainly as a result of the accession process, there is very little current, public information available on the status, potentials and cost-effectiveness in these sectors. Since good data collection and research form the basic foundations for sound, effective policies, it is very important that these countries devote **substantially more effort to energy data collection** (especially in the areas of end-use, renewables, and CHP); and to **research** related to the current status of **sustainable energy activities** (such as reliable figures on CHP shares; indicators of end-use energy efficiency, etc.), and to **potentials, costs and priorities** (such as detailed RES, CHP, and energy and carbon conservation potentials and the respective cost curves). Open, public access (such as via the internet) to these data and information should be ensured. While this is mainly a national responsibility, the EU could and should encourage/support/facilitate a harmonised approach to such activities across the CEE region. For instance, it is worth considering making such research areas a priority in EU R&D funding, even though they are not as important or has already been continuously arranged for the old MSs.
- Since many efforts contributing to the sustainability of the energy sector are rooted at the community level, regional-, municipal- and community-based initiatives should be encouraged more. Currently most measures in CEE originate at the national level (required by the EU), and regional/local governments lack the financial and legislative power to promote sustainable energy projects. **Municipalities and regional governments should be granted greater financial and legislative independence to be able to engage in local- and community-level renewable energy and energy efficiency initiatives.** The environmental and energy authorities should enhance their cooperation with the municipalities in order to promote sustainable energy solutions at the local level. In addition, there needs to be a more concerted effort to coordinate regional initiatives and to establish the exchange of experience, such as through the formation of networks, and greater co-operation with existing networks in Member States is needed. The EU should support capacity building in municipalities in order to allow them to play the above-mentioned role.
- EU-level instruments and policies should **facilitate and promote the integration of sustainable energy objectives into other sectoral policies,** such as social, economic and fiscal policies, agricultural, industrial, transport, regional development, and urban planning policy regimes. Therefore, EU support programs should incorporate requirements related to improving energy efficiency and the environment in the various economic areas and facilitate monitoring of such improvements.
- Policy monitoring and post-implementation evaluation capacities, which are generally underdeveloped in the region, should be strengthened.

RECOMMENDATIONS RELATED TO THE ENERGY RESTRUCTURING PROCESS AND EU ACCESSION-RELATED ENERGY SECTOR CHANGES

- While the adoption of the *acquis communautaire* should bring major improvements in the sustainability of the energy sectors of accession countries, it has been shown that complying with the *acquis* by transposing then into national legislation is often not sufficient. The national legislation has not always been in the most effective

form; framework legislation is often not translated into action plans and concrete acts; institutions and procedures are not always established to implement and enforce the acquis; and the necessary resources are often lacking for the implementation of particular legislative acts. **Beyond the legal transposition**, the EU should both **require and support adequate implementation and enforcement** as well, and encourage the establishment of the proper institutional background. The revision of some of the existing energy policy documents written several years ago would also be timely in several candidate countries.

- With the accession process and after full membership the candidate countries will have access to a large number of EU Funds (regional, social and structural development, R&D, etc). However, this fact alone is not sufficient guarantee that these funds will be used in the best way. First, many of the funds require substantial (typically 50%) local co-funding. Since currently very limited national or municipal resources are available for the promotion of sustainable energy projects and R&D, there is much concern that CEE project partners will not always be able to engage in successful EU-level projects due to the lack of available co-funding. **The EU should evaluate and make sure that adequate amounts of funding are set aside at the national and local levels to match EU resources.**
- The post-accession development funds (the regional, social and structural funds) will determine development pathways in these countries in a significant way. Since many areas covered by these funds have a profound impact on the sustainability of these energy sectors as well, it is crucial to evaluate the distribution of these funds from a sustainable energy perspective. In early 2004, the authors were not aware of any major studies undertaken either by academia, non-governmental organisations, the commission or other actors to evaluate the impacts of the current plans under these funds on energy consumption trajectories and efficiency levels. **Therefore it is strongly recommended that several stakeholders (including the Commission, the green movement, and the research community[7]) conduct regular assessment of the expenditure and current plans under these funds, as well as how (more of) these funds could be used (more effectively) to promote the goals of sustainable energy development.**
- Energy sector restructuring, and in particular the lifting of energy subsidies and the introduction of market prices, have imposed a large burden on the population, increasing fuel poverty and making energy prices a highly politicised issue. And since making energy prices reflect true costs (direct and, in an ideal case, external costs) is a key priority of any sustainable energy policy regime, this process should not be compromised by continuing (cross-) subsidisation. The social burden should be eased by targeted assistance to the most vulnerable groups. The most highly recommended solution is to **use the funds for social compensation for the improvement of energy efficiency,** thereby investing in long-term solutions to reduce energy bills.
- In democratic societies, but especially in liberalised markets, consumer associations play a crucial role in assuring that social/consumer interests influence the directions in which markets are going. In CEE, consumer associations in the energy sector, especially those representing residential consumers, are few, and typically weak. **The EU could play a more pro-active role in facilitating/promoting/supporting the existence and establishment of consumer associations in the field of energy in these countries.**

SECTOR-SPECIFIC RECOMMENDATIONS

- While it is difficult, if not impossible, to prioritise among the different areas of sustainable energy policy analysed in the report, perhaps one issue can be generally concluded. The (further) **improvement of energy efficiency** can typically be regarded as the **highest priority goal for sustainable energy pathways in the NEU-8**. This is due to the still high prevailing energy intensities, the economic and other side-benefits of improved energy efficiency for the region outlined above; the gap compared with EU levels of specific energy consumption figures for production, the profitability of many such investments, and the relatively lower costs of such measures compared to some other areas, such as renewable energy.
- Governments should devote a much higher level of resources (financial, human and institutional) in improving the end-use energy efficiency , considering the importance of the economic and social gains that can also be made. Energy efficiency agencies should be established where they do not yet exist, and should be staffed adequately (currently institutional and human capacity in these fields is much lower than in old MSs).
- **District heating**, as a potentially appealing heating option from a sustainability perspective, has a much higher share in the new MSs than in the old MSs. Since there are many problems with district heating systems in the region, this area should receive much higher attention at EU levels. For instance, the CHP directive has being formulated primarily for EU-15, while it will probably have a major impact on the new MSs. Furthermore, the absence of any EU-level legislation or policy on district heating *per se* means there were no accession funds available for district heating, as there are for water sanitation, for example.
- **Public procurement legislation** will need to change to accommodate several existing and incoming directives. However, there is a remaining need to evaluate public procurement laws in NEU-8 from the perspective of their **accommodation of public-private partnerships**, i.e. **performance contracting and third party financing**, as

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well as their **energy efficiency** and perhaps **renewable energy provisions**.

Conclusion: Opportunities and recommendations in energy efficiency policy

It has been demonstrated that there remain significant cost-effective energy efficiency potentials in the region even after over 13 years of restructuring in this field. The greatest potential lies in the industrial and residential sectors. To achieve the technical potential significant investment is needed. The realisation of the market or achievable potential could lead to a substantial decrease in the energy consumption and energy intensity of the countries in focus. However, the design of well-targeted policies requires reliable assessments of end-use efficiency potentials and costs, which, in turn, relies on detailed end-use data collection. Therefore, in order to make sure that these countries distribute their taxpayers' money in the most cost-effective manner to promote energy efficiency, efforts should be made to ensure more detailed end-use data collection and reporting, and investment is required in detailed and up-to-date studies on potentials and costs. It has to be acknowledged that the Visegrád countries have all made significant progress towards improvement of energy intensities in terms of pricing reforms, energy sector restructuring, establishing institutional structures for energy efficiency, and introducing various energy efficiency policies and programs. However, the capturing of the remaining potentials is still inhibited by major barriers, some of which are region-specific.

Beyond the barriers, however, there are also several **opportunities** for improving energy efficiency in the region. First, **EU accession** provided stricter criteria for energy efficiency standards, labelling, and building codes; and new incoming and planned directives (the emissions trading directive, the buildings directive, the energy services directive, etc.) will further promote energy efficiency. Another potential engine of further energy efficiency improvements may be **Joint Implementation** and **Emission Trading** under the Kyoto Protocol (see paper n°7,279 in the 2005 ECEEE conference proceedings). While the liberalisation of energy markets typically does not provide incentives for energy efficiency activities of market actors, there may be some exceptions to this in CEE countries. For example, in Hungary utilities reacted to the coming market opening by establishing ESCO-type daughter companies concentrating on offering energy services to increase their market share and to capture further customers. It is also anticipated that Hungary will see more value-added services offered by deregulated Hungarian suppliers than by their counterparts in the EU, since there is not so much room for price-based competition. This may favour energy efficiency services.

Since it is going to be extremely difficult to introduce any further taxes or levies on energy to finance energy efficiency (or renewables) in the short term due to the recent drastic increases in energy prices, and since these countries all face strong budgetary constraints, **market-based instruments** (such as the creation of Energy Services Companies or ESCOs and the introduction of Tradable Energy Saving Certificates) which can deliver savings in energy consumption should receive much attention in the CEE region as a way to foster sustainable energy pathways. However, introducing market-based policy mechanisms is not going to be easy in the region. First, there is little tradition in market-based mechanisms, and most of the corporate elite in energy-intensive industry and the energy sector has been working for decades under command-and-control approaches, and thus is sceptical about market-based environmental policy tools. Second, such instruments also need adequate and elaborate regulatory frameworks providing multiple pillars, such as the one in Hungary favouring ESCO businesses. It should also be mentioned that there are some general concerns about the viability of market-based instruments in the CEE region.

However, before the introduction of new instruments, it is crucial that governments place **a real priority on energy efficiency and allocate sufficient resources** to reach EU energy intensity levels, and the objectives of the adopted ambitious action programs. Without real **political commitment** no policies, instruments or programs will achieve their intended impact. In addition, a comprehensive policy framework in which energy efficiency policies are **integrated into sectoral policies** (IEA 2003a), as well as with other economic, social and environmental goals (Energy Charter Secretariat 2003) is needed. Well-defined **sectoral targets** are needed in line with national energy efficiency targets (Energy Charter Secretariat 2000). Beyond national level strategies, it is important for countries to place an emphasis on **regional and municipal level energy efficiency strategies**. Good practices in municipal strategy development and practices have been demonstrated in Hungary, Poland, Bulgaria and Romania, although significant further progress is needed (Energy Charter Secretariat 2003).

It is also very important to strengthen the **public and specialist education** in the EE field. While, as opposed to the EU-15, much of the CEE population has a strong interest and motivation to conserve energy, most people do not know how to (they lived much of their lives in a highly subsidised energy era without incentives to conserve).

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