



EU Climate and Energy policies: opportunities and challenges in Central and Eastern European Member States

Europe's Climate and Energy Crossroads – First Seminar
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Europe's Climate and Energy Crossroads Seminars

This briefing note has been prepared by the Institute for European Environmental Policy (IEEP) as a contribution to a seminar for Members of the European Parliament in the Environment and Industry Committees, as part of the "Europe's Climate and Energy Crossroads" series. The aim of these seminars is to provide a balanced overview of some key climate and energy issues that the European Union will face in the coming years, giving new Members of the committees in particular an opportunity to discuss the context and likely objectives of forthcoming legislative proposals.

This first seminar provides background information and an opportunity for discussion on the current climate and energy policies in Central and Eastern European Member States, as well as opportunities and challenges in the future in relation to the proposed 2030 EU energy and climate targets. It offers a discussion of the case for action consistent with latest literature available; and provides pointers to sources of further information.

Further seminars in a series of three will address the challenge of the implementing of the 2030 targets once agreed by the European Council and the likely policy questions facing the co-legislators.

Disclaimer: The arguments expressed in this policy brief remain solely those of IEEP, and do not reflect the opinion of any other party. Any errors that remain in the paper are solely those of the author. IEEP is grateful to the European Climate Foundation for supporting the preparation of these briefing documents. For more information about IEEP's work on EU climate and energy policy, please contact: Kamila Paquel at kpaquel@ieep.eu or Andrea Illes at ailles@ieep.eu.

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Summary and Key Messages

- Energy security is a significant concern in Central and Eastern European (CEE) Member States. Greater energy efficiency could significantly reduce the region's energy import bill, strengthen its energy market and at the same time deliver low-carbon objectives and wider economic benefits. There is significant energy savings potential in the residential building sector and the transport sector.
- An expansion of storage capacities in CEE countries and developing interconnectors with neighbouring states would also help reduce the region's energy dependency. An extension of the 10 per cent interconnector target to 15 per cent by 2030 could play an important role.
- Economic growth is fully achievable at the same time as implementing ambitious climate change policies in the region. Investment costs will arise from implementation of the proposed climate and energy targets, but significant benefits are expected from avoided health costs, reduced fuel import bills and uninterrupted energy supply.
- Ambitious and legally binding greenhouse gas emission reduction targets, renewable energy targets, energy efficiency targets and interconnector targets would provide clear signals to investors and enhance investor certainty, which is particularly valuable in the CEE region in order to upgrade ageing electricity plants, build new interconnectors and storage capacity, invest in energy efficiency and further develop renewable technologies. Improved regulatory predictability could further attract private investment.
- Given that a number of CEE countries are expected to choose to continue to use coal in the future, a particular attention should be paid to less polluting carbon technological research and development of less polluting approaches, especially on carbon capture and storage (CCS).



Central and Eastern European Member States covered in this briefing note

1. Background Information

Although the ten Member States (MS) of Central and Eastern Europe (CEE) who joined the European Union in 2004 and 2007 share a number of common characteristics in relation to their climate and energy policies, some of their challenges and opportunities are very much country-specific. This section provides a short introduction to the CEE countries covered in this background document, namely **Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia**.¹

1.1 Regional profiles

Table 1 provides an overview of the different country profiles, highlighting the main economic and energy indicators. **Energy intensity**² in all of the nine CEE countries is considerably higher than the EU average with the highest intensity in Bulgaria. The **energy mixes** of CEE countries vary: while natural gas is the main source of energy in Hungary, Latvia, Lithuania and Slovakia coal plays an important role in Bulgaria, Czech Republic, Poland and Romania. **Energy dependency**³ is quite high in Lithuania – in 2012 it was 80.3 per cent⁴ – while in other CEE Member States it is generally lower than the EU-28 overall figure. Nevertheless, if one looks at the CEE countries' dependence on imported – mainly Russian - gas it is clear that most of the countries are heavily reliant on foreign gas exporters. This is especially true for the Czech Republic, Estonia, Latvia, Lithuania and Slovakia. Latvia's and Lithuania's dependence on imported oil is also very high.

Table 1: Key economic and energy indicators in nine CEE countries in 2012⁵

Member State	Population (million people)	GDP in PPS (billion)	GDP per capita in PPS (EU-27=100)	Total primary energy production (million tonnes of oil eq.)	Total final energy consumption (million tonnes of oil eq.)	Energy intensity ⁶ (kg of oil eq. / €1 000)	Energy dependency ⁷ (%)
Bulgaria	7.3	89	47	11.7	9.2	669.9	36.1
Czech Republic	10.5	217	81	32.0	24.1	355.4	25.2
Estonia	1.3	24	71	5.1	2.9	478.7	17.1
Hungary	9.9	169	67	10.5	14.7	268.7	52.3

¹ Cyprus, Malta and Slovenia, who also joined the EU in 2004, and Croatia (joined in 2013) are covered in an accompanying background document focusing on Member States around the Mediterranean Basin.

² Energy intensity indicator is calculated as a ratio between the gross inland consumption of energy and the gross domestic product (GDP) for a given year.

³ Energy dependency shows the extent to which an economy relies upon imports in order to meet its energy needs.

⁴ Eurostat database: [Energy dependence](#)

⁵ [Eurostat Statistics database](#)

⁶ Gross inland consumption of energy divided by GDP (kg of oil equivalent per 1 000 EUR).

⁷ See definition above.

Latvia	2.0	33	64	2.3	4.0	328.6	56.4
Lithuania	3.0	55	71	1.3	4.8	291.6	80.3
Poland	38.5	660	67	71.1	63.6	298.7	30.7
Romania	20.1	272	53	27.4	22.7	378.8	22.7
Slovakia	5.4	105	76	6.2	10.3	329.3	60.0
EU-28	504.5	12,970	100	794.3	1,103.4	143.2	53.4

Latvia had one of the highest shares of **renewable energy** in final energy consumption in the EU in 2012 – 35.8 per cent of energy from RES in gross final consumption of energy.⁸ The highest share of renewable energy sources is from biomass and waste in all CEE countries (above 70 per cent for all countries, while in Lithuania and Poland it is around 92 per cent and in Estonia 96 per cent), while hydropower also plays a significant role in Bulgaria, Latvia, Romania and Slovakia. Solar energy also plays an important role in Bulgaria and the Czech Republic, while wind energy has a notable share in renewable energy production in Bulgaria, Poland and Romania. Hungary has relatively high levels of geothermal energy.⁹

Projected **climate change impacts** on the region show a mixed picture.¹⁰ While river floods are already causing serious economic and social damages¹¹ and are expected to further intensify, some of the regions will also face water scarcity problems given the prolonged duration and increased intensity of droughts. Furthermore, winter wind speed extremes are also expected to increase in Central Europe. Even though the impacts on economic activity will be most prominent in the Southern regions of Europe, climate change will also significantly affect agricultural production and human health (damage caused by extreme heat waves combined with poor air quality) in Central and Eastern Europe.

The **economic and financial crisis**, starting in 2008, also had a significant impact on CEE Member States, affecting both households and industry. The downturn's impact on climate and energy issues was two-fold: as a result of reduced industrial activity the regions' greenhouse gas (GHG) emissions went down, while at the same time investments in energy infrastructure slowed down.

1.2 Current policy on climate and energy

Energy security is a major policy concern for all CEE Member States, particularly following developments in Ukraine. As indicated above many countries are heavily reliant on Russian gas, with the most extreme situation in the three Baltic states. In some MS energy security shifted the discussion on climate change policies to the diversification of energy mixes and energy suppliers. For instance, in Poland indigenous coal has been put forward as a solution

⁸ Eurostat News Release (2014) [Renewable energy in the EU28](#)

⁹ Eurostat (2014) [Renewable energy statistics](#)

¹⁰ IPCC (2014) [IPCC WGII AR5 Climate Change 2014: Impacts, Adaptation and Vulnerability, Final Drafts](#)

¹¹ This year heavy rains hit Romania and Bulgaria, which forced several hundreds of people to be evacuated, as well as a number of people reported missing or dead.

for energy independence.¹² Coal is the main fuel used in power generation in Poland, with the result that the GHG emission factor for power generation is more than twice the EU average.¹³

According to the EEA's latest assessment the Czech Republic, Hungary, Poland, Romania and Slovakia are well on-track to achieve their 2020 **GHG emission** targets. Bulgaria, Latvia and Lithuania will need to introduce additional policies to achieve their national targets, while Estonia is expected not to achieve its GHG emission target even if new policies are implemented.¹⁴

After the Soviet era a number of CEE Member States have abandoned or reduced their production in energy intensive sectors. This was the case for instance in Hungary where aluminium is no longer produced but the country shifted its focus to expertise in making or assembling components for car companies, like Suzuki or Audi, and electronic companies, like Samsung or Philips.¹⁵ Such structural changes had important implications for energy efficiency: a large part of the achieved **energy efficiency** improvement is due to withdrawal from more energy-intensive activities; future improvement at the same rate might be more difficult to achieve.

Energy efficiency in the building sector is a major concern in many CEE countries. A number of countries are now addressing these challenges; nevertheless major gaps still remain, for instance in Bulgaria and Romania, and the implementation of energy efficiency programmes has often failed to deliver the planned range of improvements.

Most of the CEE states are on track to achieve their 2020 **renewable energy** target, with the exception of the Czech Republic, Latvia and Poland. The expansion of renewable energy sources has been particularly marked in Estonia and Bulgaria, where the 2020 targets have been already achieved in 2012 (see Table 2).

Table 2: Share of energy from renewable sources and national RES targets for 2020¹⁶

Member State	Share of RES (% , in 2004)	Share of RES (% , in 2012) ¹⁷	2020 RES target (%)
Bulgaria	9.6	16.3	16
Czech Republic	5.9	11.2	13
Estonia	18.4	25.2	25

¹² Buchan, D. (2014) [Europe's energy security – caught between short-term needs and long-term goals](#), The Oxford Institute for Energy Studies

¹³ Ecologic Institute (2013) [Assessment of climate change policies in the context of the European Semester, Country Report: Poland](#)

¹⁴ EEA (2013) [Trends and projections in Europe 2013](#)

¹⁵ Buchan, D. (2010) [Eastern Europe's energy challenge: meeting its EU climate commitments](#), The Oxford Institute for Energy Studies

¹⁶ [Eurostat News Release \(2014\) Renewable energy in the EU28](#)

¹⁷ Latest information on different renewable energy sectors has been recently published at: <http://www.eurobserv-er.org/downloads.asp>

Hungary	4.4	9.6	13
Latvia	32.8	35.8	40
Lithuania	17.2	21.7	23
Poland	7.0	11.0	15
Romania	16.8	22.9	24
Slovakia	5.3	10.4	14
EU-28	8.3	14.1	20

2. Future opportunities and challenges

2.1 Emerging trends

2.1.1 Economic concerns around the proposed climate and energy targets

Economic and competitiveness concerns have repeatedly emerged during the discussion on the future EU climate and energy package. Members of the Visegrad Group (V4) – Hungary, the Czech Republic, Poland and Slovakia – also argued that rising energy prices, especially with a view to the current EU – US price gap, should be fully taken into consideration in the negotiation process. **Fuel poverty**, which has intensified as a consequence of the economic crisis, is also something that cannot be ignored in CEE Member States. Nevertheless, neither very low energy prices¹⁸, such as in Bulgaria, nor the freezing of consumer prices, as done by the Hungarian Government, provide an adequate solution given their negative impact on energy efficiency. The IEA’s advice is that low-income households should be dealt with using targeted social measures, such as support schemes for home insulation for low-income or vulnerable people, instead.¹⁹

Given Poland’s heavy use of coal, decisions on the allocation of responsibility for emissions reductions between Member States (Effort Sharing)²⁰ will also have a significant impact on the outcome of negotiations. The proposed ‘Modernisation Fund’ under the EU ETS could be a useful tool to overcome concerns. However, the economic implications of climate targets tend to be over-estimated by policy-makers, and a number of recent reports²¹ have highlighted that **economic growth** can be fully achieved at the same time with implementing ambitious climate and energy policies.

¹⁸ Relative to other EU countries

¹⁹ IEA (2011) [Energy Policies of IEA Countries: Hungary](#), 2011 Review

²⁰ The current Effort Sharing Decision establishes binding annual greenhouse gas emission targets for Member States for the period 2013–2020. These targets cover GHG emissions from most sectors not included in the EU Emissions Trading System (EU ETS), such as transport (except aviation and international maritime shipping), buildings, agriculture and waste.

²¹ The Global Commission on the Economy and Climate (2014) [The New Climate Economy Report – Better Growth, Better Climate, Synthesis Report](#); IPPR (2014) [Europe’s Power: Re-energising a progressive climate and energy agenda](#), The Institute for Public Policy Research

2.1.2 The undoubted role of energy security

As discussed above **energy security** is a major concern for CEE Member States and is expected to influence final decisions on the climate and energy package. If energy security policy leads to improved energy efficiency, it can result in substantial cost savings, compared with diversification of source of imports. The European Commission concluded that reducing the EU's dependence on fossil fuels and increasing the energy system's efficiency can achieve an **annual saving in Europe's fuel bill** of over €500 billion.²²

With energy security being high on the agenda, CEE countries may also decide to focus on expanding their **storage capacities** and developing **interconnectors** with neighbouring states. Regional co-operation in this sense is a key tool. Increasing the current 10 per cent interconnection target to 15 per cent by 2030 would also support such aims.

The enabling of **reverse gas flows** could be also a priority. For instance, as a result of the January 2009 gas crisis, which significantly hit Slovakia, the Government has taken a proactive approach and reverse flows are now enabled between the country's two western connectors.²³

Finally, the building of **LNG terminals**, such as in Poland and in Estonia²⁴, and the possibility of expanding US gas exports to the EU will also influence Europe's dependency on Russian gas; although this has the potential to increase global greenhouse gas emissions and wider environmental impacts from extraction and conversion in the US.

2.1.3 Ageing energy infrastructure in CEE Member States

As a result of long periods of underinvestment in energy infrastructure in a number of CEE states those infrastructures are ageing and will require substantial investment for replacement or modernisation, regardless of EU climate targets. Even though EU **Structural and Cohesion Funds** play an important role in financing infrastructure projects in Central-Eastern Europe there is a need to further attract **private investment**, for which **investment certainty and regulatory predictability** will be crucial. Concerns have been also raised on the effectiveness of some Structural and Cohesion Funds investment in energy efficiency.²⁵

Long-term electricity system planning could help to avoid the lock-in of carbon intensive technologies and investments. Delivering the 2030 targets at least cost, without regard to

²² EC (2014) [Impact Assessment Accompanying the document Communication on Energy Efficiency and its contribution to energy security and the 2030 Framework for climate and energy policy](#), SWD (2014) 255, Brussels

²³ IEA (2012) [Energy Policies of IEA countries: The Slovak Republic](#), 2012 Review

²⁴ Dudzinska, K. (2012) [Energy Policy in the Baltic States – United or Separate](#), Polish Institute of International Affairs

²⁵ See for example the European Court of Auditors special report no. 21, 2012, "[Cost-effectiveness of cohesion policy investments in energy efficiency](#)".

requirements for future decarbonisation, is unlikely to promote the scale of investment necessary to enable rapid further decarbonisation and achievement of the EU's ambitions for 2050 at least cost.

2.1.4 Unconventional fossil fuels

With large estimated resources of unconventional gas in a number of CEE countries the exploitation of **shale gas** will also have a significant impact on climate and energy policy in the future. While Poland and Romania gave a green light for fracking, Bulgaria and the Czech Republic banned it as a result of environmental concerns. Poland believes that shale gas is one of the solutions for reducing energy dependence. Nevertheless it should be kept in mind that shale gas is not a low-carbon energy source, and has the potential for significant environmental impacts.

2.1.5 The importance of technology development

Even if energy efficiency is extensively promoted in CEE countries a number of states, such as Poland, are expected to continue the use of coal in the future. Investment into less polluting carbon technologies, in particular **carbon capture and storage (CCS)** could therefore be critically important. The European Commission has argued that '*coal and lignite's CO₂-emissions mean that they only have a long-term future in the EU if using CCS*'.²⁶ In order to accelerate the demonstration of CCS, research and development policy should be closely linked with energy policy; and there are opportunities for focusing EU-level funds derived from the sale of EU ETS allowances on this issue.

2.1.6 Future potential of renewable energy sources in the region

The current renewable energy mix in the region is dominated by **biomass** with a significant contribution of hydro-power in Bulgaria, Latvia, Romania and Slovakia.²⁷ Even though biomass is the most mature and economically attractive renewable energy source in the region sustainability concerns are significant, and alignment of agriculture and forestry policies with energy policy is an important challenge.

Further potential is seen in **onshore wind**, especially in Poland and Romania. In 2011, 88 per cent of the totally installed wind capacity was in only five of the twelve new Member States, namely in Bulgaria, Czech Republic, Hungary, Poland and Romania.²⁸ There is also a great potential in solar energy, which is currently plays a notable role in renewable energy production in Bulgaria and the Czech Republic.

A recently published study, quantifying the extent of public intervention in energy markets, concluded that renewable energy sources have a great potential at a cost that is fully

²⁶ EC (2014) [European Energy Security Strategy](#), COM (2014) 330, Brussels

²⁷ Eurostat (2014) [Renewable energy statistics](#)

²⁸ EWEA (2013) [Eastern winds: Emerging European wind power markets](#)

competitive with conventional energy sources.²⁹ Nevertheless, a clear regulatory signal is essential in order to ensure investment certainty in renewable energy sources.

2.1.7 Strengthening the role of environmental taxes and phasing out environmentally harmful subsidies

Environmental taxes are being more widely considered as a useful tool in climate and energy policies and could therefore influence the region's low-carbon future. While some other Member States have made progress in this area, CEE Member States have been slow to implement such instruments. **Vehicle taxes** do not sufficiently reflect carbon emissions from cars in a number of countries, such as Bulgaria, Estonia, Lithuania and Poland; and currently there is no **carbon tax** in any of these nine CEE countries.³⁰

Finally **environmentally harmful subsidies** in the CEE region, such as excise tax exemptions on transport and heating fuels and subsidies for the coal industry, run counter to decarbonisation and energy efficiency objectives, and their phase-out could therefore bring benefits in these areas of policy.

2.2 Perspective on climate policy in the region

Given that large investment needs are required in energy infrastructure, including developments in aging electricity plants, new interconnectors and storage capacities, renewable technologies and carbon capture and storage, the introduction of **ambitious and legally-binding GHG emission reduction, renewable energy, energy efficiency and interconnector targets** could provide a clear signal to investors and foster greater investment certainty.

Energy efficiency is an especially important area for the CEE region, with the greatest potential being in the residential sector, including district heating, and the transport sector. Improvement in energy efficiency can alleviate energy security risks, can help to reduce the region's fuel bill, and can support economic growth and an improvement of the position of low-income households. As noted above most CEE states are well on-track to achieve their 2020 RES targets; however, in part this is because the targets were allocated through a process which took account of differentials in GDP per capita. Achieving the full economic potential of CEE economies in renewable energy would require greater ambition.

Even though the required capital investment varies in the CEE Member States (see section below) in most countries it is significant. This is largely because of the requirement to upgrade ageing energy infrastructure, rather than because of the need to do so in a low-carbon way. Alongside that cost, the benefits for human health, the energy import bill and

²⁹ Ecofys (2014) [Subsidies and costs of EU energy](#)

³⁰ The Czech Republic planned to introduce a carbon tax as of January 2014 but it is not clear what happened to this plan.

uninterrupted energy supply are also significant and should be also taken into account, as the following section suggests.

2.3 Potential impacts of the 2030 package

A recent study estimated that the currently proposed 40 per cent GHG emission reduction target would lead to a **cumulative cost for the EU of 0.2 per cent of GDP in 2030**³¹ – however, this figure does not take account of the benefits from avoided climate change impacts, or wider co-benefits, such as improved health. For the CEE countries covered in this briefing the equivalent cost figure is estimated to be: 0.1 per cent of GDP for Bulgaria, Czech Republic, Estonia and Hungary, 0.2 per cent of GDP for Latvia, Poland, Romania and Slovakia and 0.3 per cent of GDP for Lithuania. The same study also suggests that reduced reliance of fossil fuels could significantly **reduce health costs** related to respiratory illnesses in the CEE region. This is especially true for Bulgaria, Czech Republic, Poland and Romania, where the economy is heavily reliant on coal. Avoided human health costs in these four countries could be between €163-431 million, €413-1165 million, €1.7-4.7 billion and €260-733 million, respectively, representing between 0.2 and 0.4 per cent of GDP.

As indicated above ambitious binding GHG emission reduction, renewable energy, energy efficiency and interconnector targets would ensure green growth in the region, as well as energy security and a reduced energy import bill. Improved **investment certainty** on energy choices (for example, a clear message of a shift from fossil fuels to renewable energy sources) could reduce investment costs. Realising the potential for greater energy efficiency, improving interconnections, and improving the integration of regional energy markets could have significant positive impact on the economy, energy security and GHG emissions.

Finally, in the longer term ambitious and legally binding 2030 climate and energy targets would pave the way towards the **EU's 2050 low-carbon objective** (reducing GHG emissions by 85-90 per cent by 2050 compared to 1990³²) and would also provide a clear and strong signal to international climate negotiations, especially in a view of the forthcoming **2015 Paris summit**, where a new global climate agreement is planned to be adopted.

³¹ Enerdata (2014) [Cost and benefits to EU Member States of 2030 Climate and Energy targets](#)

³² As indicated in the [Roadmap for moving to a competitive low carbon economy in 2050, COM\(2011\) 112](#)

Sources for further reading

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