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Energy use and the carbon performance of transition countries, 1990-2008

The EBRD region is the only major region in the world in which carbon emissions have fallen substantially – by about 28 per cent – between 1990 and 2008. This decline, which occurred notwithstanding an increase in real GDP by about 22 per cent over the same period, was a product of the transition from wasteful and energy-intensive planned economies toward market economies. Transition led to both shifts to less carbon-intensive energy sources – in particular, increased usage of gas instead of coal – and most importantly lower energy usage per unit of GDP. The latter resulted both from deep energy efficiency improvements within economic sectors and (to a lesser extent) from structural change, that is, a shift from energy-intensive activities such as heavy industry to less energy-intensive activities such as services.

This said, there are large disparities both in changes in emissions between 1990 and 2008 – from a reduction of 56 per cent in Eastern Europe and the Caucasus (EEC) to an increase in emissions by 108 per cent in Turkey – and in 2008 emission levels per capita or per unit of GDP. Today, the region still includes some of the worst performers in the world in terms of carbon intensity (for example, Uzbekistan, Kazakhstan and Russia), as well as some countries, such as Latvia and Hungary, which are close to the global leaders in carbon or energy performance. The majority of the EBRD region remains carbon and energy intensive and there is much scope for further improvement.

Statistical analysis at the firm level reveals that private and foreign-owned firms tend to be more energy efficient than state-owned enterprises, and large firms more energy efficient than small firms. It also shows that there is a strong impact of energy prices on energy efficiency, suggesting that subsidy and tax policies that affect prices can have a large impact on emissions. These results are confirmed in country-level analysis, which also indicates that market-oriented reform and (for new EU members) the start of EU accession negotiations have played important roles in accelerating the improvement in carbon performance. ■

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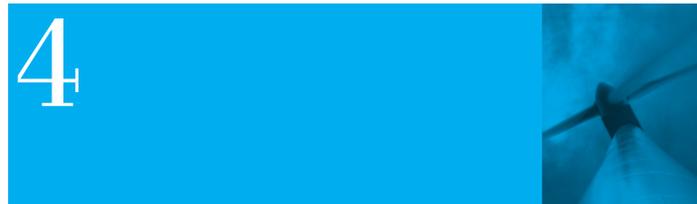
The economic impacts of climate change mitigation policy

Compared to a “business-as-usual scenario”, mitigation policies consistent with global warming of no more than 2°C may entail economic costs, through three channels: (1) structural change toward less carbon-intensive production; (2) a reduction in the international demand for carbon-intensive goods (such as fossil fuels) that will hurt exporters of such goods; and (3) in a world with tradable carbon permits, the cost of purchasing (or revenues of selling) such emission rights. An “integrated assessment” model that analyses all three factors shows wide differences in mitigation costs within the EBRD region, with the lowest costs arising in new EU member states and higher costs in energy exporters. For the EBRD region as a whole, gross mitigation costs are halfway between those expected for advanced countries and those expected in the large energy exporters in the Middle East.

Although mitigation may be costly particularly for the energy exporters in the region, it is in the best interests of these countries to undertake mitigation policies, in order to adapt production and exports to the lower future global demand for fossil fuels and to maintain economic competitiveness. The sooner this occurs, the lower the costs of mitigation. Furthermore, decarbonisation is likely to offer significant benefits that are not fully captured by the models used to simulate mitigation costs. In addition to the obvious gains from reducing the risks of calamitous climate change, these benefits include higher long-run growth from lower resource dependence, technology spillovers associated with the development of alternative energy sources, and reduced distortions from energy subsidies and inadequate regulation of energy production and distribution.

Cost-effective climate change mitigation will entail structural change in the EBRD economies. These will be largest in the energy sector, where fossil-fuel production will have to shift away from oil, productivity will need to improve, renewable energy sources and technologies must be developed and carbon capture and storage needs to be deployed on a large scale. The industrial sector will need to reduce the share of the most energy-intensive industries. Elsewhere in the economy the pace of energy efficiency gains will need to be maintained or accelerated through improvements in the energy efficiency of industry and buildings and the carbon performance of transport.

Analysis for selected transition countries suggests that climate policies will not significantly reduce the affordability of electricity and gas for the average household, but may have a higher impact on the poorest households. Hence, climate policies need to be developed hand-in-hand with adequate social safety nets. ■



Effective policies to induce mitigation

What policies are most likely to make emission reductions attractive to profit-seeking investors? This question is analysed by extending a concept known as “marginal abatement cost” curves, which rank emission reduction opportunities across sectors of the economy in increasing order of relative costs. The analysis quantifies the impact of a range of policies – including removal of energy price subsidies, improvements in the business environment to reduce investment risks, direct support for renewable energy, and the introduction of an economy-wide carbon price – on the costs of abatement.

The analysis shows that the introduction of an economy-wide price on carbon would have a particularly powerful effect on emission reductions. This requires creating infrastructure that caps emissions and allows trade in carbon permits, which presently exists in the EU, but not in non-EU transition economies. In addition, general economic reforms that are not specifically targeted at climate change but would remove energy price distortions and improve the business environment also have a powerful effect in creating profitable abatement opportunities. Grasping these opportunities – many of which already exist – requires awareness-building and financing.

Detailed analysis for Russia and Turkey suggest that a portfolio of general economic and climate specific policies could turn carbon abatement into a major investment opportunity reaching potentially almost half of gross capital formation in Turkey and above 30 per cent in Russia. Profitable or zero cost abatement opportunities could exceed 1,100 MtCO₂ in Russia and 250 MtCO₂ in Turkey by 2030, equivalent to 45 per cent of the energy-related emissions in the EU-15 in 2008. The introduction of carbon taxes or auctioning emission permits would increase government revenue by 1 to 2 per cent in both countries. ■

The political economy of climate policy in the transition region

Implementing climate change policy, even if it is economically beneficial, poses difficult political economy challenges. Domestic policymaking depends on the type of political regime – democratic or autocratic – as well as the relative strengths of the carbon-intensive and low-carbon industry lobbies, the role of the independent media and civil society agents, and the public’s broader political and economic preferences.

A new global index of Climate Laws, Institutions and Measures (CLIM), is used to compare the quality of domestic climate policies internationally, empirically assess which political factors drive policy, and find out whether the relationship between those factors and climate change policy outcomes is different in the transition region. The analysis shows that the level of democracy alone is not a major driver of climate policy adoption. Instead, public knowledge of climate change is a significant positive determinant of climate change policy adoption while the relative strength of carbon-intensive industry is a major deterrent, regardless of the level of democracy and administrative capacity in any given country. There is also evidence that emission reduction targets under the Kyoto Protocol and EU membership lead to better domestic climate policies. These factors appear to apply in transition countries and non-transition economies alike.

Accelerating the adoption of low-carbon policies at the level of individual countries may require different solutions in different countries, depending on the main political economy obstacle to better policies. However, some policy levers are likely to apply across countries, including entering international commitments, and educating public opinion and creating awareness of the risks associated with climate change and the economic benefits of mitigation. ■