

ACCELERATING ENERGY EFFICIENCY INITIATIVES AND OPPORTUNITIES IN EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA

EXECUTIVE SUMMARY



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Photo credit: Dmitry Shytsko

INTRODUCTION

Sustainable Energy for All (SE4All), an initiative launched by the UN Secretary-General and the President of the World Bank, has amongst its three objectives the goal of doubling the global rate of energy efficiency improvements by 2030. Meeting this ambitious energy efficiency target requires the mobilisation and partnership of government, the private sector, civil society and other stakeholders. Identifying key opportunities and taking action is critical to building momentum on energy efficiency.

Since its inception in October 2013, the Copenhagen Centre on Energy Efficiency (C2E2), which serves as SE4ALL's Energy Efficiency Hub, has been analysing and promoting opportunities for accelerating energy efficiency uptake globally. As part of this undertaking, C2E2 has focused on regional performance, engaging local partners to analyse and review the status of existing energy efficiency policies, priorities and opportunities in key countries of the following regions: Africa; Southeast Asia; Eastern Europe, the Caucasus and Central Asia; and Latin America and Caribbean.

The result is four reports that profile energy efficiency acceleration activities within constituent countries of these regions and, at the same time, aim to inform and support the future development and uptake of related policies and programmes. Executive summaries delivering a snapshot of these reports are provided here. However, we encourage you to see the full-length Accelerating Energy Efficiency reports online www.energyefficiencycentre.org for a comprehensive view of the targeted markets and opportunities.

- The Bariloche Foundation in Argentina for the Latin America and Caribbean Region
- The Asian Institute of Technology in Thailand for the Southeast Asia Region
- The Centre for Energy Efficiency (CENef) in Moscow for the Eastern Europe, the Caucasus and Central Asia Region
- The Energy Research Centre at the University of Cape Town in South Africa for the African Region

We would also like to acknowledge organisations that provided the information and insights that have informed these summaries and reports.

As the global energy efficiency dialogue continues to evolve and intensify, C2E2 is looking forward to playing an active role, engaging with stakeholders and supporting the critical work on the ground.

Jyoti Painuly
Head
Copenhagen Centre on Energy Efficiency

Ksenia Petrichenko
Researcher and Regional Coordinator,
Eastern Europe, the Caucasus and Central Asia

John M. Christensen
Director
UNEP DTU Partnership



This report has been prepared by the Center for Energy Efficiency (CENef) for the Copenhagen Centre on Energy Efficiency (C2E2) with the aim to ‘map’ energy efficiency developments in 10 transition economies (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan and Uzbekistan) and identify countries, which can be targeted for accelerating energy efficiency actions.

The mapping includes the overview of the key trends related to energy efficiency in the region, assessment of energy efficiency potentials, identification of existing energy efficiency initiatives and recent actions in this field, as well as key stakeholders in the abovementioned countries.

A large variety of information sources were used to complete this task, above all statistical data and personal communications. All major energy-consuming sectors were screened to obtain a comprehensive picture. For the purposes of structuring all this information, an energy efficiency scoring system was elaborated and applied to identify five transition economies that can be targeted for support to further energy efficiency activities.

TRENDS IN ENERGY EFFICIENCY IMPROVEMENT

The report analyses economy-wide energy efficiency improvement dynamics for each of the 10 countries (e.g. GDP MER energy intensity, GDP PPP energy intensity, energy efficiency indices) and discusses challenges of selecting an adequate metric for energy efficiency tracking at a high level.

GDP presented in PPP was selected for the purposes of comparing GDP energy intensities across these countries to the global average and exploring their evolution from 1990-2012.

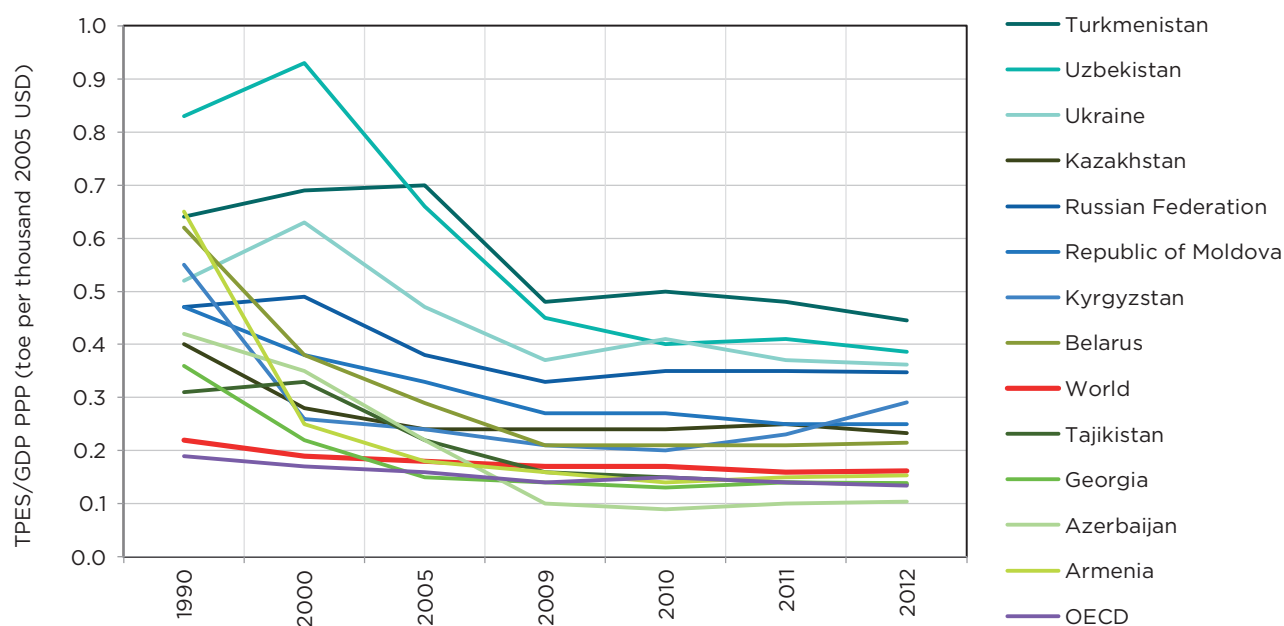
The 1990-2012 timeframe, for which the required data are available, can be split into three periods:

- 1990-2000 – mostly a declining phase of economic development;
- 2000-2009 – economic recovery driven mostly by loading idle capacities that were built back in the Soviet era and only partly by new investments;
- 2009-2012 – slower and uneven economic growth affected by the global economic crisis, with a slowing of energy intensity decline.

Figure 1.1 shows that these three periods were characterized by quite variable relationships between GDP growth and GDP energy intensity decline.

Analysis of other indicators, presented in this report, also demonstrates positive trends for energy efficiency improvement. After 2009 this process had slowed down significantly, and the 10 countries developed a need for an additional policy push to further foster the energy intensity decline driven by energy efficiency improvement. It is important to at least double the contribution of technological advances to the energy intensity decline.

FIGURE 1.1 THE 10 COUNTRIES' GDP PPP ENERGY INTENSITIES CONVERGING WITH THE GLOBAL AVERAGE (TOE PER THOUSAND 2005 US\$, PPP)¹



While global energy-related CO₂ emissions showed breath-taking growth over the last decade to a value in 2012 more than 50% above the 1990 level, economies in transition (including the 10 countries considered here) managed to keep their emissions well below their 1990 levels. Some of them cut emissions by more than 70%, however, mostly due to the economic recession. During 2001–2012 large income-driven energy-related GHG emissions were, to a significant extent, neutralized by reduced energy intensity and fuel switching. Nevertheless, the GHG emissions growth trend is observed in seven of the ten countries (Table 1.1).

TABLE 1.1 CO₂ EMISSIONS IN TRANSITION ECONOMIES IN 1990-2012

	CO ₂ emissions, million ton						AAGR		2012/ 1990
	1990	2000	2005	2010	2011	2012	1990- 2000	2000- 2012	
Armenia	21	3	4	4	5	5	-16.4%	4.0%	-73.6%
Azerbaijan	55	59	31	24	27	29	0.7%	-5.6%	-46.8%
Belarus	124	59	62	65	66	71	-7.2%	1.6%	-42.8%
Georgia	33	5	4	5	6	7	-17.9%	3.3%	-79.5%
Kazakhstan	236	113	157	234	234	226	-7.1%	5.9%	-4.5%
Kyrgyzstan	23	4	5	6	7	10	-15.1%	6.6%	-57.7%
Moldova	30	7	8	8	8	8	-14.2%	1.3%	-74.8%
Tajikistan	11	2	2	3	3	3	-14.8%	1.8%	-74.9%
Turkmenistan	45	37	48	57	62	64	-1.9%	4.7%	43.4%
Uzbekistan	120	118	109	101	110	111	-0.2%	-0.5%	-7.2%
World	20989	23759	27501	30509	31342	31734	1.2%	2.4%	51.2%
OECD	11150	12625	13024	12510	12340	12146	1.3%	-0.3%	8.9%
Russian Federation	2179	1497	1512	1577	1653	1653	-3.7%	0.8%	-24.1%
Ukraine	688	292	306	272	285	281	-8.2%	-0.3%	-59.1%

¹ Source: Energy balances of non-OECD countries. 2013 Edition. IEA. 2013. <http://www.iea.org/>

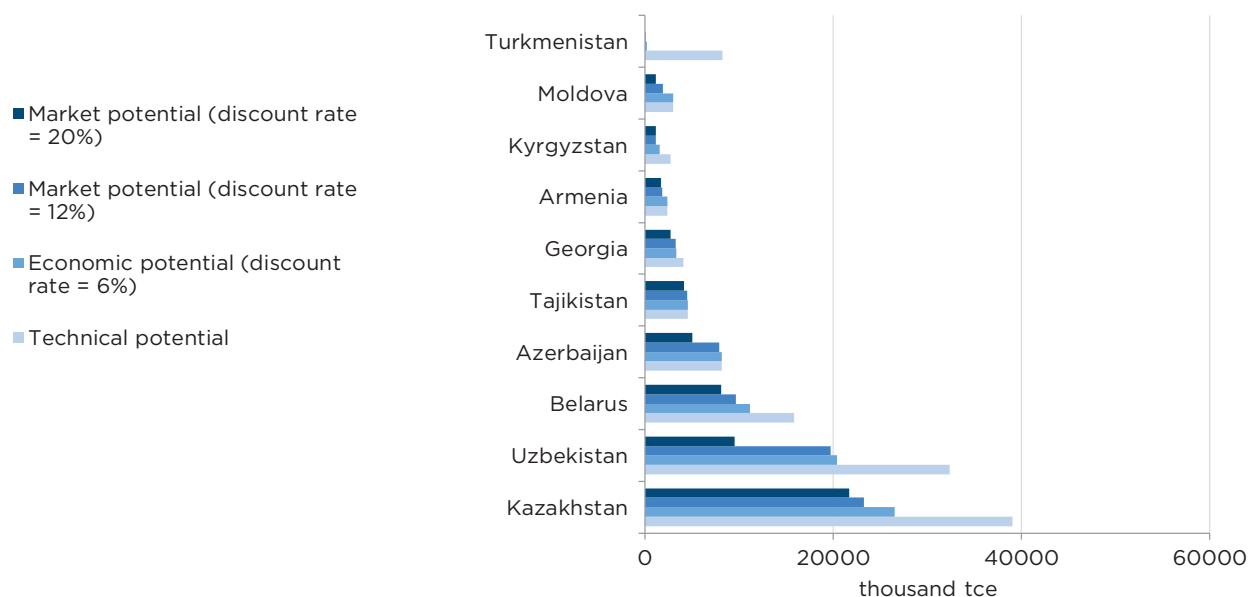
ASSESSMENT OF ENERGY EFFICIENCY POTENTIAL

In order to understand how much of countries' energy consumption can be reduced through energy efficiency improvement and supporting policy activities, the assessment of energy savings potential was conducted for each of the 10 countries.

In this report, energy efficiency potential is considered as indicative of a country's attractiveness in terms of potential energy savings if new effective energy efficiency policies are introduced and the impact of existing ones is increased.

Figure 1.2 shows the results for 10 countries for their technical, economic and market energy-saving potentials. In terms of technical energy efficiency potential, the top-five countries are: Kazakhstan, Uzbekistan, Belarus, Turkmenistan and Azerbaijan. However, for economic and market potentials, Turkmenistan has the lowest result due to its very low energy prices. The five leading countries for these types of potentials are: Kazakhstan, Uzbekistan, Belarus, Tajikistan and Georgia.

FIGURE 1.2 TECHNICAL, ECONOMIC AND MARKET ENERGY EFFICIENCY POTENTIALS



Energy efficiency potential serves as one of the criteria for selecting target countries for further assistance on energy efficiency actions. A number of other factors were assessed through a comprehensive scoring system developed during the course of this study.

SELECTION OF THE COUNTRIES FOR POTENTIAL SUPPORT

In order to identify countries in the region which can be targeted for accelerating energy efficiency actions, a multi-criteria scoring system has been developed. During the scoring exercise the main data gaps were identified for respective countries. Therefore, the quality and comprehensiveness of the data used in the scoring system varies significantly across the 10 countries. As none of the countries publishes national reports describing the results of its energy efficiency activities, many of the metrics are based on expert estimates collected by CENef from a variety of sources. Therefore, the country rating results should be used with caution, keeping in mind both the limitations of the suggested rating system and the quality constraints of the data used.

Country ranking is based on the following major criteria:

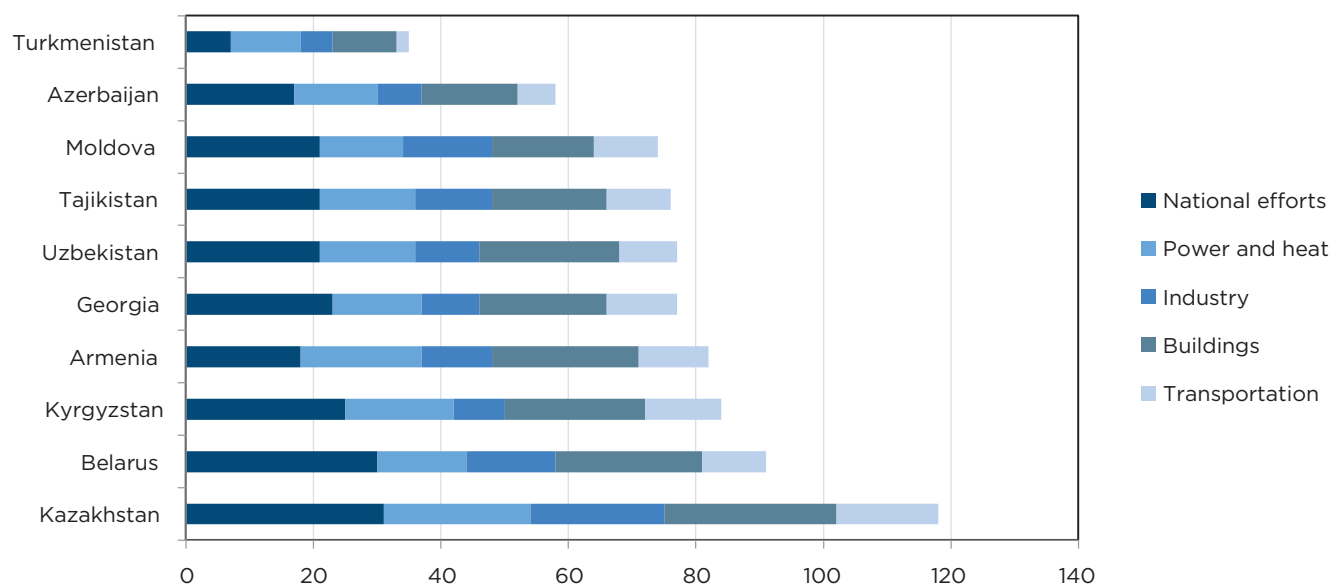
1. Improvements in energy efficiency indicators in the past.
2. Energy efficiency policies and policy implementation governance.
3. Energy efficiency potential in different sectors.
4. Energy efficiency policy gaps, plans to further develop energy efficiency policies, government interest in, and commitment to, the acceleration of energy efficiency activities.
5. Need for assistance in energy efficiency improvements and a willingness to collaborate with foreign partners, especially from the EC, and experience in being a recipient under assistance programmes.
6. Institutional structure in place for both the implementation of effective energy efficiency policies in different sectors and the effective accommodation of foreign energy efficiency assistance.
7. Availability of officials and energy efficiency experts, who may become contact points for the discussion of potential cooperation.

Sixty-nine metrics divided into five scoring blocks are considered in the rating system:

1. National efforts
2. Power and heat
3. Industry
4. Buildings
5. Transport

Weight is assigned to each indicator, and each metric is estimated according to a special rule. The maximum score is 171. The proposed scoring system uses, inter alia, estimates of energy efficiency potential in individual sectors. This is an innovation compared to other rating systems. Figure 1.3 illustrates the result of the scoring across 10 countries for each of the five blocks listed above.

FIGURE 1.3 ENERGY EFFICIENCY RATING OF 10 COUNTRIES (AS OF 2012-2014)



With 118 points out of a possible 171, Kazakhstan takes the lead, followed by Belarus (91), Kyrgyzstan (84), Armenia (82), Georgia (77), Uzbekistan (77), Tajikistan (76), Moldova (74), Azerbaijan (58) and Turkmenistan (35). Given the limitations of the developed scoring system and the input data, the 10 countries may be broken down into three groups: Champions, Mediocre accomplishees and Underper-formers.



While the comparative scoring within the groups may not be very informative (the activities in place may be more or less effective), the division by groups is considered very logical and robust.

The countries included in the 'Champions' group have demonstrated significant progress on energy efficiency in comparison to their regional counterparts. The 'Underperformers' group is also formed quite logically: both Azerbaijan and Turkmenistan are rich in fossil fuel resources and, therefore, might not see energy efficiency as a priority. Turkmenistan provides very cheap energy, which is a poor motivation for consumers to use it effectively.

The 'Mediocre accomplishees' group includes six countries that are relatively close in received scores (74-84 points), all being engaged in multiple energy efficiency activities, yet not intensely enough to be promoted to the status of champions. The ranking of these six countries within the group is not intended to be precise.

The ratings results offer the opportunity for three alternative interpretations in terms of selecting the countries for further support to accelerating energy efficiency actions (see table 2).

TABLE 1.2 APPROACHES FOR SELECTING TARGET COUNTRIES TO ACCELERATE ENERGY EFFICIENCY ACTIONS

CRITERIA	REASON FOR POTENTIAL SELECTION	COUNTRIES FOR TARGET-ING
Maximum scored coun-tries	Large energy efficiency potential, legislation and regulations, insti-tutions, experts, data and experience in international cooperation in place would facilitate work on further acceleration of progress in energy efficiency	Kazakhstan, Belarus, Kyr-gyzstan, Armenia, Georgia, Uzbekistan
Minimum scored coun-tries	Substantial lack of momentum and resources to spur (or even launch) energy efficiency activities and, therefore, significant need for assistance from experienced countries to push it along the energy efficiency pathway	Georgia, Uzbekistan, Tajik-istan, Moldova, Azerbaijan, Turkmenistan
Moderately scored coun-tries	Good potential for energy efficiency improvements and a soil that can accept the seeds of change; some experience, some progress, some institutions are already in place and there is a will to enhance energy efficiency activities, however, much still needs to be done	Armenia, Georgia, Kyrgyz-istan, Moldova, Tajikistan, Uzbekistan
Highest market EE potential	Potentially high cost-effectiveness of investments in energy efficien-cy and relatively favorable decision-making practices, discount rates and energy prices	Kazakhstan, Uzbekistan, Be-larus, Tajikistan and Georgia

Using a multi-criteria approach to selection, the rankings are attributed according to the number of times a country is listed in the four criteria. In accordance with this system, Uzbekistan and Georgia gain the highest score (4), followed by Tajikistan (3). Several countries score 2 points: Kazakhstan, Bela-rus, Kyrgyzstan, Armenia and Moldova. It has to be noted that there is no perfect selection method and the results presented in this report should be considered only as an indication for the decision-making process.



Photo credit: Alena Romanenko

