



Sustainable Energy Europe and Central Asia Region

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Overview

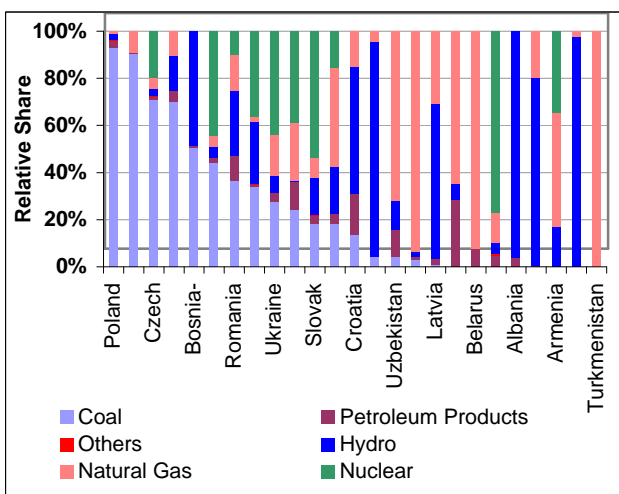
The Europe and Central Asia region (ECA) has high connection rates to electricity and centralized heat supply networks. Unfortunately, however, because of the history of central planning in their economies, the energy supply structures in many countries are based on old-fashioned, inefficient technologies and a highly energy-intensive supply pattern. As a result, energy intensities are much greater in ECA than in Western Europe (see fact box 1).

Fact Box 1: Energy Intensity Levels

Energy intensity measured in toe/'000 US\$ GDP:	
Range for western European countries:	0.1-0.2
Range for countries in Central and Eastern Europe:	0.5-1.0
Range for the Commonwealth of Independent States (CIS) countries:	1.0-4.0

In a number of ECA countries the environmental challenges posed by high energy intensity are compounded by the extensive use of lignite-fired thermal power generation and industrial facilities. Although emissions have been continuously reduced since the early 1990s, these plants often emit SO₂ and NO_x in excess of limits set in most OECD countries. As illustrated below, coal constitutes more than 25% of the primary energy source for electricity produced in ECA (see figure 1).

Figure 1: Electricity Generation by Fuel Type, 2001
(Source: IEA)



Challenges and Priorities

Within ECA, the World Bank is addressing the challenges to the energy sector along the following four broad areas of intervention:

1) **Delivery efficiency:** Improving the quality and technical efficiency of energy services.

2) **Financial efficiency:** Creating fiscal space by eliminating or restructuring subsidies and improving economic efficiency in the energy sector.

3) **Subregional integration:** Creating regional energy markets and achieving economic efficiency through cooperation and power trading.

4) **Mitigation of adverse environmental impacts:** Fuel switching, plant upgrades, and the promotion of renewable energy sources and demand side energy efficiency.

The projects within intervention area (4) are those most directly linked to sustainable energy, although renewable energy and energy efficiency play a major part within all the intervention areas, given that they are complementary.

World Bank Assistance for Sustainable Energy

The World Bank is promoting sustainable energy in ECA within a framework of market-based incentives. Based on this strategic approach, two primary areas of focus have emerged to promote sustainable energy development in ECA: to establish a supportive policy framework and to create investment opportunities.

Establishing a supportive policy framework by addressing the institutional and financial barriers and constraints includes providing advice on policies and laws related to renewable energy and energy efficiency, as well as supporting and establishing national institutions that help with policy implementation and project preparation. Following are some examples of the projects:

- The Bulgaria Geothermal Potential Study, the Moldova Biomass Potential Study, the Turkey Renewable Energy Law, and the Ukraine National Strategy for Greenhouse Gas Emissions Reduction.
- Institutional support in such countries as Belarus, Bulgaria, Poland, and Turkey.

Creating investment opportunities for private sector investment and participation in renewable and energy efficiency projects includes developing projects that demonstrate innovative financing, risk-sharing structures, and technical approaches, as well as creating regional or national funding or guarantee mechanisms. Examples of projects include the following:

- The Belarus Biomass Conversion project, the Croatia Renewable Energy project, the Hungary Small Hydropower plant, the Hungary Biomass Conversion project, the Lithuania Geothermal District Heating project, the Macedonia Mini-Hydropower plant, and the Russia Renewable Energy project.

- The Carbon Finance Umbrella projects in the Czech Republic and Poland.
- The energy efficiency programs in Bulgaria, Croatia, Lithuania, Poland, Romania, and Serbia.
- The Regional Fund for Geothermal Energy and the Financial Intermediation project in Turkey for renewable energy through two local development banks.

Highlights of Sustainable Energy Projects

Two examples of regional sustainable energy projects are the Russia Renewable Energy Program and the Geothermal Energy Development Project for the ECA Region and its Geothermal Development Fund.

Russia Renewable Energy Program

Despite considerable renewable energy resources in Russia, especially in the northwestern part, the southern part, the far eastern part, and the Baikal area, the level of utilization is less than 1%, compared with 8% in the European Union. This is a result of a disadvantageous investment and legislative climate for the development of renewable energies that is characterized by financial, information, institutional, ownership, and implementation capacity barriers. The Russia Renewable Energy Program (RREP) is being established to overcome these barriers, with a focus on the financial barriers.

The program seeks to (a) increase the availability of financing for renewable energy investments through a long-term financial facility that would provide soft loans and contingent grants, and (b) promote the market for advanced renewable energy technologies through grant support to developers, manufacturers, and consumers. RREP would start with the support of projects in Northwestern Russia (biomass energy), in the South (geothermal, solar, and wind energy), and in the Baikal region (solar and wind energy). Beyond supporting existing federal programs, RREP will also serve as a transparent and reliable mechanism for the creation of conditions and infrastructures to attract large-scale investments in projects related to renewable

Geothermal Energy Development Project and Geothermal Development Fund

Abundant geothermal potential remains unexploited in many of the ECA countries because of a vast array of barriers. Some of the barriers are inherent in geothermal technology, while others are common to renewable energy utilization in general. The ECA Geothermal Energy Development Project is based on an initiative by the Global Environment Facility (GEF) and the World Bank that is responding to a number of ECA countries that requested support to develop geothermal energy.

The project follows a strategic approach in providing assistance in barrier removal, financial support, and technical assistance in project preparation and implementation to project developers in client countries to ultimately facilitate the implementation of individual geothermal projects. The project will be an umbrella for many geothermal subprojects in participating ECA countries. The project will support the development of

geothermal energy for electricity generation, district heat, and other heating applications in the following ways:

- Provision of technical assistance and capacity building to transfer know-how and to establish a geothermal database and capacities to develop and implement geothermal energy projects.
- Support of capital investments in geothermal energy development projects.
- Development of reforms in policy and in the legal regulatory and institutional framework of the energy market.

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Romania Energy Efficiency Project

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