



TETRA TECH

Accelerating Decarbonization and Advancing Resilient, Inclusive Energy Sectors

Countries in Eastern Europe, the Western Balkans, Central Asia, and North Africa are striving to meet European Union energy and market standards. Three common challenges include:

1. Decarbonizing energy systems
2. Strengthening energy security
3. Forging an inclusive, reliable, and affordable energy sector

These [energy pillars](#) provide the framework for the work and investments of organizations such as the [European Bank for Reconstruction and Development \(EBRD\)](#).

Tetra Tech's Europe-based energy team sees several opportunities for aspiring countries to achieve their clean energy goals, strengthen energy security, and advance a just energy transition for all.



Tetra Tech implements projects that strengthen energy security and bolster economic growth.

30+ years of coordination with EBRD

30+ EBRD countries of operation

Decarbonizing energy systems

Scaling up renewable energy and clean technologies through auctions

Investment in clean energy can only be mobilized through reliable enabling environments. Investors and developers need security and transparency to make confident decisions with their capital. Governments need to keep consumer costs affordable and keep power projects on schedule. Competitive procurements—or renewable energy auctions—can reduce clean energy costs, spur private investment, and curb corruption. Auctions are increasingly used by governments, donors, and companies worldwide to meet these goals.

Energy Community countries are required to introduce renewable energy auctions as part of their European Union market integration. Auction planning and grid planning go together, and project agreements should be as final as possible when auctions take place to create a level playing field for all participants. Successful auctions will be tailored to local markets, power system conditions, and policy objectives.

Designing solar auctions

In Albania, Tetra Tech is advising the EBRD on the design and implementation of an auction for solar projects on private land. Tetra Tech supported the Government of Kosovo to select and pre-develop a 100 MW solar photovoltaic site, and to design a [successful auction](#) that yielded a winning offer of €48.88 per MWh. In Kazakhstan, we worked with USAID and the government to [add over 1,000 MW of renewable energy projects through auctions](#), with bid prices coming in up to 64 percent below previous renewable tariff ceilings. Auctions had locational signals to ensure that projects would be located where grid capacities are available.



Preparing the energy system for a decarbonized and decentralized future

The clean energy transition poses both challenges and opportunities for energy systems planning and the development of market-based solutions. A challenge for countries is that economical and reliable delivery of energy requires robust network and storage infrastructure. Benefits of new and decentralized energy technologies include enabling energy consumers to control their consumption, participate in energy markets, generate energy on-site, and contribute to enhancing energy system flexibility and resilience. Planning for power system adequacy and renewable energy source integration benefits from sophisticated probabilistic modeling with appropriate, granular historical data series.

Whereas the system-level approach advises on network development and operations, appropriate regulatory models that can trigger innovation and attract private sector participation are essential. Smart and inclusive market frameworks offer appealing alternatives to costly, time-consuming infrastructure development. These include self-consumption, behind-the-meter storage, smart electric vehicle charging, and local flexibility markets. Heat pumps, solar thermal systems, and biomass technologies are prominent solutions to consider for the decarbonization of district heating and cooling, paired with demand-side measures and cost-reflective heat metering and billing systems.

Facilitating electricity market integration —

In Moldova, Tetra Tech developed and conducted a grid flexibility study that will advance the procurement and deployment of battery energy storage and other high-tech equipment to strengthen the grid and facilitate greater electricity trade with Romania, Ukraine, and the broader European market. This is particularly important for Moldova's power system, which is highly inflexible and depends on external parties to observe the frequency quality limits within the range provided by the Continental Europe Synchronous Area.

In Ukraine, we helped tune the generation fleet to better provide load-frequency control services and created nested microgrid concepts. We are now analyzing the revision of the feed-in tariff support scheme to allow for competitive, market-based procurement of new renewable energy source capacities.

In Armenia and Moldova, we worked on collective and individual renewable energy source self-consumption models and their integration into the electricity market while assessing the hosting capacity of the distribution network as part of a regulatory quota determination for distributed generation. In Kazakhstan, we supported renewable energy source integration and district heating decarbonization while advancing regional market cooperation among five Central Asian countries, aiming to regionally optimize available resources and increase renewable energy source penetration in each country's energy system.



Promoting biofuels and clean hydrogen

The necessity of clean alternative fuels such as hydrogen and its derivatives, synthetic fuels, and biofuels is becoming more pronounced as the call to decarbonize hard-to-abate industries and economic sectors escalates. Long-term planning, including the development of strategies and roadmaps with input from all stakeholders, is crucial to properly align efforts and minimize redundancy. Comprehensive mechanisms involving public policy, funding, and regulation are necessary not only for projects related to production but also for end users, generating enough interdependence between supply and demand for these markets to develop effectively.

Promoting the development of clean fuel hubs with stakeholders aligned across the entire value chain is essential. These hubs concentrate production and storage infrastructure, enabling economies of scale that reduce production costs and make projects more viable. Furthermore, with the involvement of a diverse set of off-takers, hubs can generate varied revenue streams, reducing operational risks.

Developing clean hydrogen strategies —

To support Ukraine's goals to decarbonize heavy industries, future-proof its exports, and emerge as a major clean hydrogen supplier, Tetra Tech developed a high-level national hydrogen strategy in collaboration with USAID. The strategy assesses Ukraine's potential along the hydrogen value chain from production to transportation. It also defines Ukraine's high-level goals, priorities, and approach, including milestones in hydrogen development and recommended policy and regulatory mechanisms to support the sector. We are closely involved in the development of biomethane in Ukraine, including leading trainings and business roundtables and supporting biomethane secondary legislation. Tetra Tech is also devising a comprehensive plan to establish a clean hydrogen hub in Uzbekistan, assessing the optimal location and characteristics based on resource mapping.

Accelerating fossil fuel phase-out through improved energy planning

Abundant low-cost clean energy solutions and ambitious climate plans are accelerating the fossil fuel phase-out. But improved energy planning procedures must address security of supply and financing concerns as well as industry and labor concerns. Planning is essential for developing and maintaining power systems to serve homes and businesses, withstand climate-related shocks, and achieve the policy goals of decarbonization, access, and energy security. Strategies and implementation plans help welcome large-scale renewable generation fleets onto the grid and should be revised every three to five years.

Cross-sector decarbonization modeling and plans need to cost-optimize the fossil fuel phase-out, while nationally determined contributions (NDCs) and low-emissions development strategies need to be backed up with credible implementation plans and stakeholder input. Decommissioning of coal and inefficient gas plants coincide with just transition plans.

Decarbonizing power grids

Tetra Tech is supporting the EBRD in Azerbaijan to develop a low-carbon pathway for its power sector by modeling energy systems and assessing various scenarios as inputs to its NDC. In Moldova and Ukraine, our USAID programs advised on modeling, developing, and organizing NDC plans. In Egypt, Tetra Tech is working with USAID to assist the government in grid development and modernization, which will support grid integration for large-scale renewables and gas plant decommissioning. In Moldova, Serbia, and Ukraine, we are advising governments on [the impact of the European Union's Carbon Border Adjustment Mechanism](#) on their power sectors. Tetra Tech has also worked on clean energy investment plans in Albania, Azerbaijan, Georgia, Kosovo, Moldova, North Macedonia, Serbia, and Ukraine.



Strengthening energy security

Securing energy supply

The energy crisis triggered by Russia's aggression has led decision-makers in the European Union to adapt policies and strategies. Diversification of energy carriers and energy supply has rapidly changed energy consumption patterns and led to an unprecedented reduction of natural gas utilization. Adaptation entails countries accelerating renewable energy source generation and developing network and storage infrastructure. They must also advance market integration.



Developing resilience plans

In Moldova, Tetra Tech has been writing regulations to enable virtual reverse flows (backhaul) and making full use of the vertical corridor to supply Moldova and Ukraine. We have been working closely with the Government of Moldova and development partners to accelerate renewable energy source development by developing forecasting and renewables acceleration areas.

In Ukraine, in the face of the war and continuous damage to energy infrastructure, we worked closely with the electricity and gas network operators to prepare resilience plans, determine adequacy on a rolling horizon for winter and summer, and start planning the electrical system's configuration to continue operating in synch with the European system. We also prepared stress-testing and hydraulic simulations of the gas transmission system to determine the impact of Russia's cutting off gas transit through Ukraine.

Bolstering regional cooperation, we have supported market coupling efforts between Romania, Moldova, and Ukraine, and we are assisting Kosovo to implement the memorandum of understanding for market coupling in Southeast Europe.

Advancing energy efficiency

Energy efficiency is considered the “first fuel” leading to cost-effective carbon dioxide mitigation. Despite global progress in reducing energy intensity, much more effort is needed to achieve the 2-degree Celsius target, more than doubling current investments. Well-established best-practice policies on energy efficiency can help mitigate regulatory, institutional, and economic challenges. Among them are targeted economic incentives to de-risk investments and attract private sector finance, as well as streamlined and digitized procedures to facilitate investment such as one-stop shops and dedicated technical assistance facilities. Pioneering business models, new financing mechanisms that

incorporate energy performance contracting, and digital innovation encompassing data analytics and aggregation are expected to help exploit the substantial energy efficiency potential in all sectors of the economy.

Supporting investment strategies

In Moldova, through the [USAID Moldova Energy Security Activity](#), Tetra Tech is supporting the government to improve the legal and regulatory environment to facilitate investment and introduce financial instruments to fund energy efficiency projects. We have been assisting the Ministry of Energy to fully harmonize Moldovan legislation with the European Union Energy Performance of Buildings Directive and to develop a National Information System on energy efficiency. In parallel, we launched an innovative program for small and medium-sized enterprises to finance energy efficiency. We are also implementing the Moldova Super Energy Service Companies (MESCO) Program, which includes designing and setting up an innovative entity to pilot the ESCO market for energy efficiency renovations in buildings.

In Poland, under an EBRD project, Tetra Tech performed a market analysis of available and potential financial instruments for the energy efficiency rehabilitation of public buildings, focusing on instruments incorporating energy performance contracting. This led to an investment strategy that prioritizes structured ESCO-based financing mechanisms tailored for specific market segments.



Forging an inclusive, reliable, and affordable energy sector

Safeguarding a just energy transition

A coordinated coal phase-out supports a just energy transition. It requires comprehensive, ambitious, yet realistic plans that serve as a roadmap to restructure the productive model of the transitioning areas. These plans must also capitalize on the areas' diverse comparative advantages and all available sources of funding. Successful initiatives mobilize substantial dedicated funding to leverage investments that alleviate the socio-economic costs of diversifying local economies.



Overall, this effort should:



- Safeguard and increase employment while creating new jobs through investment and reskilling of the workforce with a distributive lens
- Offset the socio-economic effects of coal mine closure by maintaining and strengthening community relations
- Use available funding and direct investments through appropriate incentives to areas undergoing a clean energy transition
- Provide gender-smart and disability-inclusive investment technical assistance to private investors

Advancing equality and inclusion



Tetra Tech works with societies to sustainably strengthen weakened social, economic, and governance systems by providing design, implementation, monitoring, and evaluation services. Our economic growth programs provide expertise across the energy infrastructure life cycle: from policy framework development to the preparation, design, facilitation, and financing of the most efficient, sustainable, and equitable projects. This includes the USAID-funded [Engendering Industries](#) program, through which we provide technical assistance support to [increase workforce gender equality in male-dominated sectors worldwide](#). Furthermore, Tetra Tech is supporting the Dutch Good Growth Fund's Gender Lens Investing Capacity Development Programme to improve access to financing for women in the "missing middle" by providing technical assistance to financial institutions and private investors, guiding them toward gender-responsive and socially inclusive efforts throughout the investment process.



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