

Armenia energy storage economics

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The Republic of Armenia (Armenia) is a landlocked country in the southern Caucasus region between the Black and Caspian seas, bordered by the Republic of T rkiye (T rkiye) on the west, Georgia to the north, Azerbaijan on the east and Iran to the south. The country is approximately 29800km² with a population of 2.969 million. Yerevan, the capital, is the largest city with 1.092million inhabitants.

Armenia's economy has undergone numerous reforms since the economic crisis of the early to mid-1990s. It has evolved from having a Soviet-era centralised structure to a partially market-oriented economy, with privatisation of most enterprises. An influx of foreign capital and funding from donors since the early 2000s has contributed to healthy economic growth, and Armenia's real GDP increased 5.72% per year from 2002 to 2021 (measured in USdollars at 2017 PPP prices). Real GDP per capita was USD4670 in 2021, roughly six times what it was in 2002.

Armenia's reliance on export-oriented industries and high remittances from the Armenian diaspora (which accounted for 10.5% of GDP in 2021) expose the economy to price and demand fluctuation risks. During the latest global financial crisis, the country's real GDP fell 15% and poverty rose from 27% in 2008 to 35% in 2011. However, targeted social expenditures and pension increases have induced economic growth, and the poverty level had fallen to 27.0% in 2020.

Lacking indigenous resources, Armenia imports natural gas and oil for most of its energy needs (78.6% of total energy supply in 2020), mainly from the Russian Federation (hereafter, "Russia"). Natural gas is imported from Russia via pipeline through Georgia, but also from Iran through a barter agreement under which it exports electricity in exchange.

Armenia also trades electricity with Georgia, though volumes are low since the countries' networks are not synchronised. Energy interconnections with Azerbaijan and T rkiye are currently inactive for political reasons.

Prompted by a severe electricity supply crisis in the mid-1990s, Armenia has revamped its energy sector over the past 20 years. Parts of the sector have been privatised, some companies have been restructured, most households now have access to gas, and cost-reflective tariffs have been introduced. This has led to ample investment in capacity and networks, which has considerably improved reliability; funding came mainly from the donor community, upon which Armenia still relies for support.

Energy policy is now focused on developing indigenous energy sources, mainly renewables, and on extending the lifetime of the nuclear reactor that supplies nearly one-third of the country's electricity. The government

has begun to pay more attention to energy efficiency issues, and the second National Energy Efficiency Action Plan (NEEAP-2) was developed in 2020.

Armenia's regional policy focuses on strengthening its position and broadening market integration. The European Union and Armenia completed negotiations for an Association Agreement and the Deep and Comprehensive Free Trade Area in July 2013; soon after, however, implementation was suspended because Armenia expressed strong interest in joining the Eurasian Customs Union with Belarus, Kazakhstan and Russia. Armenia subsequently became a member of the Eurasian Economic Union in January 2015 with Belarus, Kazakhstan and Russia, and Kyrgyzstan joined in August 2015. It has been an observer to the Energy Community since 2011 and a member of the Eastern Partnership since 2009.

Armenia relies on imports of natural gas and oil for most of its energy needs, which exposes it to supply risks and dependence on a single supplier. As the government considers energy security and the development of indigenous sources to be of prime importance for the energy sector, renewables and efficiency measures are key areas. To satisfy expected demand growth while increasing reliability, the government aims to increase capacity and promote domestic energy sources.

This strategy and its accompanying action plan are Armenia's main energy policy documents. Their targets and objectives aim for an energy sector that is:

In 2014, the government developed the Scaling-Up Renewable Energy Programme Investment Plan. It is an update of the Renewable Energy Roadmap developed in 2011 and includes comprehensive analyses of renewable energy potential, costs and benefits, and the viability of specific technologies. It also sets targets and objectives for renewable energy to 2025, including a plan for financing.

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