

Shirak Province – Under2 Coalition-Appendix

PROFILE

Shirak Province occupies the northwestern part of Armenia and covers an area of 2,680 km² (1,035 sq mi) (9% of total area of Armenia). It has borders with Lori Province from the east, Aragatsotn Province from the south, Turkey from the west and Georgia from the north.

Demographic and economic profile:

Country: Republic of Armenia

Province's Population: 251,941, 8.3% of the entire population of Armenia

Country GDP (PPP): Total: \$ 26.560 billion (2016)

Per Capita: \$ 8,881 (2016)

TARGETS

The Republic of Armenia ratified the UN Framework Convention on Climate Change (UNFCCC) in May 1993 and as a developing country not included in Annex I to the Convention. In December 2002, Armenia ratified the UNFCCC Kyoto Protocol. On September 2016, Armenia signed the Paris Agreement. According to Armenia's intended nationally determined contribution (INDC) submitted to the UNFCCC in 2015, the country (respectively the Shirak Province) intends to limit aggregate GHG emissions to 633 million tCO₂e for the period between 2015 and 2050. An annual average of GHG emission per capita aims to be limited to 5.4tCO₂e for the period of 2015-2050, while Armenia's GHG emissions comprised 2.14tCO₂e per capita in 2010.

TOOLS

Armenia (respectively the Shirak Province) outlines some of the priority sectors in mitigation and adaptation which are as follows.

- Energy supply
- Transport
- Land use and forestry
- Water resource management

Energy supply

The energy sector in Armenia has achieved a range of reforms over the past decades, which have led to a strong payment discipline with collections for electricity (100% of sales), reforms for the energy subsidies and a competent regulatory agency put in place for the sector. While the country has made notable progress in reforming the country's energy sector, the government still considers that development of renewable energies and energy efficiency measures is key to strengthening energy security and the development of indigenous sources, as well as to reducing their energy-related GHG emissions. Nevertheless a number of projects in the energy sector have been implemented or committed to, and the types of these projects are diverse, including renewable power plants, high efficiency transmission infrastructure, and energy efficiency for buildings. In light of these benefits, the "Caucasus Electricity Transmission Network" project, supported by Germany, the EU and the EIB, establishes better energy interconnections to enable energy exchange and transit between Armenia and Georgia as well as other areas in the South Caucasus region (EC, 2014). The ADB also committed to supporting "Power Transmission Rehabilitation Project", aiming to increase the efficient electricity supply to urban and rural consumers to support inclusive and sustainable economic development (ADB, 2014). The World Bank (IBRD) has also supported a similar project called "Electricity Supply Reliability Project" since 2011 (WB, 2011).¹⁵ To promote investments in renewable energies, the "Scaling-up Renewable Energy Program Investment Plan (SREP)" was also developed in 2014 with the support of the Strategic Climate Fund (SCF) of the Climate Investment Funds (CIFs). The plan includes comprehensive analyses of renewable energy potential, cost-benefit and the viability of specific technologies. It also sets targets and objectives for renewables to 2025, including a plan for financing. Under the SREP, "Geothermal Exploratory Drilling Project" was committed in 2015. In light of the importance of hydropower in the country, the EBRD supports JSC International Energy Corporation (IEC) in rehabilitating its existing and aged hydropower plants. The project aims at a significant increase in reliability and power production of the plants, while improving overall generation efficiency and lowering the GHG emission level (EBRD, 2012).

Transport

The ADB has supported the investment program that targets a range of urban connectivity and mobility improvements in Armenia, aiming to improve transport efficiency, reliability, safety and reduce congestion (ADB, 2011). The cities include: Yerevan, secondary cities such as Gyumri (Shirak Province), Kapan, and Vanadzor, as well as smaller cities where manufacturing, agriculture and/or tourism industries are important drivers of economic growth. In addition to the need to develop efficient road transport infrastructure, rail transport in cities can also play an important role in reducing GHG emissions, congestion and other environmental impacts such as air pollutions and noise. The project "Green Urban Lighting", supported by the GEF and the UNDP, aims to facilitate demand-side energy efficiency activities (i.e. lightings) at the facilities related to the transport sector and also other urban infrastructure in cities of Armenia. The project has implemented technical

assessment, facilitation of financing, and development and implementation of municipal programs and national policy, in order to tackle barriers to the uptake of such lighting equipment.

Land use and forestry, and natural ecosystems

Need for enhancing carbon sequestration through sustainable land use planning and forest management has been mentioned in multiple studies on climate actions undertaken by Armenia. Better land use and forestry management would provide significant benefit on not only climate change mitigation, but also adaptation, water resource management, disaster risk management and ecosystem conservations. The INDC mentions forestry in both the mitigation and the adaptation sections, where afforestation, forest protection and increasing carbon storage in soil are identified as measures. While there have been a few relevant projects in the country, an NGO called the Armenia Tree Project has been engaged in a reforestation program with support of Norway. The GEF and the UNDP have also committed to support a project on “Sustainable Land and Forest Management in Dry Mountain Landscapes”. It aims to promote an integrated approach towards fostering sustainable forest management, striking balance between environmental, social and economic objectives in development plans and associated investments. “Ecosystem approach” is a key for Armenia to adapting to a changing climate, and also seeking opportunities to maximize the synergies between mitigation and adaptation actions. Armenia has identified a range of challenges to the adaptation of natural ecosystems to climate change. The examples identified in the preparatory work for the GEF-financed Project “Adaptation to Climate Change Impacts in Mountain Forest Ecosystems of Armenia” include: (1) decision making processes regarding the country’s forest ecosystem management, which do not integrate the climate change risks; (2) insufficient technical capacity of individuals and institutions to observe and forecast adaptive capacity of forests, and identify and implement options for adaptation; and (3) no concrete experiences with implementing adaptation measures.

Water resource management

While the country has rich water resources: 14 river basins and 100 small mountain lakes, including Kura River and Araks River basins and the Sevan Lake, the water shortage has often occurred and made the agriculture sector in particular vulnerable to climate change. Rapid decline in irrigated areas in the country from 300 000 ha (in 1980’s) to 150 000 ha (as of 2014) took place, due to degradation of water distribution and drainage systems, a lack of maintenance and high pumping costs, and frequent water shortages as a result. The EU, the EBRD and the EIB committed to the project “Yerevan Water Supply Improvement Project” that aims to improve technical water losses. The project focuses on priority investments that will reduce these losses, improve services and contribute to a sustainable water system, while reducing energy use for supplying water. The ADB has also been supporting water supply and sanitation projects in the country since 2007. The “Water Supply and Sanitation Sector Project” helped the country upgrade and rehabilitate water supply and sanitation systems, and improve management and operational efficiency through 18 subprojects in 16

towns and 125 villages (ADB, 2012). In 2012, the ADB approved additional financing towards 2017 so as to continue the actions mentioned above, and also to ensure further public health and environmental improvements by providing potable and reliable water supply to households in approximately 18 towns and 92 villages in the provinces of **Aragatsotn, Ararat, Amavir, Geharqunik, Tavush, Lori, Kotayq, Shirak, Syunik, and Vayots-Dzor** (ADB, 2012).

Agriculture

The agricultural sector of Armenia is considered vulnerable to climate change due to frequent droughts, higher air temperature, reduced precipitation, increased evaporation rates and deteriorated water scarcity, which can at least partly be amplified by a changing climate. The impact is already being felt, for instance, the drought in 2000 resulted in a loss of 2.7% of GDP and 10.1% loss in agricultural GDP, accounting for the total economic loss of USD 57 million. Germany committed to a large-scale project “Irrigation System of Integrated Water Resource Management in Akhouryan River” that is part of a broader project called Integrated Water Resources Management for Akhouryan River. The Irrigation-related project aims to modernize the field irrigation systems and technology in order to address issues about water losses caused by inefficient infrastructure for canals and water distribution systems. Improving irrigation systems for the agriculture sector can also benefit GHG mitigation efforts of the country. The “Irrigation System Enhancement Project for Armenia”, supported by the World Bank, aims to reduce the amount of energy used and to improve the conveyance efficiency in targeted irrigation systems. Switzerland supports the project “Livestock Development in the South of Armenia” aiming to improve farmers' capacities and economic stability to cope with the impacts of climate change. The overall goal of the project is to create increased economic opportunities and incomes of farmers involved in animal husbandry in the Syunik and Vayots Dzor regions of Armenia.

CAPACITY

Armenia has been implementing reforms in its energy sector during the past 20 years, such as privatization and restructuring of companies in the energy sector, and introduction of cost-reflective tariffs. This has led to considerable investments in capacity and networks, which has improved reliability of the relevant infrastructure considerably. A significant portion of the investment was from the donor community.

Nearly USD 200 million of climate-related development finance is committed to Armenia per year in the period between 2013 and 2014, where more than half of the amount was committed to adaptation projects. The scale of finance for adaptation projects and multi-focal projects (targeting both mitigation and adaptation) is significantly larger than the EECCA average. None of the other EECCA countries receives more adaptation finance than mitigation finance.

Energy sector received the largest amount of climate-related development finance, not only for mitigation but also for adaptation. This is largely attributed to the “Armenia–Georgia high voltage transmission line project” supported by Germany, which amounts to USD 97 million, aiming at both mitigation (energy efficiency) and adaptation (energy sector resilience). The agriculture, forestry and fishery sector was also committed a relatively large amount of climate-related development finance. Examples include: the expansion of the irrigation system by Germany, and the project on community agriculture resource management that aims to improve productivity and sustainability of pasture and livestock systems, supported by the International Bank for Reconstruction and Development (IBRD).

In the period of 2013-14 about USD 130 million per year of climate-related development finance was committed through bilateral channels, while about half the amount (USD 64 million per year) is delivered through the multilateral channels. Loan financing dominates as an instrument to deliver climate-related finance both in bilateral and multilateral channels. The Asia Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD) and the European Investment Bank (EIB) provide nonconcessional equity financing for mitigation projects (e.g. energy and financial sectors).

Domestic climate finance mechanisms and frameworks

The country has established mechanisms and policy frameworks to promote mobilization of domestic public and private climate finance sources. These include national funds that can be used to allocate resources to climate actions, reforms on tariffs for electricity, and public budget allocation to low-carbon technologies and capital investments. Notably, the Renewable Resources and Energy Efficiency Fund of Armenia was established to implement loans and grants to develop renewable energy and energy efficiency in line with strategic priorities set out by the Government. The R2E2 also aims to attract domestic sources for co-financing. The INDC also indicates a plan to establish an internal (domestic) climate revolving civil fund that would be replenished on permanent base by allocations from environmental fees, ecosystem service fees as well as carbon taxes. Tariffs Among other domestic financing schemes for climate actions, Armenia is developing a tariff policy to create favorable conditions for developing renewable energies and attracting investment. Pooled fund to be used for development of renewable energy The Renewable Resources and Energy Efficiency Fund of Armenia implements loans and grants for projects, with support of the World Bank and the funds operated by the Global Environmental Facility, to develop renewable energy and energy efficiency in line with strategic priorities set out by the Government of Armenia. The Board of Trustees that consist of representatives of government agencies, NGOs, and the private sector oversee the implementation of related projects and overall R2E2 Fund operations. Financing for low-carbon climate-resilient technologies In terms of technology development and transfer, Armenia plans to promote co-operation with the UNFCCC’s Climate Technology Center and Network (CTCN). The country also considers the establishment of a similar mechanism within the country.

ADAPTATION

The Republic of Armenia embraces the ecosystem approach for adapting to climate change. The approach is in harmony with the environmental policy of the country, can ensure synergy with other international environmental conventions and treaties, will lay the ground for inter-sectorial coordination, and will support establishment of cross-border cooperation and solidarity environment. Adaptation activities will be prioritized based on the most vulnerable sectors to climate change: 1. Natural ecosystems (aquatic and terrestrial, including forest ecosystems, biodiversity and land cover) 2. Human health 3. Water resource management 4. Agriculture, including fishery and forests 5. Energy 6. Human settlements and infrastructures 7. Tourism.