#### RENEWABLE ENERGY SNAPSHOT:

## Armenia



Empowered lives. Resilient nations.

General Country Information		Electricity C Capacity 20			
Population: Surface Area: Capital City: GDP (2012): GDP Per Capita (2012): WB Ease of Doing Busines:	2,969,081 29,740 km <sup>2</sup> Yerevan \$ 9.9 billion \$ 3,338 s: 37	4,100 MW         Total Installed Capacity         221 MW         Installed RE Capacity		<b>5.4%</b> RE Share	
		Biomass	Solar PV	Wind	<b>Small Hydro</b>
Installed Renewable Capacity 2012 in MV		< 1	< 1	2.6	218
Technical Potential Renewable Electrici		n.a.	39,700	500	300

Source: Babayan (2012); Danish Energy Management A/S (2011); UNDP & GEF (2012); Ministry of Energy and Natural Resources of the Republic of Armenia (2013); R2E2 & GEF(2008); World Bank (2014); Hoogwijk and Graus (2008); Hoogwijk (2004); JRC (2011); and UNDP calculations.

#### Key information about renewable energy in Armenia

Armenia is a landlocked country without oil and hydrocarbon reserves. It is therefore highly dependent on imported oil and hydrocarbons (IFC & BMF, 2011). For that reason, the development of renewable energy sources is particularly important for Armenia. The estimated technical potential, if fully developed, could make the country less dependent on energy imports from neighbouring countries. The Law on Energy of the Republic of Armenia gives responsibility to the Public Service Regulatory Commission to determine tariffs each year for both new commissioned and existing generators, including technologic specific feed-in tariffs for wind, biomass and small hydropower plant producers (Glemarec et al., 2012).

#### Feed-in tariff in Armenia

Eligible technologies	Additional Condition	Tariff in € / MW-h excluding VAT
Wind	-	61.31
Biomass	-	68.15
Small and mini hydro	for natural water streams for irrigation systems for natural drinking resources	35.58 23.71 15.80

Source: R2E2 (2014) based on the Dram/Euro (1 March 2014)

The tariffs ensure guaranteed purchase of produced electricity for 15 years from commission. They are determined by the Public Service Regulatory Commission to ensure that all current and recurring capital costs are covered and a sufficient rate of return is provided. Armenia is 37nd in the World Bank's Ease of Doing Business index, rising by 3 places in 2013. Starting a business is relatively easy in Armenia (11<sup>th</sup> position) and better than in the United States of America (13<sup>th</sup> position) (IFC & World Bank, 2014).

#### Legislation and policy

Armenia's Strategic Development Program for the Hydro Energy Sector forecasts that, in 2025, 30 percent of Armenia's energy demand can be met by renewable energy (Ministry of Energy and Natural Resources, 2011). The country's Renewable Energy Roadmap, developed by Danish Energy Management and R2E2, defined targets for installed capacity of renewable energy sources to meet the forecast electricity demand. The targets are 197 MW installed renewable energy capacity by the end of 2013, 282 MW by 2015 and 545 MW by 2020 (Danish Energy Management A/S, 2011). The Law on Energy, adopted in 2001, regulates interactions between stakeholders in the electricity market, for example the 15-year electricity purchase guarantee by grid operators for electricity produced from renewable sources. The Law on Energy Saving and Renewable Energy regulates specific renewable energy issues, such as the definition of renewable energy. It also gives the Public Service Regulatory Commission regulatory power (Law on Energy Saving and Renewable Energy, Article 4.1). The Law on Licencing requires licences for power generators. The licences can be obtained from the Public Service Regulatory Commission. Foreign investment companies face the same tax regimes as Armenian companies. Specific tax exemptions and privileges may apply if the foreign investment exceeds AMD500 million (c, \$1.2 million) (ECS, 2008).

## Armenia

Institutions			
Organization	Responsibility	Website	
Ministry of Energy and Natural Resources (MENR)	- Responsible for energy policy development and implementation	www.minenergy.am/	
Ministry of Nature Protection of Armenia (MoNP)	<ul> <li>Designated national authority for clean development mechanisms in Armenia and is responsible for the issuance of Letter of Approval for clean development mechanism projects</li> <li>Responsible for the coordination of implementation of the UNFCCC in Armenia</li> </ul>	www.mnp.am/ www.nature-ic.am	
Public Service Regulatory Commission (PSRC)	<ul> <li>Independent regulator setting tariffs for electrical and thermal energy, transmission and distribution</li> <li>Grants licences for generation, transmission and dis- tribution in the energy sector</li> </ul>	www.psrc.am/am/	
Institute of Energy of the Ministry of Energy and Natural Resources	<ul> <li>Research and analysis of energy sector information, policies, regulation, technology in renewable energy and energy efficiency, project implementation</li> </ul>	www.energinst.am	
Renewable Energy and Energy Efficiency Fund of Armenia	- The Fund's objectives are to facilitate investments in energy efficiency and renewable energy sectors, and promote the development of these markets in Ar- menia through, for example, active participation in policy-making, removal of barriers, creating and de- veloping opportunities for financial sector entities, and development of energy services	www.r2e2.am	
High Voltage Electrical Networks (CJSC)	- State-owned transmission company constructing , operating and maintaining the transmission network		
Electric Networks of Armenia	- Monopolistic distribution company owned by Russ- ian RAO UES	www.ena.am/	
Armenian Development Agency	- State investment agency providing information and consultancy for foreign investors in Armenia	www.ada.am/	

Opportunities to finance renewable energy projects in Armenia		
Financing organization	Details	Website
KfW through German - Armenian Fund	A $\in$ 40 million loan was concluded between KfW bank and the Central Bank of Armenia to promote utiliza- tion of renewable energies, by enhancing the access to loans for private entrepreneurs and enterprises.	www.gaf.am
Green Growth Fund	Provides direct and indirect (through financial inter- mediaries) financing for small scale renewable energy projects usually not larger than €50 million.	www.ggf.lu/
Asian Development Bank (ADB)	Asian Development Bank provides equity, loans and guarantees for private sector with clear development impacts as well as a sound rate of return.	www.adb.org/

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Financing organization	Details	Website
Eurasian Development Bank (EDB)	Prioritizes investment in power generating RES projects by granting debts ranging from \$30 to \$100 million.	www.eabr.org/e/
International Finance Corporation (IFC)	With investment (equity, loans and other financial in- struments) and advisory services, IFC supports invest- ment in renewable energy power plants.	www.ifc.org/
Armenian Sustainable Energy Financing Facility (ArmSEFF)	Financing of individuals and private Armenian busi- nesses of all sizes and in all sectors for energy effi- ciency or renewable energy projects including free technical assistance.	www.armseff.org/
European Bank for Reconstruction and Development (EBRD)	Provides renewable energy developers with equity, loans and loan guarantees for projects with good commercial prospects of up to 15 years' duration.	www.ebrd.com/pages/workingwithus/pro jects.shtml

# CompanyProjectStatusConstructed by Sunir (Iran)<br/>and now owned by High-<br/>Voltage Electric Network<br/>CJCSSunir constructed Lori 1 as the first and only wind<br/>farm in Armenia to date, with an installed capacity<br/>of 2.64 MW. It was built in 2005 at Pushkin Pass with<br/>a \$3.2 million funding.Commissioned

#### References

**Recent projects** 

Armenia Renewable Resources and Energy Efficiency Fund (R2E2) & Global Environment Facility (GEF), 2008: Wind Power Development in Armenia. Available at: http://t2e2.am/wp-content/uploads/ Windpower\_in\_Armenia.pdf

Armenia Renewable Resources and Energy Efficiency Fund (R2E2), 2014: Tariffs. Available at: http://r2e2.am/en/2011/06/tariffs/

Babayan, T., 2012: Renewable Energy in Armenia. Available at: www.energy-community.org/pls /portal/docs/1668199.PDF

Danish Energy Management A/S, 2011: Renewable Energy Roadmap for Armenia. Available at: http://reweek.am/UserFiles/45567aaef3822f38dfd1236 5719112eeRenewable%20Energy%20Roadmap%20for %20Armenia.pdf

Energy Charter Secretariat (ECS), 2008: Armenia -Follow-up Review of the Investment Climate and Market Structure Review in the Energy Sector. Available at: www.encharter.org/fileadmin/user\_upload/ Publications/Armenia ICMS 2008 ENG.pdf

Glemarec, Y., Rickerson, W. and O. Waissbein, 2012: Transforming on-Grid Renewable Energy Markets – A Review of UNDP-GEF Support for Feed-in Tariffs and Related Price and Market-Access Instruments. Available at: http://web.undp.org/gef/document/UNDP\_ IT\_Port\_TransformingREMarkets\_15oct2012.pdf

Hoogwijk, M., 2004: On the global and regional potential of renewable energy sources. Utrecht: Universiteit Utrecht, Faculteit Scheikunde. Dissertation. Available at: http://igitur-archive.library.uu.nl /dissertations/2004-0309-123617/full.pdf

Hoogwiijk, M. and W. Graus, 2008: Global Potential of Renewable Energy Sources: A Literature Assessment. Available at:

www.ecofys.com/files/files/report\_global\_potential\_of \_renewable\_energy\_sources\_a\_literature\_assessment. pdf

Joint Research Centre of the European Commission (JRC), 2011: Technical Assessment of the Renewable Energy Action Plans. Available at: http://cc.europa.eu/dgs/jrc/downloads/jrc\_reference \_report\_2011\_reap.pdf

International Finance Corporation and Bundesministerium für Finanzen, 2011: Analysis of Feedin Tariff for Renewable Energy Sources in Armenia. Available at: http://r2e2.am/wp-content/uploads /2012/08/FiT-analysis\_English.pdf

International Finance Corporation (IFC) and World Bank, 2014: Doing Business – Measuring Business Regulations, Available at: www.doingbusiness.org /data/ exploreeconomies/armenia/

Ministry of Energy and Natural Resources of the Republic of Armenia, 2013. Available at: www.minenergy.am/

Republic of Armenia, 2004: The Law on Energy Saving and Renewable Energy. Available at: www.parliament.am/legislation.php?sel=show&ID=211 9&Iang=eng

UNDP & GEF, 2012: Armenia: Situational analysis and assessment in the context of Sustainable Energy for All Initiative: Rapid Assessment – 2012. Available at: www.nature-icam/res/Third%20National %20Communication/WEB/SE4ALL%20Armenia\_Report %20\_ENG\_pdf

World Bank, 2014: Data Catalog. Available at: http://datacatalog.worldbank.org/