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Related documents: CC 571, Mess. 1326/16

DECISION OF THE ENERGY CHARTER CONFERENCE

Subject: Adoption by correspondence – Recommendations of the In-depth Energy Efficiency Review of Armenia

By document CC 571 dated 4 October 2016, the Energy Charter Conference was invited to welcome the report on the In-depth Energy Efficiency Review of Armenia and endorse its recommendations. As specified by Rule 19 of the Rules of Procedure concerning the adoption of decisions by correspondence, members of the Energy Charter Conference were informed that any delegation that wished to object to this proposal should notify the Secretariat of its position in writing by 26 October 2016.

Having received no objections within the specified time limit, the Conference **welcomed** the report on the In-depth Energy Efficiency Review of Armenia and **endorsed** the recommendations made to the Government of Armenia.

Keywords: In-depth review, Energy Efficiency, PEEREA, Armenia

IN-DEPTH REVIEW OF THE ENERGY EFFICIENCY POLICY OF ARMENIA

Background

The Republic of Armenia is a mountainous, landlocked country strategically located at the crossroads between Europe and Asia. The country has an area of approximately 29,740 km²¹ and is located in the South Caucasus region of Eurasia. Armenia borders Turkey in the west, Georgia in the north, Azerbaijan in the east, and Iran and the Azerbaijani exclave of Nakhijevan in the south. The capital of the Republic of Armenia is Yerevan and in 2014 the population of the country stood at 3.01 million.² Its population density is just over 100 people per km², making it one of the most densely populated countries in the region. The majority of the population lives in urban areas and approximately 38% of the population lives in Yerevan.

Prior to the fall of the USSR, Armenia was a Soviet Republic for 70 years. The Republic of Armenia declared independence from the USSR in August 1990, but was not officially recognised as an independent state until 1991. After the dissolution of the USSR, the country embarked on a path of democratic reform and transition from central planning to a market-driven economy. In accordance with the Constitution adopted by a nation-wide referendum on July 5th, 1995, Armenia became an independent and democratic nation with a presidential form of administration in which the President, elected by a national vote for a term of five years, appoints the Prime Minister. The legislative authority is the National Assembly and from 2017 all members of the Assembly will be elected by proportional representation.

Armenia's economy contracted by half after independence from Russia in 1991 due to the break down of value chains of the former USSR. Recovery was slow with a shift from heavy industry to services, which explains improvement in energy intensity. From 2000 to 2008, the economy benefited from massive expansion in the construction sector but the construction industry collapsed in the wake of the 2008-2010 financial crisis, following which Armenia's economy contracted by 14% before slowly recovering. Inflation is currently below 4%³ and the current account currently enjoys a small surplus.⁴ Poverty in Armenia increased in the wake of the global economic crisis, however, and currently affects almost 30 percent of Armenian households.

¹ <http://www.gov.am/en/geography/>

² <http://www.gov.am/en/demographics/>

³ <http://www.tradingeconomics.com/armenia/inflation-cpi>

⁴ In July 2015 the budget surplus was 58mUS\$.

<http://www.tradingeconomics.com/armenia/current-account>

The World Bank ranks Armenia as 35th out of 189 countries in relation to ease of doing business.⁵ In relation to economic freedom, Armenia was ranked 52nd out of 178 countries, and 23rd out of 43 European countries, by the Heritage Foundation in 2015.

In a 2014 Readiness for Investment in Sustainable Energy (RISE) survey carried out by the World Bank, Armenia was assessed on three pillars of sustainable energy - energy access, renewable energy and energy efficiency. Regarding energy efficiency, the report noted that in spite of legislation passed in 2004, which helped to adopt a legal framework for energy efficiency, the country still lacks a national target for reducing energy intensity. One area in which Armenia scored poorly was regarding the incentives or mandates that energy supply utilities had to invest in energy efficiency. The report critiqued that utilities were not required to carry out energy efficiency or carbon-reduction activities. The same applies to investment into energy efficiency by public entities and large scale users, which have no binding energy saving obligations.⁶ Overall Armenia achieved RISE scores of 59/100 in renewable energy and 37/100 in energy efficiency.⁷ Such scores indicate that much work is necessary to attract necessary further investment in both areas of sustainable energy.

Supply and demand

Total primary energy supply (TPES) of Armenia reached 2900 ktoe in 2013, 77% of which is imported. Armenia imports all of its oil and gas. With gas accounting for 63% of Armenia's primary energy, the country is highly dependent on gas imports, 80% of which come from Russia. The remainder of gas imports come from Iran, imported in exchange for Armenia's supply of electricity to Iran.

Armenia's electricity generation capacity is comprised as follows: 2433MW thermal (1380MW available), 815 MW nuclear (407.5MW available), 1182 MW hydro and a wind pilot of 2.6MW. At present, baseload capacity is provided by the nuclear power plant with nuclear fuel being flown in from Russia. Hydropower plants provide daily load regulation while thermal plants operate to cover peak demand, especially in the winter, and to provide backup when the nuclear power plant goes offline for maintenance. Roughly 50% of the generation facilities are more than 40 years old, however, and many will need to be closed in the short to medium term. The lifetime of Armenia's nuclear plant is to be extended to 2026, enabled by a \$300 million loan from Russia, with downtime to upgrade the plant to be undertaken in a phased approach over several years to minimise supply disruption.

Total final energy consumption (TFC) reached 2101 ktoe in 2013 and is on a rising trend. TFC is dominated by natural gas (62%), followed by electricity (22%) and oil products (15.4%). The share of natural gas almost doubled since 2000. The residential sector is the largest energy consumer, responsible for one third of the final energy consumption in 2013, followed by the transport sector (25 %) and industry (18 %). Some of the growth in

⁵ Doing Business 2016: Armenia, *The World Bank Group* (2015)

⁶ <http://rise.worldbank.org/data/exploreconomies/armenia/2014/energy-efficiency>

⁷ <http://rise.worldbank.org/data/exploreconomies/armenia/2014?topic=energy-access#energy-efficiency>

gas is attributable to households leaving the district heating system and installing their own boilers. The latter was facilitated by low gas prices and the collapse of the district heating system in the 1990s. Road vehicles are another major contributor to the growth in gas consumption. A large share of vehicles in Armenia use compressed natural gas (CNG) instead of gasoline or diesel.

Legislative framework and market structure

The Energy Law was adopted in 2001 and regulates interrelations between legal entities involved in the energy sector, electricity, heating and natural gas consumers pursuant to the law and the state bodies. The law sets out a number of principles relating to, for example, market structure, competition, regulation of energy sector operations, consumer protection, investment promotion, safety, energy efficiency and environmental protection. This law is currently under review.

The gas sector is vertically integrated and dominated by ArmRusGazprom, which is fully owned by Russia's Gazprom. The company imports gas from Russia and Iran and also owns and operates the gas transmission and distribution networks in Armenia.

For the electricity sector, the privately-owned Electricity Networks of Armenia (ENA) acts as the single buyer of electricity through contracts with generating companies at regulated rates. Energy flows and payment delivery are monitored by the state-owned settlement centre. The system operator dispatches generators taking into account the economic dispatch order of plants as well as plants' operational constraints⁸. The system operator is state-owned and independent from the state-owned transmission company.

While there are 175 generating companies in total, many of these are small hydro and wind facilities. Approximately two thirds of all generation capacity is state-owned. Around 60% of electricity generation capacity is thermal and of this, some 45% is owned by Russia and a third is owned by Armenia, with the remainder privately owned. Armenia also owns all nuclear capacity (though a Russian company, RAO UES, operates the facility) and around a third of hydro capacity.

Institutional arrangements and regulatory framework

Established in 1992, The Ministry of Energy and Natural Resources of the Republic of Armenia (MENR) is the highest executive authority to elaborate and implement the policies in the energy sector, which includes the reform process. It is responsible for system planning and investment planning for state-owned entities. The Ministry objectives also include provision of energy efficiency and renewable energy sector policy development and implementation, provision of the state policy of state technical control in the power sector and energy consumption, conducting supporting research, and obtaining and facilitating support from international organizations.⁹

⁸ Investment Plan for Armenia, April 2014

⁹ <http://www.minenergy.am>

The Ministry of Urban Development (MUD) is responsible for construction and building policies and regulation, and for overseeing most of the investments in this sector. MUD is also responsible for the Social Housing Strategy. The energy efficiency related tasks and functions are included in its Charter. The Ministry of Nature Protection coordinates the implementation of the activities aimed at meeting Armenia's commitments under UN Framework Convention on Climate Change.

The Public Services Regulatory Commission (PSRC) performs regulatory operations in energy, water and telecommunication sectors, relating to tariff design, service quality standards, licensing, compliance, dispute resolution between customers and licensees, and definition of electricity market rules. The PRSC regulates tariffs gas and electricity generation, transmission and distribution.

A comprehensive tariff study on Armenia was issued by the World Bank in June 2013. The study noted that the end-user tariffs had not been increased since 2009 and were no longer cost reflective. The Government recently reviewed tariffs and put forward proposals in 2015 to increase tariffs. These proposals met with considerable resistance from the public. Armenia has since revisited its proposals, with latest indications suggesting price decreases. The Government will publish final tariffs before the end of 2016.

Renewable energy tariffs were set by the PSRC in 2007 to stimulate private investment in renewable energy. New generating plants sign 15 year power purchase agreements (PPAs). Under these agreements Energy Networks Armenia (ENA) is obliged to pay the generator for all the power produced. The PSRC is required to adjust feed-in tariffs annually in line with changes in inflation and the USD to AMD exchange rate. MENR is currently investigating geothermal and utility-scale PV investment strategies which includes an international tender for 50 MW of PV. Future development of RES will depend on the price resulting from this competition.

Strategies and Policies

Several strategies and action plans are in place to develop the energy sector, improve energy security and advance energy efficiency. The 2013 National Energy Security Concept identifies the promotion, development and investment in renewable energy technologies as critical to Armenia diversifying its energy supply and achieving energy independence. The Armenian Development Strategy (ADS) and National Security Strategy (NSS) also emphasise the importance of renewable energy and energy efficiency in addressing energy security.

Important for energy efficiency action has been the Law on Energy Saving and Renewable Energy (2004) and the national programme on Energy Saving and Renewable Energy (2007). The National Energy Efficiency Action Plan (2011-2014) is a key instrument to deliver the high-level strategy and is in the process of being updated (NEEAP 2). The first NEEAP exceeded its overall target of reducing energy consumption by 63.3 Mtoe by nearly a factor of two. However, the sectoral targets were not all met. Most of the energy savings came from the public buildings and services sector and the

transport sector, while there was under-performance in the residential buildings, industry, power, agriculture and forestry sectors.

RECOMMENDATIONS

General recommendations

The Government should continue to work on the long term energy strategy to ensure that energy policy goals respect and fully reflect the potential of energy efficiency and renewable energy to contribute to wider political, economic, social and environmental goals. The government is to be commended for the ongoing efforts within National Energy Security Concept and when making decisions on increasing generation capacities the potential contribution of energy efficiency on reducing long term energy demand should be taken into account.

Energy Efficiency and Renewable Energy should continue to be high priority in all sectors and future energy-related policies should be supported by detailed analysis of energy efficiency potentials in the economy, and the barriers which delay the realisation of these potentials.

The Government should continue to ensure sufficient coordination and synergy between the national policies and international donors' initiatives. The institutional framework to support the implementation of Energy Efficiency policies, including the Ministry of Energy and Natural Resources, should be strengthened, in order coordinate and enforce concrete programs and actions in all economic sectors

Active engagement of relevant scientific research institutes should be encouraged in the efforts to address current challenges facing the energy sector, including the issues of increasing energy efficiency, reducing losses, ensuring reliability and high quality of power supply.

Government should ensure effective implementation of the second National Energy Efficiency Action Plan (NEEAP). The establishment of an effective institution is of key importance in this respect. A procedure for evaluation and review of progress should also be put in place.

From an economic point of view, the observed decoupling of GDP and energy consumption growth is positive and should be reinforced further.

While continuing promoting participating in the Covenant of Mayors, further efforts should be targeted to increase the capacity of municipalities to develop and implement their Sustainable Energy Action Plans, including financial capabilities.

Recommendations Electricity, Gas and Heating sector

The modernization of the generation, transmission and distribution infrastructure needs to continue, in order to further minimise losses and utilise the existing energy saving potential.

The Government should continue to facilitate the progress on interconnections with neighboring countries to support regional integration of energy markets and to overcome isolation of the domestic energy market.

The Government, with the support from the PSRC, should review the market model as new interconnections develop and ensure adaptation of balanced market rules to reconcile with EU legislations and Eurasian Economic Union rules to remove regulatory and trade barriers.

The Government should continue the promotion of renewable energy in a cost effective way.

The ongoing efforts by the distribution company (Electric Network Armenia) to introduce smart technologies in metering should be encouraged.

Feasibility studies, including assessments on efficient use of heat, should be carried out as a basis for future decisions on development of co-generation.

Recommendations Industry

The Government should consider a more proactive energy efficiency policy for the industry sector.

The Government should assess further expansion of mandatory energy auditing for large industries, consider voluntary auditing also for SMEs as well as incorporating a standardized approach to energy auditing. It should also encourage further industrial enterprises to implement actions to deliver cost-effective energy savings including the already adopted energy auditing system for the large energy consumers.

The Government should actively promote the adoption of energy management practices (such as ISO 50 001) to large industrial enterprises.

The Government should continue the process of aligning the existing industrial equipment standards to the best international practices.

The Government should encourage ongoing efforts to introduce clean resources planning as well as activities within the Global Cleantech Innovation Program for SMEs in Armenia. It should encourage establishment of networks of large industries in order to establish platform for information sharing and promotion of best practices to accelerate the identification, planning, and implementation of high impact energy efficiency measures.

The Government should consider extending the policy toolkit to include various incentive schemes for industrial enterprises that undertake energy audits in order to support the implementation of the audits recommended measures as well as other justified actions.

Recommendations Buildings

The Government should put efforts into effective enforcement of recently adopted legislations in the building sector. The relevant technical regulations and standards should be adopted as soon as possible in order to improve the effectiveness of the whole regulatory system in the building sector.

Further strengthening of existing building legislations towards introducing requirements for near-zero consumption buildings should be considered.

The Government should continue striving to make public buildings a model for energy efficiency. Ensure the application of the latest best international standards regarding the performance of various building components – windows, heating, ventilation and cooling systems, etc.

The Government should encourage local authorities to undertake energy audits of all public buildings and develop dedicated programmes for improving the energy performance of public buildings to implement the requirements of the audits.

The Government should require that special energy efficiency criteria are introduced in procurement procedures for public expenditures on goods, services and works, with particular emphasis on the public building sector.

The Government should continue its efforts to raise public awareness by providing information on end-use energy efficiency measures, both in residential and public buildings.

The Government should utilise lessons learned from demonstration projects to inform subsequent government policies on the choice of institutional and regulatory reforms.

The Government should ensure necessary conditions are put in place to allow local authorities to finance energy efficiency measures in the longer term. It should also further encourage energy efficiency improvement by providing innovative financial mechanisms and creating attractive conditions for application of energy performance contracting and ESCOs.

Recommendations Lighting and Energy Using Products

The Government should accelerate the process of development and adoption of common minimum energy performance standards for energy using products in line with respective EU and Eurasian Economic Union rules.

Authorities need to allocate sufficient resources for compliance, monitoring and verifying advertised performance for different appliance groups on energy efficiency requirements, regardless of whether they are imported or locally manufactured.

The Government should create the necessary conditions to support local authorities in developing and implementing projects for high-efficiency public lighting. It should also consider introducing financial incentives to facilitate the fast deployment of energy efficiency street lighting in the country.

The Government should continue to encourage the purchase of high-efficient household appliances.

Recommendations Transport

The Government should improve the quality of urban planning, including transport infrastructure elements and traffic management, by setting up a system of transport sector energy efficiency indicators.

The Government should introduce policy packages (regulatory and incentives) that encourage more rapid turnover of the old vehicle fleet. Such measures could be in the form of discouraging the import of old vehicles, incentives encouraging quick fleet renewal by owners, vehicle fuel economy labels, tax and fiscal measures stimulating purchase of more efficient vehicles.

The relevant authorities should improve the quality of service, efficiency, accessibility and comfort of existing public transport systems in order to create alternative to private vehicle use in urban areas.