REPUBLIC OF ARMENIA
General country information

Structure of EECA Research Inventories

Date: 15/05/09

Country name	Republic of Armenia
Population	3210.0 thousand (as of 2001)
Area	29,800 sq km
Capital	Yerevan
System of Government	Presidential Republic
Head of the Government	Prime Minister Tigran Sargsyan
Education & Science Minister	Armen Ashotyan
State Committee o f Science, Chairman	Samvel Harutiunyan
Parliament	Hovik Abrahamyan
Administrative structure	11 marzes (provinces)
Geography	Armenia is a landlocked country in the Asia Minor, borders with Georgia in the North, Azerbaijan-Nakhijevan exclave in the East and South-West, Turkey in the West and Iran in the South. The terrain is mostly mountainous and flat, with fast flowing rivers and few forests. The climate is highland continental. The land rises to 4,095 m above sea-level at Mount Aragats, and no point is below 400 m.

S&T-related information:

Research structure

In Armenia R&D was one of core sectors of economy before the collapse of the USSR. The independent Armenia inherited quite ramified and developed network of research and education institutions distributed among Academic, university and branch/enterprise sectors.
The present R&D infrastructure in Armenia can be characterized as combination of features of centrally organized administrative system and new elements that have appeared on the way of transition to market economy. It can be stated that progress in integrated science, technology, and innovation-related policy-making in Armenia during last decade of transition period has been rather modest and has largely failed to keep pace with other areas of social, political, and economic changes.
The National Academy of Sciences (NAS RA) with its around 35 research institutions exists without major systemic and functional changes and is the main R&D performer in the country. Table 1 shows the number of R&D institutions in Armenia according to branch subordination.

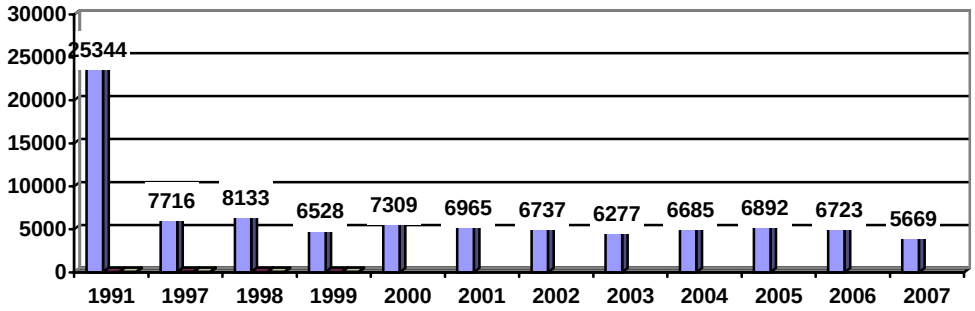
Table 1. Number of R&D Institutions in Armenia by branch subordination (1991 total, 2001-2007)

Institutions/Year	**1991**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Ministry of Trade & Economic Development	-	17	20	19	16	18	17	-
Ministry of Healthcare	-	11	12	12	11	11	11	-
Ministry of Energy	-	5	4	5	5	5	5	-
Ministry of Agriculture	-	11	11	12	10	10	10	-
Ministry of Education and Science	-	-	1	2	3	7	7	-
National Academy of Sciences	-	37	40	41	41	42	41	-
Other	-	10	8	8	7	9	10	-
TOTAL	**124**	**91**	**96**	**99**	**93**	**102**	**101**	**89**

Source: Data of National Statistical Service of Armenia (http://www.armstat.am)

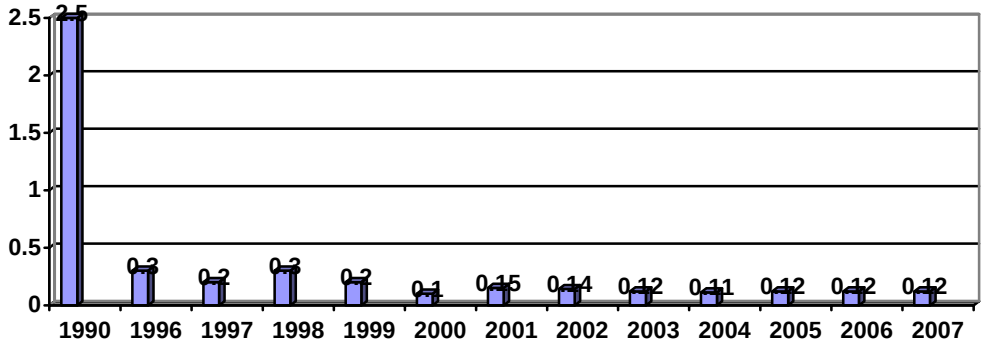
Figure 1, shows dynamics of R&D personnel for 1991 and 1997-2007, and Figure 2, dynamics of GERD/GDP ration for 1990 and 1996-2007. All these comparative figures are indicative of significant downsizing of R&D intensity and input indicators in Armenia for the mentioned period.

Figure 1. Dynamics of R&D Personnel, 1991, 1997-2007



Source: Statistical Yearbook of Armenia, 2008. National Statistical Service of Armenia.

Figure 2. Dynamics of GERD/GDP ratio in Armenia (1990, 1996-2007)



Source: Statistical Yearbook of Armenia, 2008, and Statistical Data Book, Science in the Republic of Belarus, 2001.

As it has been mentioned the NAS RA institutes remain to be the main R&D performers in the country. In November 2006 the Armenian government adopted resolution on optimization of the Academy infrastructure and restructuring of some of its institutes through amalgamation and creation of scientific and technological centers. This decision was aimed at improving coordination of research activity in the institutes involved in overlapping or close research disciplines, more efficient use of scarce financial resources and promoting commercialization of research outcomes. For example, Scientific&Technological Center of Organic and Pharmaceutical Chemistry was created through amalgamation of the Institute of Fine Organic Chemistry, Institute of Organic Chemistry and Molecule Structure Research Center.

At present there are three main R&D funding mechanisms in Armenia implemented via State Committee of Science within the Ministry of Education and Science of Armenia, as follows:

- thematic (project based) financing;
- basic financing;
- special purpose research projects

The thematic financing was introduced in 1992, which was then a progressive step that had several positive results, as, for instance, general democratization of entire science system, cutting down of overlapping research teams and projects, and possibility to have overall picture of research projects conducted in the country. However, the allocated funds were mainly directed towards paying salaries. Thus, science in Armenia was deprived of the ability to carry out an integrated policy in the field of fundamental research, to ensure re-orientation of its potential, to initiate new research trends, to provide effective organizational and financial support to research institutes, and to stimulate investigations. Existence of only thematic financing mechanism had also its negative aspects, as, for instance, weakening of integrated research activity and disintegration of infrastructure on the institutes level. Based on this the government made a decision on introduction of basic financing mechanism in 1998, and, later in 2002, special purpose research projects' financing mechanism.

Thus, thematic financing is directed to individual researchers and small research groups. Basic financing is allocated to research institutes for carrying out research in the field of general priority of the institute and maintenance of research infrastructure. Special purpose (targeted) financing is intended for important innovative wide-scale research and technological projects, which can incorporate several institutions, including industry and SMEs. There are no data on R&D financing from private sector but it can be stated that funds

for research from and within private sector are mainly directed toward specific applications or development of specific products, and are still insignificant. According to data of Armenian Statistical Service, in 2006, the Gross Domestic Expenditure for R&D amounted to around 11 mln. Euro in Armenia.

Research policy

It is widely accepted fact that at the current stage of the development of the society research, development and innovation (RDI) can become determining factors for sustainable economic development, increasing the country's competitiveness in international market and key to solving many social problems. But in the early years of transition, the Armenian government, in condition of drastic economic crises, ethnic conflicts in the region, and social transformations, was not eager and in no position to formulate and enforce adequate S&T policy. The efforts of the scientific community were mainly directed to solving arising problems and preserve as much of the inherited from the former USSR R&D potential as possible. Thus, it can be stated that until the late 1990s, the matter of S&T policy-making and priority setting was not a major concern of the political actors in Armenia. During those years the RTD sector has been existing or better say "surviving" in the country by itself with very weak links and hardly any contribution to development of national economy.

The only major step in S&T policy during the early 1990s, was the government decision to implement thematic (project based) financing of science.

There were also several unsuccessful attempts of creating science and technology council subordinated either to the president or prime minister.

Nowadays a pressing challenge for Armenia is the reformation of its S&T and innovation system in accordance with the requirements of the market economy and needs of economic development.

In December 2000, the Armenian Parliament adopted the Law on Scientific and Technological Activity aiming at regulating interrelations between R&D performers, state bodies, and R&D outcome consumers, as well as outlining general principles of formation and implementation of state policy in the field of S&T. The Law prescribes the Ministry of Education and Science (MES) as state authorized body to develop and coordinate S&T policy-making.

The Statute of the National Academy of Sciences of Armenia (NAS RA) was approved by the government in April 2002, as of the highest scientific organization coordinating basic research throughout the country and official scientific advisor to the government. It gave the Academy a status of a state non-profit non-commercial organization.

By government resolution as of September 2006, the Ministry of Trade and Economic Development was recognized as authorized body responsible for development and implementation of innovation policy, in co-operation and coordination with other concerned ministries and organizations. The aforementioned situation was indicative of fragmented character of policy-making in S&T and innovation, and poor interlink and cooperation between these organizations.

To improve the policy-making and better coordination in the field of S&T, in October 2007 the government made a decision on creation of the State Committee of Science empowered to carry out integrated S&T policy in the country. This structure is subordinated to the Ministry of Education and Science, but with wider power of independent activity. The Committee is also responsible for development and implementation of research programmes in the country through three main financing mechanisms: thematic (project based) financing, basic financing and special purpose projects.

During this period several other governmental acts and decisions have been adopted directed to regulation of S&T and innovation policy in the country.
In April 2001, the government approved the concept on development of science in Armenia, which stated S&T development as priority task for the state, and necessitated implementation of profound reforms in this field.
In May 2001, the government approved the concept on development of information technology industry in Armenia. It emphasizes the existence of adequate potential in the country for development of IT sector, and need for further improvement of infrastructure and legislation supporting development of IT industry.
In August 2002, the government issued a resolution on Science and Technology Development Priorities in the Republic of Armenia**.** These priorities are as follows:

- Armenian studies
- Basic research promoting applied research of vital importance
- Special-purpose research
- Information technologies
- Advanced technologies (biotechnology, nanotechnology)
- New energy sources
- Risk factors and human health
- New materials

In January 2005, the government approved the concept of innovation activity in the Republic of Armenia. The main aim of this document was the formulation of general approaches and principles of the state policy directed to consistent creation and development of national innovation system, and its basic elements and infrastructure, capable of ensuring sustainable development of the country and increasing its competitiveness, and creating favorable innovation environment for international economic co-operation.
Based on this concept, the government approved action plan 2005-2010 in November 2005, directed to creation and development of innovation system in Armenia, which suggests around 20 measures to be implemented during the stated period.
In May 2006 the Law on State Support to Innovation Activity was adopted, which was one of the measures of the Action Plan 2005-2010, and which defined legal and economic bases of national innovation policy formation and implementation, and forms of state support to innovation activity in the Republic of Armenia.
The Government's decision "Conception on Improvements in Science Sector in the Republic of Armenia" adopted in July 2007 sets several clear targets for action and improvements in the field of S&T. Some of the primary steps defined in the document are setting up clear cut priorities, gradual increasing of science funding in parallel with reformation and improvement of science sector, redefining funding forms and mechanisms, introduction of independent peer-review and expertise system for project selection, modernization of infrastructures, fostering commercialization of scientific outcome.

International co-operation in research, science and technology

Integration into intenrational scientific and technological system is one of the priorities of Armenia stated in the Law on Scientific and Technological Activity. During the years of independence certain steps have been undertaken towards inhancing international S&T cooperation. In 1992 the National Academy of Sciences of Republic of Armenia (NAS RA) joined the International Council for Science (ICSU). NAS RA is also a member of the InterAcademy Panel on International Issues, International Association of Academies of Sciences, and Council of Academies of Sciences of BSEC Countries.

NAS RA has cooperation agreements with the Academies of Sciences of Russian Federation, Belarus, Ukraine, Turkmenistan, Georgia, Hungary, China and Memorandum of Understanding with Indian National Science Academy.

Being among leading universities of Armenia Yerevan State University, State Engineering University of Armenia, and Yerevan State Medical University maintain wide international cooperation within cooperation agreements in the field of education and research with various universities and research centers of more than 30 countries of the world, including Russia, Great Britain, France, Italy, Germany, Greece, Spain, Sweden, Japan, China, USA, and others.

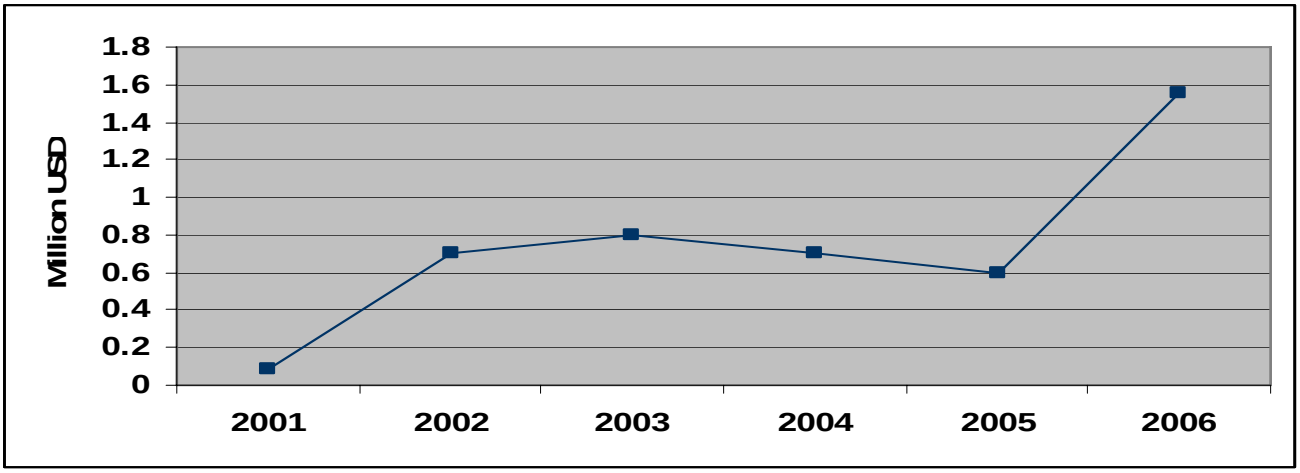
On the intergovernment level during 1991-2005 S&T and/or cultural cooperation agreements were signed with around 20 EECA and EU-member states, including France, Greece, Romania, Slovakia, Bulgaria, Cyprus, UK, Russia, Ukraine, Belarus, Georgia, Kyrgyzstan, and Tajikistan.

In 1999, Armenia and European Union signed the Partnership and Cooperation Agreement, which serves as legal basis for development of cooperation including in the field of S&T. New prospects for closer EU-Armenia cooperation were openned after inclusion of Armenia in the European New Neighbourhood Policy (ENP) Initiative and further development of the ENP Action Plan aiming at contributing to sustainable economic development of the country. The ENP Action Plan includes the article on measures in the field of S&T incorporating points towards assisting in development of adequate S&T and Innovation policy system reformation activities and creation of independent peer-review structure for competitive selection of RTD projects in Armenia. It also contains an article stating the need for closer integration of Armenia into European Research Area through more active promotion of participation of Armenian research organizations in EU's Framework Programmes.

Inclusion of Armenia in the EU's new Eastern Partnership Initiative officially launched in May 2009 will add a new multilateral framework for EU-Armenia relations in various fields of economy.

International funding comprise important source of R&D funding in Armenia. Figure 3 illustrates the dynamics of international funding of R&D in Armenia during 2001-2006. In 2006 the international funding amounted to more than 1,5 mln. USD, which made around 11,5 % of Gross Domestic Expenditure on R&D.

Figure 3. Dynamics of International Funding of R&D in Armenia (2001-2006, mln. USD)



Source: Statsitical Yearbook 2007, State Statistical Service of Armenia, http:www.armstat.am

The major source of foreign funding for research in Armenia is the International Scientific & Technological Centre (ISTC). In 2006, ISTC contributed $ 2,118,016 in grant payments to Armenian beneficiary scientists within 10 funded projects. During 1996-2006, around 120 projects were financed by ISTC in Armenia with more than 30 mln. total budget. The Academic institutes received 40 grants with around 10 mln. USD total budget. In 2007, the number of successful ISTC projects was 12 in Armenia with more than 4,3 mln. USD total funding.

During 1994-2004, 162 Armenian research teams received more than 2.8 mln. Euro grants within the framework of programmes of the International Association for the promotion of co-operation with scientists from the New Independent States of the former Soviet Union (INTAS). In 2002-2007 Armenia received the total of 602 043 EUR of funding for the research projects within INTAS Open and Thematic Calls. During the same time span Armenian young researchers received individual grants for 186 250 EUR within INTAS Young Scientists Fellowship Programme. In 2006, joint INTAS-South Caucasus Collaborative Call was launched on co-funding basis with 1.9 million Euro total budget within the framework of which 9 Armenian teams were granted more than 430.000 Euro.

Around 1 mln. Euro was received by Armenian research organizations within EU's 6th Framework program (2002-2006). Up to July 2008, Armenian teams were present in 55 submitted project proposals within FP7, out of which 9 were selected for mainlist with around 500.000 Euro funding.

Other important international sources of funding are the US Civil Research and Development Foundation and National Foundation of Science and Advanced Technologies (until 2004, 235 grants with $4.3 mln. total cost), and NATO Science programme, particularly for infrastructure and equipment upgrading.

Yerevan Physics Institute (YPI) is one of leading research centers involved in high-energy physics research with wide international collaboration. During 1996-2005 YPI researchers received more than $ 7 mln. international grants. It cooperates closely with accelerator laboratory DESY in Hamburg and the European Centre of Nuclear Research (CERN).