

December 2011

Mini Country Report/Republic of Moldova

**under Specific Contract for the Integration of INNO Policy
TrendChart with ERAWATCH (2011-2012)**

Mini Country Report

Thematic Report 2011 under Specific Contract for the Integration of INNO Policy TrendChart with ERAWATCH (2011-2012)

December 2011

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Preface

The European TrendChart on innovation is the longest running policy benchmarking tool at European level. Since its launch in 1999 it has produced annual reports on national innovation policy and governance, created a comprehensive database of national innovation policy measures and organised a series of policy benchmarking workshops. The databases of INNO Policy TrendChart and ERAWATCH have been merged and a joint inventory of research and innovation policy measures has been created by the European Commission with the aim of facilitating access to research and innovation policies information within Europe and beyond.

With a view to updating the innovation policy monitoring, the European Commission DG Enterprise and Industry commissioned a contract with the objective to provide an enhanced overview of innovation and research policy measures in Europe and to integrate the INNO Policy TrendChart with the complementary ERAWATCH platform. This contract is managed by the ERAWATCH Network asbl. (<http://www.erawatch-network.com>) coordinated by Technopolis Group (<http://www.technopolis-group.com>).

During each of the two years of this specific contract three reports will be produced to complement data collection and to update the research and innovation policy measures: a trend report on innovation policy in the EU, an overview report on innovation funding in the EU and an analytical thematic report (the selected theme for 2011 is demand-side innovation policies). To this end, the objective of the present mini country report is to furnish those three reports with country specific information.

Executive Summary

The Moldovan innovation system continues to be rather centralised. The main innovation policy makers are the Academy of Sciences and the Ministry of Economy. Several agencies and bodies subordinated to the academy, the ministry of economy or other ministries are also involved in policy formulation and implementation. This concerns for example the State Agency on Intellectual Property and the Agency for Innovation and Technology Transfer (AITT). Innovation stimulation measures are implemented in first place through the AITT, a body subordinated to the academy. A challenge is in this context the weak coordination of innovation policies among the relevant bodies in Moldova.

Funding for innovation remains modest; the main innovation support tool is Innovation and Technology Transfer Projects, which is implemented by the AITT. The budget of this funding line amounted to around €1.2m in 2010, whereby approximately half of it was raised by private business. This funding tool is too narrowly focused on transfer and application of research results generated in public research organisations to business. The second significant tool is establishment of three technoparks and three innovation incubators, which also receive support through AITT. The overall AITT budget for these tools is a moderate €900,000. A major weakness of the national innovation system is the low investment in R&D and innovation by companies.

Some internationalisation of innovation policies has taken place over recent years. Especially the AITT has enhanced its international outreach. It has for example joined the Enterprise Europe Network (EEN) and it participates in an interstate programme on innovation among CIS countries.

Demand-side innovation policies gain in relevance, although only implicitly and not as an explicit innovation policy strategy. Awareness of demand-side policies is not very high in the country. Tax incentives have been introduced for residents of technoparks and innovation incubators, but are not yet working properly. Regulation and standardisation have become quite important due to efforts to harmonise Moldovan rules with international and especially EU rules. The National Institute for Standardisation and Metrology is the competent institution in this field. Awareness raising activities for innovation are another significant demand-side tool, which is applied by the AITT: innovation awards are handed out and webplatforms for presenting Moldovan innovations were set up.

1. Innovation policy trends

1.1 Trends and key challenges for innovation policy

The main characteristics of the national innovation policy have not significantly changed over the reporting period. General goals of R&D and innovation policy are defined in the Code on Science and Innovation. These goals have been complemented and refined in the Partnership Agreement (2009-2012) between the [Academy of Sciences \(ASM\)](#) and the [Moldovan Government](#). Objectives include hence strengthening the infrastructure of science and innovation, stimulating the creation of small and medium sized enterprises, attracting direct investments in science and innovation, and expanding technology transfer.

The current government, the coalition "Alliance for European Integration", which rules the country since 2009, has proposed some changes to innovation policy since it was re-elected in 2011. In its [Programme](#) for the period 2011-2014 (entitled "European Integration: Freedom, Democracy, Welfare") it formulated the aims to stimulate innovation and competitiveness as a basis of the economy. Major changes regarding innovation policy foresee a decentralisation of R&D funding in order to open it to all innovative organisations, which means also businesses. Research in higher education institutions as well as the interaction of research with business shall be strengthened. Cooperation with foreign partners, including with large multinational companies, shall be enhanced to get access to advanced R&D and high technology. The stimulation of research and innovation activities in the fields of energy and natural resources has been singled out as a priority.

A specific strategic document on innovation is not yet available in Moldova, but several measures in this respect are imminent: [The Government Action Plan for the years 2011-2014](#) foresees the development of an innovation strategy by the end of 2011. Furthermore, a [Concept of innovation entrepreneurship development in Moldova](#) was drafted within the ASM and is currently under discussion. It sets a target of a level of 60% of GDP, which shall be generated based on innovative production. In addition, it specifies priority sectors for which innovation stimulation measures shall be provided (food industry, ICT, agriculture, tourism, wine industry, building materials, nanotechnology and new materials, design and beauty industries, biotechnology and medicine). Finally, a national foresight exercise is being implemented in 2011 in a bilateral Moldovan-Romanian cooperation. This foresight shall provide a basis for elaborating a research and innovation strategy for the Republic of Moldova until 2020.

Most R&D and innovation support measures continue targeting public R&D organisations, despite provisions in the government programmes to change this situation. Funding tools and other measures include only to a limited extent knowledge transfer, innovation management, direct funding of business R&D or innovative start-ups.

RDI funding is allocated mainly in the form of grants. Guarantees have been introduced only recently and other tools such as venture funding and subsidised loans are missing. The available schemes, above all the Innovation and Technology Transfer Projects financed by the AITT, provide incentives for companies to bring innovations to the market, which were developed in public research organisations. The design of these support schemes is not particularly focused on stimulating research within private companies.¹ The private sector is not taken seriously enough as a relevant RDI actor and incentives are not yet strong enough to develop an innovative culture in companies.²

Tax incentives have been introduced by law for residents of scientific-technological parks and innovation incubators, but in reality they are not working properly yet. In addition, a lack of facilities for residents of scientific-technological parks and innovation incubators has compromised the idea of such innovation infrastructure and led to a decrease in its activity.³

So far no assessment has been made of R&D and innovation policies by a political authority, although the [Partnership Agreement \(2009-2012\)](#) provides that in 2009, the ASM together with ministries will develop a methodology for assessing the social and economic impact of public investment in science and innovation on the development of the economy. The methodology was not been elaborated until now, and therefore mostly quantitative and rather superficial indicators are applied for impact measurement.⁴

The most important challenges for the innovation system, which are currently under discussion in Moldova, are the following:

Cooperation between research and business is a major challenge in Moldova. The national innovation system suffers from a weak capacity to transfer innovation inputs into outputs. Partnerships between public organisations and companies are underdeveloped and innovation policy is not focused on enhancing RDI activities in the private sector.⁵ On the one hand knowledge of innovation management is weak among companies and they are reluctant to take risks for R&D. On the other hand, direct public RDI funding is not yet available for private companies. Tools to stimulate cooperation in the knowledge triangle education-research-business are weakly developed and only slowly emerging. There is only little support for start-ups and spin-offs. Procedures for public procurement of innovative good and services are missing.

Another major challenge is **provision with qualified human resources**. The number of researchers has decreased drastically since Moldova became independent and for the remaining researcher stock a certain ageing trend can be observed. Moreover, the number of students and PhD students in sciences and engineering is significantly lower than previously. Moldova has experienced large-scale emigration of its skilled workers, a problem that is complemented by internal migration from the countryside to Chisinau. As a result, finding workers with the relevant level of skills is a difficult task for employers. This lack of skills has a strong impact on the innovation potential of firms. The share of employees in technology-intensive sectors is very low. Life-long learning is nearly not followed-up: currently, less than 1% of employees participate in any form of training.⁶

¹ OECD (2011). Competitiveness and Private Sector Development, Republic of Moldova 2011: Fostering SME Development, <http://dx.doi.org/10.1787/9789264112285-en>

² Expert Grup (2011). Research, development and innovation sector in Moldova: is it necessary to reform? <http://expert-grup.org/index.php?go=biblioteca&c=15>

³ Agency for Innovation and Technology Transfer (2011). Innovation and Technology Transfer Activities 2010.

⁴ Expert Grup (2011).

⁵ OECD (2011).

⁶ OECD (2011), Expert Grup (2011).

The **capacity of the business enterprise sector to implement innovations** is the third important challenge. Overall, there is only a limited number of innovative companies in Moldova, whereas the R&D capacities and resources (financial and human) are concentrated in the public sector. The low level of innovation in the economy is due to the low knowledge absorption capacity of industry with its focus on trading and low-tech products. Exports of technologically advanced products and services reach only a share of 5% of total Moldovan exports. Most innovative companies are restrained in their activities by a lack of access to credit and by limited external (venture) financing.⁷

1.2 Innovation governance

Responsibility for innovation policy is mainly split between the Moldovan Academy of Sciences and the government bodies, especially the [Ministry of Economy](#). Since 2009 no major change occurred in the governance of the innovation system.

According to the Code on Science and Innovation, the government has responsibility over the strategic orientation and the budget allocated for innovation. It defines strategic orientations in consultation with the scientific community, designs the incentive schemes for innovative activities and it is responsible for infrastructure to support innovation, including, in particular, the science and technological parks. The [Moldovan Parliament](#) approves laws for innovation.

But the government has delegated the main competence to carry out the state policy in the field of science and innovation to ASM. This institutional setting is formalised in a Partnership Agreement signed for a period of four years, and which is revised annually. The agreement determines the responsibilities of the parties in the field of innovation and sets priorities for the respective period.

Thus, the Academy of Sciences of Moldova plays a key role in innovation governance. The ASM is composed of three scientific departments and of several bodies for designing research and innovation policies. It is the main policy-making institution in Moldovan S&T, but also the main policy implementation organisation; nearly all public R&D and innovation funding programmes are managed by the ASM through its executive body, the [Supreme Council for Science and Technological Development \(SCSTD\)](#), or its subordinated agency, the [Agency for Innovation and Technology Transfer \(AITT\)](#). SCSTD is responsible for the design of policies, it distributes the state budget that is allocated to innovation, it approves the programmes and monitors their performance. AITT was established by the ASM and shall stimulate the cooperation of research institutions with business.

Specific independent state agencies also have a relevant role in the innovation system. [The State Agency on Intellectual Property of the Republic of Moldova \(AGEPI\)](#) is the public institution responsible for issuing patents and trademarks. It shall support the government in monitoring and improving the intellectual property system. [The National Council for Accreditation and Attestation \(CNAA\)](#) is in charge of attestation and accreditation of research personnel and research organisations. Only accredited organisations are eligible for funding in public RDI programmes.

The Ministry of Economy coordinates economic development policies across the various ministries, public organisations and industrial associations. It oversees the implementation of actions for accelerating economic growth and for enhancing competitiveness. At the same time, most practical aspects of innovation policy are dealt with by the ASM. Unfortunately coordination between the ministry and ASM is rather weak. The ASM governing bodies include only scientists. Consultative bodies of the ministry, on the other hand, do not include ASM representatives, who are responsible for innovation policy in the country.

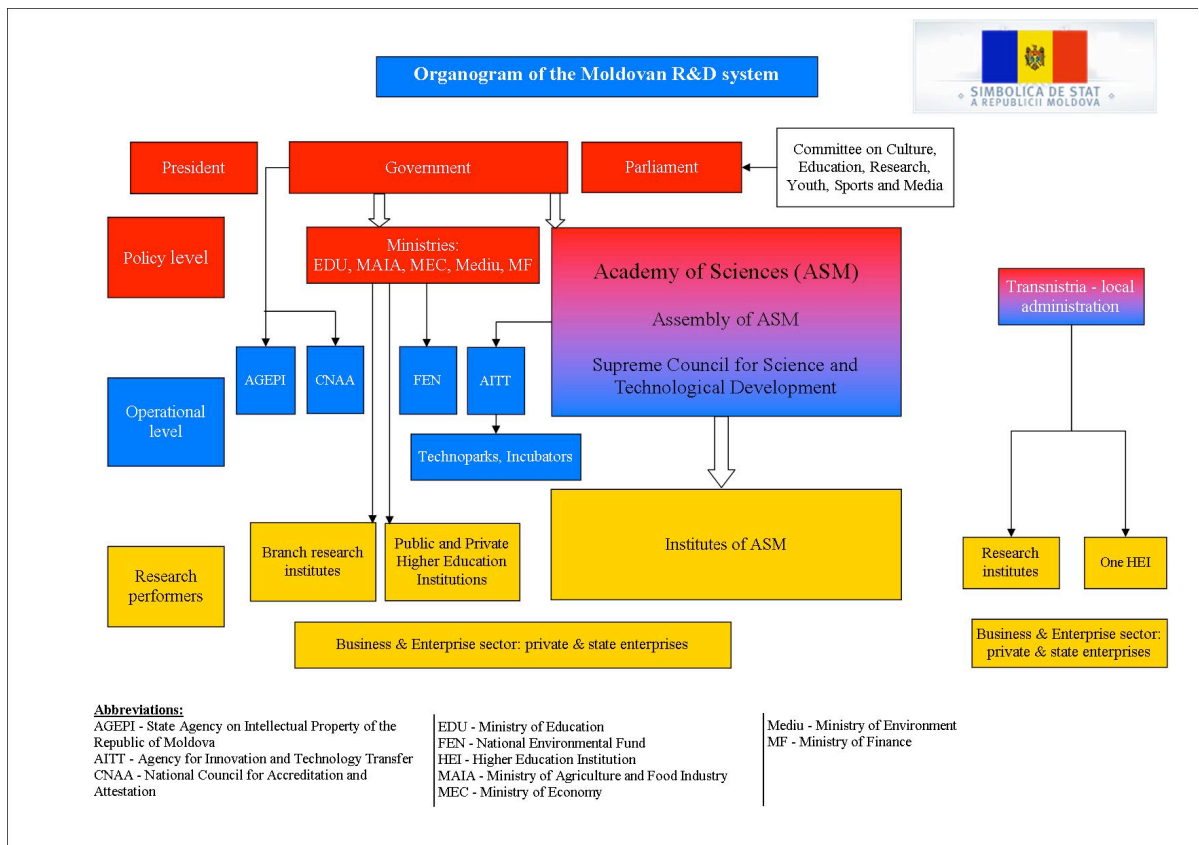
⁷ Expert Grup (2011).

The increasing importance of innovation policy for the economy is reflected in the structure and tasks of the ministry. It has a department for technological development and competitiveness, and several subordinated institutions:

- [National Institute for Standardisation and Metrology](#),
- [the Organisation for the Development of the SME Sector of the Republic of Moldova](#),
- [the Moldovan Investment and Export Promotion Organisation](#).

Overall, the Moldovan innovation governance is highly centralised. Policy formulation and priority setting, as well as policy implementation and evaluation are concentrated in the academy.⁸ The centralised system ensures continuity of the funding stream and provides stable priorities for pursuing long-term research. There is an obvious risk that such an innovation system is not very efficient and slow to respond to emerging topics. Furthermore, co-operation between public and private research institutions depends fully on the academy's actions. The low level of participation of the private sector in the governance of the academy, and in innovation activity in general, means that the academy has only limited feedback from companies on the effectiveness and relevance of its activities and policies.⁹

Figure 1 Organisation chart of the Moldovan RDI system



⁸ Expert Grup (2011), OECD (2011).

⁹ OECD (2011).

1.3 Recent changes in the innovation policy mix

No major changes have occurred in recent years among innovation policy measures. Measures support primarily RDI in the public sector, and are much less targeted at the business sector. They are focused on supply-side policies. The most important tools continue to be Innovation and Technology Transfer Projects and the programme on technoparks and innovation incubators, both responding to the challenge of cooperation between research and industry. Both programmes are managed by the [Agency for Innovation and Technology Transfer \(AITT\)](#).

With the tool ***Innovation and Technology Transfer Projects*** AITT aims to stimulate the application of research results, new technologies, and other intellectual property generated in the public sector. Its transfer to the business sector shall be facilitated herewith. In 2010 the restrictive condition that only the implementation of objects of intellectual property (patents, industrial design, etc.) can be supported by public funds, was lifted (by an amendment to the partnership agreement). Following an annual call, 36 innovation and technology transfer projects were selected in 2010 for support over a two-year period. The total amount of funding under this measure was €1.2m in 2010, half of which was non-public funding. According to the partnership agreement a higher spending on this measure should have been foreseen, but targets could not be reached due to the limited incentive of the measure (no funding for business) and the low technology absorption capacity of businesses.¹⁰

Another important support measure, which was introduced through the [Law on Science and Technology Parks and Innovation Incubators \(no.138 of 2007\)](#) targets the ***creation of innovation infrastructure***. In 2010 AITT held a competition for selecting residents of the science and technology parks, as well as for the Moldovan innovation incubator. As a result of the competition 17 new residents were approved:

- Technopark Academica, no specific thematic focus, four new residents;
- Technopark Inagro, specialised in ecological and intensive agriculture, 10 new residents;
- Technopark Micronanoteh, specialised in nanotechnologies and microelectronics, no residents approved;
- Innovation Incubator Inovatorul, no specific thematic focus, three new residents.

The residents benefit of exemptions from payment of VAT (20%) on goods and services imported from abroad and on those purchased in the Republic of Moldova. They are also exempt from payment of customs taxes (5%) on imported goods and services. They enjoy low tariffs for leasing of premises for usage of public utilities. As fourth incentive, the State Agency on Intellectual Property covers 95% of their patenting costs. In spring 2011 a competition was held to establish new innovation incubators within universities: two incubators were selected, „Politehnica” (Technical University of Moldova) and „Agrarium” (Agrarian State University of Moldova), which will be supported by AITT.

AITT has an important role in awareness raising and promotion actions (see also section 3.3). For example, as a result of technology audits of applied research projects, the section “100 innovative ideas” was created on the agency’s web-site. It organises annual business plan competitions and allocates awards for innovations.

¹⁰ The Court of Accounts (2011). The performance audit report „To achieve the expected benefits, it is necessary to improve the policies and the procedures of the Academy of Sciences of Moldova for allocating and monitoring research funds, <http://www.ccrm.md/en/hotariri/>

As the link between education, research and business is traditionally weak, the ASM is trying to tackle this issue through its scientific-educational cluster "[UnivER SCIENCE](#)". For integrating education with research and business, the cluster includes the [ASM's Lyceum for gifted children](#), the [University of the ASM](#) and the research and innovation structures of ASM. The cluster shall allow for cooperation among research and education institutes, state and private sector, commercial associations and other entities. Until now, however, it is more a formal structure, with limited practical impact.

Most other programmes are administered by the ASM's Supreme Council for Science and Technology Development and are dedicated to support research and development. The main tool is here ***State programmes for research and development***. The most important goal is to effectively support R&D in those scientific fields, which are highly relevance for Moldova. Both research organisations and companies can participate in projects, but private companies cannot receive funding in these programmes. In 2010, ten state programmes were carried out, in which 70 projects were supported with a total amount of funding of €610,000.

A variety of measures addresses the provision with qualified human resources. However, these concern mostly attracting and retaining young researchers in R&D. Programmes for young researchers (up to 35 years) and fellowships for doctoral and postdoctoral studies have been put in place accordingly.

Stimulating entrepreneurship and innovation activities in the business enterprise sector is in the responsibility of the Ministry of Economy. Since 2009 the ministry has launched a series of measures, especially with the support of external donors, to support entrepreneurship and business development in general, but not specifically innovation activities.

- A pilot programme "[PARE 1+1](#)" was introduced to attract remittances to the economy and to mobilise human and financial resources of migrant workers for a sustainable economic development of Moldova for the period 2010-2012. It features a direct financial assistance from the state in the amount of about €12,000 per project, as well as training and consultancy.
- To promote and facilitate the involvement of the young in entrepreneurial activities the ministry implements the programme [National Economic Empowerment of Youth \(PNAET\)](#). The period of implementation of this programme was extended until 2013. In 2010, 1522 young people were consulted and 405 were trained. In terms of funding, 141 private businesses of young people in rural areas of the country received support in the amount of €38.8m in total, including grants of €970,000.
- A [Credit Guarantee Fund \(FGC\)](#) was established to improve access to finance. The fund is managed by the Organisation for the Development of the SME Sector of the Republic of Moldova. In 2010 it was supplied with €440,000 from the state budget. For start-ups the guarantee is 70% of the loan amount, but not exceeding €25,000. The guarantee period lasts for up to 3 years.
- The ministry continues to implement training programmes on "Effective management of the business". The training is targeted at entrepreneurs and shall help enhancing their entrepreneurial skills. In 2010, with the help of this programme 1600 persons were consulted, of which 1452 attended also a training.
- Support for establishing business incubators is another tool for enhancing the competitiveness of the economy.

1.4 Internationalisation of innovation policies

Overall, Moldovan innovation activities are significantly less internationalised than R&D. In R&D more than 75% of the internationally published research articles of Moldovan researchers are prepared in collaboration with foreign authors.

However, some internationalisation measures were taken. In 2010, the AITT acceded to a number of European and international innovation networks:

- Enterprise Europe Network (EEN), which allows access to the European database of SMEs. In addition it provides support for the internationalisation of Moldovan SMEs, through organising training sessions, information seminars, brokerage events, matchmaking, etc.;
- EcaBit, the Eastern European and Central Asian Business Incubators and Technology Parks Network;
- InfoDev, a global grant programme managed by the World Bank to promote innovative projects on the use of information and communication technologies for economic and social development.

With support of the EU instrument ENPI – TAIEX (European Neighbourhood Policy Instrument – Technical Assistance and Information Exchange) a series of innovation related events were held in Moldova, such as the workshop "Implementation of the concept of innovative clusters in the Republic of Moldova", the international conferences "Key tools for the development of venture funds in Moldova" and "Innovation networks – new formula for regional development". Some relevance for international business and innovation cooperation have EU sponsored Cross-Border Cooperation programmes (CBC). Moreover, a national contact point for the European R&D funding programme FP7 is situated in Moldova and it includes a specific contact point for SMEs.

Some opportunities of internationalisation of innovation policy are provided by the Science and Technology Centre in Ukraine (STCU) and the Moldovan Research and Development Association (MRDA). The latter implemented together with the US Civilian Research and Development Foundation (CRDF) an entrepreneurship development programme in the technical-scientific sector (STEP), which is targeted at scientists willing to transfer their results to business or willing to establish a business.

Finally, Moldova participates in the development of the Interstate Programme for Innovation Cooperation among CIS (Commonwealth of Independent States) countries up to 2020. This programme shall stimulate cooperation in the field of innovation, the development and sharing of innovation infrastructure, and provide for a coordinated regulation of innovation among CIS countries.

In principle, all Moldovan innovation stimulation measures are open for participation from abroad, but foreign participants cannot receive funding from the national public budget.

1.5 Evidence on effectiveness of innovation policy

Several reports and studies were published recently, which address among other issues also the Moldovan innovation policy. The OECD (2011) Report on SME Development states that the government should consider changing its top-down approach to innovation policy in order to strengthen the links between academia and the private sector and to develop a more inclusive innovation agenda. Establishing intermediary institutions such as the AITT provides a good practice example of efforts to more effectively include the private sector in the innovation process. Science and technology parks and innovation incubators, which are already operational, are examples of initiatives aimed at improving the innovative capacities of companies. However, the scope of these initiatives is limited and their results are still uncertain. Moreover, the current orientation of the AITT does not seem to focus on developing the R&D activities of the private sector. It relies instead on a separation of tasks where public institutions perform research, the results of which shall then be transferred to and marketed by private companies. The current institutional setting seems to be geared towards basic research. The authors of the OECD report consider that it is important that the government reviews the results of initiatives already existing in the area of innovation policy, in close dialogue with donors and the enterprise community, to make successful programmes sustainable and to extend coverage and accessibility even after donor support is finished.

The Report of the Expert Grup (2011) on the RDI sector of Moldova evaluates the state policy in R&D and Innovation in terms of good governance. The study suggests that the current state policy is not adequate to achieve the expected results. Strategic goals for RDI are not set and the sector has practically no role in the national development objectives identified in strategic planning documents. The study recommends a new organisation model of the RDI sector in Moldova.

The Report of the Court of Accounts (2010) on allocating and monitoring research funds¹¹ includes an audit of policies and procedures developed by the ASM for allocation and monitoring of utilisation of public funds for research and innovation. The report deals mainly with the implementation of state programmes and of innovation and technological transfer projects. The report reveals that the actions undertaken did not assure linking up science with economic and social requirements. Goals of the instruments were not achieved, because of reasons such as flaws in the communication and dissemination of research results, because of flaws in the funding mechanisms and in project management, and because of a lack of criteria to assess results.

Some assessment of the effectiveness of innovation policy is included also in the annual Report of the Agency for Innovation and Technological for 2010. The report lets deduct that direct financial instruments were not very stimulating and it is considered that the systems of higher education and of lifelong learning do not ensure the necessary competences for the proper implementation of research results.

The main future challenges for innovation policy for the period 2012-13 remain improving the innovation governance model (through e.g. involving more actors in policy formulation, spreading of policy formulation, implementation and evaluation over different actors), increasing business R&D and linkages between education, research and business, development of an efficient evaluation and monitoring system of implemented policies.

¹¹ <http://www.ccrm.md/en/hotariri/>

Case 1 Innovation and Technology Transfer Projects

The support measure Innovation and Technology Transfer Projects aims to facilitate the application of research results and new technologies generated in public research organisations and their transfer to the business sector. The measure addresses a fundamental problem of post-communist economies: after the dissolution of the Soviet Union, companies reduced drastically their R&D activities and investment, and academic and other public R&D institutes got disconnected from the application of their R&D in the business sphere. Previously major research intensive companies (such as within the military-industrial complex) lost most of their scientific potential in terms of personnel and know-how.

Funding in this support scheme is provided in form of grants. Co-funding of at least 50% of the overall project cost is required from extra budgetary sources (by companies or own resources of research organisations). Target groups include public and private R&D organisations and companies. Co-operation is required between research organisations and users of innovations, which are either other research organisations or, as de-facto happens in most cases, companies.

It is difficult to assess the impact of the measure, because no public report is available which analyses or presents the results achieved in an aggregated form. However, it is besides technoparks and incubators the only instrument used in Moldova, which supports private companies to access public resources for science and innovation and to benefit from the results of public research institutes. The volume of co-financing from the private sector has grown steadily since the launch of this measure.

"Do lessons" of the instrument: the requirement of 50% co-financing of companies is a positive incentive, because it stimulates private RDI investment and increases the overall available budget for RDI. It also enhances the commitment and accountability of companies for the project.

"Don't lessons": there is no clear mechanism that regulates how benefits and intellectual property rights are shared between the project participants in case of co-financing from the private sector. Moreover procedures for monitoring and evaluating the success of a project are weakly developed.

For further information: <http://aitt.md/node/346>

2. Innovation policy budgets – an overview

The 2009 TrendChart reports included a detailed analysis of available budgets based on the data contained in the policy measure templates for each country. The findings were summarised in the European Innovation Progress Report 2009 (available at: <http://www.proinno-europe.eu/trendchart/european-innovation-progress-report>).

This section updates the 2009 analysis and further explores budgetary issues for implementing innovation policy. It is recognised that not all Government departments/agencies allocate specific budgets to specific measures and that actual year-by-year expenditure can vary considerably from that initially declared in policy documents or programming documents. Equally, not all important policy measures are based on significant direct public funding (e.g. the enforcement of a regulatory measure may have an indirect cost for public or private sector stakeholders that is not easily quantifiable prior to adoption).

2.1 Trends in funding of innovation measures

The general public budget or the budgets of Moldovan organisations do not include a specific financing line for innovation. Only at the Academy of Sciences, the budget for its agency AITT is assigned exclusively to measures for the promotion of innovation. For this reason, the following section analyses data on support measures both for research and innovation without differentiating between the two domains.

The evolution of the research and innovation budget in recent years has been affected by the economic crisis and virtually allocations to all type of actions were being reduced as compared to 2008 (see Figure 1). As competitive funding measures and innovative policy measures were more significantly reduced, the share of institutional funding for organisations increased to about 85% in 2010.

Most financial resources for research and innovation were allocated for scientific research - about 75% of the total funding in the period 2006-2010. The majority of support measures target public research organisations and only few stimulate business R&D and innovation activities. Many aspects of innovation policy (pre-competitive research, innovation management tools etc.) are not addressed. Available data show no change in the share of research and innovation financing provided by different funding sources. The most important source continued to be the public budget, while private sector co-financing is very modest.

Funding from abroad, in particular from international donors, has a considerable importance. It is used mainly for entrepreneurship stimulation and for increasing the competitiveness of the economy. In the framework of these support schemes, innovation activities can also receive financing.

Access to finance is one of the obstacles for companies to develop innovation activities. They do practically not get direct financing for this purpose from the state RDI budget. The banking sector faces some financial difficulties (in the wake of the financial crisis), which translates into a restricted access to loans for innovation activities. Non-banking financial institutions and support measures (e.g. venture funds, innovation voucher) are not well developed yet. A Special Guarantee Fund has been established; it, however, provides support however generally to small and medium sized enterprises (including start-ups) and not especially to innovative ones. Innovative enterprises can make use of the fund under the same conditions as other enterprises.

Research and innovation funding is mostly traditional direct funding, made available in the form of grants. Most public innovation funding is allocated through innovation and technology transfer projects by AITT. Tax incentives are another tool. Although there is a legal framework for tax incentives in technoparks and innovation incubators ([Law on Science and Technology Parks and Innovation Incubators, no.138 of 2007](#)), the application of these rules for park residents is rather cumbersome, because there are no clear mechanisms for implementing this law.

Public-private partnership could play an important role in promoting innovation, especially as public budgets are quite strained. Currently it is only possible through innovation and technology transfer projects to attract private co-funding. In 2010, private companies have contributed approximately the same amount, as was allocated from the state budget (about 610,000 Euro).

Figure 2 Broad share of available budgets by main categories of research and innovation measures

Broad category of research and innovation policy measure	Approximate total annual budget for 2010 (in euro)	Commentary
Governance & horizontal research and innovation policies	€370,000	Actual expenditure (public budget) Expenditure remained at the same level as in 2009, but lower than in 2006-2010
2. Research and Technologies	€15.3m of which a) 85% - institutional funding; b) 33% - basic research	Actual expenditure. Expenditure is the same as in 2009, increased from 2006-2007, but decreased compared to 2008. Data is underestimated, because it includes only public funding (no exact data on financing from the private sector and abroad are available)
3. Human Resources (education and skills)	€900,000	Actual expenditure. Expenditure has decreased in comparison to 2008-2009. Data is underestimated because it includes only public funding (listed in the budget section Science and innovation and managed by ASM). The universities finance training of human resources also from other sources, but precise data are lacking.
4. Promote and sustain the creation and growth of innovative enterprises	€250,000	Actual expenditure. The amount represents the budget for S&T parks and for support of innovation incubators, the only measure that directly supports innovative enterprises.
5. Markets and innovation culture	-	There is no separate budget line for this purpose.

Source: [Report on the work of the Supreme Council for Science and Technological Development and the main scientific results obtained in science and innovation in the period 2006-2010](#)

2.2 Departmental and implementing agency budgets for innovation policies

It is above all the Academy of Sciences, which disposes of a specific budget for innovation measures. The innovation related budget is managed by the Agency for Innovation and Technology Transfer (AITT), which is subordinated to the academy.

The Ministry of Economy implements a series of measures that shall enhance the national economy's competitiveness. It supports business incubators, entrepreneurship, involvement of youth in entrepreneurial activity, training of the labour force, improving access to finance etc. But all these measures are rather general to support business development and are not directly focused on innovation.

In the Government Programme for 2011-2014 greater attention is paid to increasing the competitiveness of the national economy, including through stimulating innovation activities. But the budget of AITT is modest and other agencies and governmental departments have no specific budgets for innovation measures.

Figure 3 Innovation budgets of the main government departments and agencies

Name of the organisation (with link)	Number of staff responsible for innovation measures (% of total)	Innovation budget managed	Estimated share of budget earmarked for specific policy measures
Agency for Innovation and Technology Transfer of the ASM (AITT) www.aitt.md	25 (100%)	€900,000	€610,000 earmarked for Innovation and Technology Transfer Projects €250,000 earmarked for S&T parks and incubator support

2.3 Future challenges for funding of innovation policy

The future challenges for the funding of innovation policy can be grouped into the following:

- Increasing the share of business financing of R&D and innovation activities needs to be tackled.
- The innovation culture is still rather low. Both policy-makers and enterprises need to be made more aware of the importance of innovation policies for enhancing competitiveness. In addition, research organisations are not sufficiently oriented towards the economic and social needs of the society.
- The structure and the size of the economy is a restraining factor for innovation. The majority of companies deal with low-tech production and trade. Under these circumstances, it is difficult to increase business enterprise expenditure on innovation.
- The global economic crisis has caused a reduction of financing of innovation activities. Another slump in economic growth would certainly negatively affect the scale of financial resources for innovation policy measures.
- The institutional structure of the national innovation system with its high centralisation and the focus of funding tools on the implementation of public research results are limiting factors. This needs to be tackled through decentralisation and a broader approach regarding stimulation tools.

3. Thematic report: Demand-side innovation policies

For the purposes of this report, the following categorisation of demand-side innovation policy tools is adopted:

Figure 4 Categorisation of demand-side policies

Demand side innovation policy tool	Short description
Public procurement	
Public procurement of innovation	Public procurement of innovative goods and services relies on inducing innovation by specifying levels of performance or functionality that are not achievable with 'off-the-shelf' solutions and hence require an innovation to meet the demand. ¹²
Pre-commercial public procurement	Pre-commercial procurement is an approach for procuring R&D services, which enables public procurers to share the risks and benefits of designing, prototyping and testing new products and services with the suppliers ¹³ .
Regulation	
Use of regulations	Use of regulation for innovation purposes is when governments collaborate broadly with industry and non-government organisations to formulate a new regulation that is formed to encourage a certain innovative behaviour. ¹⁴
Standardisation	Standardisation is a voluntary cooperation among industry, consumers, public authorities and other interested parties for the development of technical specifications based on consensus. Standardisation can be an important enabler of innovation. ¹⁵
Supporting private demand	
Tax incentives	Tax incentives can increase the demand for novelties and innovation by offering reductions on specific purchases.
Catalytic procurement	Catalytic procurement involves the combination of private demand measures with public procurement where the needs of private buyers are systemically ascertained. The government acts here as 'ice-breaker' in order to mobilise private demand. ¹⁶
Awareness raising campaigns	Awareness raising actions supporting private demand have the role to bridge the information gap consumers of innovation have about the security and the quality of a novelty. ¹⁷
Systemic policies	
Lead market initiatives	Lead market initiatives support the emergence of lead markets. A lead market is the market of a product or service in a given geographical area, where the diffusion process of an internationally successful innovation (technological or non-technological) first took off and is sustained and expanded through a wide range of different services ¹⁸ .
Support to open innovation and user-centered innovation	Open innovation can be described as using both internal and external sources to develop new products and services ¹⁹ , while user-centered innovation refers to innovation driven by end- or intermediate users. ²⁰

¹² NESTA (2007) Demanding Innovation Lead Markets, public procurement and innovation by Luke Georghiou

¹³ http://ec.europa.eu/information_society/tl/research/priv_invest/pcp/index_en.htm

¹⁴ FORA, OECD: New nature of innovation, 2009, <http://www.newnatureofinnovation.org/>

¹⁵ Commission Communication: Towards an increased contribution from standardisation to innovation in Europe COM(2008) 133 final 11.3.2008

¹⁶ Edler, Georghiou (2007) Public procurement and innovation – Resurrecting the demand side. Research Policy 36. 949-963

¹⁷ Edler (2007) Demand-based Innovation Policy. Manchester Business School Working Paper, Number 529.

¹⁸ COM 2005 "Industry Policy" http://ec.europa.eu/enterprise/enterprise_policy/industry/index_en.htm and Mid-term review of industrial policy

¹⁹ Chesbrough (2003) Open innovation. Harvard Business School Press

²⁰ Von Hippel (2005) Democratizing innovation. The MIT Press, Cambridge

3.1 Trends in the use of demand-side innovation policies

Demand-sided aspects of innovation policies are not explicitly discussed or mentioned in reports and policy documents on RDI. Only in the AITT annual report for 2010, where some barriers to innovation are examined, a lack of policies related to state purchase of products manufactured in Moldova is stated. It is deemed necessary in the report to define a national policy to support innovation, which should include measures such as involving the state in the demand for innovative goods and services, and putting priority on public procurement. A national innovation strategy shall be developed by the end of 2011 and possibly some elements of demand-side policies will be included in this new document. Overall, currently implemented innovation policies are largely poorly coordinated among relevant actors and often have a general character.

For the moment only few demand-side policies are implemented in Moldova. The available stimulation measures reflect a focus on the supply-side of innovation policy. Tax incentives for residents of technoparks and innovation incubators are the most relevant support tool of demand-side innovation policies. Regulation and standardisation, as other tools, have become quite relevant through the national programme to adopt international and European standards. The government programme for 2011-2014 further underpins this priority of harmonisation of national legislation and practices with European ones. But this process is top-down driven by government and not based on voluntary cooperation among industry, consumers and public authorities.

Elements of demand-side policies are included in some of the traditional stimulation instruments, which contribute implicitly to a growing demand for innovation (see for more details sections 3.3.). For example, the programmes “Development and implementation of new pharmaceuticals based on local raw materials” and “Recovery of renewable resources in the Republic of Moldova and development of a Moldovan Satellite” facilitate demand for innovative solutions in these sectors. Innovation awareness raising measures of the AITT provide at least a basis for increasing demand for innovative solutions in the future.

The most important role in priority setting and implementation of concrete measures of demand-side innovation play the Ministry of Economy and the AITT. The focus of the ministry’s activities is on stimulation of entrepreneurship and business development, whereas innovation measures are far less relevant. The AITT attempts with some schemes, to identify requirements of the business community in the field of innovation.

There are several barriers for demand-side innovation measures and for their future development:

- The limited size of the public economy does not provide for a significant use of procurement measures.
- The relatively low inward-outward FDI and its modest role for intra- and inter-regional industrial cooperation, does not facilitate regional demand for national innovations.
- The absorption capacities and demand for new technologies are limited by the level of economic development and the industrial structure of the country. Private demand for R&D is constrained by an orientation on low-tech production and trade. Business expenditure on R&D is rather low. In fact, there is a lack of critical mass in the private sector to allow significant use of demand-side policies.
- There is not enough awareness among the political and research elite of the relevance of innovation policies, and of demand-side policies in particular.

- The informational and analytical base for demand-side policies is not sufficient. Industry studies are not available, roundtable discussions on demand-side policies involving different relevant actors have not taken place and no reports on national and regional innovation needs were prepared until now.
- The academic sector is mainly oriented towards basic and applied research activities. It is therefore caring foremost for the support of these activities, while stimulation of innovation and raising of R&D activities in the business sector are of far less relevance for it.
- Flaws in the implementation of measures restrain the effects of policies. For example, tax incentives for residents of technoparks and incubators do not work properly due to flaws in its regulation.
- A lack of adequate human resources such as experts on commercialisation is another barrier.

As demand-side policies are not yet perceived and implemented as a distinctive feature of innovation policies, no evaluation of such policies has been undertaken up to now. The available reports and policy documents cover some elements, but not the entire spectre of demand-side needs.

According to an OECD report (2011) on SME development, the innovation policy in the Republic of Moldova is influenced by a linear conception of the innovation process, where research is driven by public authorities, conducted in public research centres and then applied by private companies. The authors suggest that the authorities should strive to re-shape the innovation system to improve the level of integration of the various stakeholders.

3.2 Governance challenges

The Ministry of Economy is responsible for coordination of innovation policy and for policies to strengthen the competitiveness of the economy. It has established an Advisory Board in order to develop the partnership between government, civil society and the private sector. The board enhances stakeholder participation for identifying strategic priorities of the country. Several innovation related agencies are directly subordinated to the ministry. This concerns The National Institute for Standardization and Metrology, which is responsible for implementing standards in the Republic of Moldova, the Organisation for the Development of the SME Sector, and the Moldovan Investment and Export Promotion Organization.

To promote the demand-side of innovation more effectively, the ministry's policies would have to be better coordinated with the activities of a range of other agencies in the field, but which are responding to different line ministries and operating under different policy guidelines. This concerns above all the measures of the AITT. Other relevant agencies are the [Public Procurement Agency](#), which is responsible for establishing the regulatory framework for public procurement, the State Agency on Intellectual Property, responsible for issuing patents and trademarks, and the [Chamber of Commerce and Industry](#).

Innovation policy coordination is generally at a fairly low level. Therefore policy co-ordination tools need to be put in place to foster synergies among different programmes and to co-ordinate effectively with the donor community.²¹

²¹ OECD (2011).

3.3 Recent demand-side innovation policy measures

Public procurement is dealt with by the Public Procurement Agency under the Ministry of Finance. The agency makes suggestions for modifications of public procurement and prepares draft regulation for approval of the government. It shall ensure that access to public tenders is fair and effective. Despite these tasks, innovative aspects of public procurement are practically not discussed. The [Law on public procurement of 2007](#) does not include any provisions that would specifically stimulate purchasing of innovative products and services.

In the procurement process are usually indicated specific products and the price is rather important. More focus on describing specific needs and expected results would allow bidders to propose better and a wider variety of solutions to a problem to be solved. The contracting agencies are obliged to send the request for tender to the public procurement agency, if a contract exceeds €6,100 for goods and €30,500 for services. The agency reviews the tender documents and ensures that they are in conformity with the law on public procurement and then publishes the tender on the Public Procurement Bulletin and on its website. The selection of the tender is then conducted by the contracting agency.

The priorities of the agency include the harmonisation of national legislation with EU rules and the WTO agreement in the field of public procurement. This should have repercussions on stimulation of innovation and R&D through improved public procurement practices. Recently, the agency has taken measures to include SMEs in the list of qualified economic operators, so that they can participate in tenders.

Pre-commercial procurement and **cross-border procurement** are of only very limited relevance for Moldova.

Much more important for demand-side policies are **regulations and standardisation**. A commission to regulate business activity was established by the Ministry of Economy. It includes representatives of public authorities, entrepreneurs, and non-governmental organisations, and its activity can indirectly contribute to innovation. During 2010 its work was focused on further reforming the regulatory framework for entrepreneurship. Administrative constraints on business shall be removed.

Standardisation and technical regulation are highly relevant demand-side issues in Moldova. To increase competitiveness and to facilitate innovation activities, it is important to meet the growing demands of international markets in terms of quality and performance of products; compliance with international standards has become a condition for market access. The system governing technical regulations and standards in the Republic of Moldova is undergoing a transition from the GOST system (state standard), a legacy from the communist period, to adopting internationally recognised standards. Importantly, Moldova has started to adopt EU technical regulations and standards. In recent years it is tried to improve the metrology, standardisation, testing and quality – actions, which are all necessary to obtain access to foreign markets and increase competitiveness of domestic products. To implement the National Programme for the adoption of international standards (ISO) and European (EN) as national standards, from January to September 2010 were adopted 1111 national standards, which were identical to the international standards and 1024 national standards identical to European ones. Due to resource constraints, transition is slow and GOST still represents 90% of standards currently applicable. In accordance with the Government Action Plan, harmonisation will continue until 2014 so as to ensure that transposing of national to European standards will reach a level of 50%.

Through the [Competitiveness Enhancement Project](#), the development and implementation of quality management systems continues according to international standards ISO 9000 at about 118 industrial enterprises. The number of enterprises which are in the process of implementing ISO 9000 increased by 55 units in 2010. In 2009-2010, 64 grants were awarded for co-financing ISO implementation.

Awareness raising measures are another relevant demand-side element in Moldova. In the first place, it is AITT that takes care of such awareness raising measures. In order to achieve its objective to increase interest in innovation in the scientific community and in the business environment, it organises and participates in various national and international events such as contests ("Best innovative student", "Top of Innovations"), exhibitions ("Made in Moldova", "INFOINVENT", two scientific and technological permanent exhibitions, other international exhibitions), conferences, roundtables, seminars, various interviews and advertisements broadcasted through the media (TV, radio, newspapers and magazines). For example, at the annual exhibition "Made in Moldova", there are innovative products of scientific-technological parks and of the innovation incubator as well as of technology transfer projects presented.

Tax incentives for residents of technoparks and innovation incubators are in place, but not yet working properly (see chapter 1.3 above).

The following organisations deal with certain elements of demand-side innovation policies:

The **Ministry of Economy** is responsible for strengthening the overall competitiveness of the economy. For the demand-side it is responsible for tax incentives for residents of technoparks and incubators. The ministry includes a department of technological development and competitiveness and it has moreover a number of subordinated bodies, whereby especially The National Institute for Standardization and Metrology is relevant for demand-side policies. It is responsible for implementing standards and technical regulation in the Republic of Moldova. It also provides standard-related services to companies (e.g. certification).

The Academy of Sciences of Moldova is through its **AITT** responsible for the implementation of state policy in the fields of innovation and technology transfer. AITT has taken several awareness-raising measures for innovation (innovation award, web platform for innovations, etc.).

The **Public Procurement Agency** is the institution, which monitors public procurement procedures in the Republic of Moldova, ensuring that access to public tenders is fair and effective. It also deals with regulation of public procurement.

Figure 5 Key demand-side policy measures

Measure name (duration)	Short description of objectives, main activities or types of funding support, etc.	Key implementation details
The National Programme for the adoption of international standards (ISO) and European (EN) as national standards (2009-2011)	<ul style="list-style-type: none"> The objective is to adopt EU technical regulations and standards; Direct funding from state budget. 	<ul style="list-style-type: none"> Annual budget of the programme is about €1,5m; Responsible organization is the National Institute of Standardization and Metrology; URL: http://www.standard.md/pageview.php?l=en&idc=197 (in Romanian)

3.3.1 Sectoral specificities

A more advanced sector in demand-side policies is the renewable energy sector. In fact, elements of demand-side innovation policies are implemented through a mix of legislation and international agreements on renewable energy sources. Measures include direct funding of S&T projects in energy and environment in the framework of state research and development programmes. Some actions concern the implementation of international environmental and energy saving standards.

The Law on Renewable Energy and Moldova's energy strategy until 2020, both of 2007, stipulate the requirement to produce until 2020 an amount of 20% renewable energy as a share of the total energy volume. Among other things, these documents provide the transposition into national law of the Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market and of Directive 2003/30/EC on the promotion of biofuels and other renewable fuels for transport.

However, regulations and standards in the field were not sufficiently developed and implemented. A National Program for the use of renewable energy, developed by the Academy of Sciences has not been approved yet. In 2010, few actions were taken: an Energy Efficiency Agency was established, which is now the responsible authority in the field of renewable energy. The statute of the International Renewable Energy Agency (IRENA) was ratified and a new industrial park "Bioenergagro", specialized in using biomass for gas was approved. The Government Action Plan for the years 2011-2014 also stipulates actions in this field, such as projects to promote energy efficiency and renewable energy use in public institutions. Priority is given here to schools, kindergartens and hospitals. The action plan also foresees to prepare the ground for implementing of European legislation and experience with funding of "green technologies", including biomass, biodiesel, bioelectricity, solar and wind energy.

3.3.2 Good practice case

A good practice case in demand-side policies is difficult to single out, as most measures have been implemented only in recent years. Standardisation and regulation are certainly highly relevant for Moldova, as they facilitate access to the EU market and may serve as RDI stimulation tool. The implementation of harmonisation with the EU, however, has not yet far advanced (see chapters above for further details).

Appendix A Research and innovation policy measures for Republic of Moldova

No	Name of the Support measure	1 st Priority	Start date	End date	Status (CC to complete)	Estimated public budget in 2010 in euro	Comment
1	R&D State Programmes	1.2.1 Strategic technology policies (long-term research agendas)	2004	open end	To be updated	€610,0001, 3	actual expenditure
2	Innovation and Technology Transfer Projects	2.2.3 R&D cooperation (joint projects, PPP with research institutes)	2005	open end	To be updated	€610,0002, 3	actual expenditure, private sector co-financing of at least 50% of the overall project cost required
3	Projects for young researchers	3.2.2. Career development (e.g. long-term contracts for university researchers)	2007	open end	New to be created	€325,000, 4	committed budget
4	Projects for procurement of research equipment	Policy measures concerning excellence, relevance and management of research in 2.1.4 Research Infrastructures	2007	open end	New to be created	€312,500, 4	committed budget
5	International bilateral projects	3.2.3. Mobility of researchers (e.g. brain-gain, transferability of rights)	2006	open end	New to be created	€380,0001	actual expenditure
6	Fellowships for doctoral and postdoctoral studies	3.1.3. Stimulation of PhDs	1990th	open end	New to be created	€843,0001, 3	actual expenditure
7	Excellence Grants of the Government of Moldova	3.1.3. Stimulation of PhDs	2003	open end	New to be created	€50,0005	actual expenditure
8	National and academic awards for researchers, students and science journalists	5.1.2 Innovation prizes incl. design prizes	2004	open end	New to be created	€21,0004	actual expenditure
9	S&T parks and incubator support	2.2.1 Support infrastructure (transfer offices, training of support staff)	2007	open end	New to be created	€250,000, 3	actual expenditure, allocation to two parks and one incubator
11	Credit Guarantee Special Fund	4.3.1 Support to innovative start-ups incl. Gazelles	2001	open end	New to be created	€440,000	actual expenditure; only partly relevant, as the Fund is targeted at all Moldovan companies and not only at innovative start-ups and Gazelles,

No	Name of the Support measure	1 st Priority	Start date	End date	Status (CC to complete)	Estimated public budget in 2010 in euro	Comment
11	National Economic Empowerment of Youth Programme	4.2.1 Support to innovation management and advisory services	2008	2013	New to be created	€970,000 ⁶	actual expenditure, only partly relevant: programme component - Financing rural investment projects
12	Initiative to develop the cooperation between scientists still working in the country and the Moldovan “Scientific Diaspora”	3.2.3. Mobility of researchers (e.g. brain-gain, transferability of rights)	2008/2010	open end/2012	New to be created	-	The initiative is based on two projects, financed by foreign entities
13	Creating of the Academic network “Education and Research: High School-University-PhD–Postdoc”	3.1.2. Relation between teaching and research	2007	2011	New to be created	€14 million ³	actual expenditure, allocation for creating a High School for gifted children and a University within the Academy of Sciences of Moldova

1. According to [Report on the work of the Supreme Council for Science and Technological Development and the main scientific results obtained in science and innovation in the period 2006-2010](#);
2. According to [Innovation activity in figures, AITT data](#);
3. According to [Report of the Court of Accounts of the Republic of Moldova on the audit of the Academy of Sciences of 19.04.2011](#);
4. According to data of SCSTD on the organisation of competitions;
5. Calculated on basis of the [Government Decision no.164 of 09.03.2010](#);
6. Data of Ministry of Finances, [reports on 2010](#)