General policy framework

Science and technology has increasing importance in the policy of the Hungarian Government. This is earmarked by strengthening the governmental S&T co-ordination body, restructuring the public administration of S&T as well as the higher educational and research institutions creating the basis of a new concept of S&T financing.

In 1998, the former Science Policy College (TPK) being the highest-level government body for science and technology policy has been reorganised and completed by technological issues. The renewed Science and Technology Policy College (TTPK), chaired also by the Prime Minister, became more operative than earlier having a preparatory advisory body, the Scientific Advisory Council, with members of highly reputed experts from scientific, business and governmental spheres, as well as a new secretariat being responsible for the operational background work. Within the Ministry of Education (OM) this operational secretariat has important co-ordinating role in the national S&T policy implementation.

Recently further steps have been taken with the aim of enhancing the governmental structure for S&T administration and funding. From January 1, 2000, the role of the Ministry of Education has been widened, as the former governmental office, the National Committee for Technological Development (OMFB) was integrated into the Ministry as a new division supervised by a Deputy State Secretary being responsible for R&D issues. A technology policy advisory body of 15 members remained under the name OMFB.

From 2000 on, some changes in the economic policy and R&D policy of Hungary can be observed. The economic policy tends to give stronger impetus to SME development and to the regional approach. It has to be emphasised that the measures of different policies, such as industry, investment, regional development, trade, competition, monetary, fiscal, education and employment policies should be treated together and harmonised. At national level, the harmonisation among programmes supervised by different ministries is improving in the frame of a complex development programme.

By the end of 1999, a first outline for the was completed in coherence with the country’s economic policy as one of its important horizontal components. The innovation policy focuses on the international competitiveness and on the societal and economic conditions promoting technological, management and market innovations. The main goal is to increase the competitiveness both at micro and macro level to promote a sustainable growth. The creation of knowledge intensive jobs, the improvement of the quality of life and the decreasing of regional differences of development are priorities as well. It is an important lesson from the experiences of the successful OECD countries that no narrow sector or disciplinary priorities are set but large horizontal programmes, interdisciplinary research, widely useful generic technologies, co-operation and networking. For small economies it is especially important to find priorities within these large programmes also in a international or transborder context. Analysis of scientific trends, discovering gaps and the fields where comparative and competitive advantages can be found are necessary. Although the legal regulation of intellectual property rights are satisfactory, some further steps will be made in the field of the enforcement.
There are new innovation related programmes for less developed regions of Hungary to increase their chances and to strengthen the links between them and the S&T infrastructure of the country. Due to the decision of the Parliament, since 1999 there has been a special catching-up development programme targeted to the less developed Hungarian counties. The programme was launched first for three counties in 1999 and it is broadened to five counties in 2000. An agreement is signed yearly between the Government and the local County Development Councils. In the field of R&D and innovation local development agencies operate demand-driven innovation programmes for SMEs, with special respect to knowledge acquisition and application, R&D infrastructure, networking and training. It is also an important objective to enable local SMEs to become suppliers in large co-operation networks. These goals fit to the national innovation strategy. The first experiences of this initiative are favourable.

Foreign direct investments have strong positions in the Hungarian processing industry. There is a knowledge transfer through FDI but is has to be enhanced by further policy measures, described in Section 2/g. It is a declared objective to make the country as attractive operation site as possible for further investments. In Hungary a favourable tendency can be observed in establishing new R&D centres by multinational companies.

In order to promote business investment in advanced R&D facilities, a programme has been launched in 1998 to attract for company R&D investments in Hungary. The aim of the programme is to create research centres that will be responsible for the domestic development and introduction of advanced technologies. The investments shall be associated with high-tech and serving the applied research and development activities. The details and conditions of this programme are described below (see2/c), among the supporting measures.

Financing has been always a crucial question of R&D in the last decade, not only in Hungary, but in most CEE countries. Government and business R&D expenditures decreased strongly in the early 1990s and stayed at a low level in the second half of the decade. Now there are positive signs that, in accordance with the general recovery of the Hungarian economy and with the considerable decrease of the relative weight of foreign debts in the state budget, the national S&T budget started to increase again. According to the expectations of the Government, this growth should be accelerated from 2001 on. The ratio of institutional financing as opposed to competitive bidding has to be reduced, and the involvement of the private economy in the R&D efforts is aimed at.

The utilisation of the potential in international S&T co-operation is a very important tool. Since 1999 Hungary, among other CEE countries, has been participating in the 5th RTD Framework Programme of the European Union. This is a further impetus for the development of the domestic R&D institutions and for fostering the international networking. Bilateral international S&T co-operations are also of special importance. At present, Hungary has 29 inter-governmental S&T treaties with 630 ongoing projects.

2. Policies related to the recommendations of the TPJ report

A. Reforms to and support of the science base

Major initiatives to reform universities and/or the role of public laboratories, including the creation of centres of excellence

In the last years an important integration process began in the Hungarian higher education sector. To face the challenge represented by the dynamically growing number of students, in accordance with the long-term goals of the government, and by the need of more flexibility and variety, a large university integration programme has been launched.
The fundamental reforms in the financing of the Hungarian Higher Education took place in 1996-1997. Since that time its implementation has been in progress. (e.g. establishment of different funding schemas, the necessary financial budget provided by the amended Higher Education Act, 1996.)

The development and proper financing of the education and training systems is an essential task of the government. In the medium term, the renewal of the contents, the structures and methods of education and the research sector is inevitable. The ongoing integration process in the Hungarian higher education sector and also the consolidation and reorganisation process in the government financed research institution network of the Hungarian Academy of Sciences (HAS) take aim at more effective utilisation of the facilities and human resources, and more flexible operation of institutions. Knowledge flow between education institutions, research institutions and companies, has to be strengthened, and network building among them is one of the major goals.

The integration process of higher education institutions is being carried out supported by considerable budget resources as well as by a World Bank programme. The number of public higher education institutes decreased from 51 to 18, enabling flexible use of buildings, laboratories, sports and language training facilities, personnel and R&D resources.

A consolidation and reorganisation process has been carried out in the government financed research institution network of the Hungarian Academy of Sciences (HAS), merging similar R&D profiles and maintaining the research staffs but aiming at more effective utilisation of the facilities. Some HAS research groups working at universities continue their activities in favourable atmosphere at the new integrated universities. This reorganisation process has also been supported with budget resources.

**Changes in the funding of basic science or changes in the criteria for public funding**

There was no considerable change in the funding rules and criteria in the last two years.

The system of the allocation of state funds devoted to basic science is similar to that of most EU countries: The overwhelming majority of the financial support is non-refundable.

The public funding of basic science can be:

- Institutional financing to cover the maintenance costs of research institutes and higher education research units. These basic provisions are built into the ministries and HAS budgets, which are parts of the state budget.

- Thematic, project financing through competition systems. Thematic financing is made through the Special Estimate of the ministries via the different funding schemas.

The most important funding schemas of basic science are:

**National Scientific Research Fund (OTKA):**

OTKA is a state fund devoted to basic research but may be used for the development, of the scientific infrastructure, as well. It supports the bottom-up initiatives of researchers and their communities and backs up talented young researchers. OTKA is supervised by the General Secretary of the Hungarian Academy of Sciences, and its Committee that consists of a president, two vice-presidents and 17 members nominated by the prime minister. Administration is by its Office and allocation through a competition system. Independent opponents and commissions judge applications.
Competitive R&D Grant for Higher Education (FKFP)

FKFP is one of the research funding frames of Ministry of Education. However it supports not exclusively the basic science. Independent experts and commissions evaluate the project proposals. The highest level decision making gremium is the Board, whose members are nominated by the Minister of Education. In the first round (1997) 503 projects received support from the Board, and the shortest projects ended by December 1998. The longer running time (2-3 years) gives more stability to the individual research groups, resulted in committing HUF 673.5 million from the 1998 granting budget. In 1999 the financial resources were HUF 400 million for 307 projects.

Research Grant of Hungarian Academy of Science (AKP)

AKP – with less weight than OTKA and FKFP – also contributes to the financing of basic science.

Major initiatives to involve stakeholders in the setting of research priorities

A new programme for establishment of Co-operation Research Centres has been announced in summer 1999. These research and engineering centres will be located at the universities and will provide good conditions for the higher education to collaborate with the industry in order to concentrate their knowledge and resources to work out new technologies. The common use of knowledge is of mutual interest, integrating education and technology, developing not only the company assets but also the university curricula. An additional result of the programme is that many universities and companies got an impetus to formulate or reformulate their R&D strategies (see more detailed in 2.c).

B. Links between science and industry

Covered by a questionnaire of the TIP group.

C. Incentives and support for R&D

Major changes in the tax treatment of R&D and/or changes in direct support for R&D

The regulation of the tax treatment of R&D is quoted below:

Personal Income Tax (Act CXVII of 1995)

Twenty-five per cent of the income of a private individual engaged in intellectual activities, earned by such activities, but no more than HUF 50 000, may be deducted from the tax of the consolidated tax base. For the purposes of this provision, a private individual earning income as an original beneficiary, although not by private entrepreneurial activities, which results in the implementation of a patented article or a work subject to copyright law in accordance with the provisions of the Act Patenting Inventions or is protected by the Copyright Act, shall be regarded as a private individual engaged in intellectual activities.

A private entrepreneur using the entrepreneurial income based taxation method may deduct from the entrepreneurial revenues 20% of the amount accounted as costs of research and development during the tax year, if not accounted against revenues received as subsidies, whereby the accounted sum shall not include the purchase value of research and development; for the purposes of this provision, the invoiced amount of material costs and work performed by others shall be regarded as expenses on semi-finished or finished products of own production.
Customs Law (Act C of 1995)

Objects used for educational, scientific or research purposes arriving for educational and higher educational, scientific and medical institutes as well as to other foundations, public foundations and public bodies pursuing educational, scientific or health care activities, as gifts or as exchange, shall be free of duty, provided that the head of the institution verifies registration. These customs goods may only be alienated within five years, in the case of the payment of the customs debt referred to in the provisions of the legal rules in force at the time of alienation.

Corporate Tax and Dividend Tax (Act LXXXI of 1996)

The following shall reduce pre-tax profit: 20% of the amount incurred in the tax year on the grounds of research and experimental development (specified in a list called SZJ 13) and accounted for as own, direct costs of research and experimental development, pursuant to Accounting Act regulations, reduced by the amount of subsidies received and allocated thereto, irrespective of whether or not such has been entered in the inventory as the capitalised value of experimental development.

Support for R&D:

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Business enterprises</td>
<td>40.3</td>
<td>31.3</td>
<td>28.6</td>
<td>28.7</td>
<td>36.1</td>
<td>37.4</td>
<td>36.4</td>
<td>37.8</td>
</tr>
<tr>
<td>Government budget</td>
<td>55.8</td>
<td>62.9</td>
<td>65.1</td>
<td>63.0</td>
<td>55.1</td>
<td>51.2</td>
<td>54.8</td>
<td>54.7</td>
</tr>
<tr>
<td>Other domestic</td>
<td>2.1</td>
<td>2.9</td>
<td>3.9</td>
<td>4.7</td>
<td>4.1</td>
<td>6.9</td>
<td>4.6</td>
<td>2.8</td>
</tr>
<tr>
<td>Foreign, international</td>
<td>1.8</td>
<td>2.9</td>
<td>2.4</td>
<td>3.6</td>
<td>4.7</td>
<td>4.5</td>
<td>4.2</td>
<td>4.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Central Statistical Office (CSO)

<table>
<thead>
<tr>
<th>Year</th>
<th>Current price (Billion HUF)</th>
<th>Current price (1991=100.0)</th>
<th>PPP price (Million USD)</th>
<th>PPP price (1991=100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>27.1</td>
<td>1</td>
<td>885.7</td>
<td>100.0</td>
</tr>
<tr>
<td>1992</td>
<td>31.6</td>
<td>1.1</td>
<td>852.6</td>
<td>96.3</td>
</tr>
<tr>
<td>1993</td>
<td>35.3</td>
<td>1.3</td>
<td>916.0</td>
<td>92.1</td>
</tr>
<tr>
<td>1994</td>
<td>40.3</td>
<td>1.4</td>
<td>786.9</td>
<td>88.8</td>
</tr>
<tr>
<td>1995</td>
<td>42.3</td>
<td>1.5</td>
<td>697.0</td>
<td>78.7</td>
</tr>
<tr>
<td>1996</td>
<td>46.0</td>
<td>1.6</td>
<td>634.0</td>
<td>71.6</td>
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<td>1997</td>
<td>63.6</td>
<td>2.3</td>
<td>753.4</td>
<td>85.1</td>
</tr>
<tr>
<td>1998</td>
<td>71.2</td>
<td>2.6</td>
<td>742.3</td>
<td>83.8</td>
</tr>
</tbody>
</table>

* OECD purchasing power parities have been used for the conversion of national currencies in US dollars.

Source: OECD, CSO
### R&D expenditures by type of activity

<table>
<thead>
<tr>
<th>Year</th>
<th>Basic Research</th>
<th>Applied Research</th>
<th>Experimental development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Billion HUF 1991=100.0</td>
<td>Billion HUF 1991=100.0</td>
<td>Billion HUF 1991=100.0</td>
</tr>
<tr>
<td>1991</td>
<td>6.9</td>
<td>9.4</td>
<td>10.8</td>
</tr>
<tr>
<td>1992</td>
<td>8.6</td>
<td>10.7</td>
<td>12.3</td>
</tr>
<tr>
<td>1993</td>
<td>10.0</td>
<td>11.0</td>
<td>14.3</td>
</tr>
<tr>
<td>1994</td>
<td>13.0</td>
<td>13.6</td>
<td>13.7</td>
</tr>
<tr>
<td>1995</td>
<td>12.4</td>
<td>14.8</td>
<td>15.1</td>
</tr>
<tr>
<td>1996</td>
<td>14.6</td>
<td>15.4</td>
<td>16.0</td>
</tr>
<tr>
<td>1997</td>
<td>18.3</td>
<td>18.8</td>
<td>26.5</td>
</tr>
<tr>
<td>1998</td>
<td>22.1</td>
<td>25.5</td>
<td>23.6</td>
</tr>
</tbody>
</table>

**Source:** CSO

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*Measures to enhance the efficiency of support, to establish public/private partnerships in R&D or to introduce more competitive programmes for government funding*

One of the objectives of the Hungarian R&D and innovation policy is the promotion of R&D in enterprises and their collaboration with universities. This aims to promote joint R&D actions undertaken by universities and enterprises and the appropriate transfer, which may lead to new processes or products the productive sectors.

**Program to establish new high-tech R&D units**

The National Committee for Technological Development, the Ministry of Economic Affairs and the Ministry of Finance started in 1999 a program for supporting investments associated with high-tech and serving the applied research and development activities.

The aim of the program is to create, either in form of independent business venture or of an independent organisation unit within a business venture, a research centre that will be responsible for the domestic development and introduction of advanced technologies. The facility to be created is to:

- Strengthen the independent company research-development base.
- Strengthen co-operation between business and non-profit research institutions.
- Improve the employment.

Applications may be submitted by a business venture incorporated in Hungary or by a consortium of such business ventures that agree to establish or expand, within two years from submission of the application and with a total investment of HUF 500 million, a research centre where the employer agrees to employ at least 30 full-time new graduate researchers within 6 months of completion of the investment and putting this facility into operation. Applicants must also agree to operate the research centre for at least five years in compliance with the original objectives.

In the form of support, maximum 25% of the overall cost of investment to be implemented within two years at most, may be applied for. Support received from other central or local government agencies (thus, the allocation of a site free of charge at its market value) shall be deducted from the overall investment cost of the project and 25% of the remaining sum, but no more than HUF 125 million, may be applied for a support. The application may be for a non-repayable grant and for an interest-free loan.
Program to establish Co-operative Research Centres

Objectives: To create, or to strengthen the operation of, research centres allowing the formation of integral ties between the institutions of Hungarian college and university (higher) education, other non-profit research institutions and the enterprise-business innovation sector, and wherein the strategic integration of education, research and development, knowledge and technological transfer can be realised.

Bids can be submitted by Hungarian universities and colleges individually or jointly, or in a consortium form with enterprises in the capacity of Co-operative Research Centre (CRC) recipients. The leading institution of the consortium may only be an establishment accredited by the Hungarian Accreditation Committee for Ph.D. training. CRC proposals shall be submitted exclusively with the participation of business partners. The centre to be established can be an independent legal entity or a separately financed, economically independent unit – within the organisation of an institution of university or college education.

The proposal shall detail a strategy for long term (minimum 3, but preferably 6-9 years) research, training, plus knowledge and technological transfer, developed jointly by the participating partners, supplemented by the business plan required for the operation of the centre.

The grant awarded to a centre for a period of three years will fall into the range of HUF 50 to 250 million. The actual grant amount will depend on the scope and contents of the planned task(s).

Changes in the balance of R&D support to different sectors, and initiatives to move from support to R&D to support for innovation, including changes to reflect the growing role of services in innovation

<table>
<thead>
<tr>
<th>Industries</th>
<th>Distribution of BERD, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1995</td>
</tr>
<tr>
<td>Agriculture</td>
<td>16.3</td>
</tr>
<tr>
<td>Mining</td>
<td>0.2</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>76.3</td>
</tr>
<tr>
<td>Of which:</td>
<td></td>
</tr>
<tr>
<td>Petroleum refining, chemicals, rubber and plastic products</td>
<td>56.3</td>
</tr>
<tr>
<td>Machinery, electrical machinery, transport equipment</td>
<td>12.9</td>
</tr>
<tr>
<td>Electricity, gas and water supply</td>
<td>2.2</td>
</tr>
<tr>
<td>Construction</td>
<td>0.5</td>
</tr>
<tr>
<td>Service sector</td>
<td>4.5</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: CSO

D. Technology diffusion and networking

Major initiatives to enhance commercialisation and technology diffusion, and to enhance business participation and cost-sharing with the private sector in diffusion programmes.

Joint action between Government and regional chambers: Since 1997 there have been joint action between Government and economic chambers to promote regional innovation in Hungary. The programme involves regional chambers and the central government in such a way, that they jointly finance innovation activities
in the regions, mainly technology diffusion programmes aimed toward the promotion of innovation activities of SMEs. The financed projects include setting up services for technology transfer, setting up and operating innovation centres, supporting quality development activities. This programme is also contributing to the collaboration of different partners active in a region.

Other programmes with technology diffusion elements: The Government is running a programme for call for applied R&D project-proposals. In the framework of this programme there are priorities toward enhancing joint activities of industrial entities and the institutions of the knowledge–base (universities, or R&D institutions). In this way, this programme enhances the commercialisation and technology diffusion.

Another programme, called INTEGRATOR has been started in 1999 to enable and promote the joint innovative activities of major industrial enterprises, corporations with Hungarian SMEs as their suppliers.

Efforts to promote technology diffusion for services or to open existing programmes to service firms.

Separate action lines are included in the generic technological applied R&D programmes run by the Government, where proposals can be submitted also for innovation services on the specific scientific field. (E.g. Information services are included in the so called Applied R&D programme for information and communication.)

Other programmes do include some service elements, like quality management, too.

Policy initiatives towards cluster formation, including initiatives to use public procurement in promoting innovative behaviour.

Specific cluster programmes do not exist in Hungary.

Public procurement regulations are quite new in Hungary: On the level of law public procurement regulations have been created in 1995. The Act on Public procurement exempts specific services from the obligations of the Act, among them research and development activities if the following criteria prevail: the activity is not financed over the extent of maximum 50% and over the threshold by the organisation itself who requested the proposal and at the same time, the results of the activity is not utilised by him, too. The Act gives also a possibility to define criteria diverging from the obligations of the law in order to increase the chances for SME participation. For the innovative activities there is an important regulation in article 70, § c), which allows to use proceedings for research, experiment, study and development purposes, in case that this activity does not create market possibilities or does not cover the costs of R&D.

Changes in competition policy to enable networking and co-operation in pre-competitive research

Group exemption for joint R&D

The Government has adopted the Regulation 84/1999. (VI.11.) on the exemption from the prohibition on restriction of competition of certain groups of research and development agreements.

Under this Regulation research and development agreements, the subject of which is:

- Joint research and development of products or processes and joint exploitation of the results of that research and exploitation, or
Joint research and development of products or processes excluding joint exploitation of the results of that research and exploitation, or

Joint exploitation of the results of research and development jointly carried out pursuant to a prior agreement between the same undertakings shall be exempted from the prohibition of agreements restricting economic competition.

The exemption shall apply for the duration of the research and development programme and, where the results of the research and development are jointly exploited, for the period within which products and processes, to which the agreement relates, are protected by patents or as industrial designs, utility models or topographies or, failing protection of industrial property rights, for five years from the time those products are first put on the market.

**State aid for R&D**

Government adopted the Community regulation for R&D in respect of eligible costs and standard rates as follows:

**Standard rates**

- Fundamental research: up to 100 %
- Industrial research: up to 50 %
- Pre-competitive research: up to 25 %

**E. Technology-based firms and new growth areas**

*Major programmes to strengthen the creation of high-tech firms, covering fiscal and financial incentives, regulatory reforms to promote entry, changes to bankruptcy laws and initiatives to promote venture capital markets.*

Programmes to strengthen the creation of high-tech firms: Since 1999, the Government has run a programme called TECH-START to support the newly formed technology based firms to implement their initial innovation plans. Grants are given to technology based firms not older than five years and under 10 employees.

There are no specific fiscal incentives oriented toward NTBFs.

Venture capital market: the venture capital market is growing in Hungary mainly through various private VC-funds active in the country. A law has been passed by the Parliament in early 1998 to regulate and revitalise the VC-market in Hungary.

**Venture capital (Act XXXIV of 1998)**

This Act regulates the foundation, establishment, operation in the Republic of Hungary, and state supervision of venture capital enterprises, venture capital funds and venture capital fund management companies and of Hungarian branch offices of foreign-registered companies.

The duration of operation of venture capital companies shall be at least six years and may not be terminated by voluntary dissolution within six full calendar years. Funds may only be established for a specific duration of no less than six full calendar years.
Venture capital companies may only operate as companies limited by shares having registered shares, or as branch offices. The subscribed capital of a venture capital company or fund shall be at least five hundred million HUF. Funds may only be established as closed-end funds.

A share paid for from the assets of a venture capital company or a fund, acquired may not amount to over fifteen per cent of the equity capital of the venture capital company or the fund at the time of the investment. The investments of a venture capital company shall, on the average of the first six full calendar years reach at least 50% of the equity capital and at least 70% of the equity capital during three years within such six year period.

Venture capital companies and funds may extend loans only to enterprises in which they have an ownership share of over 25%. A loan granted to an enterprise may not exceed the capital amount invested by the venture capital company or the fund in the enterprise or in other enterprise(s) controlled by such enterprise.

Venture capital companies and funds may not be engaged in activities other than the capital investment and lending activities described in this Act, and shall keep all liquid assets in domestic government securities, in sight deposits or deposits fixed for a maximum of six months. Funds may not acquire real property from their assets. Venture capital companies and funds may not acquire shares listed on the stock exchange.

Specific policy initiatives aimed at new growth areas, such as information technology, biotechnology or knowledge-intensive services

The system of calls for proposals is constructed to fit the priorities of the Hungarian innovation policy: development of knowledge base; improvement of the innovation power of enterprises; development of R&D infrastructure

There are programmes for specific technological areas:

- The mission of the Program of Information and Communication Technologies is to promote the knowledge-based information society, to announce calls for proposals for the development of information and communication technology applications such as information mobility, eCommerce and eWork models, user-friendly services, smart cards, geoinformation systems, language modalities.

- Environment Protection and Energy are approached in structured way. Biomass, geothermal power plants and solar applications are the areas where joint international research and development program settings have been supported.

- The new biotechnology program covers secure foodstuffs, phyto-technologies, biopharmacology. The aim of the 2000 call is to support creation of high-tech biotechnological products, processes and services, to improve the competitiveness of the Hungarian biotechnological ventures.
F. Labour-related measures

Policies to change the status of scientific personnel, to enhance mobility of university researchers and scientific personnel, and to increase financial and non-financial incentives for scientific personnel.

The number of PhD and other scientific degree holders has grown substantially in the past years. The growth is due to the new programmes supporting personal teaching and research excellence. The possession of a scientific degree is a general precondition for the participation in these programmes.

The number of doctoral students is growing too. The Ministry of Education is supporting yearly 50 doctoral fellowships for the students of the neighbouring countries.

The Government Decree 156/1997 (IX.9.) provides the legal basis for concluding post–doctoral work–contracts and supporting this form of employment in the state R&D sector.

Several state-run grant schemes offer 1-3 year post-doctoral fellowships to the best young PhDs.

There is a special fellowship for professors and senior researchers working in the higher education.

Changes in support for scientific training and education programmes, policies to enhance the supply of skilled personnel.

The Hungarian government published a decree on December 9, 1998 formulating the principles to transform the network of the higher education in order to improve the professional training with special regard to the creation of a flexibly changing educational structure most fitting to the ever changing requirements of the labour market, the economy and the science. It is similarly important to unite the intellectual resources in the interest of multi–, trans– and interdisciplinary research and development activities on international level.

In summary, the main goals are:

- To make possible the life–long learning in the universities, the ability of adapting to the rapidly changing social requirements.
- To create the basis of research and development activities and knowledge centres on international level, by uniting the intellectual power of the integrated institutes.
- To make the integrated institutions general intellectual centres of the regional development.

Changes in policies towards the international migration of scientific and high-skilled personnel.

The Domus Hungarica Program was introduced in 1997 to help Hungarian-born foreign scientists take up temporary residence in Hungary. The Academy of Sciences set the employment quota in Hungary for its Hungarian-born external members. The Government recently has decided to allocate funds for the support of Hungarian scientific organisations in the neighbouring countries.

With the aim to slow down the leaving of the best scientific personnel, different actions have implemented:

- For young researchers the Zoltán Magyary Postdoctoral Fellowship supported by the Foundation for the Hungarian Higher Education and Research and the Bolyai Research Fellowship supported by Hungarian Academy of Sciences and Ministry of Education.
− Paul Erdős International Summer Institute of Mathematics organised by Bolyai Mathematical Society and supported by international sponsors and with the contribution of Ministry of Education.

Other strategies are under construction.

G. Globalisation

Policies to promote and reduce obstacles to international co-operation in science, technology and innovation and measures to enhance access of foreign firms to technology programmes

According to the reciprocity principle, the Hungarian government has declared that EU research units and institutions will be given access to national technology programmes. The implementation of this principle is in progress. At the moment, three technology programmes (on information technologies, on biotechnology, and on EU 5th Framework Programme accompanying measures) are open. The number of open programmes will increase.

New (major) cross-country collaborative research programmes

Among the new major cross-country collaborative research programmes, first of all, the participation in the EU 5th RTD Framework Programme has to be mentioned. This is a real chance to join projects in the mainstream of European research activities. According to the preliminary data on short-listed projects, Hungarian research and development teams were quiet successful in the first year of the full programme level participation.

Bilateral S&T co-operations are considered of crucial importance. In the last two years the number of the bilateral intergovernmental agreements increase further, now there are 29 agreements and 630 international projects with Hungarian participants.

H. Policy evaluation

Changes in the nature of the evaluation process, new schemes, changes in evaluation methodology

Evaluation is treated as an important policy-forming tool, together with technology foresight and strategic studies. Evaluation is used less to prove the “value for money” approach but more for learning and policy formulation. The development of the new wave of the Hungarian applied R&D evaluation approach being started in 1995–96 with the professional backing of the Swedish evaluation expertise, is going on further, including new elements, such as portfolio analysis and policy evaluation. For example, an ongoing horizontal evaluation is targeted not on a specific programme but on the SME policy of the Hungarian applied R&D funding institution, including all policy documents and funding schemes, and focusing on the comparison of the policy statements and the real institutional behaviour through the programmes.

The continuous development of the evaluation activities needs active international co-operation. An interesting bilateral joint evaluation project was carried out with French experts and there is a long-term multilateral evaluation co-operation in the frames of the TAFTIE (The Association For Technology Implementation In Europe). In 1999, Hungary organised the TAFTIE Evaluation Seminar being a useful European forum for exchange of opinions on evaluation policies and methodologies. From 1999 on and the professional contacts with the Evaluation Unit of EC DG Research are also more and more intensive.
Institutionalisation of the evaluation process, including enhanced feedback of evaluation in the policy-making process

In the field of the Ministry of Education there are well-established and consolidated evaluation mechanisms on the higher education institution research. The Hungarian Accreditation Committee (MAB) is in charge of evaluating universities and deciding on the accreditation of curricula and PhD programmes. The Higher Education Development Programme (FEFA) completed recently, had also advances evaluation system, which was also a requirement of the former IBRD loan. The National Scientific Research Fund (OTKA), focussing on fundamental research projects, has its own evaluation system, reflecting the scientific quality of the projects and the personal excellence of the researchers.

Similar institutionalisation of evaluation exists at the Hungarian Academy of Sciences (MTA), where the measurement of scientific quality for persons and institutes have long tradition. Furthermore, there is an MTA institute within the institute network dealing especially with research organisation and research evaluation (MTA KSZI).

The national economic planning process is under reorganisation, in accordance with the requirements of the European Union in the accession period. The planning system includes an integrated framework of programming and monitoring, where the hierarchy and balance of goals and indicators are key elements.

Major assessments of recent policy initiatives

Recently there is no comprehensive policy evaluation in the field of S&T. But, as already mentioned above, a “horizontal” policy evaluation is going on concerning the SME policy of the former OMFB. The evaluation focuses on the attitude of the institution, i.e. institutional behaviour towards SMEs, analysing all relevant policy documents and declarations as well as the real trends of financing within the individual programmes. The independent experts will show a mirror to the management and desk officers. The results of this evaluation, as usually, will be published in two languages: Hungarian and English.