The creation of a contemporary RDI Observatory (Summary of the study commissioned by NKTH)

An essential condition for fact-based political decision-making is a properly operating information system which provides the knowledge required to understand processes. Hungary's RDI statistical information system has a noteworthy tradition, and has undergone significant modernisation since the beginning of the country's transition to a market economy However, Hungary's RDI statistical portfolio is only partially capable of meeting the needs of the system-based theoretical innovation policymaking The need for change was articulated in the Government measure on the STI plan for 2007-2010, stating in its section B.I.2 that:

"The creation of an updated analytical database for R&D and innovation is also an important part of an economic and legal environment that encourages the development and utilisation of knowledge." The content and aim of the measure is as follows: "developing and analysing the RDI statistical methodology, creating the specialised analytical database (for example S&T Observatory) which will promote the operation of the methodological instruments for the establishment and operation of the RDI strategy."

To this end, the National Office of Research and Technology carried out a study, authored by **Dr. Annamária Inzelt** with the contributions of **László Csonka, Lajos Nyiri** and **dr. György Varga**.

The first section of the four-part study presents an assessment of the needs of the stakeholders in the drafting and implementation of Hungary's S&T and innovation strategy. The second part evaluates to what extent the structure, human and financial capacities of Hungary's current R&D and innova-tion (RDI) information system respond to current needs. The third part introduces good practices of successful international RDI statistical databases and examines three models. The fourth part looks at the various possibilities within Hungary's legal and institutional structure, taking into account the applicability of international experience.

In the first part, **the needs of Hungarian users with regards to statistical information** are set out in the following six categories: (1) institutions, (2) societal actors, (3) the media, (4) researchers and students, (5) enterprises and business, (6) research institutions. It states that while certain organisations (as users of information) are present, this fact alone does not provide any clues as to with what intensity or what level of detail this information is needed, nor to what extent they are satisfied with the information, nor whether they behave as active or passive users.

Frequently, the specific RDI statistical needs set out in Hungarian legislation and strategies as well as the STI objectives they pursue show that in order to implement these, policymakers will – sooner or later – need new types of information.

The study establishes that although the list of RDI statistical needs in legislation is considerable, actual demand for these rarely materialised. From the point of view of a fact-based STI policy and the quality of the RDI information system, a crucial issue is that decision-makers require relevant information and provide the necessary conditions for its creation.

Thus far, very little attention has been paid to how the RDI statistical portfolio will address the needs of users outside of the public sectors, which is the service duty of the governmental sphere. As well, certain groups of potential users (industry organisations, trade unions and lobby groups) have not yet clearly articulated their needs.

It is also problematic that the information cannot be accessed in a format in which users can easily utilise it. Users need the RDI statistical database to provide analyses which will assist them in avoiding drawing false conclusions from the data.

According to international trends, there are certain indicators for the development of the STI system which cannot currently be reached, nor are they much sought after. However, they will become more important for a wider range of users in the medium term. These needs can only be met through coordinated efforts, entrenched in legislation if necessary in order to supply (and locate) the necessary human and material resources.

The second part presents **an overview of those currently available resources to complete the needs for RDI statistical information** and outlines those production and analytical resources for data and indicators which could be used. It concludes that the Hungarian Central Statistical Office (in Hungarian, the KSH) provides the backbone for the data gathering and the production of indica-tors in the Hungarian RDI information system. The Statistical Office's developmental work (if in the future it will be supported by more resources than currently) can in part satisfy actual and latent domestic needs for RDI statistical information as well as potential needs identified by OECD and EU developmental work. Responding to the remaining needs should, however, ideally be met by the projected Hungarian RDI knowledge centre (such as observatory). At present, there is a lack of per-sonnel within the domestic system who would carry out a systematic analysis of RDI data and indi-cators, and who would contribute to their development.

The main problem with respect to the provision of data is that the issue of the transfer of administra-tive data within the members of the Official Statistical Service has not been appropriately solved. One of the weak points of the Hungarian RDI system is the utilisation of data collected for adminis-trative purposes. A frequently recurring example of this is the absence of GBOARD data, which could indicate that decision-makers are not promoting the transparency of the distribution of public funds. The issue of the creation of GBOARD data has yet to be solved.

This overview of the Hungarian situation in this field can be summarised as follows: that the RDI statistical system, despite its established portfolio, the quality and accessibility of some of its data-banks, and other strengths, suffers from numerous shortcomings. Among these failings, it is worth noting that very few organisations fulfil their obligation (stipulated by Law XC of 2005 on the free-dom of electronic information) to publish by electronic means data of public

interest – a factor which would favour not only the accessibility of data but also the creation of a modern database.

After the beginning of transition process, with international cooperation, Hungary meets its RDI statistical obligations, but its participation in RDI statistical development and experimentation, or in promoting nationally vital issues, is moderate.

The RDI statistical information system lacks resources, in particular with respect to human re-sources needed for its operation and development. Just as in the STI management system, the RDI statistical system also **lacks stability and a competency-based structure**. When contracts are given (rarely) for analytical work, existing institutional knowledge and the effort to increase it does not have much influence on the choice of the parties chosen to carry out this work.

The *third part* is focusing on the good practices with RDI statistical systems and institutions cur-rently operating in selected OECD economies. Three successful European models are described in details: the French Observatory model, the Scientific Council model in Norway and the German Platform model.

A common feature of the countries examined is that the RDI statistical information serves a strong and significant national innovation system, and is not merely supported by the RDI statistical in-formation and reports. The RDI reporting culture, the debate and utilisation of the information con-veyed through its messages, play an important role in the development of the statistical system. In certain countries, current practice is the result of an evolutionary process spanning several decades, and which is continuously developing and renewing itself.

After several years of planning, the French **Observatoire des Sciences et Techniques** (OST) was established in 1990 by a governmental decree. The OST is a company operating in the public inter-est which categorises and analyses R&D data. It is not responsible for the collection of data. It proc-esses data gathered elsewhere or drawn from databanks, guarantees the quality of these data and uses it to create and analyses indicators. The results are then published in a user-friendly format.

The 13 founding bodies (5 ministries, 7 state research institutes and 1 non-profit organisation) each send one delegate to the OST's 30-member decision-making body. The OST and its member bodies are bound by a mutual contractual relationship. Their joint work is for a definite term: in 1990, in the year that it was founded, the parties signed a contract for 6 years, which was renewed in 1996. In 2002 however, a 12-year agreement was signed, which ensures a long-term guarantee of institutional and financial stability and autonomy for the OST. It has an annual budget of EUR 2 million (HUF 490 million), drawn mostly from the contributions of the member bodies and from contracted work. It does not only receive, but also purchases data. The OST carries out quality controls of the data received from state institutions and the data purchased, after which it uses this data to create indicators.

It also issues a biannual 500-page publication, comprising over 200 tables, entitled "Scientific and Technological Indicators". This is its most significant service, which primarily presents indicators related to R&D activities and achievements and their various aspects (dynamics, national, regional and global characteristics) grouped under twenty so-called indicator corpus categories. These indicators can be used to analyse R&D human and financial resource expenditures, while for institu-tions of higher education it can be used to analyse academic publications and inventions as well as the comparative analysis of indicators related to participation in EU R&D programs.
The creation of a new indicator is an expensive undertaking. For this reason, it is an important inter-est that the indicators appearing in the OST's publication are designed to serve the widest possible range of users at various decision-making levels. To this end, the OST seeks to teach potential users how to "read" the indicators.

The unique feature of the **Norwegian model** is that while the organisation that operates the RDI statistical information system has numerous links to the government, it is to a certain extent independ-ent from the government's electoral cycles.

Two organisations play a determinant role in the collection of data and the generation of indicators: firstly, the Norwegian Statistical Bureau (NSB) and, secondly, NIFU STEP. NIFU STEP is respon-sible for the collection and treatment (analysis) of R&D data from the higher education and institu-tional sector, while the Statistical Bureau is responsible for R&D data from the business sector. NIFU STEP is a research institute which operates as an independent, non-profit foundation; how-ever it is linked in several ways, both directly and indirectly, to its funding organisations: the Re-search Council (RC) and the Ministry of Education and Research (MER). It receives its basic fund-ing from the RC. It currently employs 90 staff members, of which 80 are researchers. It has an an-nual budget of approximately NOK 65 million (HUF 2 billion), of which about NOK 7 million is basic funding. Through a three-year R&D statistical contract, the RC provides a further NOK 9 mil-lion for the carrying out of tasks related to the generation of statistics.

The main users of the information system are the ministries, which besides the regular statistics oc-casionally also require polls carried out through questionnaires. However, there are few experts em-ployed by the ministry-users who are capable of properly handling, applying and analysing the sta-tistics, and the capability of understanding by policymakers is not strong enough.

In Germany, the **Expertenkommission Forschung und Innovation** (EFI) (in English: the Expert Commission for Research and Innovation) examines the situation of innovation / technology, draws conclusions therefrom, carries out analytical work, and formulates recommendations. As a six-member independent expert commission, it performs these activities on the basis of a request issued by parliament in 2006.

However, the government also carries out its own analytical activities, or commissions experts to do so in the fields or on the topics which it judges necessary.

The ministry is responsible for the development of research (the BMBF) commissions research in-stitutions on the basis

of long-term agreements to carry out certain expert tasks (such as innovation assessments, the gathering of R&D statistical data, primary analysis, etc.). In this field, ensuring stability and the sustainable development of competencies are two important goals.

The activities of the professional advising are present in numerous points of German STI policy-making. The chancellor and the relevant ministries also have advisory bodies comprised of re-searchers and prominent business leaders. These bodies however do not carry out assessments, nor do they generate indicators. In their advisory work, they primarily use the data provided by the EFI and the BuFI, or the results of studies ordered by the ministries.

The EFI sends its own independent report to the BMBF, which the BMBF is required to send, unal-tered, to the chancellor and to parliament, along with a separate report giving its appraisal of the EFI report.

The BMBF nominated the members (6 members who are recognised experts in various fields of RDI, 5 from Germany, 1 from another country) of the first commission in 2006 for a four-year term.

The EFI's budget, of approximately EUR 1.6 million in 2008, is entirely provided by the govern-ment. This covers the expenditures of the EFI office as well as the regular and ad hoc research works contracted out by the commission. Approximately one-third of the EFI's annual budget goes directly to the upkeep of the institution itself, while the remaining two-thirds goes to outsourced work. The development of standardised indicator-system elements, the collection of data and data processing is contracted out to German research institutes on the basis of agreements for terms of several years. Between 15 and 25% of the budget is devoted to research in completely new fields, also by outsourcing.

The funds for the annual budget are transferred by BMBF to the bank account of the recipient or-ganisation chosen through public procurement to host EFI, from which the EFI's director's holds drawing rights, in accordance with EFI's decision to this effect.

Every two years, the Commission prepares a report on the state of German innovation and techno-logical development as well about their position with respect to global competitors. The report fo-cuses on an analysis based on statistical data and indicators, and, based on its analysis, it formulates policy recommendations, suggestions, as well as directions of action.

A common feature of all three models is the generation and presentation of indicators describing the state of domestic RDI as well as the main element of reports the international outlook. A common feature of all is their contribution to the development of the RDI statistical system and intensive co-operation with all stakeholders, appropriate institutional embeddedness, thereby ensuring a good de-cision-making and implementation position, as well as stability and flexibility. An important lesson is that, besides intensive cooperation with the state administration and the preservation of expert in-dependence, which require strong legal guarantees, stable funding ensures independence and the achievement of its tasks. The main variations between the various models appear in the configura-tion of their functions, the number of collaborators and the distribution of tasks among the latter. In certain countries, besides the organisations charged with producing basic RDI statistical informa-tion, special organisations assist in the collection of RDI data. (A table in the study shows the main features of the three models, broken down by types of activities, while the models main characteris-tics are summarised in another table.)

The *first lesson* to be drawn from international experience is that the features common to all three models should appear in the eventual Hungarian model. The three types of models in the three countries observed should all be taken into account as good practice.

The *second lesson* to be drawn from international experience is that strong legal guarantees ensure the autonomy of RDI statistical information organisation from politics, from state administration, as well as professional independence from academic and business interests. There are many advan-tages to an independent expert RDI statistical report. Independent expert opinions can be accepted by all political actors, and its recommendations can significantly contribute to policy decisions both within government and within the legislative process, to the formulation of strategies, as well as promote a greater awareness of the social and economic importance of innovation.

The *third lesson* is that the method of funding these organisations can also protect them from undue influence, guarantee their institutional autonomy and reliable operation. Quality data and time se-ries are ensured by having capacity conditions, while funding rests on a solid base.

Another condition – which is the *fourth lesson* – is that for the effective operation of the models the relevant actors must cooperate in planning, generating and verifying the institutional and activity-related indicators. There should be good and regular contact between data providers and users, data should be easily accessible within the public administration, and from funding organisations.

The *fifth lesson* is that in the focus of the reports significant substantial differences can be observed   in relation with certain national innovation systems and the RDI policy concept. Thus the scope of each model corresponds to the national RDI information priorities and adjusts itself to the other ac-tors in the RDI statistical information system.

The *fourth part* begins by stating that **policymaking in a knowledge-based economy requires new information and multifaceted analysis of existing information. This is why Hungary needs to change its RDI statistical model**. The Hungarian Central Statistical Office's valuable role in RDI should be preserved, while it should also expand to new areas and sectors to which little attention has been paid thus far. This change will require deliberation on the part of the government and legislators.

This part lists which steps and decisions would be required to change the Hungarian model. Obsta-cles to be overcome in the domestic scene include the insignificance of facts regarding decision making, the lack of RDI statistical capacity, and the observable blank areas in the present functions.

In choosing the model, ensuring three functions on an internationally competitive level, are of key importance:

- Reliable provision of RDI statistical data indicators in accordance with international standards, expanding the current RDI portfolio to suit 21st century needs.
- Developing the RDI information system's capacities and implementing those capacities which are lacking.
- Developing the RDI information analytical base, including the appropriate organisational capaci-ties.

The foregoing is based on the assumption that if we wish for fact-based decision-making policy forming to continue in the second decade of the 21st century and that if we want the necessary con-ditions thereto to be created, it is worth debating the way in which this is to be implemented.

In order to determine the mode of implementation, the following policy decisions must be an-swered:

1. Taking into consideration the advantages of the various international models and domestic circumstances, which of the following models should be used in Hungary?
   - Observatory model
   - Platform model
   - Scientific council based model
   - Model based on a combination of the above
3. What legal form of operation will it have, and how shall it be funded in order to ensure the system's legal and financial independence as well as its stability?
   Possible legal forms:
   - Company founded (and operating) in the public interest
   - Foundation
   - A body which has legal personality with respect to its operational functions, without being an independent legal body

     Possible modes of funding:
   - Ensured by state budget
   - Drawing jointly from the budgets of the various ministries and administrative bodies concerned
   - From Research and Technology Development Innovation Fund (RTDIF)
4. What organisational format will ensure operational supervision and professional support?
   Which forums need to be created to ensure communication and cooperation between the interested parties in the various technical fields?
   Possible organisational forms:
   - Single organisation
   - Multiplayer network directed by a secretariat, platform

     Possible types of coordination:

   - Stakeholders' forum
   - RDI Scientific and Information Commission
   - Structured platform of data providers and data generators
   - Open forum for data generators and users
6. Which of the following will constitute the general institutional responsibilities of the model?
   - A biannual analytical publication based on RDI statistics
   - Publication of a biannual report of analyses based on indicators (destined to the Parliament, the Government and the press)
   - Publication of RDI statistics in pocketbook format, annually, and in collaboration with the Hungarian Central Statistical Office
   - An electronic collection of RDI statistics, synthesised and annotated, published biannually
   - Data collection, data and indicator generating and analytical tasks according to spe-cific fields
   - Operation of a homepage
   - Operation of the coordinating forums, permanent and ad hoc expert panels and colla-tion forums
   - Development of new data bases and indicators
   - Cooperation in international projects for the development of RDI indicators. Participation in developing indicator systems in accordance with OECD and EU/EUROSTAT recommendations
   - Carrying out special orders with respect to the system's area of specialisation

The study examines the necessary and possible institutional conditions in order to create and operate an appropriate specialised RDI analytical database, and which international experiences can be used to support the creation of this solution. The study also formulates a few basic questions which must be decided in order to prepare an implementation plan.