

*SEMINAR-WORKSHOP ON SCIENCE,
TECHNOLOGY AND INNOVATION INDICATORS:
TRENDS AND CHALLENGES*

*Moscow, Russia
18-20 September 2007*

**The creation of the system of statistic
indicators in the domain of science,
innovation and technological transfer in
Republic Moldova**

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At present, at the ending of the first stage “Determination of the system of statistics indicators in domain of science, innovation and technological transfer in Republic of Moldova” was elaborated a system of indicators coupled with the international requirements, taking in count the national particularities.

It regards the next steps:

- Studying the international standards related the measurement of scientific, technological activities and the innovation processes on the base of OECD, EUROSTAT, UNESCO recommendations;
- Studying the foreign experience;
- Analyzing the existent statistics in Republic of Moldova.

At present, in the framework of National Bureau of Statistic, the information regarding science is obtained through the following statistics wordings:

- 1. STATISTIC REPORT “Researching-development activity”**
- 2. STATISTIC REPORT “Doctoral and post-doctoral activities”**
- 3. STATISTIC REPORT “Implementation, utilization of inventions and proposal of rationalization”**

1. STATISTIC REPORT

“RESEARCHING-DEVELOPMENT ACTIVITY”

Researching-development activity is measured through the indicators of resources: personnel and expenses and results indicator – published works.

INPUT INDICATORS:

■ Personnel

- The measurement of the data regarding personnel: effective number of persons at the end of the year. The personnel from the researching-development activity (without pluralists) is qualified by occupations (researchers, technicians, auxiliary personnel and other categories), by the qualification and instruction level, on age groups (till 30 years, 40-49 years, 50-59 years, over 60).
- Informative: the number of didactical - scientific workers and the average number of the workers from the researching-development activity.
- The researches are grouped by sexes and scientific domains.

■ Researching-development expenses

- Expenses RD (expenses from the interior of unit) are classified by destination (current and capital expenses), by scientific domains and by source of financing (budget sources, own, economical agents, the sources of the high education units, from abroad, the sources of non-commercial private sector and other sources).
- Current expenses RD include: personnel expenses, material expenses and others, capital expenses – those for purchasing pot of lands, constructions, technologies and others.
- Current expenses RD are divided on kinds of research and scientific domains.

OUTPUT INDICATORS

- ***Published works*** (the works published by the personnel from the researching-development activity)

For the analysis of the researching-development activity (RD) are used the following SYSTEM OF CLASSIFICATION:

- **INSTITUTIONAL CLASSIFICATION** – based on the priority characteristics of institutions that realize the RD and that finance the RD.

The main institutional classification of the national efforts is by sector (based on the classification of economic activities): entrepreneurial sector, government sector, high education sector, private non-commercial sector.

- **FUNCTIONAL DISTRIBUTION** – is based on the RD character: the type of RD (fundamental, applicative and technological development research); scientific domains (natural, technical, medical, and agriculture sciences, also humanistic and social sciences).

2. STATISTIC REPORT

“DOCTORAL AND POST-DOCTORAL ACTIVITIES”

- The main indicators of doctoral activity: the number of PhD students accepted, the number of PhD students at the end of the year, the number of graduates, the number of graduates with the uphold thesis (in the term limits), number of PhD students left by the ending of PhD program, PhD students from other countries (by specifying the country).
- The PhD students are distributed by the financing source (PhD students with budgetary financing and on the base of contract by paying the taxes, tuition), by the science domains and the forms of instruction (with full presence or reduce presence), by age groups and gender.
- The information about the PhD students from abroad (by specifying the country) embrace: number of admitted PhD students, number of graduates and number of PhD students at the end of the year.
- The main indicators of the postdoctoral activity: number of postgraduate PhDs accepted, number of postgraduate PhDs at the end of the year, number of graduates, number of graduates by upholding the thesis, number of postgraduate PhDs left by the ending of the year, number of postgraduate PhDs from abroad (by specifying the country). Postgraduate PhDs are distributed by the science domains and gender. Information regarding the post postgraduate PhDs from abroad (by specifying the country) embrace: number of postgraduate PhDs accepted (admitted), number of graduates and number of postgraduate PhDs at the end of the year.

3. STATISTIC REPORT “IMPLEMENTATION, UTILIZATION OF INVENTIONS AND PROPOSAL OF RATIONALIZATION”

The main indicators which characterize the researching-development activity concern about the objects of industrial property – inventions, utility models, sorts of plants and elaboration of rationalization proposals, and also proposals of its implementation and use are:

- numbers of authors that wrote demands of invention protection (information presented by AGEPI);
- contracts of rights transferring (information presented by AGEPI);
- Inventions that are utilized, including those implemented in first year;
proposal of rationalization probated and utilized.

The existent statistics are much fragmentized. Also we can mention the lack of information regarding innovation and technological transfer. Thus it is obvious the necessity of creation the statistical informational system in the domain of science, innovation and technological transfer in Republic of Moldova. Such a system should be viable and comparable, have to base on the relevant statistic indicators both for reflecting the situation at the national level and international comparability.

The success related with the indicators elaboration will depend partial on the ability to improve the available information.

The evaluation of the science, innovation and comparability of statistics indicators on international background reflect country competitiveness and its position regarding field of science, innovation and distribution of new technologies. Better comprehensions of the factors that contribute at the success in these fields are helped by using proper indicators like instruments of identification of the best practice.

According to this in June 2007 in Republic of Moldova begun the project “The creation of the informational system of statistic in the domain of science, innovation and technological transfer”, that is constitute from 2 stages:

1. Determination of the system of statistics indicators in domain of science, innovation and technological transfer in Republic of Moldova (Stage 1);
2. Obtaining the statistics dates through the realization of statistic inquiry regarding science and innovation (Stage 2).

From the proposed system of indicators it will be constituted specific sets of analyze, according to needs, to the proposed goals and objects taking in count. The case of concomitant utilization of all indicators from the proposed system is rather theoretical. We mention that this system can be extended according to the necessities.

- The complexity of the innovation process consists from the strong link of this process with the researching-development activity and also with the technological transfer. Thus the system of statistic indicators in the domain of science, innovation and technological transfer will be examined in the frame of three separate components: science, innovation and technological transfer. [\[1\]](#)

- In the present project are not elaborate the system of statistic indicators for technological transfer, because it is not clarified methodology according to the international requirements. In the project are proposed a set of indicators like OUTPUT indicators “Innovations application”.

System of indicators
regarding science,
innovation and
technological transfer

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graph TD; A[System of indicators regarding science, innovation and technological transfer] --- B[System of indicators regarding science]; A --- C[System of indicators regarding innovation]; A --- D[System of indicators regarding technological transfer];
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System of indicators
regarding science

System of indicators
regarding innovation

System of indicators
regarding
technological transfer

Activities based on science
and technology (**STI**)

S&T

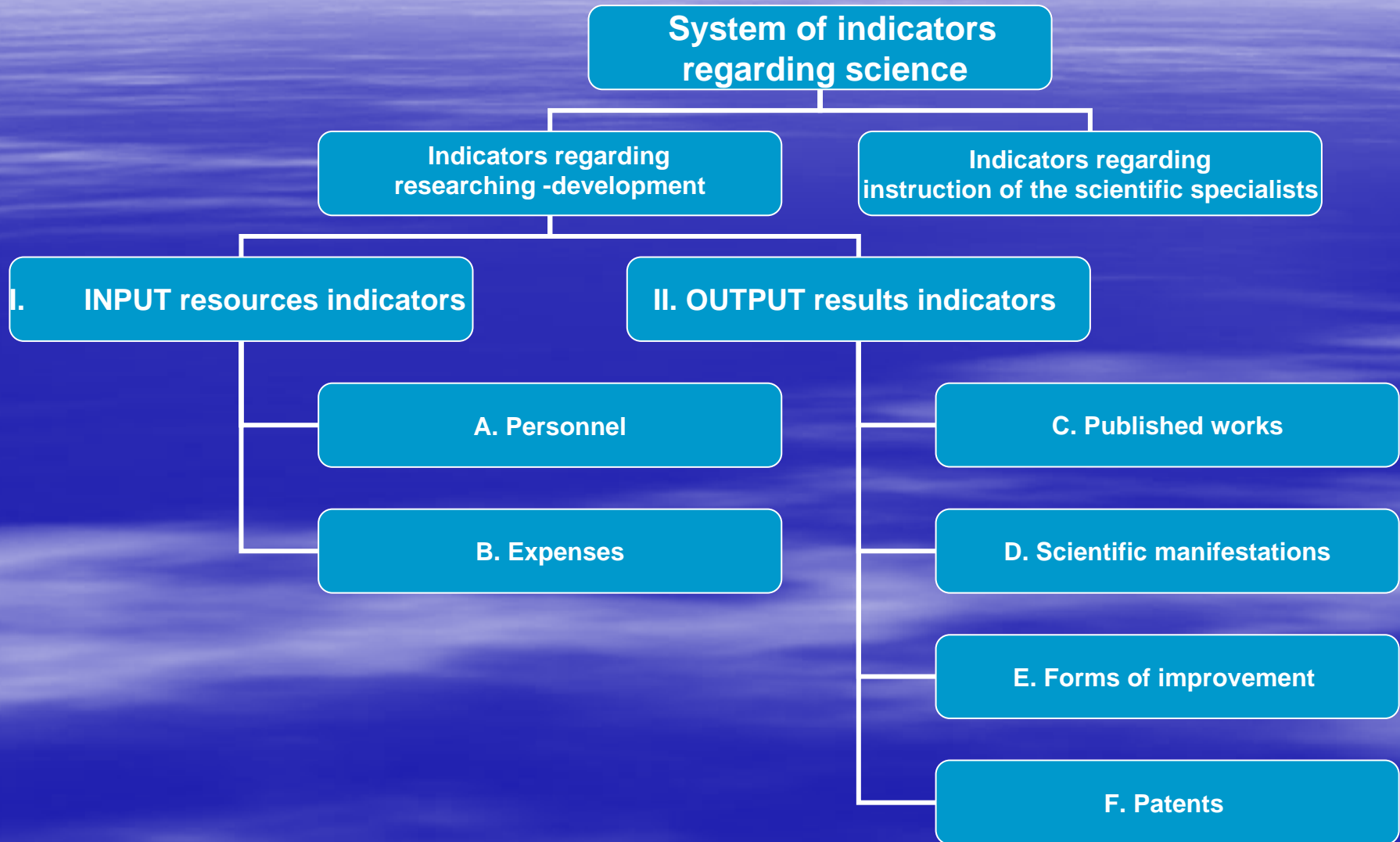
Innovations

R&D

STET

STS

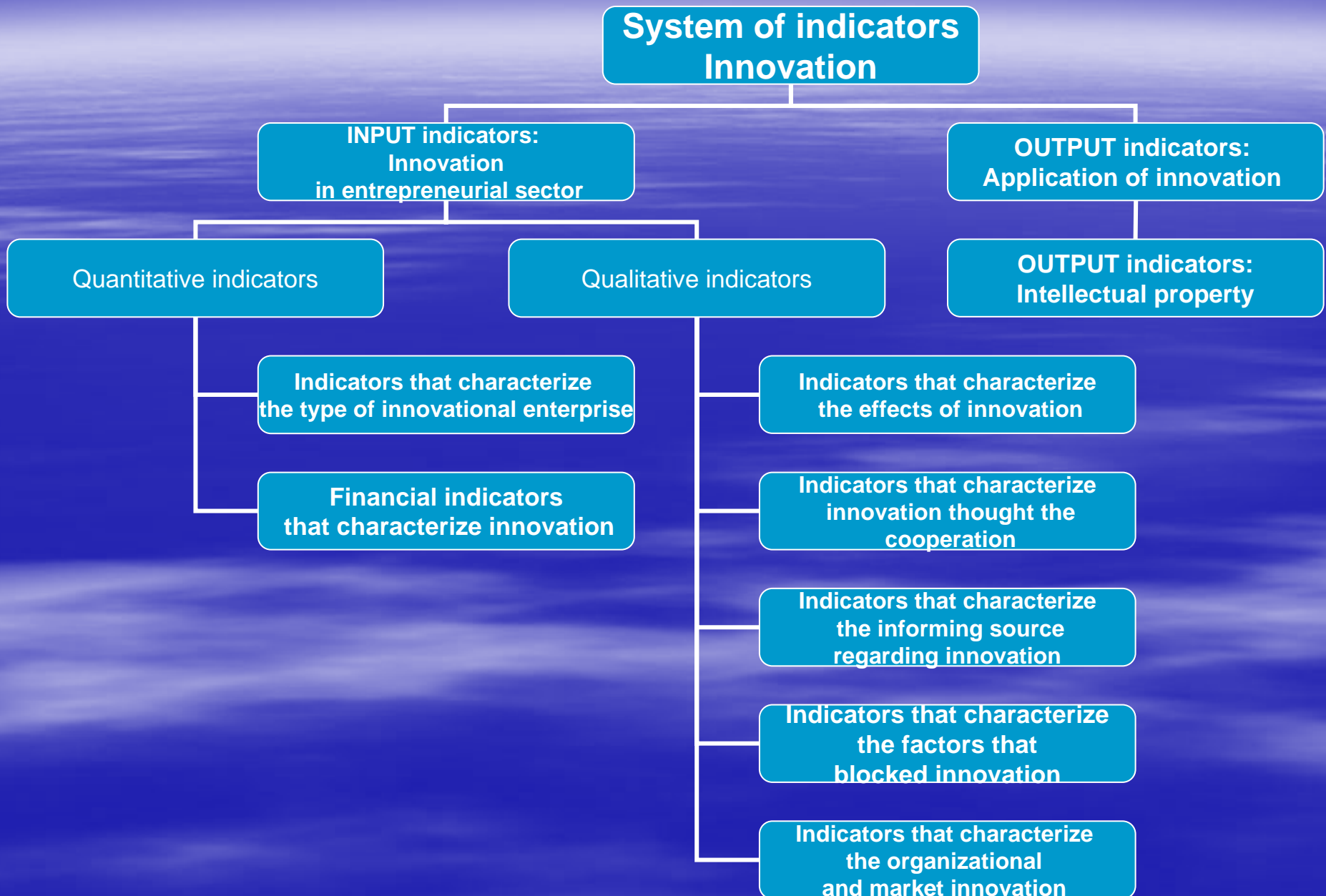
System of indicators regarding science



In this project was selected the next components:

- The system of indicators EIS2006
- Statistic enquiry CIS4
- The analyze of Romanian practice, which on the base of statistic inquiry CIS3 and CIS4 launched the statistic inquiry INOV

The system of indicators regarding innovation



CONCLUSIONS

- The statistics that exist in Moldova in the domain of science are very fragmentized, thus it is obvious that exist a real necessity to create an informational system in this field. Such a system have to be viable and comparable, it have to base on relevant statistics indicators both for reflecting the situation at the national level and for existent possibility to perform comparison on international level.
- At the moment in Republic of Moldova the official statistic regarding innovation is missing. Also it is missing the concept and strategy concerning innovational policy.
- Lack of experts in the mentioned domains.

RECOMMENDATIONS

- For a functional system that have to base on principles of continuity promptness and connection with the international standards it is necessary the existence of juridical foundation which will coordinate the relation between different ministries and responsible institutions;
- For a better presentation of indicators in domain of science, innovation and technological transfer it is necessary to use a unique methodology (base on the principle of OECD, EUROSTAT, UNESCO);
- Improvement of the indicators system that is connected with science according to EU requirements;
- Elaborating the concept and strategy regarding innovational policy in Republic of Moldova
- Elaborating the special inquiry that will be used in innovation activity of enterprises and will allow implementing the new proposed indicators. Also to apply a soft to process the dates;
- To identify the optimal modality of gathering dates from administrative and statistical sources, avoiding the doubling;
- Testing the process of dates collecting;
- Improvement of the specialist in the respective domain.

Thank you!