SCIENCE AND HIGHER EDUCATION IN POLAND: REFORMS AND CHALLENGES

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Current situation – main statistical data

38 MLN – population of Poland

6.7 BLN PLN (1.7billion €) – gross domestic expenditure on R&D activity
Overall budgetary financial means:

2005 – 0.7 billion €
2006 – 0.8 billion €
2007- 0.9 billion €
2008 – 1.0 billion €

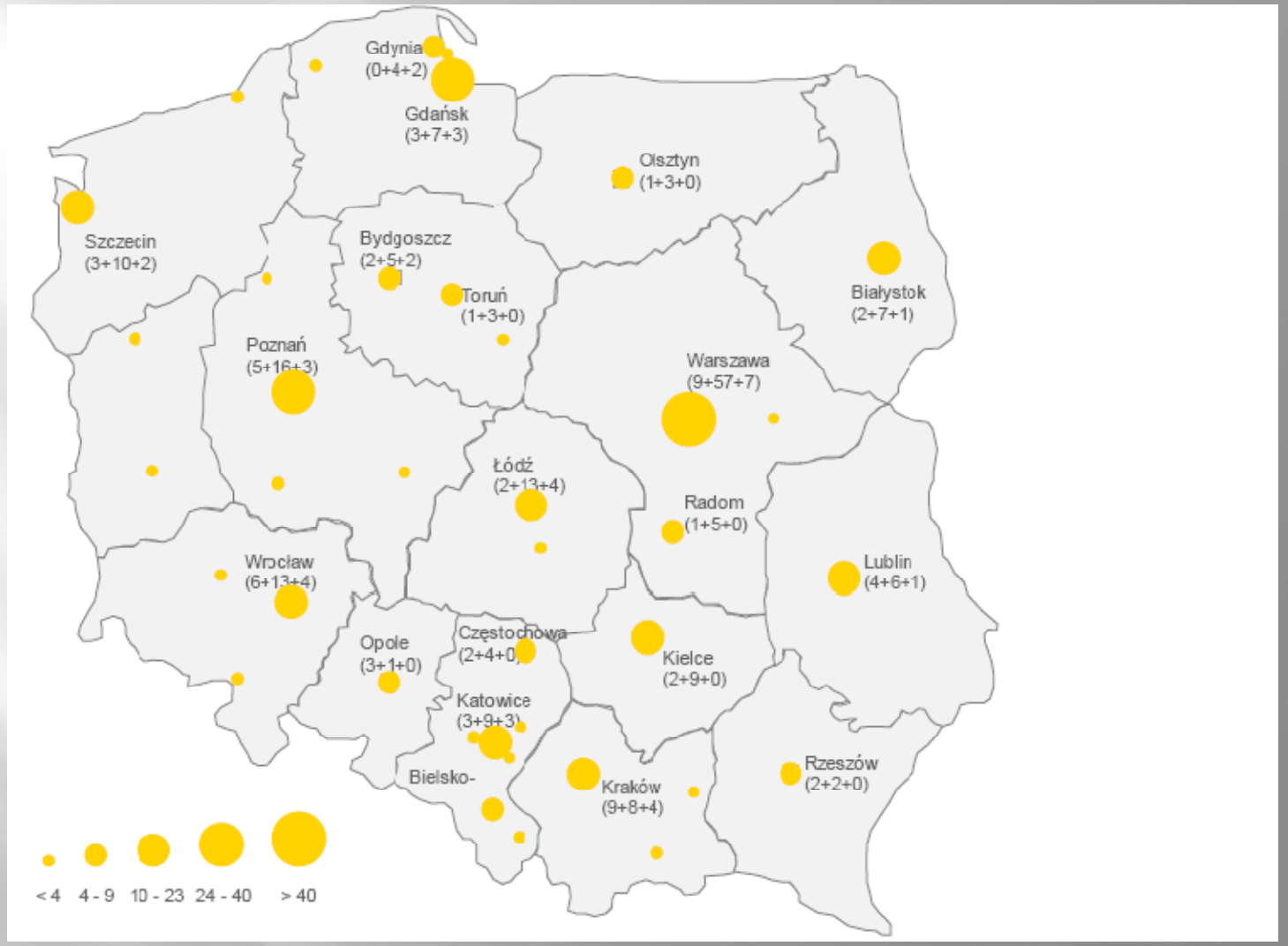
0.57% of GDP Poland spent on R&D

~97.000 – Researchers (43% - women)

4.3 – employment in R&D activity per 1000 economically active persons

~135 – public higher education institutions (**324** non-public)

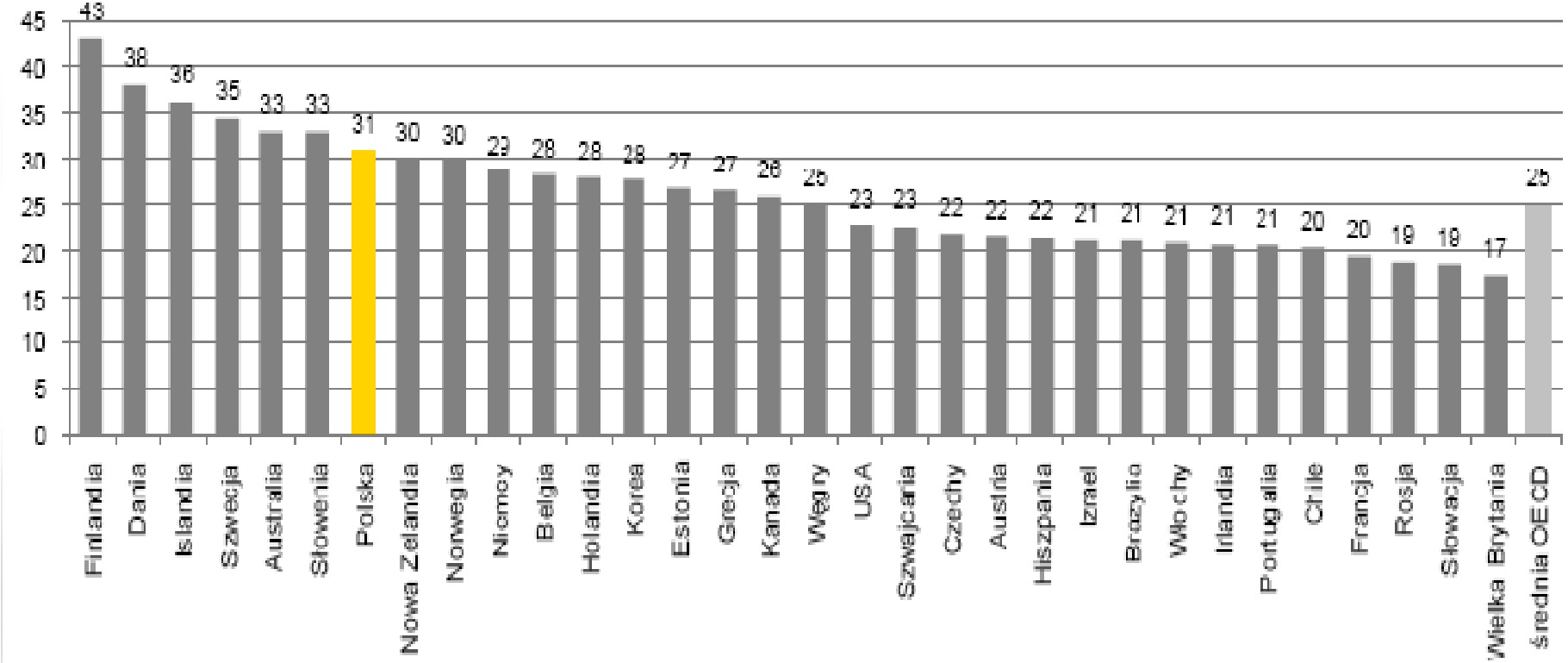
~1.9 MLN – number of university students



Major academic centres in Poland
Source: *Strategy of the development of higher education system in Poland, February 2010*

The most significant research-oriented universites

1. Jagiellonian University in Krakow
2. Warsaw University
3. Adam Mickiewicz University in Poznan
4. Warsaw University of Technology
5. AGH University of Science and Technology in Krakow
6. Wroclaw University of Technology
7. Wroclaw University
8. Warsaw School of Economics
9. Poznan University of Medical Science
10. Nicolaus Copernicus University (Torun)



Scholarisation factor in the age group 20-29 in 2007 (in %)
Source: OECD (2009)

Structure of HE system and research organisations in Poland

Governmental and academic institutions - national level

- **Ministry of Science and Higher Education**
- General Council for Higher Education,
- Council for Science (National Center of Science)
- Narional Center of Research and Development
- State Accreditation Committee for Academic Programs
- Agency for Academic Recognition and International Exchange, ref. to the degrees received in abroad (Polish ENIC/NARIC)
- National Commission for Academic Degrees Recognition (Dr, Dr habil and Professsors)
- Conference of Rectors of Academic Schools in Poland (CRASP)
- University Accreditation Commissions

Both public and non-public HEIs operate on the basis of the same Act:

The Law on Higher Education of 2005.

Higher Education Institutions

- **Public higher education institutions** (established by the Parliament or the Minister Council)
- **Non-public higher education institutions** (established by the Minister upon a request of a physical or legal persons)
- **University-type** higher education institutions
  (at least one organisational unit is authorized to confer the doctoral degree).

- **Non-university** higher education institutions

Category of public schools

- Universities (18)
- Technical Universities (22)
- Pedagogical Universities (5)
- Economic universities (5)
- Agricultural universities (6)
- Medical Universities (9)
- Academies of Physical Education (6)
- Artistic Academies (18)
- Maritime and Military Higher Schools (3)
- Theological Higher Schools (5)
- State higher vocational schools (35)
- **TOTAL: 132**

The institutional autonomy and freedom of research and teaching

- **HEIs in Poland are autonomous in all areas within the provisions of the Act.**

- The autonomy of HEIs has many advantages, but some weaknesses appear with regard to **accountability** (leadership,decision-making, etc.)

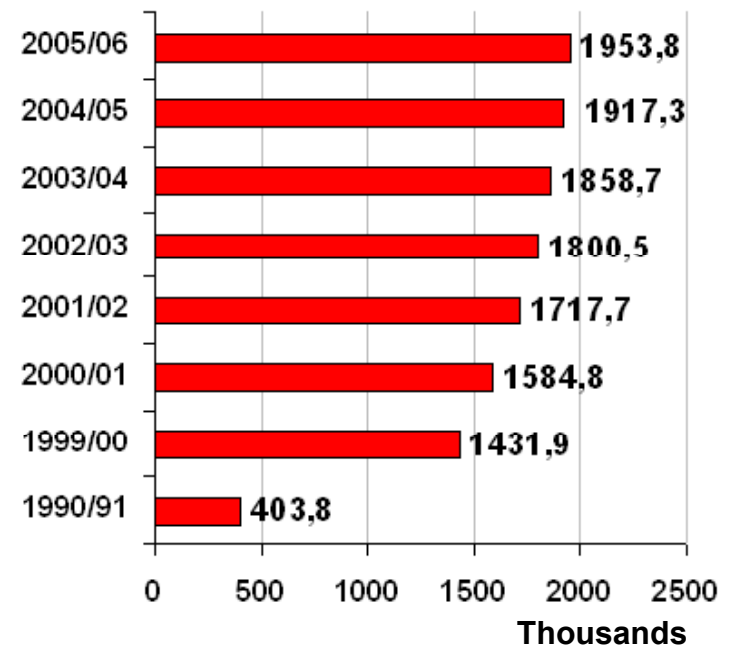
- **Many HEIs focus more on the competition rather than on inter-institutional co-operation in the area of education and research.**

Higher Education in Poland

over 130 public HEIs

over 315 non-public HEIs,

- total number of 1.9 MLN students:
- 1.3 mln at public HEIs
- 0.6 at non-public HEIs



Institutional structure of Polish science (units in R&D activity):

- Higher schools (132),
- State research and development institutions (180),
- Institutes of the Polish Academy of Sciences (75),
- Enterprises (670).

Data for 2007

New system

New ACT of 27 July 2005 **„Law on Higher Education”** and relevant implementing regulations to the Act:

- **Three-cycle structure** on a compulsory basis in all higher education institutions;
- **Diploma Supplement**;
- **The introduction of a credit transfer and accumulation system;**
- **Joint study programmes** and **double/joint** diplomas;
- **Degree programmes in macro-fields** of study and **interdisciplinary programmes**;
- The establishment of associations of higher education institutions.

Three-cycle structure of studies

- As part of the implementation of the Bologna Process, the degree system was entirely restructured
- in 2002-2007.

As a result, the main structure follows the 3+2+4 model:

- Three year Bachelor's degrees (licencjat)
- Two-year Master's degrees (magister)
- Four-year PhD degrees

Academic programmes

- **Full-time degree programmes of I and II cycle** **are free of charge** in public HEIs.

- **Part-time degree programmes** of I and II cycle are **paid in public and non-public HEIs**

Academic programmes

- Degree programmes are established by HEIs within fields of study determined by the Minister of Science and Higher Education

The Minister defines, in a regulation, names of the fields of study and general degree programme requirements for each field and at each level of study (including the minimum number of academic teachers).

Education priorities

They are defined under Operational Programme „Human Capital” financed by the European Structural Funds and take a form of key **academic programmes.**

1. Automatics and robotics,
2. Biotechnology,
3. Construction,
4. Chemistry,
5. Engineering,
6. Physics,
7. Informatics (Comp.Scinece)
8. Material engineering,
9. Environmental engineering,
10. Mathematics,
11. Mechanics,
12. Mechatronics,
13. Environment protection,
14. Design.

Diploma Supplement

To provide data to improve the international transparency and recognition of qualifications.

Contains information on the contents and results

- Program details
  - Components, and the individual grades (transcript)
  - Grading scheme, and if available, grade distribution
  - Overall classification of the qualification

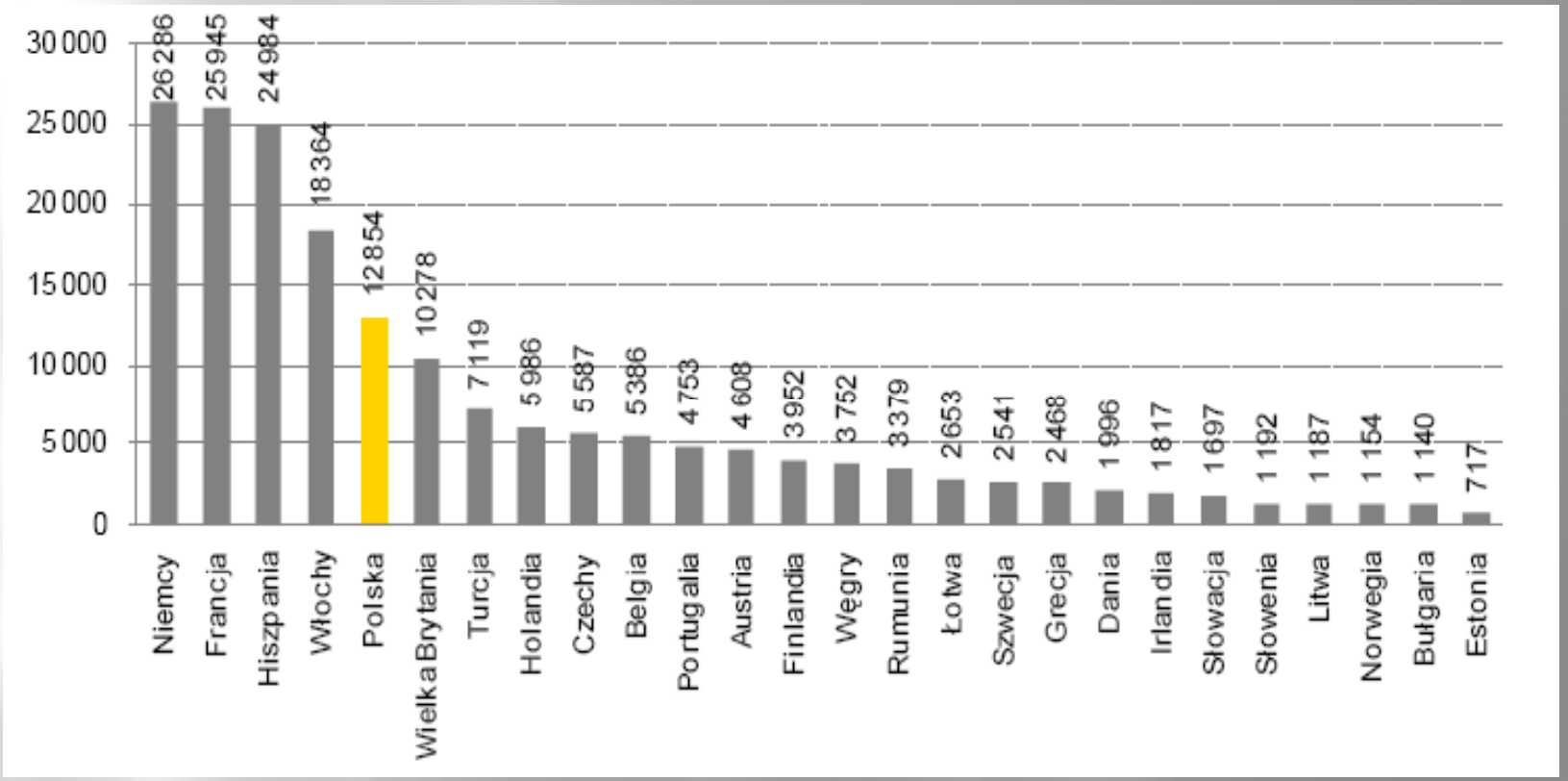
International dimension

International aspects of higher education

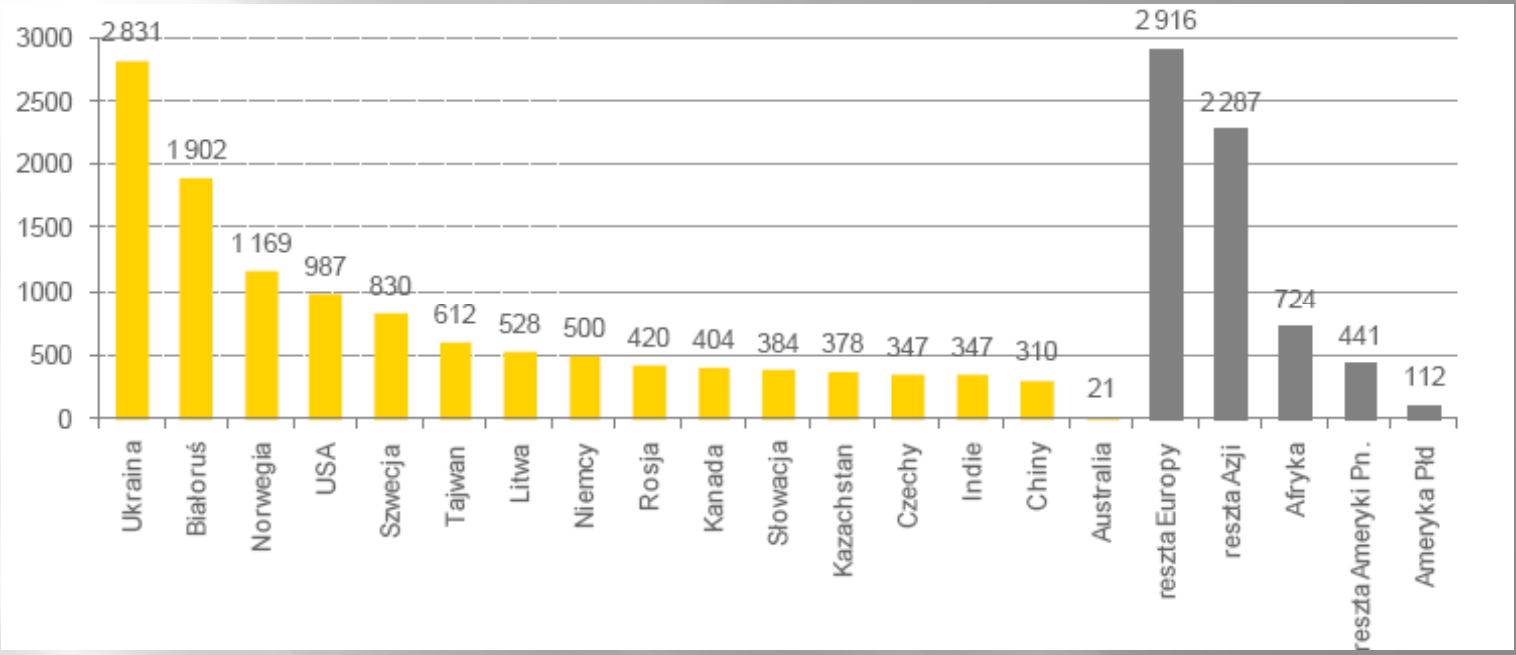
- At present, there are two main co-existing types of students' mobility:
  - **completing a full degree programme in another country** or
  - **completing a period of study in one country and continuing studies in another country.**

  After 1990, the first type of mobility is still common, but the second type is rapidly developing.

- Every year around 10 000,0 students are enrolled in full degree programmes, including mainly students from Ukraine, Belarus, Lithuania, Russia, as well as the USA, Canada and Germany.



The number of students participating in Erasmus Programme in academic year 2007/2008
Source: *Strategy of the development of higher education system in Poland, February 2010*



Foreign students in Poland in academic year 2008/2009
Source: Central Statistical Office 2009

ACCREDITATION

Quality assurance

- The State Accreditation Committee (SAC), established in 2002
- The quality assessment is conducted by SAC on an obligatory and non-paid basis for all HEIs (public and non-public)
- **SAC's opinions and resolutions are legally binding**

Peer accreditation

- Peer accreditation is conducted by 7 Accreditation Committees appointed by the Conferences of Rectors of individual types of HEIs

Peer accreditation is a voluntary accreditation of fields of study. It is not required by law, but having it raises the status of a given field of study and HEI.

- It is therefore an important factor motivating HEIs to respect programme, curricular and staffing requirements.

Peer accreditation

- University Accreditation Committee
- Accreditation Committee for Technical Universities,
- Accreditation Committee for Medical Universities,
- Accreditation Committee for Universities of Economics,
- Accreditation Committee for Teacher Education Universities
- Accreditation Committee for Physical Education Academies,
- Accreditation Committee for Agricultural Universities.

Higher Education and Science Funding

Legal framework

The act on the principles of financing science (2004)

- confers the **decision-making power** in the area of R&D policy **to the Minister of Science**
- establishes the **Council of Science** (an advisory and consultative body to the Minister)
- creates the basis for R&D strategic planning and programming in the means of **National Programme for Research and Development,**
- introduces modification in **R&D financing system** towards more competitive and performance-based funding from public sources.

System of financing science in Poland

In Poland all governmental appropriations on R&D are allocated to one budget - science budget.

Funds are granted by the Minister of Science following R&D organizations, which have legal personality and continuously perform scientific research and experimental development: higher education, research and development units (state research institutes), institutes of Polish Academy of Sciences and enterprises performing R&D.

It is the Minister of Science who takes formal decision on financing a particular projects or on rejecting an application form.

Structure of state budget spending

The public research is funded through two primary mechanisms (separate streams of science budget):

- **basic institutional funding** (statutory tasks of scientific institutions, financing of research infrastructure)
- **competitively awarded funding** (research projects), which is offered under several different legal instruments (grants, ordered projects, goal oriented projects, development projects and others) or programs (i.e. The National Programme of Scientific Research).

More than half of science budget is appropriated on statutory tasks of scientific institutions

Research funding

Each faculty is funded according to „research power”, expressed by a category (1,2,3):

- quality of research papers
- quality of scientific staff
- activity in research grants and patents

Each researcher or research group may apply for individual grants or be funded individually in a national or international competition call

New opportunities

EU funds for 2007-2013:

~ 5 billion Euro

1. Innovative Economy	~2.4 billion €
2. Infrastucture and Environment	~0.56 billion €
3. Human Capital	~1.0 billion €
4. Development of Eastern Poland & 16 Regional Operational Program	~1.0 billion €

Public instruments supporting transfer of technology to economy

- Technology Initiative (100 MLN€; 450 projects; 30 % from industry),
- Creator of Innovation. Supporting of the innovative academic entrepreneurship,
- Patent Plus,
- Possibilities of financing R&D projects in the framework of structural funds (2007-2013).

The Polish priority thematic areas for research and development activities include four groups: ***Info,Techno, Bio*** *and* ***Basic***


I. HEALTH
II. ENVIRONMENT
III. AGRICULTURE AND FOOD
IV. STATE AND SOCIETY
V. SECURITY
VI. NEW MATERIALS AND TECHNOLOGIES
VII. ICT TECHNOLOGIES
VIII. ENERGY
IX. TRANSPORT INFRASTRUCTURE

Priority research areas

- interdisciplinary and transdisciplinary research oriented toward the strategic aims of sustainable development of Poland
- research increasing the innovativness and competitiveness of Polish economy
- internationally „strong” research areas
- strenghtening the educational effect of research

R&D CENTERS IN POLAND

- THERE ARE 40 R&D CENTERS CREATED BY FOREIGN INVESTORS IN POLAND
- THEY TOTALY EMPLOY OVER 4500 PEOPLE
- THE BIGGEST R&D CENTERS ARE LOCATED IN:

Warszawa

Kraków

Poznań

Wrocław

I. HEALTH

1.1. Epidemiology, molecular foundation and risk factors affecting the aging processes.

1.2. Epidemiology, pathogenesis, genetics and immunology in tumor diseases.

1.3. Molecular biology and biotechnology and their impact on the improvement of the population's health and quality of life.

1.4. Environmental conditions and their impact on health threats.

1.5. Transplantation and regenerative medicine.

1.6. Innovative and generic drugs, materials and equipment supporting medical diagnosis and therapy.

VI. NEW MATERIALS AND TECHNOLOGIES

6.1. Nanomaterials and multi-function nanoassemblies.

6.2. Advanced materials and electronic and optoelectronic equipment.

6.3. Advanced construction materials.

6.4. Highly processed chemical compounds and materials possessing special properties.

6.5. Industrial product technologies and biotechnologies.

FUTURE CHALLENGES

„Higher education and research in Poland are under constant pressure to reform, to become more coherent, more flexible, and more responsible to the needs of society.”

Weaknesses

Complex and dispersed institutional structure;

Low expenditure on R&D – GERD: 0,57% of GDP
(1.84% - EU-27 average)

Predominance of budgetary spending in the general composition of R&D financing - 58,5% against only 24,5% from business

(almost two third from business in Eu-27)

Low level of innovativeness and cooperation between research and business – 8% of research staff is employed in enterprises

Future challenges

- streamlining the management of HEIs;
- improving quality and disseminating modern teaching methods;
- enhancing cooperation between HEIs and the business sector;
- opening HEIs to continuing education and
- internationalisation of higher education.

Future strategic aims

- Diversity of universities and academic programmes
- Openess for society and surrounding economy
- Academic staff and students' mobility
- Competition between universities in order to improve quality
- Effectiveness in using resources
- Transparency of HE system and universities

Reforms 2009-2010

Restructuring of the Polish research sector

The overall objectives of the reform

- improving innovativeness of Polish economy,
- accelerating economic development of Poland,
- attaining goals defined in Lisbon Strategy,
- improving quality of science research.

The package of 5 new regulations:

1. The act on the **principle of financing science** (the new regulation amending existing Act from 2004),

2. The Act of the **National Centre for Research and Development** (the new regulation amending existing Act from 2007),

3. The Act of the **National Centre for Science**,

4. The Act of **Research Institutes** (changing the Act of Research and Developments Units),

5. The Act of **Polish Academy of Sciences**,

Institutional and organisational changes

Package of 5 new Acts provides for:

- **New role of the Ministry** (set up of Accreditation Committee)
  - **National Centre for Research and Development** (applied research)
  - **Establishing National Centre for Science** (basic research)
- **Consolidation and restructuring of state R&D units**

Incentives to boost innovation

- fiscal instruments for private sector and business (tax allowances, tax deductions, technological loans – for financing the design and implementation of technological investments)
- ability for an enterprise to apply for and be conferred the status of R&D centre,
- enhancing public-private partnership;
- new forms of financing: *venture capital, business angels*, *seed capital,*
- support for technology transfer, management of intellectual property rights and commercialisation of research results,
- developing entrepreneurial and managerial skills of R&D human resources.

National Centre for Science

- new unit responsible for fundamental research
- transfers the decision on (research project) funding to researchers
- new evaluation and selection procedures

Thank you

for your attention