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Restructuring Romania's education system considering the evolutions from the domestic market perspective and impact on RDI progress

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EUROPEAN INSTITUTE OF ROMANIA

Project SPOS 2007 - STRATEGY AND POLICY STUDIES

Study no. 2

**RESTRUCTURING ROMANIA'S EDUCATION SYSTEM
CONSIDERING THE EVOLUTIONS FROM THE
DOMESTIC MARKET PERSPECTIVE AND IMPACT
ON RDI PROGRESS**

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ACRONYMS

NETS	National Education and Training System
EETS	European Education and Training System
EC	European Commission
ECo	European Council
LLL	Lifelong Learning
CVET	Continuing Vocational Education and Training
IG	Integrated Guidelines
EQF	European Qualifications Framework
ECTS	European Credits Transfer System
ISCED 0	Pre-primary Education
ISCED 1	Primary Education
ISCED 2	Lower Secondary Education (gymnasium)
ISCED 3	Upper Secondary Education (high-school)
ISCED 4	Post-secondary Education
ISCED 5-6	Tertiary Education
ICT	Information and Communications Technology
CVT	Continuing Vocational Training
PE	Permanent Education
AE	Adult Education
TE	Tertiary/university Education
PISA	Programme On International Student Assessment
DUT	Diplôme Universitaire de Technologie
CPGE	Classe préparatoire aux Grandes Écoles
PPS	Purchasing Power Parity Standard (expressed in Euro)
EUROPASS	European Competencies Certificate
ERASMUS	European Commission for Mobility of University Students
EUA	European Universities Association
ENQA	European Association for Quality Assurance in High Education
EDS	Supplementary European Diploma
ENG	England
WLS	Wales
NIR	Northern Ireland

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“In advanced economies such as the EU, knowledge - R&D, innovation and education-, is a key driver of productivity growth. Knowledge is a critical factor with which Europe can ensure competitiveness in a global world where others compete with cheap labour or primary resources...”.(COM (2005)24,02.02.2005, Brussels, p 23-24)

Ch. I. EDUCATION POLICIES WITHIN THE EUROPEAN UNION

Human capital is Europe’s most important asset. Member States should step up their efforts to raise the general standard of education and reduce the number of early school-leavers, in particular by continuing with the Education and Training 2010 work programme. Lifelong learning is a sine qua non if the Lisbon objectives are to be achieved, taking into account the desirability of high quality at all levels. The European Council calls on Member States to make lifelong learning an opportunity open to all in schools, businesses and households..... Availability should also be facilitated by means of working time organisation, family support services, vocational guidance and new forms of cost-sharing. (Presidency Conclusions, CoE, March 2005).

Human resources are for the European Union the **most valuable asset**, a strategic asset and the efficient development and management of human resources is among the key priorities of the Lisbon Strategy, including here the revised version of the Spring European Council from March 23-24, 2005.

In the present chapter in view of creating the European area of education and qualifications, we shall attempt to highlight – to the extent in which we had available information and considering the granted room – the main characteristics of education within the EU, the similarities and disparities against the main competitors on the Single European Market, and also on extra-community markets, by and large on the global markets, the principles and objectives according to which the lifelong education and training systems should be (re)shaped, the achieved progresses, the bottlenecks and the priorities of European learning in the 21st century.

Box no.1.

The concept of “European Area of Education and Training”

In our study the phrase “European Area of Education” exceeds the concept and defined framework of the Bologna Declaration (1999) which made reference to the “European Area of Higher/Tertiary Education”. Currently, the development of the educational process within the EU, the rationalisations, programmes and decisions of the European Councils from 2000 (the Lisbon Strategy), 2001 (Stockholm), 2002 (Barcelona) and so on, lead towards a more comprising concept of the “*European Learning/Education Area*”, including in an integrated formula **formal, non-formal and informal education, initial and subsequent education**. If in 2000, the European Council from Lisbon considered that qualifications’ transparency and lifelong learning are the two components/instruments in adjusting the education and training systems to the requirements of the knowledge society and increasing employment quality, in 2002, the resolution of the European Council from Barcelona with respect to lifelong learning emphasis is laid on cooperation between systems, between the states in the field of education. To this end, the European Council calls on Member States to build bridges between formal, non-formal and informal education. “This was seen as a prerequisite for the creation of a European area of lifelong learning, building on the achievements of the Bologna process in higher education and for **promoting similar action** in the area of vocational training”. (Source: COM (2006) 479, final a, p.2; see also Steliana Perț, 2005).

1.1. Context. Challenges

Context¹

In the last decade of the 20th century, and in the first one of the 21st century, the education and training systems, the policies in the field, all underwent several and most often converging

¹ In this paragraph we intend to draw attention only to some contextual elements strictly related to education and training and to their results based on some relevant quantitative indicators.

changes. The Guidelines of the European Councils, and/or of the European Commission and of the European Parliament, their recommendations, the generations of education and training programmes put into practice focused either on certain sub-systems of training and education, or on target groups – as a rule, on those disadvantaged on labour market – the reform (more modest than in other fields), the persistent promotion of new mechanisms and instruments of adjusting the education systems to life's requirements have generated a series of progresses at educational level. Yet, at the same time, some deficiencies/incoherencies/rigidities persisted, and the gaps against some extra-community states, such as **USA, Japan, and Canada** for instance, were not attenuated. As result, in the EU, debates around the education issues have caught the attention of experts, governments, international bodies, social partners, and of other involved actors, as well as of families and of the student population, etc. Consequently, *education and training* have turned concomitantly into **components of some strategies, programmes and, respectively, major instruments of achieving their objectives**².

The ambitious objective established at Lisbon in March 2000 reiterated and completed at Brussels in March 2005, respectively that in 2010 the European Union should become the most competitive and dynamic economy based on knowledge from the world, able of sustained growth with more and better jobs and higher social cohesion” places permanent education at the heart of the EU policy, and of each of the Member States. The education and training systems within the EU need to be continually improved in order to face the range of challenges with which Europe is confronted, in order to harmonise/articulate the enormous diversity of systems, contents, qualifications and competences, mechanisms, methods and procedures, so as to attain the proposed objectives and not remain mere aspirations unsubstantiated by reality. In order to have an image about the place of the EU within the education world, we shall briefly refer to some of these issues:

a) The participation rate to education by number of years in school per person. In the year 2000, its value was rather different within EU Member States, for most being around **9 years of schooling**. In this global context, 3 groups of countries are outlined: **the first**, represented by **Sweden and Germany** where the average number of school years is of **11.4 years, respectively 10 years** and superior to the average of other countries (in the case of Sweden, for instance being almost double as compared with the one from Portugal); **the second group** with a participation rate of **9 years per person**, has the highest level in Poland with 9.8 years and the lowest in Hungary with 9.1 years. It should be noticed that newly entered countries, save for Slovenia (7.1 years) record rates higher than 9 years of schooling; **the third group** with an education participation rate per person of **7 to 8 years**: Italy with 7.2 years, Spain 7.3 years, France with 7.9 years. A singular but worrying case is the one of **Portugal** where the number of years of schooling per person is **5.9 years**, much under the standards of other member countries. On the other hand, even if the highest numbers recorded in EU Member States are **under the number achieved in USA – 12 years per person and Canada 11.6 years per person**; Japan with 9.5 years of schooling per person and Korea with 10.8 have standards similar to or slightly higher than the ones in EU-27 Member States. (*Annex I.*)

Secondly, in the last 20 years of the previous century, the participation rate to education increased considerably in all countries, percentage increases between 11.4% in Poland and 55.3% in Portugal³. If we refer to non-community countries, outside Europe, while Korea achieves a growth of 36.7%, Japan and Canada of about 12%, and USA for which in 1980 the participation

² Not accidentally at the threshold between the two centuries, in the year 2000, in the Preface of the work “Key Data on Education in Europe” it was mentioned: The quality of education and lifelong learning are at the heart of the debate in the Community and constitute one of the priorities for action by the European Union **on behalf of the European citizens**. At the outset of the third millennium education and training are destined to become an **essential investment** for the future of societies and a **key area of cooperation** between European countries. The European Commission firmly believes that, if this cooperation is to be intensified and enriched, the availability of basic set of different kinds of **reliable, readily comparable indicators** on education systems is an important requirement. (Vivianne Reading, Pedro Solbo Mira, 2000, our highlight)

³ It is obvious that percentage growths are influenced a lot by the reference benchmark (3.8 years in Portugal, 6 years in Spain, 5.9 in Italy and, respectively 9.7 years in Sweden, 9 years in Denmark, 9.1 years in Hungary, and 8.8 years in Romania).

rate to education was of 11.9 years records an insignificant growth of 0.8% (from 11.9 years to 12 years, i.e. one p.p.). (*Annex 2*).

b) School life expectancy – a relevant indicator to “measure” the number of years at 5 years old (regarded as typically) expects to be enrolled in the formal education system. The indicator has an **analytical value** especially for international comparisons, or for dynamics in the case of an entity (region, country, etc.) and a **predictive** one. Indirectly, it is a measuring device of the enrolment rate in education of school-aged young persons⁴.

In the year 2001-2002, at EU-25 level, **school life expectancy** was of 17.4 years; above this level were positioned: the United Kingdom with 20.1 years, Sweden – 19.8 years, Finland – 19.2 years; close to the average(±) were countries such as Estonia – 17.5 years, Spain – 17.3 years, Netherlands and Slovenia – 17.2 years, Poland – 17 years; in about 10 countries the school life expectancy varied between 16 years (Austria) and 16.9 years (Portugal); the lowest shares are found in Cyprus (13.4 years), Malta and Luxembourg (14.3 years)⁵, followed by Bulgaria and Romania with 14.6 years, and 15 years in Slovakia. (*Annex 1*).

c) With respect to the projections of potential school population (5 to 9 years old and 10 to 14 years old) it should be noticed that the process of demographic ageing of population is not attenuated. With but few exceptions, in 2010 and in 2015 as well, the number of children aged 5 to 9 years and, respectively, 10 to 14 years records negative increases. Thus, **in 2010**, for the first age group increases of the population are recorded only for Spain, France, Ireland, Portugal and Italy, while for the age group 9 to 14 years of age only in Luxembourg and the Netherlands. In the year **2015**, the distribution of positive increases is somewhat more balanced: Spain, France, Ireland and Portugal for the age group of 5 to 9 years olds, to which are added Luxembourg and Netherlands for the age group of 9 to 14 years olds. Under these circumstances, it is obvious that the potential school population for ISCED 0, and ISCED 1 and 2 decreases dramatically in the majority of countries, which shall pose problems for the education systems of the respective countries (*Annex 1*).

For the next years, EU is “sentenced” to face some **major challenges**, some of them already in a chronic stage, and some new. In brief, what are those challenges?

- Delay of the structural reforms processes, of labour market and education market reform;
- Economic counter-performance in relationship with USA and Asian countries, rendered concrete in:
 - lower and varying rate of economic growth; more difficult adjustment to markets’ dynamics;
 - performance deficit showed in: *a)* lower level of economic growth rate; *b)* level and growth rate of labour productivity; ; lower participation rate of working age population to economic activity; *c)* more than third from the difference of productivity in relation to USA is explained by the low level of hourly productivity of labour in EU Member States; *d)* lower competitiveness on external markets as compared to the main competitors – USA, Asian countries;
 - marked and chronic processes of demographic ageing;
 - weaker quality of education and training drawing with it difficult insertion of less skilled on labour market, especially of young persons, and rigidities on European labour market;
 - requirements of building up the knowledge-based society and economy;
 - more marked processes of markets’ globalisation and difficulties in penetrating global, specialised and regional markets, etc.;
 - the margin differences from one member country to the other, against the objectives established by the Lisbon Strategy 2000 (2005);

⁴ In the computation of the school life expectancy indicator, non-formal and informal education are not taken into account, just as lifelong learning after leaving the education system with a graduation certificate/diploma and, respectively, a competences one.

⁵ For these countries the figures are not relevant; they have residence in the respective countries but study abroad; these persons were not taken into account in the survey.

- the continuation of the EU enlargement process coupled with actual difficulties of absorption and with the ratification of the EU Treaty in the following years by each of the member countries.

These are the issues of concern for the European Council and the European Parliament, as resources, instruments, and methods are searched in order to overcome them. Under the conditions mentioned briefly in preparing the European Council from March 2005, in the report presented in November to the European Council by the group led by Wim Kok attention was drawn to the need of urgently solving these issues: *The Lisbon Strategy is even more urgent today as the growth gap with North America and Asia has widened while Europe must meet the combined challenges of low population growth and ageing. Time is running out and there can be no room for complacency. Better implementation to make up for lost time* (COM (2005)24). At the same time, at the European Council from March 2005, President Barosso stated that renewed growth is vital to prosperity, can bring back full employment, and is the foundation of social justice and opportunity for all. It is also vital to Europe's position in the world and Europe's ability to mobilise the resources that tackle many global different challenges (COM (2005) 24).

In this manner, the Lisbon Strategy is **re-launched** centred on *growth and employment*. By maintaining the same target-objectives, the revised Strategy is constructed based on a coherent package of **integrated guidelines (IG)** consisting of three packages: a. macroeconomic; b. microeconomic; c. employment (COM (2005) 141, final. (*Annex 3*)).

Within this well-defined framework, the revised Lisbon Strategy intends, among others, for *Europe to be a more attractive place to invest; knowledge and innovations should become the drivers of European economic growth; European policies should allow businesses to create more and better jobs* (*Recommendations of the Commission, Part 1 and Part 2*).

It should be mentioned that the IG laid equal emphasis on the social and environmental component, the strategy being not only complementary part, but also an **integral part of EU's sustainable development as a whole**. Nevertheless, President Barosso mentions that even if pursuing common purposes, the two strategies (the Sustainable Development and the Lisbon Strategy) aim at complementary actions that mutually foster and stimulate each other using, as a rule, different instruments delivering same or similar results in a distinct temporal framework (COM(2005)24, Brussels).

Challenges

In the immediately following years, EU is "sentenced" to face challenges differing in nature and spatial/temporal intensity. Some of them are of **internal nature** resulting, mainly, from the EU development level as a whole, of each of the Member States more particularly, from the cultural-educational, tradition, and customs diversity, from the set of national, and regional values as components of the national patrimony with which each country enters into the EU, from the reform, modernization and operational degree of the single/internal market. It also depends on the number, structure, and quality of the human factor, on its flexibility and mobility within an extremely dynamic and more often than not unpredictable one, on the quality of the European's Commission administration and management which – in the absence of a Constitution/Treaty accepted by all Member States becomes more and more difficult and, why not, in the case of adopting some decisions, on national pride which sometimes become more exaggerated. But other challenges, and perhaps the most difficult ones, depend on **external factors**.

In direct relationship with the object of our study, the picture of these challenges, in a synthetic form might be displayed as follows:

- The imperative of creating, in short time, the **knowledge-based society and economy, diminishing the gap against USA and the Asian countries**: "knowledge and innovations are the engine of economic growth", the creation of the European Knowledge Area that largely overlaps the European Education and Training Area and which requires the strong development of research, education and innovation in the most varied forms so that "knowledge might be changed into value added", to generate more and better jobs;

- Sensibly improving the **quality of human resources and maintaining to a larger extent the high-skilled labour force on the internal market** but without barring free movement of persons and labour (two years before, the European Commissioner for Education and Culture, Jan Figel, mentioned that Europe produces more doctors than USA but uses them considerably less);
- **Insufficient jobs** of adequate quality, especially of those of high- and low-level skill, under the conditions in which – with differences from Member State to Member State – work is considerably less than in USA and in the developed Asian countries;
- **The performance deficit** of EU per assembly in relation to North America and Asia: Under this general phrase we refer to: the economic growth rate, as a rule, lower in the EU; the level and growth rate of labour productivity, both lower; a third of the gap against America is explained by the lower level of the hourly labour productivity; the participation/activity rate of the working age population and over is lower in most Member States, and at EU level as well;
- **Competitiveness deficit**, against North America and Asia, on the EU internal market and on the extra-community markets as well;
- Delay in markets’ reform, especially of the internal labour market, with consequences for productivity’s level, for the wages and incomes, rigidities, and deficit of flexibility about labour market demand, of the educational system supply, and workers’ mobility;
- Marked/speedier globalisation processes of the markets which change the terms altogether for employment, organisation and management, of education and lifelong training, of territorial/geographic and professional mobility of young, adult and elderly labour force;
- Europe’s population demographic ageing, in its turn, poses a series of specific issues with respect to the duration of working life, employment, incomes, quality of life for third- or even fourth age elderly persons, and the capacity of the European economies to support public pension systems.

As historical practice has shown, one of the main instruments, if not the most important, in order to successfully meet such challenges are *lifelong education and training*. In this context, the issue raises, if, despite the huge steps made in the last decades, the education and training systems of the EU and of the Member States are fully prepared to face predictable and unpredictable challenges/threats/risks of the 21st century. In order to answer to this key issue for the EU future, we shall analyse these systems (obviously, within the limits of information availability, and of the own capacities for analysis/interpretation) thus attempting to have a correct diagnosis that would allow for identifying most efficient solutions in creating one/some education systems compatible with the exigencies of the 21st century from the viewpoint of shaping and putting to good use the human capital. But, before, we should present the “benefits of learning” at society, community, family/individual level based on which education under all its form is a **major priority**, with an impetus difficult to express merely based on statistical indicators. Therefore, we shall use two classification criteria: a. relationship with the market; b. non-market relationships, but which are extremely numerous and important with high resonance with respect to employment quality, dimension, and development of some key economic indicators (*Figure 1*).

Figure 1

Typology (classification) of education benefits

Type of benefit	At individual/personal/private level	At macroeconomic and macro-social scale
Market related	-employability/employment; -higher incomes; -less unemployment; -(more) flexible labour market; -greater labour force mobility	- Higher productivity; - Higher competitiveness; - Better quality of the human factor and, respectively of goods and services; - Higher net tax revenue (depending also on the fiscal policy), higher budget incomes - Less dependency on the state financial support and sometimes on family support;

Non-market	<ul style="list-style-type: none"> - Better/efficient consumption - Better own and family health; - Improved reconciliation of active and family life; - Better children’s education; - Involved participation to community life; - Active citizenship; - Decent/civilised interrelationships. 	<ul style="list-style-type: none"> - Reduced violence and crime at large, especially among young persons; - Less spread of infectious diseases; - Lower fertility especially for the population categories with higher education level; - Better social inclusion; - Strengthened economic, social and territorial cohesion ; - Participation to political activities, including poll.
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Source: Elaborated by the author after the table made by **George Psacharopoulos** in the study “*Rates of return and funding models in Europe*”. *Final report to the European Commission, Ch.2. The Returns to Investment in Higher Education: Methods Data and Policy Implications*, January, 2007, pg.30.

Despite their impressive diversity, under certain aspects – the European education systems are based on a *coherent set of generally valid principles*. This essential coherence/convergence ensures, on one hand the **unity in diversity of the national systems** which take into account the national context, and on the other hand, it represents the key-element on which is based and operates the **open coordination method of the national education and training systems from the Member States**.

Which are these principles?

- a. *Equality of chances and equity*; the free right of all too education without discrimination (gender, religion, ethnic group, etc.);
- b. *Freedom of each person to choose an own education method* corroborated with the school and vocational counselling;
- c. *Integrity of the education system*, beginning with pre-primary/pre-school education and continuing learning according to the adequate formulas;
- d. *The open character of education*, having the double meaning of the progression rate from inferior to superior forms of education and training and of the opportunities of completing the studies and on this basis by transfer to superior forms of education, so as to enlist on various paths of a professional career;
- e. *Decentralisation of the system* aiming concomitantly to **diminishing the dependency on government** – within well-established game rules – and, respectively, to increase the role of regional and local bodies/authorities up to company level in managing the learning and training processes;
- f. *Institutional autonomy* – between certain legally provided for limits – with respect to contents, curricula, specialisation, places supply in the national education and training system;
- g. *Balance* between basic knowledge for all and knowledge, skills, qualifications and competences supplied by an education and training sub-system/cycle, flexibility of learning contents;
- h. Complete even wider *openness* of the school towards life, labour world and of the labour world towards school;
- i. *Partnership* between school and family, between school and other involved actors – companies, local authorities, non-governmental organisations;
- j. *Providing the graduate with a set of values* that lead to shaping the active European citizenship, to individual’s responsibility and participation to community life, to his/her integration into the society. To this end, education has, among others, the role to promote humane values shared by European societies, its general purpose being the development of the individual, and valuing his/her entire creative-productive and participative potential;
- k. *Assessment, certification and recognition* of qualifications and competences obtained within similar education systems with respect to contents and conferred diplomas;
- l. *Transparency* of the knowledge and qualifications’ system;

Box no. 2.	Definition And Functions of Transparency
Transparency of qualifications is defined as the degree to which the value of qualifications can be identified and	

compared on the labour market, in education and training and in a wider social setting. Transparency can thus be seen as necessary precondition for recognition of learning outcomes leading to qualifications. Increasing transparency is important for the following reasons: a) It enables individual citizens to judge the relative value of qualifications; b) it is a prerequisite and condition for transfer and accumulation of qualifications. Pursuing lifelong and lifewide learning requires that individuals are able to combine and build on qualifications acquired in different settings, systems and countries; c) improves the employers' ability to judge the profile, content and relevance of qualifications on offer in the labour market; d) it allows education and training providers to compare the profile and content of their own offers to those of other providers and thus also is an important precondition for quality assurance in education and training. (Source: COM (2006) 479 final pg. 3)

m. *Strengthening bi- and multilateral cooperation* between Member States, experience exchanges, dissemination of best practices, pupils/students mobility.⁶

n. *Social inclusion. Strengthening social, economic, and territorial cohesion.* Education in the contemporary society turned into a key-factor of the inclusion processes, of awareness with respect to the environment in which the European citizens live and work. Bergham distinguishes among 4 types of inclusion and, respectively, of active participation to society life: **civic** – related to democracy and compliance with the legal system; **economic** – in connection mainly with employment; **social** – which answers to the need of public security; **family and community** favoured by the new information technologies (COM (2006) 479 final).

With respect to enforcing these principles, it is necessary to mention that for each member country, these represent the general framework to which they are interested, or even compelled to relate in their own policies with respect to education and training.

Together with the **EU objectives related to education and training** – to which we shall refer subsequently – these represent the **pillars/limits and the guidelines** that Member States take into account in the process of drafting national policies for education and training. This is a very elaborate process in which it is necessary to consider own setting, general, and particular priorities, traditions, customs, adequate instruments, and mechanisms to put them into action. Doubtlessly, the European Commission by the available mechanisms, such as the monitoring and the open coordination one, and the one of supporting cooperation between member states ensures, finally, the unity in diversity of the community policy with respect to shared goals between diverse systems related to lifelong learning.

1.2. Objectives of the education and training policy

One of the fundamental priorities of the EU in the first decade of the 21st century aims to **reform and modernize** education and training systems so that these contribute to achieving the targets established by the Lisbon Strategy. We underline – in accordance with the European Commission documents – that it relates not only to economic objectives but also to an equal extent to social welfare, social inclusion and cohesion, and territorial as well, etc.

If the importance of education and training for economic growth, of jobs' number and quality was recognised right from the beginning, and considered as target and cross-sectional axis of achieving the Lisbon Strategy (March 2000), lately, repeatedly the European Commission emphasises the role of education and training for assuring EU competitiveness on long-term and on social cohesion as well. The most recent report (Joint Employment Report) for 2006-2007 *calls for more investment in the human capital by better education, qualifications and skills, for increasing the importance of continuing vocational training within National Programmes. Also a series of specific aspects are relevant, such as the persistence of early school leaving, **arguing that functioning education systems rather preserve existing inequalities (our emphasis) and, consequently, the reform must be more comprehensive, based on long term policies and a development culture.***

⁶ About principles of education and training systems see also *Annex 4*.

In 2001, the Ministers of Education from Member States adopted the report regarding the objectives of education and training for the time horizon 2010. In the same year, the European Commission from Stockholm (March 2001) establishes three strategic objectives for the Education and Training System. One year later, pursuing the position of the European Council and of the Commission, the Spring European Commission from March 2002 in Barcelona launches the challenge that in the year 2010 “...in terms of quality the education systems from EU shall become world leaders...” On this occasion, the European Council and the Commission endorse favourably the implementation – through the method of open coordination – of the **Strategy regarding education and training 2010**.

In this framework, two stipulations are particularly useful for the architecture and functioning of the reformed education and training systems. *Firstly* the Programme “Education and Training 2010” integrates all actions at European level, including vocational education and training (the Copenhagen Process). Also, the Bologna Process initiated in 1999 is crucial in developing the European Area of Tertiary Education. Both actively contribute to achieving the revised Lisbon Strategy objectives⁷. *Secondly*, the proposed objectives – 3 strategic and 13 specific ones – cover all education and training **levels** (formal, non-formal, and informal) aiming to change into reality **lifelong learning**. In addition – and this is of particular significance – the systems need to be reformed and modernised **on all plans**. Or, otherwise said, aims at the anatomy of the education and training system not only as a whole, but also the relationships system including here feedback between the various components: professors; initial qualifications; integration of information and communications technologies; investments efficiency, learning foreign languages; continuing vocational counselling/guidance; flexibility of the system so as to be accessible to all; mobility; education in the spirit of active European citizenship (civic education) a.s.o.

Based on ongoing assessments of the reforms’ progress and in preparing the various documents and/or actions of the European Commission, in the year 2005 the Commission established as one of the **key priorities** of its activity and for the creation of some efficient instruments of evaluating, certifying, and recognising qualifications the elaboration of the “**European Qualifications Framework**” (EQF). Such an instrument shall facilitate at individual level the transfer and recognition of qualifications by means of the links between national qualifications (between countries), respectively sectors, thus making possible their compatibility with each other.” The European Qualifications Framework shall act as a ‘translation bridge’ and be the main European Mechanism for facilitating the citizens’ mobility for work and studies together, for instance, with Erasmus, and the European Credits Transfer System (ECTS) and Europass”(Figure 2). According to the manner in which are conceived and structured these objectives in their integrity, they answer to the requirement of achieving at regional, national and European level **some multi-annual comprehensive development policies for education and training**. And of making education useful for Sustainable Development in its double capacity as intrinsic component, and instrument of achieving Sustainable Development (see *Annex 3*). In practice, it develops and implements the 6 key messages launched in October 2000 by the Memorandum of Education and Continuing Vocational Education and Training (*Annex 4*).

Figure 2

Strategic and specific objectives of the EU Education and Training Systems

Strategic objective I: Improving the quality and efficiency of education and training systems	Strategic objective II: Facilitating access to education and training systems for all	Strategic objective III: Opening the education and training systems to the world
Specific objectives[*]		
Improving education and training for teachers and trainers Developing qualifications for the	Open environment for learning More attractive education Supporting the shaping of active	Strengthening the links between education-work-research and society Developing entrepreneurial spirit

⁷ EC (2007), Europe – Education and Training – Interpage Education. Education and Training 2010 (http://eu.europa.eu/education/policies/2010_en.htm) (studies on European countries, USA, Canada).

knowledge society Ensuring ICT access for all Increasing the share of students within scientific and technical education Better use of resources (financial, material, human)	citizenship, equal opportunities, social, territorial and local cohesion	Improving the learning of foreign languages Increased mobility ^{**} (students/teachers/labour force) Strengthening European cooperation between education and training systems
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Notes:

*) The three strategic objectives established in 2001 at the Conference of the Ministers of Education for approving the Report regarding Future Objectives of the Education and Training Systems. In 2002 the Council for Education and Culture of the EC launches the 10th working year regarding programmes to be implemented by the open coordination method of the national education and training policies. As result of the **3 strategic objectives** established one year before turn into **13 special/specific objectives** that cover various types and levels of education and training (formal, non-formal and informal), thus being circumscribed to translating into practice the LLVET as (re)launched by the Lisbon Strategy (March 2000) and rendered concrete by the Memorandum on LLL and reaffirmed in March 2005 at the Spring European Council from Brussels.

***) The EU plan on qualifications and mobility formulates a set of objectives regarding the improvement of: a. employment mobility and qualifications' development; b. geographic mobility; c. information and transparency with respect to employment opportunities. (European Commission – DGEAC (2002) Commission's action plan for skills and mobility. Luxembourg, (COM 72 final).

Source: EC (2001), The concrete future objectives of education and training systems: report from the Education Council to the Council of the European Union, Brussels.

Improving the quality and efficiency of the education and training system is the first strategic objective. It answers simultaneously to two key issues – **quality** and **efficiency** – aiming, practically to diminish the gaps (and why not) to exceed the scores/shares achieved by the EU competitors, respectively USA, Japan and some Asian countries.

Box no.3.

Quality Assurance in Education and Training

Accountability and assurance of **quality** improvement for **education and vocational training** at Community level – as one of the priority axes of lifelong learning' efficiency and competitiveness – is based on the following principles, mechanisms and instruments. These are – in accordance with the EU practice in the field – employed by each Member State by adjusting them to the national setting, obviously according to the limits imposed by that. Which are those principles and mechanisms in their interdependency/interference?

The policies of quality assurance should cover all levels of education and training systems from each of the Member States;

Quality assurance should be regarded, organised and monitored as an integral part of the **internal management** of education and formal non-formal and informal training;

Quality assurance must include regular evaluation of **education and training institutions** and of the **study programmes** by **external bodies or agencies of monitoring**, and not only predominantly as self-evaluation, even though this has its own significance;

These periodical evaluation bodies and agencies should be subject, in their turn, to regular review by institutions/experts;

Quality assurance should include the dimensions of the general framework, of the resources, process and output with emphasis on **output** and the multiple **effects** of learning.

Operational quality assurance systems should include, at least, the following elements: clear and measurable objectives and standards; guidelines for implementation, including stakeholder involvement with corresponding accountabilities, appropriate resources (material, financial, human); consistent/scientific evaluation methods, associated with self-assessment and eternal review; identification and assessment of feedback mechanisms and of the improvement procedures for these processes; widely accessible evaluation results, that can and must be disseminated (best practices, etc.).

Quality assurance initiatives at international, national, and regional level should be coordinated in order to ensure an overview, coherence, synergy, and system-wide analysis.

Quality assurance should be a cooperative process across education and training levels and systems involving all relevant stakeholders, within Member States and across Community.

Quality assurance guidelines at Community level may provide reference points for evaluations and peer learning.

Specific objectives refer to following elements required to ensure the improvement process of quality and of increasing education and training efficiency; improving teacher education and training in agreement with the changes occurred in the organisation, contents and management of learning processes, with emphasis on developing future competences and skills particularly those required for creating, enhancing and operation of the information and communications technology; increasing the share of technical and vocational education in view of ensuring the experts for the various levels of competency of the cognitive society; finally, ensuring and efficient use of the **resources** required to a process of such significance, economic, social and political importance at all levels of the economic-social body.(**Source:** ECC, Implementing the Community Lisbon

Programme, Proposal for a Recommendation of the European Parliament and of the Council on the establishment of the EQF for life long learning, COM (2006) 479, final Annex 1.2)

Making available access to education and training systems for all (strategic objective no.3). The concept of “access for all” must be comprehensively interpreted under the conditions of the knowledge-based society. The philosophy of this concept frequently used in EU gives birth to ample debates⁸. *In our opinion, which subscribes to a series of definitions of the experts in the matter “access for all to a EETS should be interpreted as a perennial process of creating opportunities for each individual during his/her entire lifetime to participate to various forms of education and training in accordance with his/her competences and wishes, and the requirements of the labour market, and of the exigencies of strengthening social cohesion, and of the complex, multilateral development of the personality from the viewpoint of the active European citizenship.* Defined as such, **access** at one level or another of education and/or training may or may be not directly linked to an *immediate* measurable outcome, to a qualification or profession, to a certain system of competences. Defined in this manner, it differs from the current/usual understanding of the term “access to one or another level of (formal) “institutionalised” education or training at the conclusion of which an individual receives a diploma/certificate of competences based on which he may obtain a job and/or may access to higher education forms.⁹

If under the conceptual aspect differences can be operated about the content of this term/process, under the methodological aspect there are limits to the extent of access. As a rule, the operational term is the *gross/net rate of participation to one form of another of education, with the indicator of literacy/illiteracy, and with the indicator of early school leaving, etc.*

The largest part of experts who were concerned or are involved with respect to “access to the education and training systems” consider that, in first and last instance, this is determined by a set of interfering variables. Mainly, these are the following ones: economic; sociological; political and administrative; systemic. Each of these interferes with a “varying share” in the “access for all to the education system” access that, up to now, is still highly fragmented. If, we may talk, at least theoretically and without any reservations about “*equality of chances*”, about opportunities in the learning process with respect to “*equality of access*” there are still some uncertainties present, because in order to become a reality it requires that several conditions are cumulatively met, prerequisites that may be, more or less, different from one standardised level to the other.

In studying access to education system the necessary starting point is the (revised) Internal Standard Classification of Education- ISCED 1997. This widely accepted and used classification is the main methodological instrument because it classifies the various systems of education in a standardised number of levels (ISCED 0-6). Even if some standardisations could be improved.

Box no.4.

Lack of clarity in defining some concepts

ISCED 0 – pre-primary/pre-school education does not incorporate learning in the household which has a significant contribution in configuring the internal profile of the child, in forming some important ethical values (respect, responsibility, security, etc.). It refers only to **institutionalised** education and aims at learning activities for children aged 3 years prior to entering primary school. **In Northern countries and in Austria** learning in the household is associated with pre-school education. *As a matter of fact, a holistic approach, a way of combining formal and non-formal pre-school education would be required to have a whole picture of this type of education.*

Questions are still left open also with respect to *adult education*. As a rule, in this category is included the population aged 25 to 64 years and it cannot be directly linked/conditioned by any of the stages in the formal education pathway. At international level there are different definitions of adult education. As result, international comparisons require corresponding interpretation, as the conclusion might differ depending on the adopted concept. (Source: ECOTEC, Research and Consulting (2006).

⁸ **Cezar Birzea et al.(2001)**, Lifelong Learning a Priority of Educational Policies in Romania, Survey on Key Messages of EC’s Memorandum on Lifelong Learning, Institute of Educational Sciences, Bucharest

⁹ About the access issue see: Study on Access to Education and Training, Tender no. EAC/38.04, Lot 1, by Manuel Sonto Otero and Andrew McCoshan, Final Report for the European Commission, ch.2 „Access to Education and Training in the Context of Europe 2010; ch.3. Conceptual Framework, p.8-20.

In general, if the first strategic objective has its core emphasis on **quality and efficiency**, and the specific ones have the key instrument to assure both, the **second strategic objective** which aims at “ free access for all to learning” – based on its specific objective – targets to the creation of a wider openness at societal and individual level for training, for more attractive learning from the viewpoint of the trainee, including next to the proper professional requirements also social ones – active citizenship, equal opportunities, social and territorial cohesion, participation, etc. In this manner, to these specific objectives, as well as to those preceding them, lifelong learning modernisation should provide an answer at European level, and at the level of each of the Member States (*Annex no. 4*). It should be recalled that, for this latter end, of particular importance are extra-curricular activities.

Opening education and training systems to the world is the third strategic principle of the programme “Education and Training 2010”, with particular relevance for the curricular and extracurricular system of the 21st century. At first sight, it has a strong economic trait; but, actually even if this one is prevalent, it is accompanied by a series of instruments/mechanisms of general formative nature. At the same time, we believe it is an opening with a double understanding: of the school – in general – towards the labour world and, respectively, of the labour world towards learning. This implies also changes in the network and curricula of the various education forms, close/contractual relations of the NETS to companies, and wider opening and involvement of the business environment in continuing vocational training. Moreover, making “learning more attractive” shall open new horizons also at individual level. Finally, this would lead to *better reconciliation between skills and competences on labour market and the supply of the education and training system, the latter having “to work” preponderantly for the future. Thereby better conditions of employability are created, of achieving the full employment objective of labour force, of rendering flexible the two markets, of increasing labour force mobility, of normalising free movement of labour to the benefit of all participants.*

Particular attention is paid to opening education towards fundamental and applicative research, this being regarded as the **engine of economic growth** and of increasing EU’s competitiveness, of each of its Member States. A field in which still a lot of work must be done, if we consider the gap against USA and Japan in the field of research and the package of issues that EU has to solve in a relatively short period of time. *In advanced economies such as the EU, knowledge, meaning R&D, innovation and education, is a key driver of productivity growth. Knowledge is a critical factor with which Europe can ensure competitiveness in a global world where others compete with cheap labour or primary resources. The EU, however, still invests about a third less than the USA in R&D. 80% of the gap is due to under-investment in research and development from the private sector, notable in ICT. The EU is currently spending only 2% of GDP, barely up from the level at the time of Lisbon’s launch. We must achieve faster progress towards the EU target of 3% of GDP for R&D expenditure. This requires increased and more effective public expenditure, more favourable framework conditions and powerful incentives for companies to engage in innovation and R&D, as well as more numerous high skilled and motivated researchers.*¹⁰

If knowledge and innovation are growth factors, in order for them to accomplish their mission, it is necessary: to increase and improve investments in research and development; public and private sector must invest more in research and development; facilitating innovation, the uptake of ICT and the sustainable use of resources; contribute to a strong European industrial base and promotion of eco-innovation.¹¹

Also, specific objectives with multiple beneficial outcomes at an individual/family/societal, economic, social and civic level, even at the political one as the following should also be retained:

¹⁰ EC (2005), Communication to the Spring European Council. Working together for growth and jobs. A new Start for the Lisbon Strategy. Communication from President Barroso in agreement with Vice-President Verheugen, COM (2005)24,02.02.2005, Brussels, p. 20.

¹¹ Ibid., pg 8-9

- a. higher emphasis laid on learning **foreign languages** (at least two), as vehicle of communication within the EU and between Member States, of assisting under non-discriminatory conditions the free movement of labour force, of students mobility;
- b. development of the entrepreneurial spirit – as a cross-sectional axis of the entire education and training system;
- c. last, but not least, strengthening European cooperation on issues of structuring, organising, evaluating/certificating, and management of the education systems at all levels. This implies mutual support, experience exchange, disseminating good practices, etc.

A wide consultation of Member States. Translating into practice the objectives established in the Lisbon Strategy and of the targets from the Bologna Statement as well is a complex process in which are involved according to their distinctive positions and responsibilities, yet not disparaged, several stakeholders/operators. Therefore, for each case political decisiveness is necessary, along with careful study and converging actions in time and space, and of defeating own “conservatism” encountered by each system in its development and, as a cross-sectional axis, perseverance, dialogue and involvement. This is one background explanation why the *European Commission launched in 2007 a wide consultation process in all Member States for each link of the national education and training system chain*. Expectations are high, respectively obtaining answers to allow for promoting successful solutions in solving the eight key issues with cross-sectional character within the framework of education and learning nowadays¹². Hence, the interdependency relationship provided by the European Qualifications Framework between knowledge, skills and competences acquired during the learning process and within the qualifications system as such. (Annex 5).

As the eight key-competences which the child and later on the adult requires for integrating into society/community in order to be satisfied and motivated for lifelong learning were defined the following:

*a. Key competences for all*¹³

In this framework the school curricula for initial compulsory education undergoes essential changes (some Member countries have already (re)defined the new curricula). The essential content of the change resides in the transition from just listing **inputs** and (more or less) **acquired knowledge** to inventory and listing of **outcomes** to be achieved on the pathway: general competences such as: learning to learn, imagination, creativity, and practical skills (learning to do), dignity, responsibility, solidarity and other similar values (social and civic competence), initiative taking and entrepreneurship with respect to school and community life, etc. (learning to live within the community). As a whole, they are **general values** of the school and of the individual and not pertaining to one profession or individual. In their interdependency these are the **firm background** on which the child can built his/her future, understanding the changing needs, adjusting, widening his/her autonomy, assuming responsibilities, learning to be creative and deliver performance in activity, and mobile on labour market.

With respect to the traditional *curricula*, this contains *knowledge, traditional competences* such as mother tongue and foreign languages (1-2), nature sciences, mathematics and *new, modern competencies*: digital, entrepreneurial, socio-cultural and civic ones¹⁴. Three issues emerge as essential: which would be the reasonable share of these two types of competencies and value, their right balance during the learning process and which should be the role and function of the teacher – simple input conveyor and/or collaborator and co-constructor together with the students of the new competences, and which should be the relation between (formal) **school education** and the **‘outside’ education – extramural** one, including here home education in shaping the

¹² ECC (2007), Commission Staff Working Paper. Schools for the 21st Century, SEC (2007) 1009, Brussels

¹³ Ibid. 12.

¹⁴ EC (2005), Communication to the Spring European Council. Working together for growth and jobs. A new start for the Lisbon Strategy. Communication of the President Barroso in agreement with Vice-President Verheugen., Brussels. COM (2005)24,02.02.2005, Brussels.

above mentioned competences. And the more so as there is fragmentation between the values promoted by school and the actual life, and more often than not, even a break.

b. Preparing Europeans for lifelong learning

This answers to the requirements of adjustment and mobility on labour market. At the same time, this is a way of closing the gap between the **demand** of skills/competences on labour market and the **supply** of such skills and competences provided by the NETS (formal, non-formal and informal). This means that on graduating school, on terminating a schooling cycle, the student must be **competent and motivated**, able to assume productive, creative and/or social-participative responsibilities and to take “his/her life into his/her own hands”, to be able to ensure his/her own professional future by learning throughout his/her life, as well as his place and role within society. The first brick of such a behaviour vis-à-vis learning is laid within the **general compulsory education**.

In the field of “preparing Europeans for lifelong learning”, despite of the wide range of formulas, procedures and techniques currently existing and used with different emphasis from one country to another, nowadays a whole set of issues amass which require viable solutions – starting with the manner of learning – under the conditions in which it develops rapidly -, and with the organisation of the learning process, and continuing with the relationship system between school and companies, with the special centres for adult education/lifelong learning and ending with what seems most important to us, respectively the relationship between student and teacher/trainer, so that learning shall **focus on activities** and the participants “co-authors”. Also, this fields requires a “break up” with traditions and courageously assuming the new *preparing therefore first teachers/trainers and managers so that professional, educational, economic and social gain shall tend towards a maximum*.

c. Learning should contribute to sustainable economic growth

This requirement – as others, is the immediate outcome of the fact that the Education 2010 programme has turned into an integral part of the Lisbon Strategy. Three are the main factors which require improvement of active population’s competencies and making use of them for “sustainable economic growth” (see also Annex 3). First among these is the very rapid and unequally as dissemination and spreading into creative-productive processes **technological progress**. The second **markets’ and growth internationalisation** which is just as unequal with respect to the “internationalisation” of benefits. Third is the **companies’ restructuring** under the conditions of the global economy. Each of these factors, and all together in their interaction, require higher competences adequate to their nature. While rapid technological progress lays emphasis on updating creative competences, initiative and autonomy, teamwork, assuming responsibility, adjustability and mobility, the second and third factor require additionally another type of competences: entrepreneurial, communication/cultural ones, so that the individual can adjust easily to a new work and life environment. This is the reason why the *background for these competences must be laid out during compulsory education, the student understanding from an early age the benefits for him/her as individual and for the community as a whole that may be gained by lifelong learning*¹⁵. In order to have more certainty that these key-competences are shaped, and to what extent during initial education, ongoing or periodical evaluation, and international benchmarking with respect to outcomes are required by using well known, acknowledged methods (PISA and TIMSS).

Finally, aiming towards the same purpose, of increasing the contribution of education to economic growth, the cooperation between the education system and companies, the flow, and more particularly the contents of such absolutely necessary relationships need to be debated and set on firm/contractual basis on one hand, and on the other hand same for the relationships between companies and CVT centres, as well as for the role and function of companies in lifelong learning (programmes/career plans, a.s.o., methods).

d. Learning must answer to changes/challenges in our society

¹⁵ ECC (2006) Efficiency and Equity in European Education and Training Systems; COM (2006) 481, final.

This is one of the most sensible, complex and difficult issues. Its favourable solving depends on a wide range of factors and conditions. *School is only one of the factors that could contribute to wider equity inside and outside its system and to sustain the promotion of cultural diversity, and to keep children involved in the learning process for a longer period of time – preventing early school leaving – thus diminishing the alarming losses of school population which in some countries already show alarming rates.* It is true that **school has an essential mission** and under the conditions of the EU enlargement, of increased cultural diversity of contact between various national identities, traditions, etc. more needs to be done. The question is how, by which methods and means and, obviously, with what results.

Box no. 5.

Inequalities and inequities in ETS and beyond

If it is a known and acknowledged fact that performance policies of education and training have a considerable positive influence on economic growth and sustainable development, to the contrary, inequities and inequalities persisting inside and outside school have a huge cost not necessarily directly, but more due to the cascading effects on long term at economic, cultural, educational, family and individual level. There are disadvantaged categories in the education process, inequities, and inequalities, triggered by a complex set of economic, social, cultural, ethnic and religious factors, etc. these are true **traps, barriers** for social inclusion, for strengthening economic, social, and territorial cohesion. Among these factors we would mention **household income**, respectively the income per household member; the insufficient support nets for mono-parental families; over 10%, and in some countries even one third from the school population aged 15 years comes from **immigrant** population with other cultural models, and very often of other ethnicity and religious beliefs, different language, etc.; the highest percentage losses during schooling are met in the case of these categories; the rate of graduating to higher education forms is comparatively lower. According to the opinion of some experts, school population from EU Member States reflects the pattern of population's migration. After leaving school, these young persons have the highest risk of unemployment, poverty, and social exclusion; it is estimated that one from three children in these categories are threatened by economic and social risks. Most often the Roma population is brought into discussion. Nevertheless, many of the immigrants' children are motivated to learn, have a positive attitude towards school and outstanding results. (Source: Eurydice (2004), Integrating Immigrant Children into Schools; ECC (2003), Promoting Language Learning and Linguistic Diversity COM (2003) 449. ECC (2007), Joint Report on Social Protection and Social Inclusion, Brussels).

The traits of the school population “bearing” unequal treatment, being discriminated – cultural and linguistic diversity, even religious diversity – should be changed in gains for the EU in **sources for developing dialogue between cultures, for changing the attitude towards learning, for undergoing as many stages as possible of the EETS supporting integration and social cohesion by respecting each individual's identity and avoiding above mentioned economic and social risks.** Therefore, the EU aims to hard attainable objectives until 2010. We take into account here the equality of chances and access. If the equality of chances is provided by legislation, the one of **access** remains to be attained at the desired level. The level of early school leaving – very high in some countries – in 2010 should not exceed 10% at EU level, as compared to 16.5% in the year 2004/2005. In a series of Member States, among which Romania as well, this indicator has values almost double to the EU average (around 19 to 20%) according to Eurostat which shall be a hindrance in complying with the intended objective in the absence of adequate policies.

The UE experience, of various countries with respect to eliminating inequity and inequality in education show that targeted educational policies, aimed only at one issue or for short term do not deliver the expected outcomes.

Therefore, according to our opinion, diminishing inequities and inequalities from education turns into a priority issue of educational policy, so that the school population and graduates should be able of performance under the conditions of rapid change. The issue is the more important as labour emigration and immigration favoured by the free movement of labour, even if there are some restrictions, have an increasing trend. Hence, an integrated and comprehensive education policy is necessary to answer under advantageous conditions to the entire school population throughout the school cycle and thereafter. Perhaps, for a certain period, a policy of so-called “positive discrimination” is required in order to solve this issue with lasting negative effects. Otherwise, there will permanently be focal centre/risk of social unrest generating important

economic costs (France, or Italy for instance). Finally, the positive solving is also “imposed” by the demographic ageing of Europe’s population.

e. One school for all

One of the important issues concerning stakeholders with respect to education within EU/EC is the most adequate, beneficial **organisation for children with special needs**. Finally, the question is of choosing between *two alternatives* or *combining them* in the most productive/fit manner under several aspects. Traditionally, children with special needs were educated in special schools, which was a discrimination factor. The new trend/alternative resides in organising inclusive classrooms¹⁶ comprising students irrespective of the special needs of some of them. In this case, special schools change into support centres for such classrooms. The experts believe that *inclusive education represents an important background for assuring equality of opportunities for children with special needs for all aspects of their lives; it requires a flexible education system that answers to the various and very often complex needs of learning individuals*¹⁷. Such an inclusive approach of children in school is, in fact, the enforcement and development of the principle according to which **education is constructed around the special needs of each child, individually**. Issues still open in the case of this major educational option are the following few: a. can schools be organised so as to answer to the needs of each student? b. if yes, what changes should be brought to the curricula, to organisation and management at the level of school entity? c. which should be the role of teachers, and by what methods can they be trained in order to meet classes, student groups which are par excellence heterogeneous?

f. Preparing young Europeans for active citizenship

One of the most important challenges facing Europe and NETS concerns the increased **participation of youth** to representative democracy, which implies organised and monitored links between school and its environment.

School is an active support instrument of preparing students to take their place in community, and be active citizens¹⁸. This is an ongoing process, exceeding the school borders; it involves – in accordance with the recommendations of the European Council – on one hand strengthening the culture of democracy in schools, and on the other hand the participation of students, parents and teachers. “Democracy is not a game of adults for adults, and that it requires a life-long learning process which supposes both that future adult citizens be nourished by democracy and that they have practised it at their own level”¹⁹. But democracy in schools has yet another practical legitimacy as efficient instrument for creating a climate of confidence and responsibility in schools and becoming a mean of preventing drug consumption, violence, radicalism, fundamentalism, racism, and xenophobia in schools and society. Considered according to the reflection of these phenomena which are present in schools – sometimes in manners that exceed the limits of reason – we believe them to be an indication of the fact that the education process has not yet, and still does not make enough in this respect. There is yet room within educational programmes for more attention to civic education, for shaping an attitude of understanding the culture and identity of other people, for forming tolerance behaviours. It is a valid requirement, for EU-15 schools, but especially for the new Member States.

The solution, or elements that are part of the solution are not only within the power of the school, but also within the power of some extramural institutions, within the community: NGOs, Church, public authorities, companies, so that together these might contribute to creating a package of

¹⁶ In practice these types of inclusive classrooms comprises: training and learning cooperatives, collaboration in solving some issues, heterogeneous groups, systematic monitoring, certification, planning and evaluation of the work of each student. Such approaches bring benefits to all children, including the ones that are particularly endowed or gifted. (ECC(2007), Commission Staff Working Paper. Schools for the 21st Century, SEC (2007) 1009, Brussels; Eurydice (2005), Citizenship Education at School in Europe; Education and Citizenship. Report on the Broader Role of Education and its Cultural Aspects. Council of European Union, 13452/04).

¹⁷ (2003), Key Principles for Special Needs Education, Agency for Special Needs Education

¹⁸ Eurydice (2005), Citizenship Education at School in Europe; Education and Citizenship. Report on the Broader Role of Education and its Cultural Aspects. Council of Union European, 13452/04.

¹⁹ ECC (2007), Commission Staff Working Paper. Schools for the 21st Century, SEC (2007) 1009, Brussels

values to support participation and foster dialogue, communication and tolerance in a more and more diverse world.

g. Teachers – key agents for change

The key to success within the educational process is held by the quality of the management staff, of manager and before all, by the one of teachers. This is a general requirement especially for **teachers and managers**. The teachers, according to the EC concept are the **main agent** of change in education. The tasks and responsibilities are increased, in accordance with this and previous considerations:

- working with heterogeneous groups of children (mother tongue, gender, ethnicity, skills, talents, etc);
- good mastering of the opportunities offered by the new technologies;
- form and develop in children new attitudes to become lifelong learners;
- to assist and support children in being creative, imaginative, independent and take on responsibility, etc.;

For these reasons, we appreciate that teachers should be people dedicated to their profession, with multilateral training, to be able to shape knowledge and behaviours, a not easy task. It is not by chance that teachers develop one of the most stressing professions, and neither is the fact that it is most difficult to keep in schools best and experienced teachers. The labour market provides for other opportunities which are perhaps not so stressing but for sure better paid.

The solution: concomitantly with the training/improving of teachers in order to keep up with life, better payment in accordance with the complexity of their work and huge responsibilities assumed. The issue has a general character but it refers mainly to the New Member States, among which Romania , where the status of the good teacher has not the deserved height.

h. Helping school communities to develop

Performance management of school communities plays a vital role in the development of EETS. Therefore, increased attention should be given to it, promoting the concept and practice of “**leader school**”.

Box no.6

Systems of fostering quality management in schools

In Europe various systems of schools’ management are practiced:

- some systems offer a premium to management teams for the results obtained such as: facilitating open communication, stimulate creative thinking and innovation, motivate staff and students in obtaining competitive outcomes; motivating lifelong learning, etc.;
- the partnership school – various agencies and organisations – is very important in putting school in “the service of community”;
- attracting in the management boards of the schools parents and other stakeholders, especially from the financial-banking fields with superior possibilities against the staff of the school (and persons that can contribute to modernising the curricula);
- in other cases, all attributions are gathered in the hand of the school management;
- expanding the scope of extramural activities – realised also with the participation of other stakeholders/operators – is more and more a resource for the entire community (local learning centres, for instance);
- there are also systems where the role of “school leader” does not exist, and is not within the concerns;
- in Europe there is still a sufficient number of schools where the schools do not have (or have only an extremely limited autonomy) in establishing own objectives, curricula for attaining them, the selection and remuneration of staff, or implementing some necessary changes, requirements imposed by the changes of the external environment.(**Source:** Developed based on some information contained in EC documents)

Within the same framework of efficient management, this time from the exterior towards school, a useful instrument is **evaluation and inspection of school systems**. Its importance resides in the capacity of providing for feedback, thus supporting schools in answering to change needs by

means of the obtained outcomes. The European Parliament and the European Council have made already in 2001 a series of recommendations with respect to²⁰:

- transparent systems of evaluating the quality of school entities based on a set of measurable, rigorous and respectively, classification of these institutions, as well as evaluation of outcomes/performances attained by the school population;
- balance between self-assessment of the school entity and the external evaluation realised by independent institutions;
- involvement of relevant stakeholders in the instructive-educational-formative process;
- dissemination of good practices.

If we consider that these recommendation are only partially enforced, as part of stakeholders show no interest, a **key-issue** which under the conditions of rapid changes turns into a **key challenge** is the following: *“the extent to which the evaluation and assessment of school’s performance can take into account the socio-economic and educational profile of pupils, thereby highlighting the school’s added value”*²¹.

In this management diversity, in these “deviations” which are not few against the European regulations in the field, valid solutions must be identified to give impetus to school communities in promoting best management, motivating them also to answer future needs, which often cannot be foreseen about how the school entity must best meet the pressures on learning triggered by the developments of the markets’ system. Finally, what role could **international cooperation and open coordination of educational programmes play** in solving best the package of management issues within the national context of each of the Member States.

1.3. Characteristics of NETS in Europe. Similitude and disparities²²

The Picture of Education in Europe is characterised by a wide structural-organisational diversity of participation, contents, evaluation, assessment and diploma recognition, etc. The need of some coordinated policies, unitary in principles and objectives, but different to a larger or lesser extent as structures, instruments, and enforcement mechanisms is obvious and insistently claimed by the European Commission(EC) and the European Council(CoE). The programme *“Education 2010”* is called to give an answer among others to achieving a convergent, transparent, performance/competitive education system, and to lay a solid background for the European Learning Area of Lifelong Learning.

Structure and organisation

Similitude and disparity in NETS in EU Member States, and between the above mentioned and other developed countries of the world can be found at all levels – as expression of the national setting in which these operate, of own legislation, traditions, etc. In this context, the general trend and strongly supported by EU/EC is of structural-organisational convergence. In this way, evaluation, certification, and recognition of diplomas, of skills and competences can be favoured (Annex 6-12 present the NETS of United Kingdom, Italy, German, France, Canada, USA and Japan)

With respect to pre-primary/pre-school education (ISCED 0) this tends to become part of NETS. As a rule, in NETS is included only **institutionalised pre-primary education** – crèches and kindergartens – **subordinated to the Ministry of Education** or to other ministries from one country or another. Attending pre-primary education is still **optional** but the demand increases. In average, about 50% from the children of the respective age participate to pre-primary/pre-school

²⁰ EP, CO (2001), Recommendation on European Cooperation in Quality Evolution in School Education, OJL 60/53 1.3/2001; Eurydice-Eurostat, (2006), Key, Data on Education in Europe, 2005, Brussels, Luxemburg; Key Data on Teaching Languages at School in Europe, (2005), Brussels.

²¹ CCE (2007), Commission Staff Working Paper. Schools for the 21st Century, SEC (2007) 1009, Bruxelles

²² The paragraph is based mainly on information contained in the work “Key Data on Education 2005” and the work “Study on Access to Education, Final Report for European Commission (18).

education. The enrolment rate in pre-primary education of children aged 3 to 4 years, varies a lot from one country to another: 116,3% France; 76,5% Germany; 104,9%²³ Italy; Japan 81,4%, and in USA of 52,9%, a bit above the UE 25 average.

Two remarks are necessary: a. pre-school education is conceived not only as a preparatory stage for school and enrolment to primary education, but also as an instrument of shaping/developing some skills and competences that shall be further strengthened throughout the whole life of the child. The general objectives pursued by comprising children into pre-school education are similar for all countries: physical and psychical development. The general objectives mainly pursued by enrolling children in pre-school education are similar for all countries: physical and psychic development, imagination, creativity, independence, responsibility, self-confidence, development of civic spirit, preparation for school, educating them towards continuing learning, communication, information, collaboration, dialogue, participation²⁴. Collaboration with family, its involvement in various formulas of supporting pre-school education institutions turns into a requirement for the performance of these institutions, and why not, a means for reconciling family aspirations for its child/children with the educational offers of the respective institutions.

In view of attaining the objectives public/private pre-school entities are involved in a competition of providing very varied programmes to develop, either directly or indirectly, a multitude of personality traits: attention concentration, the capacity to answer to verbally formulated questions, patience, communication skills, and creative inter-relationship, imagination, respect for colleagues and educators, behavioural rules in society. In a multicultural society, such as EU, **communication** and, consequently **foreign languages** have a **share within the programmes of pre-school institutions**.

The trend breaking through under the current circumstances is to develop as early as possible such skills in children. Obviously, the function of preparing for school did not vanish, but to the contrary it becomes **compulsory**, irrespective of the realisation manner. b. the concept of pre-primary education is enriched. Naturally, next to the institutionalised public and/or private forms other ones appear, such as: **home/family education**, education in **special centres for pre-school aged children**, as well as other forms of education: **formal and non-formal** education of children. **In Austria and Northern countries, home education is regarded as pre-school education**.

With respect to the **enrolment age** into pre-school education, this varies on groups of countries:

- 3 to 4 years in half of the European countries;
- in Belgium, Estonia, Spain, Latvia and Lithuania, Slovenia and Sweden children may be admitted even earlier;
- in Denmark and Germany (most *Länder*) before turning 6 years of age;
- in Ireland and the Netherlands there is no pre-school education, at the age of **4 years** children are admitted in so-called infant classes where they spend two years of transition to primary school and obviously for shaping certain skills;
- in Luxembourg pre-school education is **compulsory** and lasts two years;
- in Hungary, 5 years old children participate in school to activities preparing them for primary school.

As a rule, pre-primary education becomes compulsory at the age of 5 to 6 years, where it coincides in most cases with the entry to primary education (ISCED 1). In Denmark, Sweden, Estonia and Poland (until 2003/4), Bulgaria and Romania (2003/4), pre-school education was not compulsory before turning 7 years of age.

In EU the average number of years that children of the corresponding age spend in pre-school education is of **2.6 years** (the EU-25 average) with differences on countries which vary in range from 0.1 years in Ireland, 1.4 years in Greece, 1.5 years in the United Kingdom and 3.6 years in Denmark and 3.3 years in Sweden, against a theoretical/potential duration with values comprised

²³ The enrolment rates in Italy and France are over-estimated because they comprise also children less than 3 years old.

²⁴ **Eurydice-Eurostat**, (2006), Key, Data on Education in Europe, 2005, Brussels, Luxemburg; Key Data on Teaching Languages at School in Europe, (2005), Brussels, p.89

between 2 years in the United Kingdom, Netherlands, Malta and Greece and 4 years in Denmark, Estonia, Latvia, Finland, Sweden, Romania and Bulgaria (Annexes 6 and 7). The enrolment rate in pre-primary education increases as the children grow older.

Even though in the last 20 years the participation rate to pre-primary education increased in all countries, in EU large discrepancies continue to be maintained. While in countries like **France, Belgium, Italy, United Kingdom, and Northern countries** participation of children aged 4 years is almost universal, in other countries, such as **Ireland and Finland** the participation is under 50% and in others – **Austria, Germany, the Netherlands, Lithuania, Portugal and Romania** the capacities are insufficient for satisfying the demand, and the system of **waiting lists** took roots.

Hence, four conclusions of practical nature can be drawn: **the first** is the integration of pre-school education in NETS, irrespective of its realisation forms; **the second** is the creation of the required infrastructure to balance **places demand** in pre-school education with the **supply** of such places; **third** is the (partial) financial support between certain limits (around 25-30%) of disadvantaged families; finally, **the fourth** is increasing the responsibility of companies with respect to pre-school education of employees' children, obviously if there is demand for such activities. We believe that such a demand exists and that large companies can create most useful and valuable opportunities.

Compulsory education (primary and lower secondary ISCED 1-2). In most EU Member States, compulsory education expectancy is of 9 to 10 years. The age of the child in the majority of the countries is the only criterion of admission. Hence, the age of entry into primary education is the one established by law 5 to 6 years, and the one of finalising compulsory studies is of 15 to 16 years. Nevertheless, in some countries, to the criterion **age** the one of **maturity** of the child is added. As result, in countries such as Czech Republic, Latvia, and Lithuania, approximately 7 to 10% of the children aged 7 years remain enrolled for yet another year in pre-school education. Against the “benchmark” of 5 to 6 years of enrolling in primary school, there are also some exceptions: compulsory education begins at the age of 7 years in the Northern countries – Denmark, Finland, and Sweden – as well as in Estonia; in Luxembourg and Northern Ireland it begins at the age of 4 years.

It should also be remembered that in a series of countries, compulsory education has a longer duration, including, in fact, also general **upper secondary education**. Thus, in Latvia school expectancy is of **11 years**, in Luxembourg, Malta, England, Scotland, Northern Ireland and Wales of **12 years** and in Hungary of **13 years**.

In Europe there can be distinguished 4 organisation models of compulsory education (ISCED 1-2), that is: (a) a single structure (classes 1 to 9/10) in Denmark, Estonia, Portugal, Slovenia, Finland, Sweden and Bulgaria; (b) compulsory education integrates lower secondary education (gymnasium/high-school) with a joint curricula: Belgium, Greece, France, Ireland, Italy, Cyprus, Romania; (c) various types/fields of education: Austria, the Netherlands, Luxembourg, Germany; (d) various combinations between the three foregoing models: Czech Republic, Latvia, Lithuania, Hungary and Slovakia.

In a series of countries, the conclusion of compulsory education does not coincide with the end of lower secondary education – Belgium, France, Ireland, Italy, Austria, Slovakia, the United Kingdom, Hungary, and Bulgaria. In these cases, the last year of lower secondary education is included in the upper secondary. It is the moment in which children from these countries – save the ones in the United Kingdom – choose between general secondary education and technical or vocational education for varying periods of 1 to 2, respectively 4 years in Hungary.

With the exception of foreign language, information and communication, and religion classes, the **curricula of compulsory education is the same** and comprises same topics/disciplines of study for all countries, but the time allocation varies sensibly with respect to the taught disciplines and/or activities. The time spent by the pupil in a classroom, timetables, the number of days per week, and the weeks per year have large variations from one country to the other. Therefore, the institutions with attributions in facilitating comparisons between countries recommend the

average minimum number of hours for the educational process within compulsory education: Scotland (950), the Netherlands (940), and Portugal (910) (ISCED 1 and 2). Hence, **in primary education** the total average number of hours is between **478 hours in Latvia, 504 in Bulgaria, 555 hours in Romania and 980 hours in Italy; over 800 hours in average yearly** are provisioned in a number of countries such as France (958), Luxembourg (894), the United Kingdom (861), Cyprus (840), and Belgium (849)²⁵.

During *the general compulsory secondary education* the **maximum** level is recorded in **Belgium** (1289 hours/year) and the minimum in Romania (779 hours/year). The time provided for classes in many Member States exceeds considerably – about 200-300 hours/year the level recorded in Romania. For instance, in Hungary the annual average duration is of 1021 hours, in Estonia of 1050 hours annually, in Denmark 910 hours/year, in Germany 931 hours/year, France 930 hours/year, Luxembourg 900 hours, in the Czech Republic 966 hours/year, and in Portugal 930 hours/year, etc²⁶

It should be noticed that the time provided to general compulsory secondary education (ISCED 2) is obviously higher than the one for primary education. With few exceptions, the time for primary education is around 600 to 850 hours/year, while the time recommended for compulsory secondary education varies between 850 and 950 hours/year.

The majority of countries have the same **curricula** for primary education, but some differences are noticed with respect to time allocation to subjects/activities. Here school entities enjoy greater freedom, flexibility and certain autonomy. In general, the trend is noticed to give more attention to foreign languages teaching (at least two), to religious education and moral/civic education.

Box no. 7. Schools autonomy in time allocation per subjects

In **Belgium** (school entities from French and Flemish Communities) **Italy, the Netherlands, and the United Kingdom** (Wales and Northern Ireland) schools are free to decide how **50%** of their teaching time should be used.

In **Spain and Poland** – the proportion of flexible time corresponds to a **third** or more of total teaching time. In the United Kingdom - **Scotland and in Bulgaria**, stands at between 15 and 20% of the total teaching time.

Considering the various disciplines the following findings result: for the study of **languages** the primary education allocates most time: **one third** or **one fourth** of total time; in **Germany** and **France** comparatively more time is allocated for the study of **foreign languages** (39%); in many countries **mathematics** occupies the second position in terms of recommended teaching time, but there are also countries which allocate an important teaching time to sport (England, for instance) or to the development of artistic activities (Denmark, Estonia, Hungary, Finland and Sweden a.s.o.).

With few exceptions (Germany, Belgium, Greece, France, Cyprus, Slovenia, Sweden, and Scotland) the time earmarked in primary education for **nature and social sciences** represents only 15% from total. (**Source:** Elaborated based on information from Key Data on Education, pag.261-264).

Transition to lower secondary requires a **certificate** of graduating primary school in countries like: Belgium, Greece, Italy, Cyprus, Lithuania, Poland, and Bulgaria.

In case that an option is made between general education and vocational one at an early age, the recommendation is for this orientation to be made not at the time of entry into lower secondary (ISCED 1), but at the time of entering into upper secondary (ISCED 3).

In the **general compulsory secondary education** the curricula and the time allocated to various subjects and activities is shared fairly almost evenly, and at the same time, sensibly different compared with primary education. The general earmark is given by the breakdown between the **language of instruction** (in the vast majority of countries – the mother tongue) – **foreign languages – mathematics and technical sciences**. On this background is noticed the trend of diminishing the number of hours for mother tongue and mathematics and increasing the time for nature and social sciences. In the **Czech Republic, Estonia, Slovenia and Slovakia** nature sciences take, according to the timetable the first position, and social sciences have an equal position in countries such as Czech Republic, Estonia, Hungary, and Portugal.

²⁵ Key Data on Education 2005, Section E, p.259.

²⁶ Ibid.

The time earmarked for the study of foreign languages is of 10 to 20% from the annual total number of hours. On the other hand, the number of hours allocated for artistic activities, compared with primary education, is diminished and not more than 10% save for Italy (*liceo artistico*) and Austria (*Polytechnische Schule*).

A second **earmark** resides in the fact that **general secondary compulsory education** has also provided for optional subjects, and the pupils are free to choose up to the point allowed by the core curricula which has a national character. The system is wide spread in **Bulgaria** and **Romania**; in **Germany, the Netherlands and Finland** the share of optional subjects exceeds very often 15%.

A third **earmark** regards the areas of **schools' autonomy**. There are six areas of the learning process where the school management/administration has the freedom to make decisions²⁷. At the same time, considerable variations are found with respect to autonomy even in these six broad areas. We mention that **school has never full autonomy in all six aspects of the learning process**, not even in the most decentralised systems, like the ones in Hungary, the United Kingdom (Wales and Northern Ireland).

As a rule, schools have autonomy – with differences on countries – with respect to certain areas. In **Greece, Cyprus and Luxembourg**, for instance, the autonomy is severely restricted. In addition, the variability of school's opportunities to decide is encountered also within an area/aspect.

Box no.8

School autonomy

In the area of **organising** the education process, the school has full decision making considering the 44 aspects; only 4 countries have a limited freedom. The timetable (time allocated) to one or another subject in the **weekly timetable** is a matter of school decision-making.

Within the **teaching content and processes, three aspects** characterise school autonomy: (a) teaching methods (6 countries have limited autonomy); (b) the choice of textbooks is also a matter for which schools have at least some autonomy, save for Greece, Cyprus and Luxembourg for primary education; (c) the trend is of limited autonomy with respect to the content of teaching programmes, while **all** countries, except Germany, Latvia and Luxembourg have at least some decision-making power with regard to **pupils' continuous assessment**; (d) schools also have autonomy (in many cases full autonomy) when it comes to criteria for grouping pupils together but, by contrast, the criteria for selecting pupils and enrolment tends to operate based on "limited autonomy". Only schools from the **Czech Republic, Italy, and Hungary** have full autonomy to decide on selection criteria.

With regard to **funding** a distinction is apparent between the allocation of public funds for the overall school budget, that is all current resources and, where applicable capital resources. Hence, schools have less autonomy with respect to their operational resources (running costs, materials). Primary schools and secondary schools in the Flemish Community of **Belgium** and the **Netherlands** have full autonomy with respect to their overall budget, and schools in **Estonia, Hungary, the Netherlands** (at primary level), and the **United Kingdom** have limited autonomy. In **Denmark, Finland, Sweden, and Norway** decisions relating to the allocation of both types of budget can be delegated by the local authority.

While the degree of autonomy for the acquisition of movables (classroom equipment, computers, and materials) shows a mixed picture, the acquisition of computer equipment – which may be considered to form part of the school's movable resources – does not always correspond. In countries such as **France, the Flemish Community from Belgium, Italy, Cyprus, Latvia, Malta, and Slovakia, the autonomy is limited**, even diminished, while in the **Czech Republic and Greece** the degree of autonomy is somewhat higher with respect to **purchasing computers**. Schools have no autonomy in most countries for the acquisition of **immovables** (buildings). Finally, schools have **full autonomy to seek private sources of funding**. The exceptions are Greece, France, Luxembourg, and Finland which have limited autonomy. As a rule, schools may not take out private loans. However, there are schools that have autonomy to do so: the Flemish Community from Belgium, Italy, the Netherlands (for secondary education), Bulgaria and Romania, with the condition that these funds will not be used for the staff (labour force).
(Source: Elaborated based on information from Key Data on Education in Europe 2005, p.103-107.)

A **fourth earmark** – with a somewhat negative nuance, if we consider the Lisbon Agenda, the general and specific objectives – refers to Information and Communications' Technologies (ICT). Even if in about half of the Member States it is a subject regarded as important in the instructive

²⁷ Each of the six areas in which the decision making autonomy is present in the case of educational entities is detailed on narrower aspects so that finally there result 44 areas/fields of school autonomy, wider or narrower depending on the conditions and specific regulation in each of the EU Member States.

process, it still has a low number of hours from the total number of hours, or it is included in other subjects/disciplines. Consequently, especially in primary education, during the instruction process “book” is more important than “computer” even in developed countries of the EU-15 (*Annex 15*). Hence, as a rule, “the book or sets of books” recommended by schools in most countries exceeds 90%, and is around 100% in others (Lithuania, Latvia, Hungary, Slovakia); only Sweden with 58%, the Netherlands with 76,3%, France with 80,4%, are positioned below these shares; in the rest of the countries the share is, as a rule, over 90%, in Romania, this is 99,7%. As result, the use of “Computer Software” for reading has low and very low shares: less than 1% in the Czech Republic, in Cyprus (0,9%), Latvia (0,7%), Lithuania and Bulgaria (0,6%), Romania (0,7%); Slovakia and Greece (0,0%). Sensibly higher shares are found in Sweden – 16,4%, the Netherlands – 12,9%, Scotland – 10,6%, England – 10,4%, France – 5,9%, Germany – 5,1% and Italy – 4,1%.

The **fifth earmark** refers to the **evaluation and certification of finalising compulsory studies**. The common feature for all countries for all countries is **pupils’ continuing assessment** based on broader criteria and not based on a certain mark which does not offer but an image for a given moment. In this manner, children’s knowledge, their understanding capacity, of answering to challenges and, finally yet importantly, the ability to raise questions and to try to solve them are monitored step by step (Figure 3).

Figure 3 **Certified assessment at the end of general lower secondary education or full-time compulsory education, 2002/2003**

This certificate is awarded on the basis of:	Countries
Final examination	DE (in certain Länder for Hauptschule and Realschule), IE, RO
The grades and work over the year	DK (optional final examination), DE (most Länder), ES, LT, LU, HO, AT, FI, SE, BG
A final examination and the grades and work over the year	BE, EE, EL, FR, IT, CY, LV, MT, OL, PL, PT, UK
When there is an examination, it is:	
Written	BE de, EL, FR, IE (+optional oral), CY, NL (central examination), PL, PT and RO
Written and oral	BE fr., BE nl, DK, DE (in certain Länder for Hauptschule and Realschule), EE, IT, LV, MT (oral for languages and the practical component of some subjects, e.g. sciences, arts, etc.), NL (school examination), UK (oral and practical examination for some programmes only).
When there is an oral examination, it is set by	
- the school (internally)	BE fr., BE nl, DK, DE (in certain Länder), NL, UK-SCT
- the school with external verification	IT, UK - SCT
- an external body/authority	EE, IE, UK-ENG/WLS/NIR, LV, MT
The final grade is awarded by:	
- the pupil’s teachers	BE, DE (in certain Länder), EL, ES, CY, LT, HU, AT, PT, FI, SE, BG
- the teachers, but weighted by an external grade	DK, DE (in certain Länder), Fr. (work of 2 years and examination), IT, SI, IS, NO
- the teachers, on the basis of criteria defined by an external body	EE, LV, NL
- external examination	IE, MT, PL, UK, RO

Notes:

Belgia: In the French and Flemish Communities, a certificate is awarded on completion of the second stage of secondary education, which is reached one year after the end of full-time compulsory education. In the Flemish Community, a first certificate is also awarded at the end of the first stage, i.e. one year before the end of full-time compulsory education. At present, in the German speaking community, a certificate is awarded at the end of the third year of secondary education (corresponding to the end of full-time compulsory education) until the key competences which have to be attained by pupils at the end of the second stage of secondary education are fixed by law.

Denmark: The certificate always contains marks for work over the year. Pupils who sit for the optional final examinations receive a certificate which also indicates the marks awarded to them.

Germany: In a number of Länder, pupils must take a final examination (written and oral) to receive the certificate at the end of the Hauptschule or Realschule. Depending on the Land, the Schulaufsichtsbehörde (school supervisory authority) either sets the topics for the written examination centrally or merely gives its approval if they are set by individual schools.

Italy: Pupils also receive a certificate (awarded by the school) indicating the skills they have acquired.

Lithuania: in 2002/2003 the external examination on completion of compulsory education was abolished.

Malta: Internal assessment takes place in 11 subjects, taking into account the results of students' practical reports from the final three years of secondary education for the final grade.

Poland: A final external examination on completion of the gymnasium was introduced in May 2002. The results obtained by pupils are indicated on the certificate and have a very strong bearing on their admission to upper secondary education.

Portugal: in 2004/2005, the internal examination will be replaced by national examinations in Portuguese language and mathematics.

Slovenia: Since 2001/2002 school year, all pupils in the first contingent to complete their compulsory education under the new system have to take an external examination at the end of the ninth year of compulsory education.

United Kingdom (Eng/WLS/NIR): External qualifications are awarded on a single-subject basis. They are certified by independent awarding bodies but are government-regulated. Assessment schemes for these qualifications vary but always include externally set and marked components either at the end of the course or, in modular schemes, at the end of each module as well as at the end of the course. Assessment schemes may also include one or more pieces of externally moderated coursework completed over the two years of the course.

In event of 'final grade combining internal assessment and external (or externally mediated) final exam', the internal assessment can mean a final internal test or an evaluation of the marks obtained or the coursework done during the year.

Source: Key Data on Education in Europe 2005, Section E., pag.302-303.

On this background, there are differences between countries. Countries may be discussed depending on the used methods: periodical tests, final examinations, marks/assessments.

Box no. 9 Some examples about pupils' assessment in compulsory education

In England: 4 series of examinations are sustained – „Key Stage National Curriculum Tests” the **outcomes** of which are used for continuing studies (at **7 years of age** – the test is sustained for **reading, writing and mathematics**; at 10/11 years of age for **reading, writing, mathematics and sciences**; at 13/14 years of age – **English, mathematics and sciences**; the **general test** on finalising compulsory studies based on which the **Secondary Education Certification** is obtained.

In Sweden: continuing assessment without qualifications for the classes I-VIII. After the 5th grade and, respectively the 9th grade, national tests are sustained at three subjects: **Swedish language, English, mathematics**. The studies are finalised by granting a certificate on the basis of the final score obtained during work in final years, taking into account the best grades for 16 subjects.

The Netherlands has a special type of final examination called “**Centraal examen**.” During the studies, continuing assessment is made by written and oral examination (2/year and one final). About 85% of the schools give final examinations (schoolexamen) and their outcomes are included in the school report of each student. Based on this report, pupils may continue their studies.

Austria: Continuing assessment, the pupils receive yearly a report regarding their development. Based on the graduation certificate they can continue their studies.

France: Continuing assessment and ongoing guidance; On finalising the studies, based on the grades obtained during the **last 2 years** and of a **final examination** a Brevet. The brevet does not provide a compulsory qualification. What is interesting/particular is that continuing the studies does not depend on the outcomes of final examination (!).

Greece: continuing assessment based on qualifications A-D (excellent – reasonable); in the 7th and 9th grades the pupils receive grades from 10 to 5. Based on the graduation certificate of the 6th grade the pupils are admitted to secondary education. The promotion system of pupils seems complicated: imposing the **grade 10** to all subjects Those who did not obtain grade 10 to one of the examination subjects have the possibility of sustaining admission to high school in the month of September. Admission to **high school** is made without examination.

Italy – on finalising primary education, pupils receive a so-called portfolio of their skills (identified up to the respective moment); at the same time, they sustain a final test based on which they are admitted to secondary education. The grading system is from **10 to 6**. On completion of the three secondary years a **national final examination** is sustained which is used as basis/criterion for entry to high school. On completing high school a **national examination for obtaining the graduation certificate** is sustained.

Spain – continuing assessment on areas of subjects within primary education, and for secondary education for each subject. Studies are completed based on a **graduation certificate** which represents the passport for high school or vocational education.

Portugal: continuing assessment made by the teacher with a **formative assessment** character which is made for each year of compulsory education; at the end of each education year and of each cycle a **sum up examination**; for each subject a classroom test is sustained, and **final examination for Portuguese language and mathematics**. (Source: Key Data on Education 2005; see also Melania Mandas Vergu, Școala Supliment Săptămânal al cotidianului Gândul, 3.10.2007.)

Upper secondary education (ISCED 3)

As for the foregoing cases, there are differences with respect to the **age of entry, the duration, and typology** of this education form.

The enrolment rate in upper secondary education varies largely throughout countries, and within each there is a differentiation between the two forms: **upper general secondary with opening towards an academic pathway** and **vocational upper secondary** with a wider opening towards the labour market, but not only. Among the **earmarks** of this type of education are noticed, before everything else, that the enrolment rate into vocational education tends at EU 25 level, but

also in an increasing number of countries to be superior to the one of general secondary education. (*Annex 16*)

If, at EU 25 level, the enrolment rate into general secondary education was of 37.3%, in vocational education it was of **62.7%**. In both situations, there are variations on countries. Thus, with respect to general secondary education, in 11 countries the enrolment rate was superior to the EU average, and also to the rate of vocational education (Estonia, Greece, Spain, Ireland – 100%, Italy, Cyprus, Latvia, Lithuania, Hungary, Malta, and Portugal). In Sweden and Denmark the rates between the two forms of education are relatively equal. The enrolment rates to vocational education are sensibly higher at EU 25 level and in a number of 10 member countries, with values between 63% in Germany and 80.2% in the Czech Republic.

Secondly, it should be mentioned – also as an earmark – that this structuring of pupils on the two types of upper secondary education, and the above-mentioned trend is given by **men**. Their enrolment rate into **vocational education** is relatively higher than the one of women choosing to a larger extent general upper secondary.

Finally, **assessment and certification** on studies' completion in secondary upper education is made in various ways/manners, depending on different criteria: it might be **internal** based on grades or work during the year, **or external, based on final examinations**, or various **combinations** between **internal and external examination** (Figure 4).

Figure 4 Certified assessments at the end of general upper secondary education (ISCED 3)

Certification	Countries
A. The certificate is awarded on the basis of:	
Final examination	Czech Republic (maturity diploma) Estonia, France, Ireland, Hungary, Malta, Austria, Portugal, Slovenia, Slovakia (maturity diploma), Finland (Matriculation Examination), Romania (Baccalaureate Diploma).
Grades and work over the year	Czech Republic, Spain, Hungary, Poland, Slovakia, Finland, Sweden
Final examination, grades and work over the year	Belgium, Denmark, Estonia, Greece, Cyprus, Latvia, Luxembourg, the Netherlands, Poland, United Kingdom, Bulgaria
B. The examination is	
- written	Greece, Cyprus, Lithuania, the Netherlands, Portugal, Finland, Bulgaria
- written and oral	Belgium, Czech Republic, Denmark, Germany, Estonia (oral only for the second foreign language), France, Ireland, Latvia, Luxembourg, Hungary, Malta (oral for languages and practical components of some subjects – sciences, art), the Netherlands (schoolexamen), Austria, Poland, Slovenia, Slovakia, the United Kingdom (oral/practical examinations for some programmes only), Romania
C. When there is a written examination, it is set by	
- the school (internally)	Belgium, the Czech Republic, Estonia, Greece, Italy (one examination), the Netherlands (schoolexamen), Portugal, Slovakia
- the school with external verification	Germany, Italy, Latvia, Hungary, Austria, United Kingdom (SCT), Lithuania
- an external body/authority	Denmark, Germany (in some Länder), Estonia, Greece, France, Ireland, Italy (two examinations), Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, the Netherlands (centraal examen), Poland, Portugal, Slovenia, Finland, United Kingdom, Bulgaria, Romania
D. When there is oral examination, it is set by	
- the school (internally)	Belgium, the Czech Republic, Denmark, Estonia, the Netherlands, Poland, Slovakia, United Kingdom (Scotland)
- in school with external verification	Germany, Italy, Latvia, Hungary, Austria, United Kingdom (Scotland), Estonia, France, Ireland, Latvia (for centralised examinations), Luxembourg, Malta, Slovenia, United Kingdom, Romania
E. The final grade (diploma) is awarded by:	
- only the students' teacher	Belgium, the Czech Republic, Estonia, Spain, Hungary, Poland, Slovakia,

	Sweden, Finland
- the teachers, but weighted by an external grade	Denmark (oral), Germany, Greece and Italy (written), Cyprus (marks of the year + final examination), Austria, Portugal (average), Bulgaria (marks obtained in 3 final years + in the examination).
- the teachers on the basis of the criteria defined by an external body	Italy (oral), Latvia, Lithuania, Hungary, Poland
- external examiner	Denmark (written), Estonia, France (jury), Ireland, Latvia (in the case of centrally devised examination), Lithuania (centralised examination), Luxembourg, Malta, Slovenia, Finland, United Kingdom, Romania

Notes:

- In **Czech Republic**: pupils receive two certificates, one with the marks for the last school year and a second one after they have also passed the final internal examination. Only the second certificate gives access to tertiary education.
 - **Denmark**: the certificate obtained at the end of the Gymnasium. The certificate also indicates marks for the work over the year. No certificate is issued if the leaving examination has not been passed.
 - **Germany**: in seven Länder, the Schulaufsichtsbehörde (school supervisory authority) sets the topics for the written examination.
 - **Estonia**: pupils receive two certificates, one based on work during the final year or years and the results of the final internal examinations, and the other on the results obtained in external national examinations. Both certificates are required for the continuation of studies.
 - **Italy**: following the reform from 2001/2002 the examining body consists of all teachers from the school and just one external examiner;
 - **Hungary**: the certificate issued at the end of gymnasium gives access to tertiary education;
 - **Malta**: in certain subjects (art, computing, geography, information technology and systems of knowledge), the final grade includes marks given for coursework.
 - **Poland**: the certificate, which gives access to tertiary education, is awarded based on a final examination and the grades obtained in the final year. The written examinations are set by the regional education authorities, but teachers are responsible for assessment and awarding marks. Those pupils who do not wish to take mature examination are awarded the certificate which is based solely on the grades and work over the year. An external mature examination is being introduced in 2005;
 - **Slovakia**: After receiving the certificate based on the grades obtained for their work over the last school year, students have to pass an internal examination to receive the school-leaving certificate. An external mature examination is being introduced in 2005.
 - **Finland**: All students receive a certificate for which the final grades are awarded based on work in upper secondary school. Students who pass the external matriculation examination receive the matriculation certificate. Either of the two certificates gives eligibility to the polytechnics, but then matriculation certificate is required for admission to university.
 - **United Kingdom (ENG/WLS/NIR)**: External qualifications are awarded on a single subject basis. They are certified by independent awarding bodies but are government-regulated. Assessment schemes for these qualifications vary but always include externally set and marked components either at the end of the course or, in modular schemes, at the end of each module as well as at the end of the course. Assessment schemes may also include one or more **pieces** of externally moderated **coursework** completed over the two years of the course.
 - **Bulgaria**: A new upper secondary school leaving examination was introduced in the 2002/2003 school year.
- Source:** Key Data on Education 2005, Section C, pag.305-306.

Tertiary education (ISCED 5-6)²⁸

As of 2000, tertiary education undergoes a reform process, of transition from the traditional structure to a new structure/organisation adjusted to the requirements of the third millennium.

We take into account two fundamental “processes” for Europe: the Lisbon Agenda and the Bologna Process. The fundamental content of the latter process pursues the creation of a tertiary education system shared as structure for the Member States. It is a structure organised on three cycles: bachelor/license degree; master studies; doctorate.

In our analysis we have selected only some of the issues regarding: the degree/gross rate of enrolment in tertiary education in the EU; access to higher education; resources and, finally some management related aspects.

With respect to the **gross participation rate**, in 2002, within EU 15 it had values comprised between 40% and almost 90% in Sweden and Finland. In the new Member States, the gross participation rate had lower values, but still recording strong increases. If in the year 1995, the gross enrolment rate in tertiary education (TE) had values between 20 and 55%, in 2002 the limits were between 30 and 70%. An important impetus in increasing the participation rate to

²⁸ In some countries there is a superior post-secondary education network, but it is post secondary non-tertiary education (ISCED 4) with periods of 6 months to two years. Successfully graduating these courses organised for various subjects, especially within vocational training, gives to the graduates two types of opportunities: a qualification allowing immediate access on labour market and, respectively, continuation of studies within the tertiary education.

education and training had the Lisbon Strategy which outlined new coordinates to educational policies and, even, to the enrolment pattern.

Similar trends of increasing the gross participation rate as of 2000 are registered also in other countries, such as **USA, and Japan**. USA, for instance, has the highest participation rate to TE, above the EU average, but slightly under the European performers **Sweden and Finland**.

Box no.10

Some general data

In the year 2001/2001 at EU 25 level over 15,0% from the total number of pupils and students were enrolled in tertiary education (ISCED 5-6): 11 countries had shares slightly higher, between 16,8% in Lithuania and 25% in Greece, 21,6% in Slovakia, 21,5% in Finland, 21,1%; in Latvia, Bulgaria, Hungary, Sweden and Denmark they varied around the EU 25 average – 15,1% in Denmark, 15,5% in Hungary and Bulgaria, respectively 15,7% in Sweden; under the average were 6 countries – if we leave aside Malta and Luxembourg -, with values around de 12-13%, among which Romania, Germany and the Czech Republic – 12,8%, Austria – 13,6%, the Netherlands – 14,4%.

The number of students in tertiary education is continuing to grow. During the period 1998-2002, at EU 25 level the relative growth was of 16%. The new Member States recorded performances in this respect (from May 2004), Luxembourg, Sweden and Romania (the Czech Republic – 32%, Estonia – 41%, Cyprus – 33%, Latvia – 57%, Lithuania – 54%, Luxembourg 64%, Hungary – 39%, Poland – 60%, Slovenia – 46%, Slovakia – 35%, Romania – 61%); the other countries have growth rates closer to the European average, with the exception of Bulgaria where the number of students in higher education is lower by 2.2 pp as compared with 1998. (**Source:** Key Data on Education in Europe 2005, Section 5, p.146).

Young persons, aged 18-19 years are largely comprised in **post secondary non-tertiary education** (ISCED 4); for the age group 20-24/26 years, the enrolment rate in tertiary education has the highest values. This is a “measure” of the education propensity for young persons in the 21st century which answers to the same extent to the requirements on labour market, to social needs but also to the aspirations of the young generations. As such, it could be interpreted as an **earmark** of education change, of its adjustment to the new needs. Maintaining, or increasing in some cases some gross/net rates of participation to education and training requires **long term strategies** which take into account the **demographic** factor, respective the cohorts of young persons which represent the recruitment pool of future students, and **the situation and more particularly the dynamics on labour market**, the demand for new professions and skills, the deficit/surplus of skills or professions, **the impact of free movement of labour under conditions of the equality of chances, the necessary resources and the available ones**, including the possibilities of supplementing them by attracting other resources. Also, last but not least, global **competitiveness** of markets, obviously, perhaps before all on the **labour market** and on the **tertiary education market**, and from the perspective nowadays, of the European Area of Tertiary Education.

The gross participation rate of women in the academic year 2001/2002 is higher, as a rule, than the participation rate of men in almost half of the EU Member States, especially in Belgium, Denmark, Estonia, Spain, France, Ireland, Latvia, Lithuania, Malta, Portugal, Slovenia, and Finland. In fact, this is the continuation and consolidation of a trend emerged in the seventies. In few countries the participation rate of men stays superior to the one of women after the age of 24 years (Belgium, Germany, Greece, Cyprus, and Austria).

In addition, the differences between the participation rates to education of women and men drop together with age, up to the point when these, regarded virtually, vanish.

During the period 1998 – 2002, **the number of women enrolled in education and training to 100 men** increased by **7% in EU 25**. Variations on countries are recorded. In **Romania**, Estonia and Malta the growth was more than double against the EU 25 average (15% >7%). With the exception of Germany, in the year 2002, in average, to **100 men** enrolled in education and training corresponded **119 enrolled women** in education and training. Performances in the field were registered in the Baltic countries, where there were 160 women per 100 men in Estonia and Latvia, 153 in Lithuania. In countries such as the Czech Republic, Germany, Spain, the Netherlands, Austria, Slovakia, Finland, Bulgaria, and Romania, the ratio is below the EU 25 average.

This trend is triggered by various factors: the increasing professional activity, the demand of skills on labour market, as well as educational factors such as the size/share on increase of women graduating upper secondary education and, respectively, the higher propensity (demand) for tertiary education, the higher rates of finalising upper secondary non-tertiary education for women than for men.

The more rapid increase of the enrolment rate for women in education and training than the one of men, finally, leads to an increased number of women graduates to 100 men.

The analysis of the structure of students on areas of study reveal important characteristics under the aspect of the equality of chances and guidance – to a significantly different extent – of young women, respectively men.

First, it is remarkable that over one quarter from the total number of students (women and men) from EU 25 choose **a career in sciences and technology**; the differences on countries vary between extremely wide margins, in relation to the EU 25 average – **between 12% in Malta and 37% in Finland** from students attend courses of **mathematics, engineering, computing, processing industry, constructions**. In relationship to the EU average of 26%, a large number of countries have higher shares – Germany – 29.7%, Greece – 30.5%, Spain – 34.4%, Portugal – 28.9%, Sweden – 28.8%, United Kingdom– 26.4%. **Romania**, with a share of 26% is placed at the average EU 25 level, having a superior share to countries like Denmark, Estonia, Cyprus, Lithuania, the Netherlands, Luxembourg, Poland, and Slovenia.

Secondly, on this background, women choices are with priority oriented on other fields, without excluding their presences from the above-mentioned areas of study.

Thus, in the field of **education**, at EU 25 level, the women represented 74% in humane sciences – 66.3% in social sciences – 56% in sciences, mathematics, computing – 38%, in engineering – 82.4%, in health – 71.4%.

Thirdly, in the field of agriculture and veterinary medicine, as in services, the shares are approximately the same; in the first case – women about 48%, and men 52%, and in the second case both women and men had a share of around 50%.

With respect to **access** to higher education, **the minimum requirement** in all countries is the graduation **certificate/diploma** for upper secondary education, or the equivalent. In the majority of countries there are, however, also **additional admission procedures**: admission examination, establishing some personal records of the candidate in various areas, interview. Such procedures are “imposed” in the cases where the number of candidates exceeds the capacity of the education institution, because of the national system of “*numerus clausus*”, or for having the certainty that those admitted have the knowledge, skills, and competences to meet the demands of the study curricula in the respective field (artistic, technical, and medical).

“Selection procedures and limits on the number of places available contribute significantly to regulating the size of the student population. The corollary of the political will to increase the population in tertiary education is the need to address the financial repercussions of any such increase”²⁹.

Box no.11

Selection procedures for admission

A numerous clauses is set at national level. In such cases, the government limits the number of places available and exercises direct control over the selection procedure. This *numerous clauses* may be determined for all courses.

The institutions themselves decide on selection procedures to limit the number of places available. This process is based either on their capacity, or on a set of criteria determined centrally. Limitation can apply to some or all courses. Moreover, regardless of the number of places available, institutions can decide to select students based on their ability.

Access is totally unrestricted. Only the certificate awarded on satisfactory completion of upper secondary education, or its equivalent, is required for admission to most courses, and institutions accept all applicants. (Source: Key Data on Education 2005, Section 13, p.85).

²⁹ **Eurydice-Eurostat**, (2006), Key Data on Education in Europe, 2005, Brussels, Luxembourg; Key Data on Teaching Languages at School in Europe, (2005), Brussels, p 84.

The procedures are varied, between the countries there is similitude but also differences appear (Figure 5).

Figure 5 Procedures of limiting the number of places in tertiary education (ET) 2002/2003

Countries	Limits on the number of places at national/regional level	Limits imposed by institutions in the light of their capacity	Selection based on ability	Unrestricted admission
1	2	3	4	5
BE fr.	Competitive entrance examination has been established for all branches of veterinary sciences for the (2003/2004; 2004/2005; 2005/2006)		Training in civil engineering and in a few artistic fields (selection: examination set by the institution)	Most courses
BE de		Teacher training college (Pädagogische Hochschule). Foreign students may not enrol once the total number of German speaking students enrolled exceeds 20. And the majority of the students enrolled (i.e. at least half plus one) must be of Belgian nationality.		Most courses
BE nl.			Some courses: civil engineering and since 1997 dentistry, medicine, nautical science and some art courses. Selection: examination set by the institution or the government.	Most courses
CZ	The government fixes the number of state-subsidised places and the institution has the final decision on the number of places available.	All courses (selection: by the institution based on the upper secondary examination results and an entrance examination). For some courses, the institution requests only the upper secondary leaving examination.		
DK	Medicine and education	Most courses. Selection: by the institution; specific requirements in relation to prior knowledge and, if the number of applicants exceeds the number of places, selection on the basis of school results and previous relevant work experience.	Journalism, photo-journalism, film studies, music	
DE	Generally, no numerus clauses, but a supra-regional selection procedure for some disciplines (such as medicine) based on interstate agreement between the Länder. Selection: average mark in the Abitur, the period spent waiting between Abitur and the application, and social criteria. Around	Almost all Fachhochschulen. Selection: by the institution, generally on the basis of the average mark in the Abitur and the period spent waiting between Abitur and the application. In courses to which admission is limited at federal level, around 20% of the places may be allocated by the universities themselves. Selection: on the basis of ability, motivation or specific conditions.	Art and sports courses (selection: aptitude test).	Most university courses.

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	20% of places may be allocated by the universities themselves – selection in accordance with ability, motivation or special requirements.			
EE	Number of places subsidised by the State, decided at central level.	All courses (selection: on the basis of the results in the upper secondary State examination and/or admission procedure set by institution).		
EL	All courses (selection: national examination)		Certain courses in artistic, linguistic, musical, sports and architectural fields, and the military colleges.	
ES		All courses Selection on the basis of results in the national examination.	Some courses in art, translation or interpreting and physical education. Selection: aptitude test in addition to the national examination.	
FR	Medicine, odontology, pharmacy, midwifery, paramedical subjects. Selection: competitive examinations organised by each institution.	Applicable to some general courses in certain institutions. Selection: priority to students resident in the académie, with a numerus clausus for the rest.	Certain courses (IUT, CPGE, etc.). Selection: by the institution, based on school record and interviews.	General university courses.
IE	Medicine, dentistry, veterinary medicine, and teacher training courses including those leading to a Bachelor of Education (places limited on the basis of course capacity with an additional numerus clauses for medicine and education)	All courses. Selection: by the institution, on the basis of results in upper secondary school.		
IT	Courses in medicine and surgery, dentistry, veterinary medicine, architecture. Diploma courses for which there is a prescribed element of practical training (courses leading to health professions) and teacher education courses for primary education. All specialisation courses. Number of places and selection criteria determined by the government. Selection organised by the institution.	Certain university courses and higher education programmes in arts and music.	Higher education programmes in arts and music.	Most university courses.
CY		All university courses. Selection: entrance examination set by the		

		Ministry of Education and Culture.		
LV	Number of places subsidised by the State, decided at central level.	All courses. Selection: by the institution, on the basis of performance in the entrance examination, or the results of upper secondary examinations.	Certain courses in art and music. Selection: on the basis of an entrance examination and aptitude test.	
LT	The institution fixes the number of state-subsidised places, subject to approval by the Ministry of Education and Science.	All courses. Selection: on the basis of the results of upper secondary examinations.	Certain courses – in languages, artistic and musical fields, law and computer science. Selection: by institution on the basis of results in the upper secondary school leaving examination, and an aptitude test.	
LU	Teacher training (pre-primary and primary teachers)			Other courses.
HU	The government fixes the number of state-subsidised places.	All courses. Selection: by the institution		
MT		All courses. Selection by the institution: based on general entry requirements and specific grades in the MATSEC examination, subject to the availability of resources.		
NL	Certain courses as decided by the government each year. University courses – course-related quota.	Certain courses: university courses (institutional quota) and higher professional education courses (non-university – institutional quota).	For certain courses one of the following 4 subjects combinations is required: culture and society; economics and society; science and health; science and technology. Selection: national decision.	All courses for which all 4 subject combinations are allowed.
AT		All non-university courses. For example, Fachhochschul-Studiegänge, and some other institutions in the post-secondary/tertiary education sector.	All Universitäten der Künste courses. Selection: aptitude test and university courses in sport.	Most university courses.
PL	Courses in medicine (number of places limited by the Ministry of Health).	All courses. Selection: by the institution on the basis of an entrance examination (written and/or oral), an interview, an aptitude test, results in the final upper secondary school leaving certificate.		
PT	The number of places available is determined by institutions and approved by the government.	All courses have a numerus clausus fixed by each institution according to its capacity. Furthermore, institutions have to specify a minimum entrance requirement for their various courses. Selection: national competitive examination for candidates with satisfactory school and exam results: candidates' marks to be above a minimum set by each institution.	Some courses (music and PE teachers). Selection: exam set by the institution.	
SI	Number of places determined by the institutions and approved by the government.	All courses. Selection: by the institution, on the basis of final upper secondary school examination results, upper	Some courses. Selection: by institution, based on an aptitude test.	

		secondary school results, or results in specific subjects		
SK		All courses. Selection: by the institution based on an entrance examination.		
SE	No maximum limit on the number of registrations, but maximum limit for financial support. Graduate quotas fixed by the government.	All courses. Selection: by the institution; specific requirements in relation to prior knowledge and, if the number of applicants exceeds the number of places, selection on the basis of school results, the results of a national university aptitude test, other tests, work experience.		
UK ENG WLS/NIR	Each institution agrees target numbers with the funding authorities. No absolute upper limits on student numbers, except in medicine, dentistry and initial teacher training in which quotas apply.	All courses. Selection: by the institution.		
UK SCT	Target number set for each institution.	All courses. Selection: by the institution.		
BG	Number of places fixed at central level. Selection: by the institution, depending on the number of places allowed centrally.			
RO	Number of places subsidised by the State decided at central level.	All courses. Selection: by the institution based on an entrance examination or results obtained in upper secondary schools.	For certain courses in art, music, sports, architecture, the entrance examination also contains eliminative ability tests.	

Source: Key Data on Education 2005, pg.336-339.

In conclusion, the information contained in the Figure reveal important earmarks with respect to the admission procedures in tertiary education. Before all, the graduation certificate of the upper secondary is **the minimum necessary condition** in all cases, but not always also sufficient; **secondly**, it is true that the admission procedures are various, but the great majority of countries has a combination thereof; **thirdly**, at national level or, as the case may be, regional, or institutional, two criteria are at least considered simultaneously, the enrolment capacity and the financial support on one hand, and the situation on **labour market** on the other hand. In fact, it is an ongoing process of **educational marketing of labour market** – obviously with differences on countries – in order to identify: a) future needs of skills and/or competences; b) skills deficit in certain professions or areas; c) surplus of skills in others. This tends, especially in the case of the Bologna process – to become a factor and essential practice in attaining a successful convergence between the two markets – the labour market and the education one.

1.4. Resources for education (financial and human)

Expenditures on education. Sizes. Structure. Annual unit cost per pupil/student

Total public expenditures on education (ISCED 0 – ISCED 6) at EU 25 level vary for a good period now around **5% of the GDP and/or gross national income**. In 2001, for instance, the EU 25 average was of 5.1% for GDP and for the gross national income. Moreover, also at European level there is a **stability** of this share for more than 10 years now.

On countries, the variation is high, even if in most of the Member States, the share of public expenditures for education is between 5 to 6%. In this framework, three groups of countries can

be identified. **In the first group** are included **Denmark, Sweden and Finland** with slightly superior shares to the EU average, respectively 8.5% (DK), 7.5 (SE), 6,2 (FI); the **second group** includes countries with shares of the public expenditures in GDP/GNI between 5 to 6% such as: **Belgium** (6.1%), **Estonia** (5.5% and, respectively 5.8%), **France** (5.7%), **Lithuania** (5.9% and 6%), **Latvia** (5.5%), **the Netherlands** (5.0%), **Austria** (5.8% and 5.9%), **Poland** (5.6%), **Portugal** (5.6%). The **third group** is the one of countries with shares inferior to the EU 25 average, respectively shares of the GDP lower than 5%, with variations between **3.3%-Romania, 3.5/3.6%-Bulgaria** and **4.7%-the United Kingdom**. In this group are found also the Czech Republic with 4.2%/4.3%, **Germany** with 4.6%, **Greece** with 3.9%, **Ireland** with 4.3% a.s.o³⁰.

Secondly, on countries large variations can be noticed from one year to the other. Between 1995 and 2001, the variations from one year to the other, in several countries were higher than 10%. In Ireland and Slovakia, the relative drop of public expenditures on education in GDP was, for instance, of 1.8%. In turn, in Greece and Cyprus have increased by 30%, while in Denmark, Lithuania, and Portugal recorded averages corresponding to the variation of 10%

Public expenditures on education in total public expenditures were in 2001 of 10.8% at EU 25 level. In the vast majority of countries **investments in education** represented over 10% from total ones. From among these, we mention: Denmark – 15.4%, Estonia – 14.8%, Ireland – 12.9%, Latvia– 15.3%, Lithuania – 16.9%, Portugal – 12.8%, Finland – 12.7%, Sweden – 12.8%. Only few countries – the Czech Republic, Greece, Slovakia, and Romania recorded lesser values of around 8%.

With respect to expenditures on level of education we note that **one third from total are earmarked for secondary education** – it receives between **34% and 63%** of the total funding for education. For instance, the Czech Republic, Germany, France, Italy, Latvia and Slovakia have a level of expenditures for secondary education of 50% and over of total public funds for education. Obviously, the differences on countries depend on national duration of secondary education and the gross enrolment rate.

The unit cost per pupil/student is a significant indicator measuring the financial efforts for supporting the education of each pupil/student attending school in full-time equivalent³¹(Table 1). Of course, the value of this indicator varies a lot from one country to another, and also in each country on education types. For the beginning, three observations seem relevant:

- a. the cost increases with the progression from an inferior level to a superior level of education;
- b. the unit cost is slightly lower in the new member countries of the EU than in EU 15, with the exception of Cyprus and Malta;
- c. within these two groups of countries the variations on countries are considerable: from one to three times: **3359 PPS Euro in Greece** and **9964 Euro PPS in Luxembourg**; in the second group, these differences are smaller– **1917 euro PPS in Slovakia**, respectively **3052 Euro PPS in Hungary**.

Table 1 The average annual cost per pupil/student from public institutions, (ISCED 0 – ISCED 6) (thousands Euro PPS), total and on levels of education, 2001

Ord. no.	Country	Total average unit cost	ISCED 1	ISCED 2-4	ISCED 5-6
1.	Belgium	7,2	5,6	7,9	10,7
2.	Czech Republic	2,9	1,7	3,1	5,1
3.	Denmark	8,0	4,7	7,8	13,7
4.	Germany	5,2	3,9	4,6	9,8
5.	Estonia	2,0	1,7	2,4	5,4
6.	Greece	3,4	2,4	3,3	3,9
7.	Spain	5,4	4,3	5,8	7,1
8.	France	6,4	4,5	8,1	8,0

³⁰ **Eurydice-Eurostat**, (2006), Key Data on Education in Europe, 2005, Brussels, Luxembourg; Key Data on Teaching Languages at School in Europe, (2005), Brussels

³¹ The indicator is expressed in thousands Euro PPS.

9.	Ireland	5,0	3,4	4,8	9,3
10.	Italy	7,0	6,3	7,6	7,7
11.	Cyprus	5,7	4,0	6,7	16,8
12.	Latvia	2,3	2,0	2,2	3,0
13.	Lithuania	2,0	...	1,7	3,2
14.	Luxembourg	9,7	7,4	10,6	...
15.	Hungary	3,1	2,3	2,5	6,9
16.	Malta	3,7	2,9	3,7	6,3
17.	The Netherlands	5,9	4,5	5,9	12,0
18.	Austria	7,7	6,3	7,4	10,8
19.	Poland	2,3	2,3	1,6	3,6
20.	Portugal	5,5	4,1	5,8	6,8
21.	Slovenia	...	...	...	...
22.	Slovakia	1,9	1,2	1,8	4,9
23.	Finland	5,8	4,3	6,1	9,1
24.	Sweden	6,0	5,8	6,2	13,8
25.	United Kingdom	5,5	4,1	5,3	9,7
26.	Bulgaria	1,3	1,0	1,1	2,4
27.	Romania	1,1	0,7	1,2	3,5

Notes:

Denmark and Italy: expenditures related to ISCED 4 not included;

Estonia: Private expenditure is only partially included;

France The overseas départements are not included;

Latvia, the Netherlands and United Kingdom: shows expenditure for public and private institutions;

Lithuania: shows public expenditure for public and private institutions;

Luxembourg: expenditures related to ISCED 5 and ISCED 6 not included;

Malta and Portugal: the number of full-time enrolments is an estimate based on the assumption that it equals the number of full-time enrolments plus half the number of part-time enrolments.

Portugal: expenditure at local level is not included. Pupils at ISCED level 0 are not included.

Annual expenditure per pupil/student in the public sector institutions measures how much central, regional and local administration, households and other private entities (the business sector and non-profit organisations) spend per pupil or student. Annual expenditure includes expenditure on staff, as well as current and capital expenditure. The indicator has been calculated by dividing total annual expenditure by the number of full-time equivalent pupils/students.

The annual average cost per pupil/student is expressed in terms of the purchasing power standard PPS in Euro.

Source: Key Data on Education in Europe 2005, pg. 169.

Another characteristic is, as well, the fact that public expenditure per pupil/student from public sector education institutions increase together with the GDP/capita growth in most EU Member States. Thus, in all countries, with the exception of Ireland, Slovakia, and Romania **total expenditure on education/pupil/student represents over 20% din GDP/capita of each country**. And in countries like Belgium, Denmark, Italy, Cyprus, Austria, and Portugal the expenditure is higher as compared with the size and dynamics of GDP/capita: **Denmark – 31%; Cyprus – 32.4%; Austria – 30.5%; Portugal – 34.5%**. In turn, Romania and Slovakia spend 19.5% and, respectively 19.1%.

Private funding of education – at all combined educational levels– **occurs on just a marginal scale as compared with public ones:** 10.8% at EU 25 level; on countries, the **minimum level** is in **Portugal 1.5%**, and the **maximum** one in **Cyprus – 18.8%**.

With respect to the structure of public expenditure on education for **public sector** institutions on categories of expenditure, following observations should be considered: a) current expenditure³² exceeds **85% from total expenditure** for the public sector in most countries; **in Greece and Luxembourg** their share is under 80%. The largest share of current expenditure is allocated for staff costs: **in average 72% at EU 25 level, with higher proportions in Belgium, Cyprus, Lithuania, Malta and Portugal**. Finally, **capital expenditure** (investments in equipment, learning support, etc.) remain at a low level: 8% EU 25 average, with variation comprised between a **minimum of 2.3%** in **Belgium** and a **maximum of 19%** in **Greece**. **In Romania total current expenditure were of 90.5%, from which staff costs – 66%, and capital costs 8.5%.**

³² Current expenditure includes: staff remuneration and staff associated costs and other current expenditure such as building maintenance, school equipment and materials and operational goods and services. (31, p.181).

Resources: Teacher education

The teacher is the main educational agent. His/her competence level, the quality of the work delivered are reflected – under the most various aspects – in the **quality of the education**, in shaping aptitudes, skills, ethic and civil values of the school population. Later on, the same are reflected in economic, creative, innovative, and participative performances.

The profession of **teacher** represents about 2% from the active population in EU Member States, the highest share being the one of women, and the age of most teachers is of about 40 years of age and over. The number and share of women, who as teachers work in education and training drops in comparison with the previous levels (ISCED 1,2, and 3).

In Europe the initial education of teachers is realised, as a rule, at the level of *tertiary education*, either in universities, or by means of non-university education programmes.

In general, **two models** of initial teacher training can be outlined: *“the concurrent model”* and *“the consecutive model.”*

The concurrent model includes two components: a. courses which cover by their content **general education** and a series of **studies on one or more specific subjects**; b. the professional component refers to courses dedicated to **teaching skills training** and, respectively, to the school in which he/she shall work, a placement.

As a rule, the theoretic and practice education of teachers can be realised simultaneously under the form of general courses.

The consecutive model, as opposed to the concurrent one, separates in time the two types of theoretic and, respectively practical education. Hence, the first period of studies lays emphasis on general theoretic education. The practical, professional education is realised in the second stage, after completing the education based on the concurrent model.

Upper secondary education issues certificates in which are include the required skills for continuing education according to the **concurrent model**. At the same time, in some cases aptitude certificates are issued for tertiary education.

According to the **consecutive model**, students who intend to attend tertiary education in a certain area of university studies have the opportunity to obtain a professional diploma for exerting the profession of teacher (post-graduate professional teacher training).

Finally, the essential difference between the two models resides in the fact that: according to the **concurrent model** students decide to become teachers once they are admitted to university or in another institution of education and training; and, in the **consecutive model** the decision to become teacher is taken after concluding the first stage of higher education.

In European countries, teachers for **pre-school and primary education** are trained in accordance with the exigencies of the **concurrent model**.

In the case of **general secondary** education the **concurrent model** is the most widely spread, as well; yet, there are also cases/opportunities to make possible choices on the pathway, by making use, in this event, of the **consecutive model**, as there are cases in which only the **consecutive model** is used (Spain, France, Italy, Cyprus and Bulgaria). The consecutive model is used to a larger extent for training teachers that shall work in **upper secondary education**. The teachers enjoying this type of education are trained according to the **concurrent model** in Germany, Czech Republic, Poland, Slovakia, and **Romania**. Also, certain teachers from Ireland, Malta, Portugal, and the United Kingdom are educated according to the **concurrent model**. Finally, in Finland, Lithuania, and Slovenia, the majority of teachers from lower secondary and upper secondary are trained also according to the **concurrent model**.

Box no.12

Ways of teacher education in various countries (ISCED 0 - 3)

In **pre-primary education**, initial education is realised in most cases in education and training. In the **Czech Republic** and **Slovakia** it is realised under two forms: one where education is made in upper secondary education, and the second at university level.

In **Austria**: upper secondary education, or non-tertiary upper secondary education (ISCED 4)

In **France, Cyprus, and the United Kingdom** initial education of teachers for pre-school and primary education is identical. The system is also used in **Ireland** and **the Netherlands** with the remark that here pre-primary education

does not occur separately (it is included in primary education). The duration of studies for pre-primary education varies on countries: 3 to 4 years, including a final qualification “on the job.” But, there is a series of countries where the duration is notionally higher (five years) such as in **France** and **Poland** (one or more possible routes), **the United Kingdom**; in **Malta** it takes a shorter period: 2 years;

In **Austria**, the notional duration is of two years in post-secondary education (ISCED 4) and of 5 years in upper secondary education.

In most countries, teachers for this level are educated in universities (ISCED 5A). In **Belgium, Luxembourg, Austria, and Romania** they are initially trained in the upper secondary non-tertiary education (ISCED 5 B). In Lithuania and Poland both models of education are used.

The duration of teachers’ education depends on the level of the provisions. There are still minimum requirements, as a rule, determined at national level: 3 years when teachers are educated within the **non-university tertiary education** (ISCED 5 B) (within specialised institutions); with the exception of Lithuania over 40% of the time is dedicated to professional training; in **Belgium (French and Flemish Community) and in Romania**; in **Luxembourg** – 90%.

The duration is of 4 years for university educated teachers (ISCED 5 A); in this case the portion dedicated to training is between 13-70%, with the highest shares in **Ireland, Hungary, Malta, Finland and Slovenia**, and among the lowest in France and Poland. **Germany** in relationship with the other countries seems to represent an exception: professional training represents 52% from the total duration of studies of 5 years and a half.

Secondary education: initial teacher education for lower secondary education occurs at university level (ISCED 5 A); in some countries – Belgium, Austria – the graduates of non-university tertiary education (ISCED 5 B) can develop their profession in the lower secondary education. A large number of countries have introduced a compulsory final period of training on the job. The duration of the training is of 4 to 5 years, with the exception of Belgium and Austria. As a rule, the training is made according to the “concurrent model”.

Upper secondary education. At this level, teachers’ initial training is made in universities (ISCED 5A); normally, it takes 5 years; 10 countries provide for short periods of training. Irrespective if the training is made after the rule of the “concurrent model,” or of the “consecutive” one, the share of theoretic training and professional training includes a qualifying stage on the job, which usually does not exceed 30% of the total time – on countries it varies between 14 and 30%.

Continuing professional training – is compulsory in 15 countries and European regions. But, teachers have the explicit obligation to attend all forms of CE/PT. As a rule, CE/PT is limited to a certain amount of time annually when teachers, on a voluntary basis, may benefit of continuing education.

In Spain, Poland, Portugal, and Slovenia this is **not** compulsory, but is related to career advancement: promotions, wages, bonuses, credits, etc. (**Source: Eurydice-Eurostat, (2006), Key Data on Education in Europe, 2005, Brussels, Luxembourg; Key Data on Teaching Languages at School in Europe, (2005), Brussels, pg.203-214.**

Note: Information about the duration of education refers to the academic year 2002/2003, in particular those regarding tertiary education of teachers. Enforcing in the EU 25/27 Member States of the regulations resulting from the Bologna Process change the data of the issue. As such, they have only information value).

Regarding the teaching staff from higher education we should mention that it is exclusively educated within the tertiary university education. On entry in the system and ongoing, by progression through the various routes and/or professional degrees in all countries a **set of criteria and conditions** are used **which need to be cumulatively met**. Respectively:

- graduation diploma of the University and specially/area, including the diploma supplement (as necessary and satisfactory condition) on entry in the system (junior professor);
- master diploma/certificate, also in the specialty area for progressing to superior levels of TE;
- diploma of doctor of sciences (PhD) obtained based on sustaining a thesis referring to a scientific subject of high interest, publicly defended and endorsed by a highly qualified commission; it is the fundamental criterion for promoting as **university professor**; at the same time, an additional criterion is developing works of scientific research with original contributions, either in the field of fundamental sciences, or of applied ones; the capacity to initiate and manage research projects; recognised professional experience; dissemination of research results within held courses. It should be retained that **the responsibility of leading doctorates and be consultants pertains exclusively to university professors accredited for this purpose.**

Staff management

In most member countries, a coherent set of criteria is applied in designating a person as head (director) of an education institution. Among these are counted: professional experience in the

education process, administrative/management experience, special professional training, moral qualities, health state.

Box no.13

Term clarifications.

As “*School unit head/manager/administrator*” is any person heading a school that alone or within an administrative body such as board or council, is responsible for its management/administration. Depending on circumstances, the person concerned may also exercise educational responsibilities (which may include teaching tasks, but also responsibility for the general functioning of the institution in areas such as timetable, implementation of the curriculum, decisions about what is to be taught and the materials and methods used, appraisal of teachers and their performance, etc.) and/or financial responsibilities often limited to responsibility for administering the resources allocated to the school.

“*Professional experience in teaching*”³³ is a certain number of years working professionally as a classroom teacher, most of the time at the level of education at which the person concerned is seeking appointment as school head. In general, 3 to 5 years of professional experience as teacher are required for applying for the position of school head. Still, the behaviour of countries with respect to this requirement is different – at least one year in the Czech Republic, up to 13 years in Cyprus.

“*Administrative experience*” is the experience of school management acquired, for example, in the post of deputy school head.

“*Special initial training*” is training specifically for headship which takes place subsequent to initial teacher education and qualification as teacher. It can therefore only be undertaken by those who have already qualified in this way. Depending on circumstances, training may be provided either prior to the initial application for a post as school head or to involvement in the recruitment procedure, or during the one or more early years after taking up a post (on a temporary or permanent basis). It may therefore be provided either before or after the appointment of those concerned. Its aim is to equip them with the skills required to carry out their new duties. It is not to be confused with the in-service or further training of school heads. The final selection is based on contest, interview, etc. (Source: Key Data on Education in Europe 2005, Section D, p.250).

In almost all countries, official provisions determine the criteria/requirements which must be met by those intending to be involved in the management of school entities. Obviously, the mentioned criteria are applied predominantly in the public sector (Figure 6).

Figure 6 Countries requiring a minimum compulsory period of initial training for the position of school head in primary and general secondary education, 20002/2003

Country	No. of days/hours	Before appointment	Country	No. of days/hours	Before appointment	Country	No of days/hours	Before appointment
Belgium Fr.	12 days	●	Italy	160 hours	○	Poland	200 hours	●
Estonia	(a)160 hours; (b)240 hours	●	Latvia	20-28 hours	○	Portugal	One year	●
Spain	variable	●	Malta	One year	●	Slovenia	144 hours	●
France	70 days	●	Austria	6 modules (aprox.30 days)	○	Finland	320 hours	●

Note

- before appointment;
- after appointment.

Source: Key Data on Education in Europe 2005, Section D, p. 249 and 251.

The quality of the education system is very often monitored and assessed, as already mentioned in the above paragraphs. Assessment is **internal, external, or combined**. Also, the outcomes of pupils/students at external examinations or tests are assessed; these are used also in order to assess the quality of the teachers.

³³ Currently (2005) only 3 countries– Luxembourg, Netherlands and Sweden do not provide officially for some requirements for the professional experience in the education process. Practically, one cannot be appointed as school head without experience as a teacher as well.

Many of the member countries have determined **standardised criteria** for assessing the education systems, just as in many countries external examinations for certification are used in characterising their education system. **But, external specific tests for monitoring the education system have an increasing importance in Europe.**

Parents' role in education management is still **rather modest and limited**. With respect to choosing the school, even though it is free theoretically, in practice it faces many restrictions.

Still, parents have a **significant consultative role within the collective management bodies of the school, respectively in the administrative boards, as well as in the national bodies of education management. In EU-15** there is **at least** one central management body of education in which parents are involved together with other stakeholders. To the contrary, in the **New Member States parents are not yet included** in the national/central bodies of the education system management.

Which are the **bodies** and what **accountabilities** they have with respect to **education management** in the EU member countries? Some observations, without reference to each country:

- As a rule, at national level, the main authority with responsibilities is the **Ministry of Education**³⁴ *-as representative of the government- having management and administrative responsibilities in coordinating and managing NES, in elaborating strategies/multi-annual development plans for education and for the **academic scientific research**; determining the minimum standard criteria for assessing and certifying pupils/students, teachers, education institutions; supervision in ensuring coherence of the diploma system regulation; coordination of the national education and scientific research plans with the ones at EU level. In most countries, it also ensures the financial resources for pre-university education.* Next to it, other ministries have as well responsibilities with respect to specific areas of education (vocational, mainly) such as: the **Ministry of Science, Technology, and Innovation; Ministry of Cultural Affairs; Ministry of Foreign Affairs** a.s.o.
- **The Council, respectively the Annual Conference of Rectors**³⁵ has responsibilities with respect to the management and administration of universities and higher education institutions, to the enforcement of university autonomy by correct and balanced decisions; the TE development policy; appointment/election of the Rector within each university by the university council/senate. Also, during this period, the implementation of the Bologna process, by applying the general principles to the national context, so as to meet and to contribute to the achievement of the European Qualifications Area. Similar to the council of university rectors/ chairmen, in some countries functions the Council of Higher Studies Schools in various fields (engineering, administration, etc.), with like responsibilities.
- **Various councils or independent institutions** with special tasks for certain important components of the education and training process of human resources (Danish Education Institute – with coordination and involvement/intervention tasks in the **assessment process** at all education levels; institutes concerned with the coordination of national plans/programmes with the ones of the EU).

1.5. The Bologna Process.

³⁴ Its name differs – in some countries the Ministry of Education and Culture, in others, the Ministry of Education and Research, or the Ministry of Education, Science and Culture, the Ministry of Education, Youth and Science, the Ministry of Science and Religious Affairs, etc.

³⁵ In some countries (Belgium, Germany) councils of the rectors function at the level of communities – French, Flemish and/or at Länder level), and after the same autonomy principle function also separate ministries within these communities/Länder with responsibilities at the territory they administer.

The Bologna Process – launched by the Declaration from 1999 which was signed by 29 countries³⁶, one year after the Sorbonne Statement³⁷ is the *substantial answer of the academic environment to the economic-social challenges at the frontier between millennia, being focused on Europe's and its citizens future.*

It is an already acknowledged fact that building up the knowledge-based Europe is an “irreplaceable” factor for economic growth and human development. Secondly, it is an instrument for enhancing and enriching the active European citizenship; an instrument of endowing the citizens with the necessary competences for meeting the changes in the new millennium along with acknowledging and sharing the values of the joint social and cultural area. The idea of creating the European Area of Secondary Education was first initiated by the Summit from **Sorbonne** by the Ministries of Education from France, Germany, Italy, and Great Britain. “A European area open to higher education brings with it multiple advantages under the conditions of respecting diversity, but presupposes sustained efforts in view of eliminating restrictions and developing an education network that stimulates mobility and close cooperation”. This valuable and beneficial idea for Europe's citizens was rendered concrete in the “Bologna Declaration” (19 June 1999). Few months later (September 1999) by the “Florence Declaration” the bases are laid for an enlarged area of cooperation and coordination in the area of initial education. “These two documents – mentions Prof. Korca – express the free political pledge, assumed by each signing country, a pledge aiming at restructuring **the own education and vocational training system** in view of achieving a common goal: **the convergence of the education and training systems for an assumed active European citizenship and for full employment**”³⁸.

In this context, the Bologna process aims, before everything else, the **reform of the higher education structure, using for this purpose means that lead to NETS convergence in Europe**. This is also the reason why the Bologna Declaration is regarded as a key document for the future of European universities that requires being more and better tuned to the economic and social requirements at global and national level.

The EETS convergence is seen according to its double aspect: (a) of the global objective in relation to the specific objectives and (b) of the political coordination by governmental and management cooperation (particularly of the ministries of education) – associations providing higher education services, as well as other directly interested stakeholders. In a world marked by cultural, linguistic, ethnic, and religious diversity, etc., **convergence does not equal with standardisation or uniformity**.

The EETS reform is not **imposed**. It is in first and last instance, *the free choice of the European stakeholders* for giving viable answers, in due time, to joint European issues. And this, the more so, as the European higher education, leaving aside the differences from one country to the other, faces a lot of joint issues waiting to be rapidly solved to the benefit of European citizens (employment, unemployment prevention, eliminating labour force deficit in some key-qualifications in key, top fields, students', professors' and researchers' exchange/mobility, assessment-certification-diploma recognition, etc.). On the other hand, European universities have a huge potential: **more than 4000 institutions of education, 17 million students, 435.000 researchers**. But, this potential is not fully used to the benefit of Europe, especially if we take into account the EU Agenda of **growth and new job creation**, or in other words, if we take into account that the **Lisbon Strategy 2 is focused on growth and employment**. The Commissioner for education and culture, Jan Figel, mentioned that “even though yearly millions of persons are

³⁶ Austria, Belgium (French and Flemish Community), Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Island, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, **Romania**, Slovakia, Slovenia, Spain, Sweden, Swiss Confederation, the United Kingdom.

³⁷ In the Sorbonne Declaration the core role of universities in developing the European cultural dimension is emphasized; the emphasis is on creating the European Area of Higher Education as a key-instrument for promoting the mobility of citizens and their employability, and also on global development of the European continent.

³⁸ **Korca, Mihai (2003)**, Vectorul educație – Formarea profesională, în perspectiva integrării europene, în volumul: Iancu Aurel (coordinator), Dezvoltarea economică a României, Editura Academiei Române, Bucharest

trained and educated, the European higher education systems are still hindered by a number of obstacles, many of these decades' old."

As compared with USA, Europe **attracts** fewer talents, highly competent personalities either in education, or in research. Not by chance, the European Council from Barcelona 2002 aimed to make Europe at the time horizon 2010 " the most attractive destination for students, academics, and researchers from other areas of the world". Even if EU as well as USA are beneficiaries of the educational mobility, the largest part of the Asian and African students choose USA; **the number of European students studying in the USA is twice as high as the number of American students**. In addition – and a significant fact with respect to the orientation of the two large science categories – while the first obtain in USA complete diplomas at advanced level, Americans come to Europe for brief periods, most opting for humane and social sciences.

Even if Europe "generates" more graduates and doctors of sciences than USA or Japan – 25% from the number of graduates against 21.9% in Japan and 17.2% in USA -, the share of researchers in the active population of Europe is inferior to the one in USA and Japan. In EU per 10000 inhabitants are 5.4 researchers, in USA – 8.7 researchers, and in Japan– 9.7 researchers.

As shown also in the Press Release of the EC from May 2006, the huge learning and scientific potential of Europe remains, unfortunately, unused because of various rigidities and hindrances. Precisely taking into account the consistent resources of knowledge, talent, and energy from Europe, EC considers that *a coordinated change is necessary: from the model in which systems are **regulated and lead** currently to another model in which universities are **governed** as to be included all activities of the universities: education/learning, research, innovation*. Hence, it is required, in accordance with the idea launched at the informal meeting of the European Council from Hampton Court (October 2005), to identify all action areas of the universities.

Box no.14 EU-USA-Japan Differences. Net enrolment rate of the young persons aged 20 to 24 years in ET. Share of population aged 30-39 years in ET

	EU 25	USA	Japan
Share of students in total population aged 20-24 years, 2003	57	81	50
Share of population aged 30-39 years in higher education, 2004	31-34	7,0	...
	35-39	4,9	...

Source: Press release, MEMO /06/190.

The global objective, - written in the Bologna Declaration – consists in creating up to **the year 2010 of the European Area of Higher Education** in view of solving some major European issues such as: increasing employability, young persons' insertion on labour market, preventing unemployment, modernising and improving the quality of education and training; increasing competitiveness of education and training systems from Europe; strengthening social and territorial cohesion of European citizens through education and training.

Why such a global objective? It is well known that the economic and social performances of any country or region are based today on the three pillars in their indestructible unity: education, research, innovation, on the ability to **create, innovate, disseminate, and apply knowledge**. But, the education systems, including tertiary ones in Europe are behind/delayed as dimensions, speed and intra- and inter-institutionally, as well as inter-border coordination.

Box no. 15 Main shortcomings of the education and training systems in Europe

Education and training in EU member countries are much too **fragmented** into sub-systems without effective links and bridges between them;

National regulations are too often **over-detailed** and this diminishes autonomy and universities' responsibility of correlating the education/training process with the emerging needs of the society, of markets;

A tendency to **uniformity** in each system and sub-system;

Universities **under-use the newly emerged/generated/created knowledge in production**. There is a breakdown between the academic world, companies, labour world at large.

Many universities do not stimulate sufficiently competition between students, researchers, and use not in rationally satisfactory manner available resources in a globalising world.

Funding of many universities is **low** comparatively with the one of its competitors (USA, Japan).

The **access rate** to education and training is lower in Europe than in other leading world regions.

(Source: Press Release, Memo /06/190, Brussels, 2006).

In this context, the **specific objectives** fulfil the function of mobilising forces to put into practice the global objective of eliminating EETS shortcomings that are found again in their performance and competitiveness deficit. These are stipulated in the Bologna Declaration, and in the Declaration of the Ministers of Education (Bologna, 19 June 1999). The specific objectives are focused on the following targets:

- a) Adopting a joint framework of diplomas/certificates, with easily readable and comparable degrees; implementing the **diploma supplement** in which the qualifications and competences are recorded in view of increasing employment of European citizens and, respectively, the EETS competitiveness;
- b) Adopting a system (structure) based essentially on two main cycles – **bachelor and master**. The access to the second cycle requires graduation of the first cycle which cannot last less than 3 years. The obtained diploma/certificate is relevant especially for the national and European labour market, at comparable, similar qualification level. The **second cycle** is the master one, with a variable duration of up to 2 years. In the year 2003, in Berlin, also the third cycle is introduced – **doctorate (PhD)** with a duration of three years. Synthetically, the “Bologna Process” introduces, largely, the duration of education and training for career paths in the system 3+2+3 (Bachelor-Master-PhD)³⁹.
- c) Establishing a **European Credit System that is attractive and advantageous** comparable with the European Credit Transfer System (ECTS) – that would cover all lifelong learning and training activities.
- d) Assuring the **European dimension of higher education quality** based on comparable criteria and methods at national and international level.
- e) Promoting mobility by eliminating still existing hindrances through means of free movement, giving attention first of all to: students’ access to studies and training opportunities, and to necessary services; access of teachers, researchers and administrative staff; recognition and putting to good use the research and training stages developed in other European countries without bringing prejudice to the statutory rights of those who benefited of such stages.
- f) Promoting **European cooperation** for assuring quality by means of developing some comparable criteria and methodologies.

In brief, the achievement of these objectives pursues to increase competitiveness and attractiveness of EETS as it is known that “vitality and efficiency of any civilisation can be measured by comparing its culture with the culture of other countries”⁴⁰. Under the external aspect, extra-community one, new opportunities will be opened for learning, career paths, and the contribution of ET in shaping skills and competences, to enriching the knowledge system, their dissemination and use in the economic and social activity shall not only be higher, but also competitive on global markets. This is **the reason why the Declaration attributes a crucial role to the academic community for the success of the Bologna process**. The mentioned specific objectives, in their interdependency, are applicable under the conditions of autonomy of the education and training institutions, of their competence, by respecting cultures’, languages, NETS’ diversity.

³⁹ **Berlin Communiqué (2003)**, Realising the European Higher Education Area Communiqué of the Conference of Ministers responsible for Higher Education., Berlin

⁴⁰ **(1999)**, The Bologna Declaration on the European Space for Higher Education: an Explanation, prepared by the Confederation of EU Rector’s Conferences and the Association of European Universities (CRE), Bologna

Education and training modernisation

The European Commission, the Directorate General for Education and Culture in their concerns for modernising EETS have identified *nine areas* in which changes must occur for European universities to contribute at creating a veritable knowledge-based economy. Each institution of higher education must find the balance between the three pillars – **education-research-innovation** – under the conditions from a region or country. A differentiated approach is, perhaps, necessary, so that each university shall become a **strong stakeholder/player in the knowledge-based society and economy**. From this perspective, the main target is for them to turn into centres of **excellence in the learning and training process, and in the research one as well**.

The nine fields of intervention suggested by the EC are dedicated to attaining these targets and support the “Bologna Process.” The nine fields are the following:

- a. attaining excellence in teaching and in research within strong universities that would act like competitive stakeholders on the increasingly global market of the knowledge society;
- b. increasing the share of graduates who develop at least one semester of activity abroad or in industry;
- c. allowing students to use **national loans or grants in EU countries** in which they decide to study or develop research;
- d. comparable procedures for recognising academic qualifications and professional qualifications making European degrees easier recognizable outside Europe;
- e. introducing training with respect to property rights, communication, networking, entrepreneurship and teamwork should become part of the career as researcher;
- f. Refocusing courses in order to allow for taking into account former underwent stages of education and training and their linking to lifelong learning. This requirement is addressed to the qualification needs of the European labour force, especially in ensuring the future labour force, hence strengthening the capacity of universities to adjust to the demographic ageing process of the European population.
- g. Reviewing national scholarships for students and support schemes so that best students are able to participate to advanced education and training, and in future be able to aspire to a career in fundamental or applied research;
- h. Funding systems of the universities should be reassessed by means of focusing on **outcomes/performances** and thereby imposing increased responsibility for **their long-term financial sustainability, particularly in research**.
- i. Granting more autonomy to universities so as to enable them to answer more rapidly to changes. This includes reviewing the curricula and adjustment to new developments, building strong links within and between disciplines and focusing on multidisciplinary/related research (renewable energy and nano-technologies) rather than on separate disciplines. Also, more autonomy should be granted at the level of the individual institutions, for academics and research staff.

It is obvious that, in order to achieve the core of the Bologna Process until 2010, in the process of eliminating hindrances still existing, all countries must undertake major efforts in the following directions:

- instituting the **universality** of the BA/MA/PhD structure (bachelor, master, doctor);
 - rendering flexible and modernising curricula at all levels;
 - real autonomy and responsibility of the universities (the Danish University developed new principles for university governance)
 - structured partnership with the business community (partnerships with excellence centres (Rolls Royce);
 - supplying/generating qualifications and competences for the labour market;
 - diminishing the gap with respect to financing against the main competitors of EU;
- more and stronger investments in education and research. In order to catch up with USA, EU should spend in average, annually, 10000 Euro per year and student, and the funding for ET

modernisation should not be lower than 2% of GDP. Financing should be comprehensive and transparent.

- increasing interdisciplinary and trans-disciplinarily and strengthening the relationships of complementarity between various fields (human sciences, social sciences, business study);

- strengthening interaction between learning/knowledge and society;

- creating/developing **high level centres of excellence**; opportunities for post-doctoral studies. The financial support could be available at European level for centres of excellence, doctoral schools, if a series of criteria are met:

- Critical mass;
- trans- and inter-disciplinarily;
- strong European dimension;
- support from the regional and national authorities, and from industry;
- identifying and recognising the areas of excellence;
- provisions for post-doctoral studies.

The European Commission does not intend to import a model from another country, and request autonomy for the sake of autonomy. The target is that debates and proposals should be adjusted to the conditions from Europe and to fully contribute in attaining the economic and social objectives in a Europe marked by cultural and linguistic diversity⁴¹.

*From declarations to action*⁴²

Of course, the Bologna Process is under full development pursuing the pan-European level and the one of each country as well, depending on the specific conditions the attainment of the objectives proposed for the year 2010 in all its components. The accountability is at supra-national, national, and regional level.

The accumulated experience allows for stating that the Bologna Declaration was well-received by the academic environment and the signing countries:

- if, in the beginning there were 29 signing countries, currently their number is of 45;

- the initiative of structural reform was, to a large extent, of the **universities**.

Currently, it is estimated that 86% of the EU universities already apply the structure recommended at Bologna and completed at Berlin; on components there are large differences between countries;

- in other cases (Spain, Romania, Hungary a.s.o.) the structure is regulated by law or Royal decree, the universities being subject to the rigors of the adopted law in the spirit and letter of the Bologna Process;

- there are also cases where due mainly to acknowledged traditions at world level, reluctance is displayed in reforming the processes according to the three cycles (Oxford, Cambridge in England, Les Grands Ecoles in France);

- implementation does not lack difficulties, ‘tempestuous’ debates, and some constraints/restrictions, and even contradictions;

- but, beyond all these failures, reluctances, important to us seems the fact – noticed again in Bergen in 2005 – that the Bologna Process lays emphasis on the indestructible link, of mutual dependency, between **higher education and research**, respectively on the importance of education and training in the future development of research, and of first hand importance, on the importance of **research** for generating new knowledge and use of higher education for developing economically and culturally European societies and strengthening social cohesion.

⁴¹ (2006), Press Releases, Frequently Asked Questions: Why European Higher Education Systems must be Modernised? Memo/06/190, 10 May, <http://europa.eu/rapid/pressReleasesAction.do?>, Brussels

⁴². Unfortunately, the information available are not enough to have a global, relatively complete image on the implementation of the Bologna Process. They are based mainly on the Final Report of the Directorate General for Education and Culture of the European Commission. The extent and impact of higher education curricular reform across Europe, Contract 2006-1394/001-001S02-81 AWB, Center for Higher Education, Policy Studies, University of Twente, Netherlands

- with respect to the **implementation of the first two cycles (BA-MA)**, in the year 2005, in accordance with the Eurydice information almost all signatory countries have introduced – true, to various extent – the two cycles, with the exception of Flemish Belgium, Hungary, Portugal and Romania, Spain and Sweden (exclusively some programmes);

- in the Netherlands was introduced the entire programme of the new structure;

- in Germany and Austria changes were implemented: in Germany, for instance, in the period 2004/2005, 36.3% from the universities worked within the new structure, comparatively to only 8%; in Austria, 28.6% from universities worked in the new structure; in France universities implement gradually the new structure;

- also, in a series of countries, in the years 2004/2005 have been initiated regulations – laws, Royal decrees, ordinances (Spain, Hungary, Romania). Sweden shall initiate the structural reform as of 2007. In Portugal, the law was passed in 2006, and the universities had already initiated the change process.

With respect to key-competences: There are still, conclusions, reluctances and many debates linked to various elements of the Bologna Process. Essentially, these are focused on the concept of competences as outcomes in terms of knowledge, qualifications, or competences acquired by the student. In this way, emphasis is laid on what is expected from the one who is learning and the relation with the European Qualifications Framework (EQF), fact which would lead to more transparency. Many countries as of 2003 have implemented new rules with respect to the (national) qualifications framework taking into account the 8 descriptors determined for EQF in Dublin: the Czech Republic, Germany, Italy, the United Kingdom, Luxembourg, Denmark, the Netherlands, Lithuania, Hungary, Latvia, French Community from Belgium. In other countries, such as Spain, Malta, Romania, Finland, Estonia, Greece there are authorities or working groups constituted especially for the realisation and implementation of the (national) qualifications framework.

With respect to the credit system: In all countries, there are such systems. But, the trend in education and training is of transition to even larger extent to the European Credits Transfer System (ECTS).

The learning methods are diversified, and become more flexible: promotion of excellence, of curricula options, modules, and validation of former education in agreement with the objectives and principles of the Bologna Process. It is true – as already shown in the foregoing paragraphs – which a series of **restrictions** regulated either by governmental authorities, or by universities “operate”.

The implementation of the **Diploma Supplement** is an instrument for simplifying the recognition of qualifications obtained in other EU member countries, applied for increasing the mobility of students, teachers, researchers, and free movement of labour and educational services.

With respect to **mobility**, as such – with the exception of the ERASMUS programme – it is still low as share (0.3% to 3.3%). The British experience underpins the fact that the programmes Hasters (2nd cycle) lead to a strong increase of mobility, which can reach 25% (England, the Netherlands).

In conclusion – in accordance with the available data – 32 countries have implemented, in general, “hardware”: structural regulations, conditions with respect to the learning cycles, diploma supplement, and transferable credits. But, with regard to the “software” – curriculum, subjects, etc. – things are quite different, the underwent path is still too short if we consider the final term – 2010.

I. 6. Impact of education on the “Lisbon Agenda”

In the first part of our study we referred to the general benefits of some successful education systems, built on modern principles and functioning to the advantage of society and citizens. In this paragraph, the emphasis will be on the way in which modernisation and efficiency of the

education systems contribute to attaining at the time horizon 2010 the Lisbon Agenda 2 targets. Before analysing this impact, some mentions seem useful:

- the reform of education is not just an instrument of the Lisbon Strategy, but also a **major component** of it. In fact, the two strategies “Education 2010” and Lisbon meet and go together coherently and coordinated on the same path of sustainable development of the EU and member countries;

- education, regarded as a lifelong process is a fundamental coordinate, a transversal axis the influence of which is found in the Integrated Guidelines package (IG) at macro- and microeconomic and social scale, at territorial level (national, regional), and also at the individual level of sustaining social inclusion and active European citizenship, etc. ;

- at the level of the European Commission were determined a number of **14 structural indicators** with the aid of which progresses attained up to a certain moment and the underwent path can be measured up to 2010.

Box no.16

Performance indicators of attaining the Lisbon targets

- **General economic framework:** GDP/capita at PPS; Labour productivity per employed person.

- **Employment:** total employment rate; women employment rate; men employment rate; elderly employment rate; elderly women employment rate; elderly men employment rate.

- **Innovation and research :** gross domestic expenditure for research and development; young persons education level – total; young women education level; young men education level

- **Economic reform:** level of compared prices; investments in enterprises.

- **Social cohesion:** poverty risk rate after social transfers - total; poverty risk rate after social transfers- women; poverty risk rate after social transfers – men; dispersion of regional employment rate- total; dispersion of regional employment rate - women; long time unemployment rate- total; long time unemployment rate – women; long time unemployment rate – men

- **Environment:** greenhouse gases emissions- total; economy’s energy intensity; Transport – transports’ volume related to GDP.

(Source: Document de Travail des Services de la Commission à l’appui de la Commission au Conseil Européen de printemps (22-23 mars 2005) sur la stratégie de Lisbonne pour le renouveau économique, social et environnemental, Bruxelles SEC (2005) 160).

Our task is to highlight the direct and strong relation between the education level and some of these indicators. As such, we shall insist, predominantly, on employment, education and social cohesion indicators. We selected these categories of indicators because: a. of the Lisbon Strategy 2 which is focused on economic growth and employment; b. of the education level, the structure of qualifications is directly involved in this new strategy orientation; c. EU member countries find themselves in extremely different circumstances in relation to the Lisbon Strategy objectives: some of them have reached and even exceeded some of the targets, while others are still at considerable distance from them, so that it is difficult to believe in catching up till 2010. In addition, and as consequences, a series of questions arise whether EU 25/27 as a whole – due to the gaps of some member countries, especially with respect to the targets determined for 2010 – shall be able to meet completely the assumed objectives. Unfortunately, there are numerous signs that the balance is inclined towards maintaining some gaps against the objectives of the Lisbon Strategy.

“If Europe is to achieve full employment, improve quality and productivity at work and strengthen social and territorial cohesion it must attract and retain more people in employment, increase labour supply, modernise social protection systems, improve the adaptability of workers and enterprises and increase investment in human capital through better education and skills”⁴³.

a) In a first approach we attempted to **group EU member countries depending on 6 indicators** – relevant in our opinion for highlighting the level reached by the differences between various countries, for characterising progress and identifying bottlenecks (Table 2).

⁴³ CCE (2005), Communication de la Commission au Conseil et au Parlement Européen. Actions communes pour la croissance et l’emploi: le programme communautaire de Lisbonne, Bruxelles, 20.07/2005, COM (2005) 330 final

Table 2 Grouping member countries depending on the performances obtained in attaining the Lisbon Agenda

Criteria/Grouping indicators					
Economic growth rate Real GDP (%)	Economy, Education, Social Inclusion	Labour productivity growth (%)	Share of elderly workers on labour market (%)	Innovative regions	Population's employment rate 15-64 years (%)
EU 25 (2,4) Czech R. (3,4) Estonia (5,9) Greece (3,3) Spain (3,3) Ireland (4,6) Cyprus (4,1) Latvia (6,2) Lithuania (6,6) Luxembourg (3,1) Hungary (3,4) Poland(4,8) Slovenia (3,5) Slovakia (4,1) Bulgaria (5,5) Romania (5,3)	Sweden Finland Denmark Portugal The Netherlands Spain United Kingdom Ireland	EU 25(1,7) Czech R. (3,6) Estonia (5,5) Greece (2,2) Ireland (3,2) Cyprus (3,2) Latvia (5,6) Lithuania (5,3) Poland (3,6) Slovenia (3,1) Slovakia (3,3) Bulgaria (3,9) Romania (4,7)	EU 25 (40,2) Denmark (60,2) Estonia (52,3) Cyprus (50,4) Portugal (51,1) Sweden (68,6) United Kingdom (55,5) Finland (43,6) <i>Lisbon target</i> <i>50%</i>	Germany Finland The Netherlands United Kingdom Sweden	EU 25 (63) Denmark (75,1) The Netherlands (73,5) Sweden (72,9) United Kingdom (71,8) <hr/> These countries have attained and exceeded the Lisbon target <hr/> Czech R. (64,7) Germany (64,8) Estonia (63) Ireland (65,4) Cyprus (69,2) Austria (69,2) Portugal (67,2) Finland (67,7) <hr/> Real chances of attaining the employment rate of 70% <hr/> <i>Lisbon target</i> <i>70%</i>

Source: Developed based on the idea of Stavros Stravon, VET European perspectives within context of achieving Lisbon goals 2010; Employment in Europe 2005. Recent Trends and prospects, pg. 228-234; 237-265.

The results obtained on countries can be synthesised as follows:

- 15 from the 27 member countries have economic growth rates slightly higher than the EU 25 average. With the exception of Greece, Spain, Ireland, Luxembourg, the rest are in the country group of New Member States (May 2004 and January 2007);
- with respect to the level of economic development, education and, respectively, of social inclusion, a group of 8 countries is noticeable, among which Northern countries have attained most performance;
- with respect to labour productivity, its growth rate has a similar pattern to the growth rate of GDP;
- the share of elderly workers on labour market – against the target of 50% determined by the Strategy, 7 countries attained the targeted level for 2010, exceeding significantly the EU 25 average, with values between 10 p.p. (Finland, Cyprus) and 28.6 p.p. Sweden;
- most innovative countries are Germany, Finland, and the Netherlands, etc.;
- finally, with respect to the **total employment rate**, Denmark, the Netherlands, Sweden, and the United Kingdom with values over 70% have already exceeded the target determined for the year 2010. A second group, of 8 member countries, with rates between 63% and 69.2 % have chances, true, unequal ones, to attained the aimed target by 2010; the other 10 countries, with employment rates under 60% are less likely to recover the gap even if many of them record comparatively higher rates of economic growth (differences to recover are between 10.3 p.p. in Spain, and 18.8 p.p. in Poland) (*Annex 17*). From these countries, 6 countries are from the New Member States.

b) Secondly, starting from the assumption that education – according to the Bologna concept, and not only – is a factor of sustaining the Lisbon Agenda we retained the **targets** from the **Lisbon Strategy 2 in the area of lifelong learning**, including here ensuring the infrastructure and gaining digital competences. Therefore, we have selected two groups of indicators: one entirely pertaining to the education and training systems and the other one comprising some indicators immediately related to the knowledge-based society reflected in the education process. In the first group we included: **early school leaving (15/16 years of age) without any qualifications; the share of young persons aged 20 to 24 years who graduated at least upper secondary education (ISCED 3); the share of pupils aged 15 years who have not succeeded in attaining even the lowest qualification level; the share of graduates from mathematics, sciences, technology; the participation of adults to lifelong learning.** The performances attained up to now are appreciated as relatively modest (Table 3 and *Annex 18*).

Table 3 **Attaining the targets Lisbon 2, as average level EU15/EU25**

Indicators	Year of reference	Lisbon target 2010 (%)	EU 15		EU 25	
			Attained average	No. of countries that achieved the target	Achieved average	No. of countries that achieved the target
1. Early school leaving (%)	2004	10,0	18,0	5	15,9	9
2. Population in the age group 20-24 years graduating at least upper secondary education (ISCED 3) (%)	2004	85,0	73,5	3	76,4	8
3. Share of pupils aged 15 years who did not succeed in attaining even the lowest level of performance (%)	2003	-20	9,7	0	2,2	2
4. Share of graduates in mathematics, technological sciences (%)	2002	15,0	3,9	1	4,4	2
5. Participation of persons in the age group 15-64 years to lifelong learning (%)	2004	12,5	10,1	6	9,4	
6. Internet connection of all schools	2002	100,0	93,6	1	...	...
7. Training all teachers in digital competences	2003	100,0	56,8	0	...	...

Source: ECC (2005) Commission Staff Working Document The Economic Cost of Non-Lisbon A survey of the literature on the economic impact of Lisbon – type reforms, Brussels, 8.03, SEC(2005)xxx .

Of course, it is an acknowledged fact, strongly evidenced by the dynamics of the economic-social life, that the quality of **human resources, of the human capital, and of the social one** plays an essential role in attaining the objectives and timely accomplishing their targets. Therefore, in this decade, emphasis is laid on developing and reforming the educational and training systems to meet any type of challenges. Important steps have been made, yet higher speed is required in some areas. Even the simple extension by one year of the lower secondary education (ISCED 2) has a strong influence on the growth rate and not only; its influence has resonance at multiple levels: the European estimates that better endowment and higher efficiency of the educational systems brought about by increasing with **one year the average level of education and training might add 0.3 – 0.5 p.p. to the average rate of GDP growth within the EU⁴⁴** . Similar effects have, for instance, the development of **pre-primary education of children**, particularly on increasing the employment rate, before all for women. Simultaneously, it also has incidence also with respect to **equity** in the education of children. Last, but not least, increasing access to secondary and tertiary education, and removing hindrances acts not only as economic factors, but at the same time as factors for strengthening social cohesion, as factors of social inclusion, narrowing significantly the area of social exclusion. And, the creation of a **true culture of lifelong learning** beyond its economic and social potential might slightly deter the effects of

⁴⁴ **European Commission**, Education, Training and Growth, Chapter 3, in: The EU Economy: 2003 Review; **European Council**, (2003), Reference levels of European Average Performance in Education and training (benchmarks), 2003/C134/02.

demographic ageing of the European population and, why not, of a migration that often slips through the control of the origin and host country.

The strong development of tertiary education, the increased rate of transition from the upper secondary to education and training (from ISCED 3 to ISCED 4-6), the development of centres of excellence within universities and structuring their relations with the business world, with companies shall generate a strong impetus for fundamental and applied research, and shall lead in record time to creating a *research and innovation culture*⁴⁵ which, finally, shall trigger increased competitiveness of the EU and member countries on tertiary markets, to diminishing/eliminating particularly the gaps against USA and Japan.

c) **The relationship education level – unemployment** – is one of the most important aspects of education non-performance and/or to the contrary of education performance. The issue is real and deserves to be studied considering both sides. In general, it can be appreciated that the unemployment rate – as size and dynamics – is in reverse proportion to the education level: **it decreases while the education level increases, and reversely** (Table 4). An educated person has infinitely more chances to integrate on labour market, to find a labour place in accordance with the level of competence; also this person has broader views and is more open to lifelong learning, to diversifying career paths, etc. and, at economic and social level, performances are superior.

Table 4 Unemployment rate according to education level, on age groups in EU 25, 2002

Age group	Education/qualification level		
	Low (ISCED 0-2)	Medium (ISCED 3-4)	High (ISCED 5-6)
25-34	13,8	9,6	6,2
35-44	10,3	7,4	3,3
45-54	8,6	7,3	2,9
54-60	6,6	7,5	3,8

Source: Key Data on Education in Europe 2005, section A, p.37.

The comments are obvious, the unemployment rate decreases as the transition is made from an inferior to a superior education level and, respectively, together with age (in fact, age and education/qualification level are directly correlated).

On this background with general value it can be noticed that labour force is unequally affected by labour market imbalances and/or disagreements between the skills and competences demand on labour market and the supply of the educational system – the education market. Thus, the unemployment rate of young persons in the age group 15-24 years is also the highest: in the period 1999 – 2000 it was more than double in relation to the age group 35 – 64 years. In addition, for this group, as a rule, with low qualification or at most medium – there emerges yet another issue related to **job safety** for the position they have at a given moment. Hence, the risk of unemployment is high, and they are counted among the labour force categories disadvantaged on labour market. In countries such as Belgium, Estonia, Greece, Spain, France, Ireland, Italy, Latvia, Lithuania, Poland, Slovakia, Finland, Sweden, Bulgaria and Romania the unemployment rate for this age group exceeded 20%.

The unemployment risk triggered by the periodical variations of the two markets – labour, and respectively education market – is most strongly felt by the youngest but also by the most elderly workers. Of course, with respect to **unemployment rate variations**, including the one of persons with higher education on age groups, naturally there are differences in time and area within the member countries (*Annex 19*).

⁴⁵ Europe “produces” almost twice as much mathematician, and experts in various areas of science and engineers than USA but many of them are “lost” for the European research because of the lack of incentives for the “career of researcher” and, perhaps not that much due to financial conditions, but especially because of working conditions and access to most advanced technologies. Increasing investments in R&D by attracting approximately 1.1 million persons, from which 700.00 researchers might sustain the 3% growth from GDP (ECC (2005), Commission Staff Working Document „The Economic Costs of Non-Lisbon, A Survey of the Literature on the Economic Impact of Lisbon – Type reforms, Brussels, 8.03.(SEL)).

Another characteristic – deriving from certain behaviours of employers on labour market and not from the education level resides in the fact that: **at the same level of qualification the unemployment risk of women is higher than for men**, hence women are discriminated with respect to the unemployment risk, the “equality of chances”(!) does not function, even if there are differences from one country to another. Within EU 25, irrespective of the training level, the unemployment rate of **women** is higher than for men.

Long time unemployment is one of the EU 15/EU 25 constants. In the year 2003, long time unemployment rate was of 3.3% in EU 15 and 4% in EU 25. On member countries, the variations are very high; the lower limit was of 1% - 1.1% in Sweden, Austria and the United Kingdom, and the maximum one was of 11.1 in Slovakia and 10.7 in Poland. Education contributes directly to diminishing long time unemployment rate by initial education endowing pupils and students with the aptitude to face changes, to continuing learning, but especially by means of **continuing vocational training** starting with the enrichment of knowledge, retraining, and up to the change of profession, of the field of activity or of selecting other career paths.

The educational capital incorporated in persons active on labour market supports the attainment of the Lisbon Agenda target. This aspect can be highlighted by the integrated analysis of five areas so that resulting synergies can support the sustainable development (Figure 7).

Figure no. 7 Impact Areas of Education on the Lisbon Agenda

Economy	Social	Research-Development	Social Cohesion	Active European Citizenship
<ul style="list-style-type: none"> -Economic growth rate> -Labour productivity> -Competitiveness > -Initiative-Entrepreneurship -Amiable labour relations -Teamwork -Motivation - -Autonomy/Responsibility -Partnership (public-private); (companies - universities) 	<ul style="list-style-type: none"> -Human capital > -Social capital> -Social inclusion; youth insertion > -Employment rate> -more and better jobs; -Unemployment rate < -long time unemployment rate < -Poverty risk < -Incomes security> - Combining mobility/flexibility with job safety 	<ul style="list-style-type: none"> -Researchers training/continuing training - Mobility and cooperation intra- and inter-institutions and trans-national -Relationship university-research-business environment (companies) -“Centres of excellence” 	<ul style="list-style-type: none"> -Equality of chances>; -Diminishing poverty risk -Participation to company and community life; - Involvement and responsibility in solving common issues; - Diminishing territorial disparity (territorial cohesion) - Social partnership - Reconciliation of work and family life 	<ul style="list-style-type: none"> - Lifelong learning culture - Civic education and culture of participation to community life - Assuming responsibility, direct involvement; -Voluntaries

In conclusion, the relationship education – labour market is permanent and aims at the individual already from the pre-primary stage. Progressing from ISCED 0 to 6 represents only the first stage of accumulating knowledge and competences that allow for the link with the profile of the labour market demand. Education continues under various forms, including by taking up/continuing it within the initial, but also in the specific education system for adult education, on education and on labour market as the support must be mutual between them. The Lisbon targets and the Bologna Process under the conditions of strengthening the knowledge-based society represent the current pillars for supporting the (re)construction of the educational model regarded from the viewpoint of lifelong learning.

Ch.II. REFORM OF EDUCATION IN ROMANIA

“Education assures growth and employment” (Jan Andersson⁴⁶)

II.1. The Need of Reform

The national education system after 1989 underwent major changes triggered on one hand by the in-depth changes of the economic and social environment, and on the other hand generated by the need of renewing and revigorating the national education system on all its levels. The national education system, even though based on general valid principles of gaining knowledge and ensuring the labour force supply, by the educational policies promoted during the period of the communist regime, especially in the last decades did not succeed but to formalise and develop passive systems of participation to education of the pupils/beneficiaries but also of the teaching staff. Despite some islands of excellence, which were remarked due to the results obtained in international Olympics or by the exceptional people who became acknowledged in various fields of universal science, **the quality of the educational system in Romania underwent a descending trend.** The safety of finding a job after graduation did not stimulate competition and excellence, the school curriculum was far from the need of knowledge and competences on labour market, of the productive, social and cultural environment and the links between education and production and research were formal. The generalisation of 10 years education and the pursued perspective of 12 grades determined a drop in the quality of the educational act, increased the risks of higher numbers of functional illiterates (even if this was not recognised by the society). The structuring of education of fields of sciences was preponderantly focused on exact sciences and technical ones, and included knowledge pertaining to low technological levels. The transition to market economy caught the national education system unprepared and the inertia of the system blocked, practically, for a good period of time the reorganisation, improvement and modernisation actions. *In essence, a brutal disconnection occurred between the education market and the labour market.* **In the first years of transition, the policy measures in the field of education have allowed for a chaotic development of the system from several viewpoints: dimensions of the system, structure, educational profile, curriculum content, etc.** As in several other fields, there were pursued, on one hand, reparatory actions, eliminating the inequities within the system, reconsidering the role of humane sciences, etc, and on the other hand the development framework was created for the development of private education and of (re)building the institutional framework required to re-link (but on different bases) the education to research and (much later) with production. At the same time, gradually, with many halts and delays were developed the support systems and mechanisms for promoting lifelong learning. Finally, **the Bologna and Lisbon processes in the context of preparing for integration and now, as EU member state, have given new impetus in reforming the entire educational system in Romania.**

The need of reform was obvious already during the first years of transition. *Adjustment was not enough but in-depth restructuring of the system was stringent under the legislative-institutional aspect, and from the viewpoint of the educational process content, as well.* The finalities of education were redefined radically and the permanent need of adjusting the labour force to the market requirements determined also a reconsideration of the adult education system (existing also during the communist period, but characterised by formalism and superficiality).

In this chapter the main stages of the reforms in the field of education shall be highlighted, on its main components: pre-university education, higher education and adult education. But, before this it is necessary to highlight some aspects which outline, in our opinion, the amplitude, thoroughness and sustainability of reform.

⁴⁶ President of the Committee for Employment and Social Affairs of the European Parliament (Live and Learn Magazine)

- a) The reform of the education system in Romania continues, but the frequent legislative changes, particularly in the last years did not allow for multidimensional assessments of outcomes, so that **the reform measures and the corresponding policies are developed, practically, without an efficient system of evaluation and adjustment**, based on feedback processes determined on analyses of their implementation, functionality and efficiency;
- b) **The reform implementation was made without preliminary preparation of the participants, and especially of the beneficiaries**, so that currently the quality and efficiency of the system are far from answering the to minimum exigencies and assumed commitments with respect to the Millennium objectives and the Lisbon Agenda;
- c) The link between education market, labour market and RDI market is of weak performance, the effected costs are far from justifying the low outcomes. **Even though the main issue** of education remains chronic under-financing, the available amounts, although increasing, sustain a low efficiency of the system, still on decrease.
- d) Currently, in our opinion, the stage of a deep crisis of the system was reached, which requires not as much a new change, but rather a reorganisation/redesign on components of the entire educational network and ensuring the quality of inputs required for the functionality – human resources, material resources, curriculum content, and last but not least legislative stability and coherence of the system build up/design.

The law no. 84/1995 provides for education as national priority (art.2) and stipulates the general purpose, respectively achieving the educational ideal, based on humanist traditions, on the values of democracy and the aspirations of the Romanian society, contributing to maintaining the national identity. It acknowledges the need of free, integral and harmonious development of the human individuality, in shaping the autonomous and creative personality (art. 3).

Box no. 17 Finality of the Romanian education – shaping the human personality

Law 84/1995 with subsequent alterations stipulates the sources and mechanisms of shaping the human personality:

- Acquiring scientific knowledge, values of national and world culture;
- Shaping intellectual capacities, affective availabilities and practical skills by assimilating humane, scientific, technical and aesthetic knowledge;
- Assimilating techniques of intellectual work, required for training and self-training during the entire life;
- Education in the spirit of compliance with fundamental rights and freedoms of man, of dignity and of tolerance, of the free exchange of opinions;
- Cultivating the sensibility towards the humane problematic, the moral-civic values, of respect for nature and environment;
- Harmonious development of individual by physical education, hygienic-sanitary education and practicing sports;
- Professionalizing the young generation for developing useful activities, generating material and spiritual goods.

Even though generous as objectives, the education law proved to be incomplete, fact also demonstrated by the 30 normative acts of changing/adding (up to December 2007). Even at present there are still aspects to be improved and rendered compatible with other components of reform. A new regulations package was proposed in the field of education which once again restructures the system, but **the functional links between the components of the system are lacking, as is also lacking the clear and pragmatic vision regarding the developments on medium and long term. Practically, without a coherent strategy of the educational process, of the national system of lifelong learning, correlated on components and between them, the applicability of any educational model (the current one or the one proposed, or yet another improved one) shall be limited. The main issues** which remain unsolved are represented by the adequate infrastructure, particularly for pre-school and primary education, the rigid curriculum to the future challenges of the beneficiary market (labour market) and the weak performance of the existing teaching staff, built largely according to the old educational frameworks and difficult to

reform in-depth, under the aspect of teaching methods, and communication with pupils/students/parents.

The regulations regarding continuing education (detailed comprehensively in the following paragraphs) pursue to ensure easier access to continuing education of adult persons. Expanding and diversifying the lifelong learning forms, the permanent gain of new skills and competences required by the market increase the employment chances and facilitate economic growth and the development of the knowledge-based society.

In addition, **the need of connecting to the European Area of Education**, to the principles and values promoted which consider the active participation of European citizens to development and economic and social progress should be mentioned. Education for participation, for an entrepreneurial approach of the own professional competence, even if identified as primary need at national level, lacks or is displayed only episodically and in point, with direct effects on the efficiency of valuing the capital of gained knowledge.

The economic and social context in which the reform of education was realized did not represent an incentive for in-depth change, but supported rather the temporary adjusted measures, in point, of the educational offer to a weakly perceived and particularly volatile demand, confused and lacking long-term perspective. The economic reform and the development of the private environment, the SMEs evolution as number and on fields of activity have still adjusted chaotically the numbers of schooling on fields of science and educational profiles. The private education, more mobile, developed and adjusted easier, but the components of curriculum reform and of introducing modern teaching methods were left behind. It is, partially, also an answer to the marginal concerns from the first decade of transition in the field of human capital development, the issues of labour market and of the demand of knowledge and competences erroneously considering that they could be solved exclusively by the market mechanisms. The failure of the first years of reform in the field of human resources has subjected to reconsideration the attention and concerns of the executive with respect to the reforms in the field and the complementary ones – education, labour market, social policies.

II.2 Stage of the reform process in pre-university education in Romania – achievements and failures

On the way to European and world competition under the full process of globalisation, which generates changes and development, the education system in Romania was pressed to negate its past based on an important role of the State in mass education.

According to the communist vision, school played an essential role in shaping “the new man”, in permanent “socialist contest” based on quantity and “healthy origin” and not on quality and efficiency⁴⁷. The prestige of the teaching staff was in continuous decline, the relationships parents-children were shaken, the system encouraging inclusively denouncement within family, and the “Marxism-Leninism” and the “dialectic and historical materialism” turned into background pillars of higher education, having a decisive role in education ideology, a process marking numerous generations of graduates, of future parents and teaching staff. The management of school entities, at all levels of the system, were entirely ensured on criteria of political enrolment. The entire communist conception and ideology favoured the degradation of the national spirit and culture.

The situation of the Romanian education system faced after the year 1989 the European and world concepts that supported the necessity of ensuring value added in any activity, changes with high impact on society, work, family life and environment⁴⁸. The emerging picture in Europe was the one of more individualized learning, of self-development, and to an equal extent, of collective

⁴⁷ Presidential Commission for Analysis of the Communist Dictatorship in Romania, Bucharest, 2006, Final Report, Ch. III “Society, economy and culture”, p.472-487.

⁴⁸ European Training Foundation, February 1998, Report of the Torino Group ‘Re-designing Management Development in the New Europe’, Chapter 1 “Painting the picture: management development in perspective”, p.17-29

learning good practices. Societies required more research, innovation, and better perception with respect to complexity and diversity.

The strategy of economic and social reforms provided for drastic measures at economic level after 1989, beginning with winding up non-profitable enterprises, privatisation of large industry and banks, diminishing budgetary deficit, the severe decrease of subventions for agriculture, full liberalisation of prices (including for power and fuels), attracting foreign investments and, last but not least, supporting the set up of small- and medium-sized enterprises. Enforcing reforms had as consequence, in a first stage, prices' and inflation increase deterioration of the living standard and unemployment growth. The positive effects of the changes in the Romanian economy were felt only after the year 2001.

The entire social-economic spectrum requires a visible change of the human resources policy, respectively⁴⁹:

- the shift from a reactive policy to a proactive and coherent policy which is not limited to reparatory and compensatory decisions taken at the moment of an emerging crisis;
- inclusion of continuing vocational training in all development programmes of human resources;
- expansion of inter-sector policies;
- encouraging social partnership;
- Diminishing the gaps and malfunctions between initial and continuing education;
- Realising some continuing analysis studies of labour market needs;
- Correlation of the vocational training standards with the occupational ones;
- Putting to good use the information and competences gained in information and career counselling centres;
- Supporting persons and socio-cultural groups with special needs;
- Launching training the trainers and manager training programmes.

The national education system tributary to a centralised decision and coordination system was faced after 1989 with huge challenges at structural level, but also at the educational and resources' allocation level.

The support of the European Union, consisting of financial and technical assistance allowed for starting up reforms. Efforts were significant under the conditions of opposition from a closed system, which was not accustomed to relate to the economic-social needs of the communities.

The first reform programmes found the Romanian education system within the structural limits designed by the needs of a centralised economic system where the finality of the educational act was based more on quantity and not quality and competence.

With the first reform programmes were implemented also the principles of competence (with its aspects related to knowledge, aptitudes, and behaviours), of professional development based on standards and not in last instance based on evaluating competences.

The state of the reform process of the pre-university education in the period 1995 – June 2003 In accordance with the Law of Education (no. 84/1995), with subsequent alterations before the year 2003⁵⁰, the education system from Romania comprised following levels (*Annex 20*):

- Pre-school education;
- General compulsory education: primary and lower secondary education;
- Upper secondary education: high school, vocational schools, apprenticeship schools;
- Post-secondary education: post-high-school and foremen schools;

⁴⁹ European Training Foundation – Romanian National Observatory, Bucharest, October 1998, The Education and Vocational Training System in Romania: issues and priorities of the Romanian reform, item 8: Summary: Constraints, Issues and Future Needs, p.84-85

⁵⁰ Emergency ordinance no. 36/1997, Law no. 151/1999, Emergency ordinance no. 130/2000, Emergency ordinance no. 206/2000, Emergency ordinance no. 295/2000, Emergency ordinance no. 2/2001, Emergency ordinance no. 32/2001, Law no. 98/2001, Law no. 159/2001, Emergency ordinance no. 123/2001, Law no. 713/2001, Emergency ordinance no. 184/2001, Law no. 345/2002, Law no. 520/2002, www.edu.ro

- Tertiary education: short term, long term, post-university;
- Permanent education.

In accordance with the same provisions, general compulsory education was of 8 grades, with completion at age 15. Upper secondary education was completed after the age of 17 years for those who elected to continue education.

The provisions of the Education Law from 1995 allowed the operation of **private education entities** in accordance with some education standards (educational and resources' programme) by undergoing assessment stages.

As a whole, the first variants of the Education Law, respectively those previous to the month of June 2003 preserved the educational structures specific to the communist period. As a new form of assessment was introduced the capacity examination on the conclusion of the lower secondary level, followed by the issue of the certificate of capacity, as document of certifying the completion of general compulsory education and access to upper secondary education. **The Statutes of the Teaching Staff (Law no. 128/12 July 1997)** allowed for co-regulation of the human resources situation within the system, with respect to: a) functions, competences, responsibilities, rights and duties; b) job profile and requirements, and for dismissals from positions; c) improvement and assessment system; d) working time and wages, bonuses and sanctioning criteria. The entry into the system of the teaching staff was conditioned not only by the level of education, but also by the capacity of exercise, moral conduct and health state. In addition, the management of the education entities imposed the existence of a management contract, subjected to periodical re-evaluation.

Box no. 18 **Characteristics of the pre-university education systems in the period 1995-June 2003**

Pre-primary education is ensured within education units of the "Kindergarten" type. The last level at this educational level is the "preparatory group" for children before transition to the 1st grade, with a period of one year. The formative objectives of the level ensure the development of the child with respect to the cognitive and language aspect, the psychological-motility and physical development, the shaping of some artistic-aesthetic and socio-affective abilities.

Primary education is characterised by its day-form and pursues to ensure the acquisition of general culture fundamentals, as main purpose of the curricula. The studies last for four years.

Lower secondary education (gymnasium) operates, by and large, based on day courses (as an exception evening classes and low distance courses are organised for persons exceeding by more than 2 years the suitable age for the respective grade). The education plan comprises the following areas: humanities and social education, basic scientific, artistic, technological and physical education. The studies last for four years. The assessment of the training at this educational level is realised by means of the **capacity examination** and obtaining the **capacity certificate**.

Upper secondary education comprises high-schools, vocational schools and apprenticeship schools. The admission to each of these levels is by means of contest organised based on a methodology of the Ministry of Education.

High-school education coexists for day courses (4 years of study), evening and far distance classes (5 years of study), being re-organised through the following channels: theoretic (real and humanities profile), technologic (technical, services, material resources exploitation and environmental protection profile), vocational (military, theological, sports, artistic and pedagogical profile). Education plans for the high-school level were structured on groups of disciplines, respectively: humane and social education, basic scientific education, optional subjects of the profile, and physical education. The share of these groups differs depending on the type and profile of the high-school. The final assessment of high-school education is ensured by the baccalaureate examination and an examination for professional competences certification. The graduation of the two examinations results in obtaining the **baccalaureate diploma**, respectively of the **professional competence certificate**, the equivalent of the 3rd qualification level.

In the case of studies' disruption, on request, is issued a **document of certifying attended studies**.

In high-school education classes can be organised for students with outstanding skills and performances, and on completing all high-school classes with average over 9.50 and the average 10 at the baccalaureate examination it is possible for the graduate to obtain a merit diploma.

Vocational schools organise day and evening courses and function either independently, or within school groups. The duration of vocational studies is of 2 to 3 years depending on the profile and complexity of training. The admission to vocational school presupposes the existence of the certificate of capacity and sustaining some tests determined and elaborated by the respective educational entities. The courses are finalised with a graduation examination and obtaining a **diploma certifying the training in accordance with the 2nd level of qualification**.

Apprenticeship schools function independently or within school groups. The duration of the studies (preponderantly practical ones) is of minimum one to two years. The admission to apprenticeship schools is done by tests specific to the trade. Gymnasium graduates can enrol, with or without the certificate of capacity. The final evaluation consists in a practical test for **certifying the vocational training**.

Post-secondary education comprises post-high-schools and foremen schools (which are also post-high-schools educational entities). The training period is of one to three years. The financing of this type of education is ensured by the beneficiaries (natural or legal persons). The admission to post-high-school education is based on a content to which are entitled to enrol high-school graduates, with or without a baccalaureate diploma. Post-high-school education is concluded by means of a graduation examination, regulated by the Ministry of Education through a specific methodology, elaborated with the consultation of the stakeholders. The promotion of the graduation examination entitles the student to obtain a **professional competences certificate**.

Admission to foremen schools is, additionally, conditioned by previous professional practice, respectively an experience of a minimum eight months in the field and the recommendation of the economic agent.

(Source: European Training Foundation – National Romanian Observatory, Bucharest 1998, The educational and vocational training system in Romania: reform issues and priorities in Romania, item 3: General characteristics of the education and vocational training system in Romania p.40-46; Law of Education no.84/1995, altered and republished, art.24 – 36, 51-54; European Training Foundation – National Observatory Romania, Bucharest 2000, Modernization of Vocational Education and Training, National Report, p.37; Foremen Law no. 6/1997, with subsequent alterations).

Under the conditions of a higher correlation chance of the reform with respect to the content of education, with the reform of the teaching staff, the Code of the Teaching Staff succeeded in implementing some new concepts in the human resources development process (using the self-assessment system, accompanied by recommendations in the case of promotions, stimulating scientific innovation and obtaining awards for students trained on the occasion of the school contests, granting a stability bonus and one for neuro-psychical overload), the principle of performance in relationship with the expectations of the community, and the one of efficiency in learning did not represent a priority of the system, aspect which favoured several malfunctions in generalising the reform programmes.

Box no. 19 **Attitude of teaching staff with respect to promoting curriculum reform**

In the absence of some efficient institutional incentives, for promoting the curricula reform, the realised researches have highlighted the fact that:

- 25% of the teaching staff obtains information and is pursuing constantly the implementation of the new curriculum;
- 40% of the teaching staff shows hesitations, expecting an official direction promoted by the Ministry; very often they display opportunistic behaviours;
- 35% of the teaching staff displays conservative behaviours (in general, young unskilled teachers and/or temporary employed within the system and some elderly teaching staffs, which pay tribute to professional routine).

Source: The National Council for Curriculum, Education Reform Project – RO 3742, Bucharest, 2001, Impact Study of the New Curriculum in Compulsory Education – Synthesis, p. 3

The changes of the Law of Education from 1995, allowed for ensuring **upwards mobility for the vocational training system**, from vocational and apprenticeship education towards high-school education, meaning that by equivalence examinations the graduates of vocational schools could be enrolled in the 9th grade of the high-school, and the graduates of the apprenticeship schools in the 10th grade, in the limit of available place and by sustaining the examinations of equivalence.

The relationship with permanent education of the system was ensured in several directions, respectively:

- certifying the graduation of the general compulsory education – **certificate of capacity**;
- certifying the graduation of high-school studies (**baccalaureate diploma and professional competences certificate**) and **certifying attended studies** (accompanied by the “enrolment file” on request), in case of high-school studies interruption;
- **certifying vocational training** by means of the **diploma of skills** (vocational education) by a **certificate of skills** (apprenticeship training) and **professional competences skills** (for post-upper secondary and foremen education).

The share of enrolled students, by levels of education during the school year 1997/1998, the year when the direct support of the European Union was initiated for Romania and Bulgaria by means

of the PHARE Programme, was significantly in the favour of high-school level, under the conditions in which the number of theoretical high-schools increased after 1990 (40.3% in 1998 against 29.7% industrial high-schools, 6.7% forestry high-schools, 8.4% economic and administrative law high-schools, 8% computer-science high-schools, 2.4% normal schools and 4.5% high-schools with another profile⁵¹) for various reasons: disintegration of the partnership relations with enterprises, misunderstanding of the new criteria and requirements of the market, the habit of providing for finite, pre-manufactured cognitive goods, based on the reproduction capacity of the students, the much more favourable image of the theoretical high-schools against industrial ones inherited from the old education system, etc. (Table 5).

Table 5 Number of students enrolled in secondary education for the school year 1997/1998

Education level	Number	%
TOTAL from which:	1.013.142	100
- High-school	765.903	75.59%
- Vocational	193.643	19.11%
- Apprenticeship	53.596	5.3%

Source: National Commission for Statistics, 1998; European Training Foundation – Romanian National Observatory, Bucharest, October 1998, Vocational education and training system in Romania: issues and priorities of Reform in Romania, Annex 2, p.93

The result of this state of affairs was the high number of unemployed with ages between 15 and 24 years, from total unemployed at national level (Table 6).

Table 6 ILO unemployment rate on age groups, gender and environments, in the first quarter, 1998

	Total unemployed	15 – 24 years	25 – 34 years	35 – 49 years	50 years and over
TOTAL from which:	7.4	20.9	8.2	5.5	1.2
Men	7.4	19.0	7.9	5.9	1.7
Women	7.3	23.5	8.6	4.9	0.6
Urban	9.6	27.3	9.2	6.3	3.6
Rural	5.0	15.4	6.8	3.7	0.4

Source: Survey on Labour Force in Households AMIGO, European Training Foundation – the National Romanian Observatory, October 1998, the Education and Vocational Training System in Romania: issues and priorities of reform in Romania, Annex 2, p. 91.

The high share of unemployed among the youth between 15 and 24 years of age reflects the inefficiency of the education system and failure in recognising the new market principles, based on competition and competitiveness, the lack of studies regarding labour market demand, inflexibility of the initial training programmes and their finality shortages, but also a slow process of accepting the new principles referring to continuing education and its role in adjusting the educational failures triggered by the economic transition.

*The economic social picture of the first half of the nineties outlined clearly for Romania **the need of strengthening the links between school and community, between school and labour.** The weak links or their inexistence have lead to generating graduates hard to place on the labour force market, the result being youth unemployment and a doubling of expenditures/individual by organizing vocational training/re-training programmes. The slower economic restructuring than in other countries made that also the influence of the large state enterprises was maintained rather strong on the volume and quality of secondary education, for a rather long period of time. On the other hand, the increase of the number of small- and medium-sized enterprises which did not create own links to school and which became the exponents of the community spirit, led to the isolation of the two important segments of the local progress. Under the conditions of an increasingly higher emphasis on individual needs and in the situation of an inexistent efficient*

⁵¹ White Charter of Education Reform, December 1998, p.17

system of continuing vocational training, “compensatory measures” were preferred as answer to the amounted discontent. As result, **the priorities of reforms in education for the pre-university level** became:

- **re-establishing the links between school and business environment;**
- **redoing the liaison between school and community granting higher attention to the issues of the individuals belonging to disadvantaged groups with special needs;**
- **creating the system of continuing education for adults;**
- **developing the vocational guidance and counselling systems;**
- **developing active and efficient partnerships for the pre-university education system;**
- **reform of the curricula system (orienting education towards competences, skills and aptitudes; a more flexible educational offer; the possibility of ensuring individualised school routes; introducing new means of selecting and organising the content of the educational subjects; adjusting contents to economic-social and community needs; accountability of the social partners towards the education issues.**

For the period 1990-1996, the PHARE support through national programmes of sustaining the reform in Romania were non-reimbursable aids which had the value of 731.1 million ECU, from which 16.3 million for education, training and research⁵². The training components were included in all sector programmes subjected to reform (agriculture, tourism, labour market, SME, environment, industry, banking sector, capital market, infrastructure, NGO, social services, rural development).

The first educational segment subjected to reform, with the purpose of sustaining changes within Romanian economy was the **vocational** one. It should be noticed that the support granted for VET reform in Romania amounted to 25 million Euros, representing the highest support budget for education reform in Central and South-Eastern Europe:

Table 7 **Financing educational reforms in Central and South-Eastern Europe**

Programme Name	Budget (million Euros)
PHARE Programme –VET reform in Estonia (ES9409)	3
" in Latvia(LE9408)	3
" in Lithuania (LI9410)	4
PHARE Programme – IMPROVE in Poland (update to the programme UPET (PL9416)	4
PHARE Programme – VET reform in Czech Republic(ES9409)	4
" in Slovakia	4
PHARE Programme –VET reform in Romania	25
" - VET reform; education; research; science and technology (VETERST) in Bulgaria (BG9506 – 9 million Euros in total, respectively VET updating - 3,7 million; Teacher career path– 0,4 millions; Secondary education financing and management– 2,5 millions)	6,6
PHARE programme –VET reform in Slovenia (SL9405)	9
" in Albania (AL9506)	0,7

Source: European Training Foundation, Report “Review and lessons learned of PHARE Vocational Education and Training Reform Programmes 1993 – 1998, January, 2001, Point 1 “Background”, p.1

The objectives of the PHARE reform programmes pursued to assist governments of the beneficiary countries in modernising and reforming secondary vocational training with its key elements in developing social and economic reforms.

Box no. 20 PHARE Programme Objectives – VET (RO9405) in Romania⁵³

⁵² European Training Foundation – Romanian National Observatory, Bucharest, October 1998, Vocational education and training system in Romania: issues and priorities of reform in Romania; Item.6 Financing vocational education and training, p.66-76

⁵³ European Training Foundation – Romanian National Observatory, Bucharest, October 1998, Vocational education and training system in Romania: issues and priorities of reform in Romania; Item 2 – Financing vocational education and training, p.68 - 69

Providing vocational training at the level of training standards within the European Union.
Realising vocational training adjusted to a democratic society, based on market economy with participative-social character in agreement with the specific occupational structure specific to the dynamic evolution of labour market in Romania.
Adjusting the vocational training structure in vocational schools in accordance with the skills requirements (levels and areas) identified based on individual and social needs.
Synergic decentralisation of the vocational training system by co-accountability of the social stakeholders.
Developing an operational information system with respect to vocational training.
(Source: European Training Foundation – Romanian National Observatory, Bucharest, October 1998, The vocational and vocational training system in Romania: issues and priorities of Reform in Romania, Item 2 – Financing vocational education and training, p.68 – 69)

The main outcomes of the programme for Romania were⁵⁴:

- Realising the first labour market studies at local and national level;
- Adjusting the educational offer to market needs (profiles, specialisations, trades);
- Developing new curricula (in 25 pilot schools and 50 demonstration schools) grouped in 20 occupational families;
- Ensuring a curricula set for each of the 19 sectors that proved to be important as result of the performed market studies; the number of occupations was diminished from 192 to 134; introducing the notions of entrepreneurial education in vocational education;
- Realising new curricula based on modules' system for the vocational level, and for the technical one as well, substantiated by the vocational training standards developed with the support of the Council for Occupational Standards and Assessment – the tri-partite structure created for developing occupational standards and the assessment and certification system of vocational training in Romania, co-financed by the World Bank);
- Elaborating and implementing a set of 134 vocational standards, 259 curricula for vocational school, 132 curricula for post-upper secondary school, 60 didactic handbooks for technical disciplines, 434 didactic portfolio for technical subjects within vocational school and 455 for post-secondary school, 22 curricula for general culture in vocational school;
- Training a number of over 3000 experts (curricula authors, professors, school managers, policy developers and social stakeholders) in country and also within the European Union;
- Purchases of equipment for 75 schools subjected to reform (18 million Euros);
- Developing social partnership at regional level by building up 6 Area Committees (Brasov, Bucharest, Cluj, Craiova, Timisoara and Iasi), with a consultative and monitoring role for vocational training which were constituted by social stakeholders.
- Realising some specific bodies for the new educational context: **the National Council for Teachers' Vocational Training, the National Service for Evaluation and Examination (realised within a programme of the World Bank, which defines the examination methodology, based on skill tests), the National Centre for Developing Vocational and Technical Education (CNDIPT), the National Council for Continuing Education.**

Post-upper secondary education (post-high-school and foremen education) was spectacularly developed during the VET reform, the gross schooling rate at this level increasing from 4.6% in 1995/1996 to 8.2% in 1999/200 and 6.4% in 2000/2001⁵⁵.

The remarkable success of this educational level was due to the new education profiles (technical, services, natural and environmental resources, administration, banking system, mass-media and advertisement), to the new curricula built according to the European system (which made attractive these specialisations), to the change of profile for a large number of theoretical high-

⁵⁴ European Training Foundation, January, 2001, Review and lessons learned of PHARE Vocational Education and Training Reform programmes 1993 – 1998, p.53-55

⁵⁵ European Training Foundation – Romanian National Observatory, Bucharest, 2001, National Report, Modernising the education and vocational training system in Romania, p.24, 27

school graduates and to a larger extent to the **active partnership with the system of chambers of commerce and industry (which aimed to the implementation of new curricula at post-upper secondary school level, to identifying the needs of local markets, the identification of experts for supporting the new technical subjects, to providing for practice at the economic agents, participation in graduation commissions and supporting pupils with good and very good results in seeking a job)**. A collateral outcome of this partnership was the **implementation of “entrepreneurial education” in the vocational training in Romania**.

With the purpose of increasing the participation to secondary education, implicitly to initial vocational training, were adopted as of the school year 1998/1999 with a series of measures, such as:

- monitoring the participation to education and identifying the reasons of social exclusion;
- institutionalising social partnership between school, local public administration and parents' organisation;
- increasing the flexibility of the system by creating the opportunity of continuing the studies within the high-school education for the graduates of vocational schools.

As of the school year 1999/2000 the PHARE-VET RO9405 reform was generalised for the entire upper secondary and post-upper secondary education.

Box no. 21 The curricular system developed within the reform programme PHARE – VET (RO9405)

Due to a **modular approach**, was noticed an adjustment to the **European qualification levels** (CEDEFOP 2 level – vocational school and 3 – post-upper secondary school) having as basis the **vocational training standards** (theoretic knowledge, practical skills, personal and social competences) and assessment forms.

As a whole, the structure of the curricula system consists of a **national basic curriculum (70%)**, and a **curriculum at the discretion of the school (30%)**.

The vocational training standards are constituted on three levels of competences' components: **general competences** (basic knowledge), which approach a wider group of occupations (occupational families), with a cross-sector character and which are developed during the first year of vocational training; **general competences for the components of the occupational groups**, frequently pertaining to several occupational families, with the purpose of developing joint technical competences for these occupations and which are developed in the 12th year of vocational training; **specialisation competences** organised in a modular system which is contained in the components of the school programmes as of the second year, and continued in the third year (occupations with more than three years of training allow for over-specialisation).

In order to implement the new curriculum, there were developed didactic and methodological supports: **didactic handbooks, vocational training portfolios and practical training projects**.

Pupils were offered handbooks and working papers for the theoretical part, and for the practical part of training as well. Practical training was based on projects realised within laboratories, workshops, and companies.

The PHARE – VET (RO9405) programme represented the fundament of a **new system of assessment and certification, based on competences, and the graduation examination was organised by cooperation between teachers and relevant social stakeholders**. As result of graduating, the pupils benefit of a **“certificate of competence” as annex to the qualification diploma or certificate, with the mention of the competences gained during the vocational training period**, this system being used previously to the introduction of the credits transfer system which shall be introduced in the subsequent stages of the reform.

The success registered by the PHARE-VET(RO9405) programme in Romania left open the way towards developing a more coherent framework between initial and continuing vocational training, for elaborating policies focused on knowledge and developing education according to the European spirit and for developing the institutional infrastructure⁵⁶.

The reform of the pre-school and compulsory general education comprised up to 2000 curriculum and educational management elements.

Box no. 22 The stages of legislative reform regarding the pre-university education

⁵⁶ European Training Foundation, January, 2001, Review and lessons learned of Phare Vocational Education and Training Reform programmes 1993 – 1998, p.13 și 55

After 1989, the change of contents and school legislation was a permanent priority of policies in the field of education. The realisation succession was made on stages.

The first stage had a reparatory character being more reactive than constructive. In this framework, getting rid of ideologies was combined with the annulment of some legal norms and promoting new ones.

The second stage was of multiplying and weighing legislative, institutional and system alternatives, along with the ones related to contents and methodology.

The first two stages were concluded with the **development and adoption of the Law of education (no. 84/1995)** and of the **Statutes of Teaching Staff (Law no. 128/1997)** followed by reform strategies of the system.

Conservative inertia and radical opinions continued their confrontation throughout the entire period.

By the end of the nineties began the implementation of the large reform systems, supported by the Government of Romania, and by the European community as well, through financing and technical assistance from the PHARE Fund and from the World Bank. (Source: European Training Foundation, January, 2001, Review and lessons learned of PHARE Vocational Education and Training Reform programmes 1993 – 1998, p.13 and 55)

As result of the debates with respect to strategic orientations, the system's objectives were focused on the following directions, regarded as more adequate for the existing situation:

- a) A curricular reform compatible with the European levels;
- b) Transition from reproductive to creative learning;
- c) A new (economic, cultural and administrative) correlation of school to community;
- d) Modernising the school infrastructure by connecting to IT systems;
- e) Creating institutional autonomy of education entities by decentralisation.

The curricular reform comprised education plans, school programmes and handbooks, yet without articulating in a coherent structure the **objectives (performance standards), contents of school activities, didactic methods** and without a **finality reflected in competence components**. It generated principles (of educational policy, of flexibility, of efficiency, of compatibility, of selection and hierarchy, of coherence, of liaison to the social environment, etc.), but it generated as well a series of questions. The answer to these questions which marked the initial period of the curricular reform were researched and analysed by the Education Reform Project – RO 3742, implemented based on agreement between the Romanian Government and the World Bank (50 million Euros co-financing).

The entire reform programme of pre-university education (RO3742) ensured:

- the development of a new curriculum (elaboration and dissemination of a **National Curriculum** and of some **Framework Programmes** for all levels of pre-university education);
- **Restructuring the teaching staff training system** (improving teaching staff in view of implementing the new curriculum and new school handbooks);
- Elaborating **alternative handbooks** for all subjects and classes (the creation of a school handbooks market);
- the **reform of the evaluation and examination system** (improving quality and objectivity);
- defining **new occupational standards** by a new tripartite system of cooperation between Government, employers' organisations and trade unions;
- organising the school year structure on **semesters**;
- **Reform of education management** (new financing and management systems)⁵⁷.

Box no. 23

Components of the reform programme for pre-university education

“Rehabilitation of school buildings” which aimed a number of 1200 school entities from more than 13.000 existing ones (9.2%) at the time. The financial resources of the project were provided by the Romanian Government and the Social Development Fund of the European Council (150 million Euros in total, respectively 50 millions from each of the three partners).

“Information and Counselling regarding Professional Career” (sub-component of the Programme “Counselling and Adult Training” financed by the World Bank and realised by the Ministry of National Education, the Ministry of Labour and Social Protection, and the Ministry of Youth and Sport). The project contributed to the development of the services for youth and adults regarding labour market by counselling, testing aptitudes and promoting actions.

⁵⁷ White Charter of Education Reform, December 1998, p.9

In the year 1995, the amount of 350.000 Euros was allocated with the purpose of developing the European awareness among youth in 500 secondary schools in Romania.

As of 1997, in Romania are also developed the **trans-national programmes** of the European Union (**Socrates, Leonardo da Vinci, and Youth for Europe**) by which the sector of secondary education and the youth movement can enrol in the good practices and innovation exchange at European level. The components of the trans-national programmes approached trainers, facilitating for them the implementation of some European practices, the experience exchange and promoting some innovative Romanian projects. (**Source:** European Training Foundation – Romanian National Observatory, Bucharest, October 1998, The education and vocational training system in Romania: issues and priorities of reform in Romania, item 6: Financing education and vocational training, p.69-70)

The study on *the implementation of the new national curriculum for compulsory education* highlighted that a high quality of the educational act cannot be attained without adequate “inputs” (educational content, resources, motivation systems for teachers, pupils and parents) and without permanent relationships with the (economic, cultural and social) community environment.

The relationship education-society requires a new approach, starting from the following *principles*:

- ❑ the education of the academic type must be refocused towards pragmatic milestones, that would allow for assessment in relation to the competence standards ;
- ❑ compulsory school should develop the wish for knowledge and continuing training, receptiveness to change dynamics, creative and entrepreneurial spirit, openness towards novelty and outcomes of research-development activities;
- ❑ the curricular reform should not represent the translation of a traditional practice into a new concept, but should assure the performance standards (descriptors/grading criteria on three successive curricula cycles: the cycle of fundamental acquisitions – the preparation group of kindergarten and the grades 1 and 2, the development cycles – from the 3rd grade to the 4th grade, and the observation and guidance cycle from the 7th grade up to the 9th grade, under the conditions of a generalised education of nine grades);
- ❑ the transition from reproductive learning to creative learning does not presuppose just the change of learning contents, but also sustained innovation of didactic methodology (replacement of up-front teaching methods with the entire class, with the personalised teaching and activities on groups, the replacement of teacher’s monologue with dialogue and classroom debate);
- ❑ the curriculum at school’s discretion should express the needs of the community translated by school in its own programmes, facilitating the accountability of local authorities and parents towards the quality of the educational act;
- ❑ the partnership between school and community, and society should be real and efficient, and the relationship should be bi-univocal meaning the mutual support for a knowledge society, closely related to the local and regional development objectives;
- ❑ the analysis of early school leaving should be done in community and social context, and the phenomenon should be approached in a flexible manner in order to adopt efficient solutions;
- ❑ the reorganisation of the school network should allow for the efficient allotment of resources, increasing the chances of the children from disadvantaged areas to access quality education.

In accordance with the Romanian Constitution which defines education as a national priority and taking into account the provisions of the National Development Plan, **the priority objectives of the new stage of reform in education** were defined as follows:

- Increasing the quality of the educational act as basis for attaining the knowledge society in Romania;
- Ensuring the training of human resources by the pre-university education and by lifelong learning;
- Personal development of pupils from the viewpoint of lifelong learning;

- Development of social cohesion and increasing the participation of citizens to economic and social development programmes of local communities.

Next to the national priorities and from the viewpoint of Romania's integration into the European Union, **the community priorities** meant to contribute to the **creation of the European Education Area** became **strategic priorities for the reform of the educational and vocational training system in Romania.**

Box no. 24 Priorities of the National Development Strategy of Pre-university Education

Transposing the policies of the Ministry of Education and Research into programmes that would constitute priorities of the National Development Strategy of Pre-university Education for the period 2001-2010 aimed to:

- **Ensuring initial education of all citizens; shaping key competences** (with the sub-components: "Ensuring initial education by formal education" "Shaping key competences of the democratic citizenship and motivation for active participation to social-political life in view of ensuring social cohesion", "Extending computer-supported learning",);
- **Increasing the quality of teaching-learning processes, as well as of the educational services** (with the sub-components "National Curriculum", "Improving the assessment and examination of school performances", "Quality assurance of educational services by institutional development". "Initial and continuing training of teaching staff and auxiliary didactic staff", "Initial and continuing training of managers in pre-university education", "Strategic orientation in the field of scientific research in education", "Strengthening the social statutes of the teaching staff – condition of increasing the quality of the educational act");
- **Substantiating the educational act based on the personal and professional development needs of pupils from the viewpoint of sustainable development and ensuring economic and social cohesion** (with the sub-components: "Substantiating the Schooling and Restructuring Plan of the School Network", "Modernising vocational and technical education", "Assuring quality of school guidance and vocational counselling services", "Supporting educational alternatives – component of educational offer", "Sustaining private education – component of educational offer");
- **Ensuring complementariness of formal, non-formal and informal education; lifelong learning as major dimension of educational policy** (with the component "Lifelong learning. Adult Education");
- **Attaining equity in education** (with the sub-components: "Assuring quality of education in the rural area and in disadvantaged areas"; "Education and learning for national minorities"; "Supporting gifted youth in school performance", "Education for children with special educational needs");
- **Opening educational and vocational training system towards society, the social, economic and cultural environment** (with the sub-components "Education for Health", "Civic Education", "Cultural-Artistic and Scientific Education", "Environmental Education", "Education by Sport", "Traffic Education").(Source: Strategy of Pre-university Education Development in the period 2001-2004, update 2002, Prospective planning up to the year 2010, www.edu.ro, Strategic priorities of the educational system in Romania).

State of the reform process of the pre-university education after June 2003

In accordance with the Law 268/June 2003, for changing and completing the Law of Education no. 84/1995, the national education system redefines its structure, comprising the following levels (*Annex 21*):

- Pre-school education (organised on age groups in the little group, middle group, and the preparatory group for transition to primary school);
- Primary education: grades 1 – 4
- Secondary education: a) lower secondary education (gymnasium: grades 5– 8); lower cycle of high-school or of the arts' and trades' school: grades IX – X; b) upper secondary education, upper cycle of high-school: grades 9– 12/13, preceded, as the case may be, by the completing year;
- Post-upper secondary education
- Higher education: university and post-university education
- Permanent education.

The revision of the national education system represented an important step on the way of continuing reforms in education, but also a way of linking to the European policies, which were fundamentally earmarked by the objectives of the Lisbon Strategy and the targets set by the specialised European bodies in the field of education.

Thus, in November 2002, Romania signed the **Declaration from Copenhagen for cooperation in the field of vocational training**. The meeting, organised by the Danish presidency, enjoyed the participation of the European social partners, as a proof of their essential and indispensable role in vocational training. **The major objective of the Declaration** was the need of mobility on the European market which imposed the development of a joint system of qualifications and competences. The concrete results of the cooperation between the Member States and the candidate ones, in view of 2010, are:

- **A single European Qualification and Competence Framework (EQF)**; the proposed instruments for attaining it being the European CV, supplements for diplomas and certificates of qualification, the Vocational Training Certificate EUROPASS;
- **A system of credits transfer** for vocational education and training (the European System of Education Credits – ECVET);
- **Joint criteria and principles for education quality in VET**, accompanied by quality guides and problem lists ;
- **Joint principles of formal and non-formal education validation** which would allow the equivalence between different countries and different levels of qualification;
- **Counselling for continuing education** with the purpose of increasing citizens' access to this type of training⁵⁸.

The signing of the Declaration of Copenhagen should be included in the wider context of preparations for Romania's accession to the European Union, starting with **Agenda 2000**, continuing with the "**roadmap for Romania**" (**adopted by the European Council from 12-13 December 2002**, at Copenhagen aiming to speed up the process based on the undertakings of the Romanian government during negotiations) and with the **Partnership for Accession, adopted in 2003**, as result of the country analysis from the EU Report for the year 2002.

At domestic level, some important pragmatic documents for preparing integration and with impact on education and the reforms in this field should be mentioned: **The National Development Plan (PND) – meant to support the attainment of the EU objectives of economic-social cohesion and regional development**, an important document for assessing and localising the funds granted to Romania; **The National Programme of Romania's Accession to the European Union (PNAR), adopted in the year 2002**; **The Economic Pre-accession Programme (PEP), based on yearly updates**, highlighting the assembly of national and sector accession policies (macroeconomic development scenarios).

The economic context, as of 2001 recorded significant changes compared with the previous period, the Romanian economy registering a growth rate exceeding the annual average of EU-15, much more rapidly than several Member States or future members with higher performance economies (Table 9).

Table 9 Annual Evolution of Romania's Gross Domestic Product in the period 2001 – 2006

	2001	2002	2003	2004	2005	2006
Gross Domestic Product	5,7	5,1	5,2	8,4	4,1	6,7
Industry	4,4	5,1	4,4	6,5	2,5	6,4
Agriculture	28,0	-6,7	5,2	18,9	-13,9	1,5
Constructions	11,1	7,6	7,0	9,1	9,9	13,0
Services	3,6	7,1	5,5	6,8	8,1	6,5

Source: National Institute of Statistics, National Council for Prognosis

After the year 2001, visible progress was recorded in the constructions' and services' sector. The population unemployment rate for the age group over 15 years was of 7.0% in the year 2002, being close to the EU-15 one (7.7%). Nevertheless, the favourable unemployment rate was a

⁵⁸ European Commission – Education and Training, Enhanced European Cooperation in vocational education and training – the "Bruges – Copenhagen process", The Copenhagen/index_en.htm Copenhagen Declaration, 30 November 2002, www.ec.europa.eu/education/copenl

consequence of the **high rate of employment in agriculture (35%)**, largely based on subsistence agriculture. Also, the hidden unemployment in certain less productive activities continues to be high. **The values for long-term unemployment, for unemployment among young persons' up to 25 years of age were of 3.8%, respectively 18.5%**⁵⁹.

The SMEs sector turned into a dynamic one, with high adjustment capacity to the market requirements, triggering the creation of new jobs and absorbing the labour force laid off from other sectors of economy. In the period 1998-2002, the number of employees per total enterprises dropped by 10%, while the number of employees within the SMEs sector increased by 15%. Hence, by the end of 2002, half of total employees were employed in small- and medium-sized enterprises.

Labour productivity in industry had an increasing trend, due to the reduced number of employed personnel, but also due to the investments for modernising manufacturing flows and to a better organisation of work, based on performance management. In the period 1996-2002, labour productivity increased by 1.26 times, against 1.16 times in the period 1996-2000.

Romania's population in the preceding period to major changes triggered by the preparation programmes for accession to the European Union was on rapid decrease presenting ageing signs (20% of population was in the age group of 60 years and over). The results of the 2002 census indicated a demographic decrease of more than 1.13 million inhabitants, for a time interval of 10 years, from which 0.7 million were children aged between 0 and 14 years of age. **The demographic drop was triggered by the negative natural increase, but also by the negative balance of external migration.** As result, *the demographic pressure on schools was decreasing leaving place to the reallocation of resources from the educational system towards increasing quality, optimising the network, and other measures of readjustment for the education system. The prognosis of Romanian authorities indicated a continued drop of the population aged 15 to 24 years of age, by 30% up to the year 2016*⁶⁰. It should be noticed that more than half of Romania's young population was located in the rural area (47%). From these, less than half attended upper secondary training forms, and only 1% the university.

Romania's economic turnaround had as effect an **increased degree of poverty for certain age groups**. Most affected by this phenomenon were young persons aged 15 to 24 years (31.9% in 2003). For children of the Roma segment of the population, a high poverty risk was registered (80% were living in poverty and 43.3% in severe poverty).

External migration triggered the emergence of a new social phenomenon which affects youth of school age: "children left at home". In accordance with a study realised by the SOROS Foundation Romania⁶¹ **170.000 children from the grades 5 to 8 have at least one parent who left to work abroad.**

The participation rate to education of the population with ages between 15 and 24 years of age was of only 41.9% in the year 2001, much beyond the EU-15 average which was of 57.4%.

Early school leaving in Romania was of 21.3% (in the year 2001), and of 23.2% (in the year 2002), while the EU-15 average was 19.3% (in 2001) and 18.8% (in 2002).

The adoption of Law 268/June 2003, for altering and completing the Law of Education no. 84/1994 led to **extending compulsory education from 8 to 10 years, ensuring the increase of the general level of training for the graduates within compulsory education and to correlating the age on finalising compulsory education with the minimum age of entering labour market** (in accordance with the legislation in force). Yet, declaring the 9th and 10th grade as **"school of arts and trades"** generated confusion among the parents, as compared to the learning objectives of learning in this cycle, the more so as this type of schools existed in the

⁵⁹ European Training Foundation, 2003, "Monograph regarding education and vocational training and labour force employment services in Romania", Context, p.3-17

⁶⁰ EU Conference on Accession and Vocational Integration of Bulgaria, Romania, and Turkey, organised by BBJ Company Group from Germany in October 2005

⁶¹ Press release from 02.10.2007 regarding the "effects of migration: children left at home"

Romanian education until the reform from 1949, having a preponderantly practical character and being supported by the representatives of the business environment. In their new formula, “the schools of arts and trades” were based on developing key competences and general technical competences (“guidance education”), being less open towards developing practical skills due to the weak relationships with economic operators. Also, the implementation of a large number of such schools on the background of some formal or inexistent relationships with the external environment made almost impossible the attainment of some objectives of the practical competences type. On the other hand, the vocational training components of the curriculum at the 1st and 2nd level did not benefit in their elaboration from the input of economic agents, and the qualified teaching staff for these activities was not enough. Hands on the job practice organised with the class discouraged employers from involving pupils in actual working tasks, and the practice within SME was impossible in the framework of such a system.

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Box no. 25

Compulsory education reform in Romania

The levels, correlated with the new structure of the education system and the European levels define reform stages during the period of preparing Romania’s access to the European Union:

Classes I – VIII (age group 6 to 14 years) – ISCED 1-2 Finality: gaining basic competences, including the new competences of a knowledge-based society ; training for lifelong learning (communication, writing, reading and mathematical calculation, digital literacy, scientific and technological culture, entrepreneurial culture, communication in international foreign languages, civic culture and conduct, democratic citizenship, critical thinking, capacity to adjust to new situations, teamwork, interest for personal development and learning).

Classes IX – X (age group 14 to 16 years) – ISCED 2 –high-school and vocational education entities are organized; in rural area are organized school entities for the classes I-VIII, especially in the “area centre”.

- **Lower cycle of high-school** (comprehensive education with pre-specialisation elements required for further guidance in continuing the studies) **Structure of the framework plan:** joint curricula 75 – 80% (general competences); differentiated curricula 15 – 20% (specific competences and, as the case may be, vocational ones required for continuing the studies – subject packages established at national level) ; curriculum at the discretion of the school 5% (in-depth study for pupils with special needs; expansion for encouraging individual learning routes, new disciplines for inter- and intra-disciplinary approaches).
- **School of Arts and Trades** (education for professionalism, assuring qualification within some occupational areas) **Structure of the framework plan:** a) joint curricula 30% (competences supporting the individual and social development knowledge-basis); b) differentiated curriculum 40% (special competences for vocational qualification– subject packages established at national level); c) local development curriculum 30% (competences specific to the needs of the local labour market – approved at county level with the advice of the Local Committee for Social Partnership Development); d) practical training is organised within school-workshops, and for improved training in a contractual system to the economic agents.

Finalities classes IX – X : actual equality of chances by the opportunity for continuing studies ; ensuring the basic education for all (compulsory education is finalised at 18 years of age ; pupils who have not graduated up to this age compulsory education receive a copy after the enrolment file and the personal portfolio for permanent education where the competences gained during the graduated years of studies are mentioned; for them programmes of the type “second chance by education” are organised); simultaneous promotion of stability and social change (all compulsory education graduates receive a graduation certificate and the personal portfolio for permanent education in which are mentioned the competences gained during compulsory schooling; the graduates of the school for arts and trades sustain the certification examination of professional competences, and on passing them they receive a certificate of professional qualification according to the 1st level of qualification);preparation for adult and active life, for leisure time, for family and society; preparation and motivation for continuing learning for a changing world.

Post-compulsory, pre-university education – classes XI – XII/XIII (age group 16 – 18/19 years – ISCED 3)

- **Completion year for the graduates of the School of Arts and Trades**_(education for continuing professional improvement and obtaining the 2nd level of qualification – the selection is realized based on the options of the pupil, and of the results obtained at the assessment of gained competences, changed in a unitary score and refers only to pupils that have obtained the certificate of 1st level qualification). **Finality of the completion year** – obtaining the certificate of qualification for the 2nd occupational level and/or continuing studies in the upper cycle of high-school.

- **Upper cycle of high-school**_(orientation on gaining specific competences and training for lifelong learning)
Structure of the framework plan: joint curricula 50 – 60% (general and specific competences according to speciality); differentiated curriculum 30 – 35% (specific and vocational competences– subject packages established at national level); curriculum at the school discretion/curriculum at the discretion of the local community 10 – 20% (in-depth study for pupils with special needs, extension for encouraging the individual routes of learning, new inter- and intra-sector subjects; ensures occupational mobility and practical activities). **Finality of the upper cycle of high-school**– baccalaureate examination (obtaining the baccalaureate diploma and the possibility of access to higher education, in event of graduating the examination or issue of the enrolment file, with the possibility of sustaining again the examination and access to a post-high-school educational entity, in case of failure to promote) and a personal portfolio for permanent education, irrespective of the outcome of the baccalaureate examination (containing gained competences during schooling).(Source: Ministry of Education and Research, Bucharest, 2003, Reform of education and vocational training system in Romania, p.14-17)

Generalising the preparatory class at pre-school level and lowering the age of beginning compulsory education from 7 to 6 years of age opened the way for real chances for all children to gain formative elements that develop school aptitudes, structuring the development directions of the child’s personality. The preparatory year is based on an educational strategy completed by contents that do not copy school methods, the education gaining formative and personalised valences for each child. The reform for **early education (3 to 6 years of age and 0 to 3 years of age)** in the spirit of the European development objectives of personal development and gaining abilities for learning and an active life from an early age, next to the development of the social inclusion system, make the object of some actions initiated as of 2006. ***The curriculum for early education shall be integrated in the policies and programmes of the Ministry of Education in the next period.***

The Reform Programme of Compulsory Education in Romania⁶² puts forward the need of vocational training for teachers with the purpose of guiding the didactic approach on assisting pupils in gaining the necessary competences for the **knowledge-based society and economy, respectively on training pupils for lifelong learning**. In addition, the didactic approach shall be completed with the new requirements related to counselling and school and vocational guidance of the pupils. The financing of these programmes was ensured from allocations from the state budget, PHARE funds, and loans from the World Bank and the Development Bank of the European Council.

Significant differences were recorded between schools in the urban and the rural area with respect to the quality of resources. Thus, the study on the topic **“Rural education in Romania – conditions, issues and development strategies”** revealed a dramatic situation with respect to the quality of human resources, respectively of the **“agents of change and development”⁶³**. It

⁶² Ministry of Education and Research, Bucharest, 2003, Reform of Compulsory Education in Romania, p. 18

⁶³ Ministry of Education and Research-Institute of Education Sciences, Bucharest 2002, “Rural education in Romania– conditions, issues and development strategies”

showed that almost 1/3 of primary schools from the rural area functioned with unskilled teaching staff, especially for the grades 1 to 8 and, in high-schools, the shares were higher by approximately 10% in the situation of cumulating teaching staff for different subjects who were teaching other subjects than the ones in which they were trained (Table 10).

Table 10 Distribution of education units with unskilled teaching staff by types, in the rural area , %

Functioning entities and type of staff	Kindergarten	Schools with the grades 1-4	Schools with the grades 1-8	High-schools and school groups	Vocational schools
Without any diploma of studies	45,1	30,8	85,5	81,3	91,7
Qualification in other fields than the taught subject	47,2	43,5	96,7	98,3	100

Source: Ministry of Education and Research-Institute of Education Sciences, Bucharest 2002, "Rural education in Romania-conditions, issues and development strategies"

As of 2001, the **Development strategy of the initial and continuing training system for teaching staff and of managers from the pre-university education** has been elaborated and enforced. The legislative and institutional initiatives have pursued the gradual implementation of a set of measures meant to improve the educational act by new activities (supplementary training of pupils from disadvantaged socio-economic environments, consulting for organising vocational training programmes in school, the development of partnerships with local communities, etc.), new wage incentives (for junior teachers, for extra-curricular activities, for the management level, etc.), and by implementing the professional evaluation and of the excellence degree granted first of all based on the performance in the classroom⁶⁴. By the Governmental Decree no. 604/June 2002 was established the **National Centre for Teaching Staff from Pre-University Education Vocational Training, as development and quality assurance agency of human resources**. The attributions of the centre regard the elaboration of standards for continuing vocational training, accreditation of programmes and their assessment and continue with diagnosis, prognosis, and other studies.

By means of the **Multi-annual PHARE Programme for Economic and Social Cohesion 2004-2009** was realised an assessment of the vocational training needs of the teaching staff from high-schools, and the development of mechanisms and procedures for quality assurance in education, and the **occupational standards for teachers, managers and school inspectors were reviewed in accordance with European standards**.

In November 2002, was launched a project by which 1100 entities within upper secondary education were endowed with computer networks, providing for the teaching staff the opportunity of vocational training in the ICT field (in the year 2001 only 5% from total teaching staff had in-depth ICT knowledge).

The TVET RO 0108.01 provided for new dimensions of pre-university education as it came to complete the already attained progresses but granting them a new, European dimension, in accordance with the new national directions and strategies.

A first step on the way of reforms within this project was represented by the **Regional Action Plans for Education – PRAI** (strategic documents at regional level) which allow for a long-term approach of vocational and technical education, correlating the needs of vocational training with the ones of qualification at school, local and regional level. **By means of PRAI**, the planning which was with difficulty adjustable to the requirements of the labour market may reflect the EU targets and the economic and social environment from Romania. The first regional PRAI were elaborated in 2003, with the target 2010. They are annually reviewed. **The regional plans**, are realised by means of the regional partnership structures (**Regional Consortia**). PRAI acquired also a local dimension (**Local Action Plans for Education – PLAI**) realised in county

⁶⁴ Ministry of Education and Research, Bucharest, 2002, Actual state of education reform in Romania- Preliminary Report, p.11

partnership structures (**Local Committees for Social Partnership Development – CLD**) and in a school structure (**Action Plans of Schools – PAS**).

Box no. 26 Objectives of the Project “Modernising Vocational and Technical Training”– PHARE TVET RO 0108.01:

- Ensuring a modern and European curriculum for vocational and technical education and, in parallel, development of teaching staff;
- Assessing and projecting the needs of the labour market; providing assistance to Regional Consortia;
- Ensuring vocational training by taking into account individual needs;
- School guidance towards a wider occupational area;
- Providing for methodological assistance;
- Reviewing the continuing vocational training system of teachers, so as to take into account the changes of teaching methodologies and of the requirements with respect to evaluation;
- Introducing a new national system of professional qualifications in parallel with the training of the teaching staff and of the trainers within the system;
- Significant involvement of employers in drafting, enforcing and evaluating the national curriculum;
- Use of evaluation based on pupil’s competition in a system with open access;
- A system plan for quality assurance;
- Using the workplace for vocational training, experience and evaluation;
- Differentiated certification of knowledge, key competences and of the technical ones on finalising the training of a young individual;
- Organising teams for developing partnerships in schools in order to draft joint action plans schools – enterprises;
- Vocational training of school’ staff with respect to the cooperation manner with employers;
- Realising a site, maintained by the National Centre for Vocational and Technical Education Development having the role of a learning platform for the teaching staff from schools and from resource centres;
- The purchase of some specialised equipment for workshops and laboratories (schools and selected resource centres);
- Granting assistance to School Inspector’s Offices for updating and adjusting vocational and technical education specific information;
- Elaborating a children’s educational programme for children with special needs and training trainers for this purpose;
- Training the management staff (school heads, managers of resource centres, the staff of the Centre for Vocational and Technical Education Development from within the Ministry of Education and Research) in accordance with EU standards;
- Providing for assistance that facilitates the transition from school to work as an opportunity to have access to the continuing vocational training system.

The outcomes of the project, evaluated as number of participants next to methodological assistance and the purchase of equipment were:

- Training 372 teachers for curriculum adjustment;
 - Launching a communication web-site ; carrying-out 8 Regional Action Plans for Vocational and Technical Education – PRAI (from which 2 pilot ones – Centre and NE – for which also labour market studies were realised);
 - Vocational training for 314 persons (teachers, school inspectors, school heads and social partners, members of Regional Consortia) in PRAI realisation techniques; vocational training of 489 persons (teachers and social partners) and of a group of trainers for the partnerships between school and economic agents;
 - Vocational training of 300 teachers for using IT techniques in elaborating the curriculum;
 - Vocational training of 413 teachers for education focused on the individual needs of the pupil and training a group of trainers in this field;
 - Vocational training of 289 teachers for organising education according to the demand of the local market, and training a group of specialised trainers;
 - Vocational training of 372 teachers for the education of children with special needs and of trainers in the field;
 - Training 92 persons with management positions from the system and of 18 specialised trainers;
 - Elaborating professional programmes for 16 fields and training a group of 59 trainers for curriculum developers;
- (Source: Economic and Social Cohesion, Project for the Modernisation of Vocational and Technical Education, PHARE TVET RO 0108)

Realising the specific plans for the vocational and technical education allowed for⁶⁵:

- assuming the reform necessity of the system at regional level (PRAI turned into axes of the Regional Development Plans);

⁶⁵ European Training Foundation – Romanian National Observatory, Bucharest, 2003, Monograph regarding education and vocational training and employment services in Romania, p.28-63

- monitoring the process of quality assurance in cooperation with local inspector's offices (Action Plans of Schools – PAS which include internal and external dimensions of the management process: resources, development, vocational training of teaching staff, evaluation and certification of outcomes, local and regional priorities; by self-assessment reports they open the way for peer-review in schools);
- the orientation of partnership with employment agencies towards identifying the competence deficits, as well as for signalling the emergence of new occupational profiles;
- ensuring the creation of new consulting services with the purpose of rationalising the school network in the region;

The new TVET curriculum provides for complete professional development starting with the key competences up to specific competences, including career and entrepreneurship development competences which provide also for a European dimension of the Romanian vocational and technical education. The module structure of training constitutes an assurance for increasing the quality in education and vocational training, ensuring an increase of occupational mobility.

As of the school year 2003-2004 the curriculum at school's discretion opened the way for optional subjects such as: education for health, education for quality, education for European integration, education for mass-media, education for human rights, intercultural education and education for a democratic citizenship.

By virtue of the "Strategy for initial and continuing vocational training of teaching staff and education managers" the TVET reform allowed for: promoting training focused on pupil's needs by means of modern teaching techniques and specific didactic supports; education of children with special needs; professional integration by combining learning and practical activities; vocational counselling and use of IT in didactic activities.

Beyond the novel lines of the TVET Reform, the largest part of practical training continued to develop in schools (laboratories or school workshops), particularly for certain profilers⁶⁶.

The **PHARE Programmes 2003 and 2004 – 2006 for Vocational and Technical Education Development** have provided for assistance in schools from the rural area and schools in medium- and small-sized localities (71 schools) having as beneficiaries pupils, teachers, school managers, Regional Consortia, and Local Committees for Social Partnership Development. Additionally, the grant schemes of the type "**Partnership for School and Community**" intended to support schools and communities from the rural area for increasing the quality of services and encouraging the cooperation with local authorities, with the purpose of diagnosing problems, and of formulating and implementing solutions.

Box no.27 Financing project of rural education for the period 2003 – 2009 (60% World Bank, 30% Romanian Government and 1% local communities)

Main objectives: a) Improving the learning-teaching activities in schools from rural area; b) Vocational training of teaching staff from the rural area by activities developed in schools and in other forms; c) Ensuring the minimum conditions of schools' functioning from the rural area; d) Improving the relationships between school and local community; e) Strengthening the monitoring, evaluation and policy elaboration capacity by creating the **National System of Indicators for Education (SNIE)**.

The components of the project are:

Improving the teaching-learning activities in schools from rural area (interactive teaching focused on the pupil; permanent evaluation in the classroom; knowledge instruments of the pupil; adjusting the curriculum to the rural area; simultaneous teaching; reading and writing improvement, and of the basic knowledge of mathematics in Romanian as second language; use of compute for teaching and learning activities; school management; development opportunities of the teaching staff career for those teaching the other subjects than the graduated discipline and who do not have pedagogical training, i.e. no qualification);

Improving the partnership community-school;

Strengthening the monitoring, evaluation and policy elaboration capacity;

Strengthening the management capacity of the Management Unit of the Project for Rural Education.

Results:

⁶⁶ European Training Foundation – Romanian National Observatory, Bucuresti, 2003, , Monograph regarding education and vocational training and employment services in Romania, p.11

- Continuing vocational training for 4000 teachers from the rural area;
 - Realising 4500 investment objectives;
 - Endowment with teaching support and printed materials for: 8000 schools with the grades 1 to 4; 4000 schools with the grades 5 to 8 from 33 counties;
 - Establishing a national set of indicators for education;
 - Modernising the national data bank for education;
 - Preparing a national evaluation of initial education.
- Source: Project for rural education, www.rural.edu.ro

The Emergency Ordinance no. 75/2005 (approved and completed by Law no. 87/2006) has facilitated the set up of the **Romanian Agency of Quality Assurance in Pre-university Education - ARACIP**. The role of ARACIP⁶⁷ is to carry out:

- External evaluation of the quality of the education provided by the pre-university educational institutions, and by other suppliers of such education (certifying the capacity of the suppliers to meet the expectations of the beneficiaries; elaborating the standards of quality; ensuring the protection of direct and indirect beneficiaries by information; developing the institutional culture of quality in pre-university education; formulating proposals for the Ministry of Education in order to improve the quality of pre-university education);
- Authorisation, accreditation, and periodical evaluation of pre-university educational entities.

It should be expected that the evaluation of the quality in pre-university education from Romania shall follow the European guidelines, meaning that they should:

- have measurable objectives and standards as basis;
- be accompanied by implementation guides that would provide for the involvement of beneficiaries;
- have adequate resources;
- benefit of feedback mechanisms and procedures;
- be transparent;
- benefit of adequate and European correlated coordination to ensure coherence and systemic analysis capacity;
- represent a cooperation process between initial and continuing training, involving the relevant beneficiaries at community, national and European level;
- take into account the community and regional priorities and allow for the dissemination of good practice examples.

By virtue of one of the first strategic priorities of the pre-university education reform in Romania, which refers to “**providing basic education for all citizens and shaping key competences**” were developed also other stages and programmes, apart from or integrated into the other reforms, after the year 2003:

a) **The Programme “Access to Education for Disadvantaged Groups”**⁶⁸ allowed for the development of four successive projects that approached these segments of the population:

-PHARE 2003 005-551.01.02 (focused on Rroma population) – had as objectives: **increasing the quality of pre-primary education** in view of stimulating participation to compulsory education; **preventing early school-leaving; correction of early school-leaving** (providing for the second chance for persons who did not finalise studies within compulsory education);

-Twinning Light RO 2002/IB/OT-02TL (dedicated to children with special needs) - was targeted on **realising a national plan regarding the integration of children with special needs in mainstream schools; preparation of a plan of vocational training for teaching staff from inclusive; realising a guide for good practices in the field;**

⁶⁷ Site ARACIP, www.aracip.edu.ro

⁶⁸ Site of the Ministry of Education and Research: www.edu.ro

- **PHARE 2003 005-551.01.02 (dedicated to children from disadvantaged communities)** - which pursued to **increase the quality of pre-primary education** in view of stimulating the participation to compulsory education, **diminishing early school-leaving for children from disadvantaged communities** and continuing compulsory education through the **programme “second chance”**

b) Developing key competences by the compulsory school curriculum and on educational levels:

* Introducing the **first foreign language** as of the 3rd grade (it can be optionally introduced already in the 1st grade); introducing the **second foreign language** as of the 5th grade;

* **Developing cultural sensitivity** by introducing the curricula area “arts” and by **extramural activities;**

* Introducing **“information and communication technology”** as part of the joint educational curriculum as of the 9th grade (in all high-school and arts and trades schools’ network) ;

* Promoting the **“entrepreneurial culture”** based on the subject “practical abilities” in primary education, “technological education” in lower secondary education (gymnasium) and “entrepreneurial education and business education” in technological high-schools and arts and trades schools – *as subjects pertaining to the national compulsory curriculum, the involvement of employers in developing these programmes was minimal.*

At the moment of Romania’s accession to the European Union the main stages of the reform in pre-university education were approached being in various phases of implementation or extension. The efficiency of these reforms could be easily demonstrated with the help of the indicators of state that can be compared with similar indicators of the European Union member countries.

In general, the pre-accession period faced a number of challenges which adjusted the dynamic but also the efficiency of initiated reforms. These challenges were triggered by:

- a) economic turnaround and the expansion of the SME sector (the need of new skills, of highly skilled workers adjusted to the new performance requirements; under-use of the research development potential);
- b) correlating the Romanian education system to the European strategies and policies (the Memorandum on Lifelong Learning, the Copenhagen Process, the European Pact for Youth, the European Qualifications Framework and the European Credits Transfer System for Vocational Training), to the action plans and programmes for European integration.

A series of phenomena affected negatively the first reform steps and triggered a weak efficiency of its implementation. Among them, we remind as the most significant: ***under-financing of the education system; maintaining, to a large extent, a centralised decision and control system; lack of pertinent studies regarding actual and future market; lack of a coherent quality system in education; lack of modern methods of developing human resources for education (management career, performance evaluation, vocational training, personnel motivation); lack of experts in educational marketing; the formal aspect of partnerships with the business environment and civil society; placing continuing vocational training on a secondary place in relation to initial vocational training; incoherence between the regulations of the Ministry of Education and of the Ministry of Labour; lack of a monitoring system for all strategies, plans and programmes subjected to reforms, of the changes within the system determined by the political factor and of the measures with electoral nuances.***

As result, the reforms developed in the period 2003 – 2006 did not succeed in bringing about significant improvements in changing the image of the Romanian education system in relation to the exigencies of the labour market, the European indicators of efficiency and, by and large, to the stringent need of increasing the quality of provided services.

II.3 Reform of the university education. Expectations. Partial results.

As already mentioned before, Romania was among the states which recently adopted the Bologna System of tertiary education (ISCED 5-6), respectively 3+2+3 (bachelor, master and doctorate).

Table no 11 Implementation stage in Europe of the Bologna Declaration

STATE	ADOPTION OF EDUCATION LAW	DIPLOMA FRAMEWORK	STRUCTURE ON 3 CYCLES	COMMON TECHNOLOGICAL AREA	MOBILITY	EUROPEAN COOPERATION
Austria	2002			Yes		
Belgium		Yes	Yes	Yes	Yes	Yes
Bulgaria	1999	Yes	Yes	Yes	Yes	Yes
Cyprus	2002	Yes	2 cycles	Yes	No	No
Czech Rep.	2001	Yes	Yes	No	Yes	Yes
Denmark	2003	Yes	Yes	Yes	Yes	Yes
Estonia	2003	Yes	Yes	Yes	Yes	Yes
Finland	2003	Yes	Yes	Yes	Yes	Yes
France	2002	Yes	Yes	Yes	Yes	Yes
Germany	2002	Yes	Yes/ in parallel with the old system up to 2010	Under implementation	Yes	No
Hungary	2004	Yes	Yes	Yes	Yes	No
Island	1997	Yes	Yes	No	Yes	Yes
Ireland	1997	Yes	Yes	Yes	Yes	Yes
Latvia	2000	Yes	Yes	No	Yes	Yes
Lichtenstein	2004	Yes	2 cycles	Yes	Yes	Yes
Lithuania	2000	Yes	Yes	No	Yes	Yes
Luxemburg	2003	Yes	Yes	Yes	Yes	Yes
Malta	2002	Yes	Yes	Yes	Yes	No
The Netherlands	2002	Under implementation	Under implementation	Under implementation	Yes	Yes
Norway	2002	Yes	Yes	Yes	Yes	Yes
Poland	2002	Under implementation	Under implementation	Under implementation	Under implementation	Yes
Portugal	2004	Yes	Under implementation	Under implementation	Yes	Yes
Romania	2003	Yes	Yes	Yes	Yes	No
Slovenia	2004	Yes	Under implementation	Under implementation	Yes	Yes
Slovakia	2002	Yes	Yes	Under implementation	Yes	Yes
Spain	2001	Yes	Yes	Yes	Yes	Yes
Sweden	2002	Yes	Under implementation	Under implementation	Yes	Yes
Switzerland	2003	Yes	Yes	Under implementation	Yes	Yes

Source: Dennis Farrington- Legislative initiatives in the Context of the Bologna Process: A Comparative Perspective (UNESCO 2005) din SAR, idei in actiune, "Lisabona, Bologna si fabrica autohtona de meritocratie"(„Lisbon, Bologna and the Autochthonous Mediocrity Factory”)

The adjustment of education to the exigencies of the third millennium is based on the two fundamental coordinates of Europe “the Lisbon Agenda” and the Bologna Process⁶⁹

⁶⁹ In the Bologna Process – the ambitious programme of higher education reform in Europe and not only – are involved 46 countries, from Ireland to Azerbaijan. The Reform Programme aims to create a single European area of higher education by facilitating students’ mobility in academic European institutions, by developing a simplified system of qualifications’ recognition at European level and last, but not least, by ensuring high standards in universities. http://www.euractiv.ro/uniunea-europeana/articles%7CdisplayArticle/articleID_12727/UE-a-lansat-un-nou-instrument-pentru-asigurarea-calitatii-in-Invatamantul-superior.html

In accordance with the provisions of the two programmatic documents, the system of permanent education must answer to a number of *minimum exigencies* that would allow not only functionality of basic components, but also efficiency, respectively the dynamic compatibility between labour market demand – exigencies imposed by the incorporation of RDI outcomes and the development of performance RDI (knowledge, competences, specific skills of the knowledge-based society and of the new economy) – and the educational supply of the continuing education system (education and CVT). These exigencies consider: **an articulated and open national system, compatible with the guidelines of EETS, reformed with respect to the curriculum aspect and of performance.**

The Reform of Higher Education was based on Law 84/1995 which underwent updates determined by the evolutions of the national education system as result of at least three factors:

- **the need of global compatibility with the European education systems** in order to allow for the development of functional relationships and mobility between higher education institutions;
- reform of the system at national level as result of the need to **adjust the system of initial education to the requirements of the labour market;**
- **development of some functional systems and links between education market, RDI market and labour market** that would allow for an efficient, performance, qualitative and flexible higher education and which would incorporate new knowledge and develop modern learning methods, which permit valuing knowledge and putting to good use the abilities and competences of the students already within the training system.

Higher education, in public or private system is organized in universities, institutes, academies of study and post-university studies schools and has as mission to develop education (and research) activities specific to the field of science, to the profile and form of organization (long-, short-term and distance education, etc.). The higher education entities benefit, in accordance with the law of *functional autonomy* which allows for organizing the education and university research system the development of the school curriculum and of the research directions in accordance with the options and strategic guidance of the higher education development determined by law and the educational policy promoted by the Ministry of Education and Research. Organizational and financial autonomy allows to higher education entities to guide didactic and scientific activity in accordance with the demands of education and labour market, but leaves them freedom in orientation towards excellence areas and developing elite schools, with national and international recognition. Their activity is circumscribed to the national curriculum and to the national evaluation system coordinated by Ministry of Education and Research.

As of the university year 2005/2006 higher education is organized on three cycles. The bachelor degree covers general training so that graduates are able to integrate on labour market. The bachelor degree areas are wider, from the 300 accredited up to 2005 remaining valid for organizing the 1st cycle only 67, thereby being pursued that students no longer are trained on narrow fields, with low chances of rapid integration on labour market (save for high-tech fields where specialization triggers efficient and paid employment). The specialization in the system of university education is realized in the 2nd and 3rd cycle, respectively master and doctorate studies. The doctorate is more flexibly organized being of two types: **scientific doctorate** based on creation and advanced scientific research, and **professional doctorate** which is granted in areas where talent plays an essential role – arts, sport, and is equivalent to the scientific one. The doctorate includes advanced studies and scientific research, both compulsory (legal regulation HG 567/2005).

The organization of university studies is within the competences of higher education institutions, with the approval of the responsible ministry. Each cycle of studies corresponds to a number of study transferable credits, in accordance with the European Credit Transfer System (ECTS) which became compulsory in the year 2004 (Law no. 288/2004, art. 15, par.1). By Order

of the Minister of MEC 3617/2005 the legal basis is provided for generalizing the credit transfer, in the framework of international mobility of students, but also between Romanian faculties and universities. By day university education, 60 ECTS per year of study can be obtained, 180-240 for the entire period of studies. The master studies with the duration of one to two years allow gathering 90 – 120 credits.

Bachelor degree studies are organized on areas of study, save for the specializations regulated by special norms. The list of areas is provided in HG 88/2005 and includes 14 fundamental areas of science, arts and culture and 69 areas for bachelor degree studies from which some are sector regulated, or general by EU norms (health, architecture). By HG 916/2005 the structure of the national higher education system is determined as well as the specializations within the study areas for the bachelor degree: 49 institutions of civil state higher education units; 7 state institutions of military higher education units; 29 accredited institutions of private higher education institutions and 28 institutions authorized to function provisory.

From the fundamental regulations which are at the basis of higher education organization and functioning, we consider as important the following:

- universities, based on their autonomy make the repartition of accredited or authorized specializations to function provisory on faculties and departments;
- the master studies ensure in-depth knowledge development in the bachelor degree area or in a related area, contribute to the development of scientific research capacities and represent a compulsory preparation stage for admission to doctor studies;
- PhD studies, organized as day courses or long-distance ones have a duration of 4 to 6 semesters, equally divided for the advanced university training programme and the scientific research programme. Each entity organizing such studies (IOSUD) sets up its own regulation for monitoring and evaluating the activity, and the doctor studies leaders are subject to external evaluation (HG 567/2005). In the Regulation it is necessary to make distinct and clear reference about the mechanisms of ensuring quality of the advanced knowledge programmes and of the scientific research programmes of IOSUD;
- by Order of the responsible Minister, already from the year 2005 (Ord. 3235/2005) was determined the obligation of the universities to redefine their educational offer and the content of the study programmes for developing the student centred education;
- by signing the Convention from Lisbon regarding the recognition of diplomas obtained in higher education in 1997 and the ratification by Law 172/1988 was created the National Centre for Diploma Recognition, a structure affiliated to the ENIC/NARIC networks and comprised in the MEC structure;
- in accordance with the law, higher education institutions may provide continuing training courses by promoting flexible training pathways, by learning opportunities and techniques this form of education being included in the Strategy of Lifelong Learning from Romania (2005);
- although institutionalized by Order of MEC 3861/2005, the Post-doctoral Research Programmes which are addressed to young researchers up to 35 years of age, universities and scientific research institutions have developed such scientific programmes;
- for stimulating excellence in university education, already in 2004 was instituted the Special Scholarship “Government of Romania” by which young persons with potential were selected to study abroad (university studies, master or doctorate studies). In the first year of enforcing it, from about 900 requests 46 were accepted, the requests for studying abroad being expressed for universities from Great Britain, USA, Switzerland, the Netherlands, and Germany. The fields selected for studies were

economy, diplomacy and international relations. Upon returning into the country a job is assured within the public administration⁷⁰.

The reform of higher education after the Bologna model is under development and the first complete cycle of education is not finalized yet, a fact for which available assessments are only partial and estimates (in the next chapter some partial outcomes shall be presented).

Even undergoing significant changes once to the shift to the Bologna system, the Romanian higher education still needs changes of essence. The concerns in the field are intense and include a wide range of stakeholders – from universities to economic agents and local community, from responsible factors from the corresponding ministry and territorial structures of the latter, up the levels of the presidential administration.

Without making a detailed presentation of the proposals from the Report of the Presidential Commission⁷¹, a series of intervention areas are identified which pursue as finalities:

- the transition from uniformity and dispersion to the differentiation of universities and concentration of resources;
- optimizing the use of human resources and creating a professional deontology code;
- introducing the management (corporatist) system in the management of universities and creating a national centre for training managers in higher education;
- differentiated and flexible financing – financing of study programmes and not of equivalent students, multi-annual and mixed financing in the public-private partnership system, encouraging the accessing of funds for research originating from/ordered by the business environment, and increasing the responsibility of universities in managing public funds;
- promoting the entrepreneurial culture in higher education – the development of entrepreneurial periphery of universities (spin-off companies and business incubators), promoting the matrix organization of universities, constituting the venture capital;
- instituting a reference system of indicators for higher education, correlated at system level and at institution level, to measure performances.

The perception on the efficiency of the reform of higher education is different. In accordance with the information provided by the Eurobarometer no. 198⁷², Romanians are more confident in the beneficial results of the systems 3-2-3 than other states, or comparatively with the EU average. Synthetically, in the following, we shall present some of the outcomes of this survey.

Table 12 Outcomes of the survey with respect to the reform of higher education (share of those who agree, %)

Question : Introducing the 3-2-3 system	Romania	EU, New Member States	EU 27
- shall improve the quality of education?	80	57	49
- shall increase the quality of training for doctor students	85	50	44
- the maintenance of the old system would have been more beneficial	20	29	32
- improving the curricula by adjustment to the requirements of the labour market	91	86	70
- shall trigger the opening of the system and the promotion of courses for adults	95	92	87
- creation of institutions' autonomy against the public authorities	86	76	75
- increasing the management quality at company level	98	84	80

⁷⁰ The programme is an initiative of the Romanian Government and supported by UNDP.

⁷¹ Romania of education, Romania of Research, Report of the Presidential Commission for analysing and developing the policies in the areas of education and research, July 2007.

⁷² Perceptions of Higher Education Reforms, Flash Eurobarometer, January /February 2007, Gallup Organisation

- universities should be financed by public funds and not concerned in attracting private funds	42	43	53
- private funds shall stimulate performance	93	83	73
- the partnership with the business environment shall revitalize universities	93	88	73
- promoting university leadership	74	78	68

Source: own processing after Perceptions of Higher Education Reforms, Flash Eurobarometer, January/February 2007, Gallup Organisation

These answers reflect the fact that significant positive outcomes are expected from enforcing the system. Interviewed professors are optimistic that the reform shall bring about changes of essence, shall increase performance and quality in education. Also, the persons interviewed from the new member countries in the EU are more confident in the benefits of reform than those of EU 15. Respondent professors with more than 30 years of teaching experience are the most pessimistic with respect to improving the quality of education by the new system. Same are professors teaching engineering sciences. At the opposite pole are those with specialization in medicine who are the most confident in the benefits of the higher education reform after the Bologna model. The respondents with technical and economic specialisation consider that less than 2/3 from the graduates of the university cycle shall be employed after graduating, and those from the field of social sciences appreciate that graduates shall follow also the second cycle before entering on the labour market.

With respect to the content of education in this system, three quarters from the respondents consider that the training programmes may ensure generic competences (communication, teamwork, and entrepreneurial attitude) and therefore these should answer best to the requirements of the labour market. A similar share of the respondents consider that a university diploma and a master one shall ensure to a larger extent increased chances for employment and professional career, but also for continuing studies in the doctorate cycle. Also, there are opinions according to which universities should be more open in their offer of educational programmes for adults and closer to the requirements of the labour market.

If we refer to the financing forms, there are appreciated as possible and necessary the mixed financing systems and the schooling fees, a larger interdependence against public authorities, and strengthening the cooperation relationships with the business environment. The competition between universities is regarded as beneficial, but must be doubled by efficient internal management and the freedom to select future students.

In our opinion, in Romania **the reform of the university education system shall generate lower effects than the expected ones**, at least because of the following reasons:

- a) *the reform was implemented without sufficient preparation of the stakeholders*, of the participants – students, teaching staff, business environment;
- b) *the quality of the content of the educational packages is weak*, and in general to lesser extent linked with/adjusted to the demands of the labour market and of the RDI market;
- c) pupils come from the pre-university system with *an insufficient baggage of knowledge for the demands of transition to performance tertiary education*;
- d) *the links between universities and the business community are weak or inexistent*, the educational offer does not support competitiveness and the labour demand is not linked to the knowledge and skills supply of the university environment;
- e) *there is a chronic deficit of efficiency in the internal management of the universities*, a fact which affects the adequate spending of the financial allocations and does not incentive to a satisfactory extent the attraction of private funds or of EU financing.

In our opinion, *the reform may be efficient and can generate quality in the educational processes if adjusted to/completed with the contents of the curricula and the renewal of teaching methods, at least at the level of educational policies.*

II.4 The reform continues in Romania. Between desiderates and realities.

Even though Romania had in 1989 a relevant experience with respect to permanent education (Law no. 2/1972 – *“the vocational training improvement is developed in enterprises, enterprises with the statutes of central unit, ministries and within other bodies of the state administration, improvement centres, research and design institutes, entities of education and other institutions*) these processes were perceived in agreement with personal hobbies or with the need to gather new knowledge for career advancement. Modern concepts of continuing education propel the field in the area of new and/or (integrally or partially) updated “competences” at large, combining knowledge with skills and aptitudes based on two assessment alternatives: “the person can” or the “person cannot” develop a certain activity. A proper understanding of these principles had to lead the traditional education system, and also the training one, of permanent education towards understanding the applicative purpose of the training-educational processes.

Introducing a new education system in Romania, in resonance with the traditional one, represented a long-lasting process full of hindrances, finalised from the legislative viewpoint only in 2000 and applicable only as of 2004, respectively 9 years after first initiatives of distinct regulations of permanent education were initiated, replacing the old legislation, valid as of 1972. After the Education Law no. 84/1995 was adopted, which institutes the beginning of a permanent education system in Romania, the initiative came from the civil society and enjoyed the interest of the Ministries of Education, Labour and Youth.

The draft law resulting from the analyses of the initiators benefited from the interest of the legislative bodies.

Just as in the case of educational reforms, *the main obstacle in the way of introducing the new system was represented by the mentalities* – on one hand the ones practiced throughout decades with respect to the uniqueness of the educational act, respectively “you qualify ones in a lifetime and have the guarantee of a job up to the moment of retirement”, and on the other hand the feeling that a good theoretical training, of the “Olympics” type allows for approaching any occupational segment.

Faced with the heritage of the old economic-social order, the speed of the economic changes and the new social phenomena, inexistent before, led to the need of conceptual clarification⁷³. Thus:

- **“initial education”** was defined as representing basic education (pre-school and compulsory general education);
- **“adult education”** entails all learning situations which follow after initial education, or replace it and is characterised by: **“continuing vocational training (CVT)”, intensive programmes for adults’ literacy, education during the free time or “leisure activity”;**
- *continuing vocational education is acknowledged as meant to harmonise the needs of the market with the ones of the social stakeholders (employers, employees, persons seeking jobs), a concept open towards the European principles in the field;*
- **“formal education”** is the activity developed within the specialized institutionalized system (kindergarten, school, university, training centres) and finalized by obtaining marks, diplomas, or certificates; activities not meeting the criteria of the formal system are defined as being **“non-formal education”;**
- the methods and content of the specific CVT programmes should be adjusted to the education needs of the adults;
- the participants to CVT programmes are, usually, persons with work experience and who have already graduated a form of initial education.

Box no. 28

Adjustments of legislation regarding permanent education

The Emergency Ordinance no. 36/1997 regarding the alteration and additions to the Law of Education has brought about improvements of the enforcement procedures of permanent education Thus:

- **the National Council for Education and Continuing Training** was set up within the Ministry of Education;

⁷³ European Training Foundation – National Observatory – Romania, Bucharest, September 1998, “Continuing Vocational Training in Romania”, First Part, p.7-8, Third Part, p.32

- The Ministry of Education assumes the role of a methodologist for continuing vocational training of adults and authorises programmes of continuing vocational training for teachers with the purpose of diversifying the education offer.

Under the conditions of a legislation that does not compel companies to allocate funds for continuing training of its employees, and considering the circumstances of lacking financial or management facilities, the development of a harmonized system of continuing vocational training was impossible. Broadly regarded, the system developed next to those institutions that disposed of financial resources for totally or partially financing the activities (ministries or public institutions, foreign companies, employment and unemployment agencies). Under these circumstances, small- and medium sized companies turned into the most vulnerable ones in relationship to the continuing vocational training possibilities for their own employees.

The devolution of the CVT efficiency in relationship with the persons finding a job as result of the courses attended in the period 1991-1997, reflects the great economic and organisational malfunctions of the continuing vocational training system at the time.

Table 13 Share of persons finding a job in total participants to organised courses

	1991	1992	1993	1994	1995	1996	1998 Q.I
Total number of persons attending courses, from which	34.5	22	16.4	20.6	18.6	20.2	10
- on request of the economic agents	88.7	84.3	77.7	44.7	30.6	23.8	12.4
- based on studies and prognoses regarding labour market	12.6	16.5	14.0	15.3	10.7	36.1	10.6
- on request of interested persons	18.5	21.5	9.3	12.7	15.7	14.1	8.9

Source: Statistical Bulletin of Romania, 1997, p.148-149. Quarterly Bulletin no.1 and 2/1998,MMPS

In accordance with the data of the National Commission for Statistics, the continuing vocational training expenditure represented in the year 1996 only 0.2% at the general level of economy with high variations from one field of activity to the other: 0.0% in agriculture, forestry and health; 0.1% in industry, public alimentation, defence and social protection, trade, hotels and restaurants; 0.2% in transport and real estate intermediation; 0.4% in financial, banking and insurance activities; 0.7% in constructions.⁷⁴

Considering the aspect of human resources competitiveness, in relationship to the European market (the criteria of the Copenhagen process), Romania was placed in a disadvantageous position. In the year 2000 (the year of initiating the accession negotiations) Romania had a **human development index under the average of the candidate countries**, respectively 0.777⁷⁵. In this context, the directions of action of the **National Strategy for the Development of Human Resources 2001-2004** have defined as priority the following objectives:

- Extending the educational reform also to the continuing vocational training system (system not regulated from the legislative and institutional viewpoint);
- Extending the system of competences' shaping, that is technical and basic ones (recommended on the Lisbon Summit);
- Using economic opportunities to stimulate investments in human capital;
- Ensuring quality vocational training in accordance with the European standards;
- Putting to good use permanent education in selecting, employing and professional promotion of the staff;
- Attracting social stakeholders in organising and financing the education system, particularly of the vocational one.

⁷⁴ European Training Foundation – National Observatory – Romania, Bucharest, September 1998, "Continuing Vocational Training in Romania", Third Part, p.33

⁷⁵ The computed level of this index reflects the low level of competitiveness of human resources in relationship with the market. European Training Foundation – National Romanian Observatory, Bucharest, 2001, National Report, Modernising the education and vocational training system in Romania, p. 59.

All identified objectives led to the need of defining and implementing the continuing vocational training system in Romania.

By the vocational training component of the Employment and Social Protection Project, in value of 50 million USD, developed through the Ministry of Labour were created the **National Council for Adult Vocational Training (CNFPA)** and the county structures of the above-mentioned, being legalised and institutionalised the following directions of action:

- realising the tripartite bodies (Ministry of Labour, Ministry of Education, the National Agency for Labour Force, representative employers' and trade union organisations at national and county level) for making decisions about the organisation and functioning of continuing vocational training;
- accreditation of the vocational training programmes and of the suppliers in relation to European standards and training's quality;
- implementation of sequences (modules) in training to allow for the flexibility of inputs and outputs from the system.

The Ordinance 129/2000 with respect to adults' vocational training, respectively the normative document which introduced officially the system of continuing vocational training in Romania, went a long way, full of hardships until it was enforced in the year 2004, after adopting the Law 375/2002 and the enforcement norms in 2003.

The relationship between initial and continuing vocational training was reiterated within the **National Development Strategy of Pre-university Education for the Period 2001-2010**. The strategy had as main objective **"continuing pre-university education reform"** so that educational policies should contribute to developing the inclusive and prosperous Romanian society, by ensuring the inclusion of each child and school-age youth into one form of education, by developing individualised educational programmes for adults who did not benefit from the first chance provided by education for **gaining the specific key competences of the knowledge economy and information society in order to participate actively and in a decisive manner to the social, civic, cultural, economic and administrative development projects of the local communities**⁷⁶.

The high percentage of youth (15 to 24 years of age) not enrolled within the educational system (almost 60%) correlated with the high percentage of persons with an average education level (61%) and with the strategies of the European Union with respect to continuing vocational training (**Memorandum on lifelong learning, elaborated by the European Commission in October 2000**) have imposed a speeding up of the procedures of completing and rendering operational the continuing education system for adults.

Box. no. 25 Key Messages of the Memorandum on Lifelong Learning

The **Memorandum** took over from the European Councils from Feira and Lisbon the mandate to implement lifelong learning for all. The key messages are:

1. **Assurance of universal and permanent access to education** for training and renewing the competences required for sustained participation to knowledge society;
2. **Visible increase of the investments' level in human resources** in view of valuing the most important resource of Europe: its people;
3. **Developing teaching and learning methods and settings** required to ensure lifelong learning;
4. **Significant improvement of ways in which participation to and outcomes of learning are understood and assessed**, particularly non-formal and informal learning;
5. **Ensuring the necessary conditions so that all have easily access to quality information and counselling regarding educational opportunities** throughout Europe and for the entire lifespan;
6. **Providing permanent education opportunities as close to the beneficiary as possible**, within their own communities using also IT facilities.

⁷⁶ Strategy for Pre-university Education Development in the period 2001-2004, update 2002, Prospective planning up to the year, www.edu.ro. Strategic priorities of the educational system in Romania.

The **National Action Plan for Employment – PNAO** a programmatic document for Romania's link to the European Community's objectives in the field of employment, elaborated as of 2002, included a series of policies for supporting lifelong learning with the purpose of **increasing the employment degree, diminishing unemployment and increasing labour market efficiency**.

Romania had in the year 2003 a low participation rate to continuing training against the EU-15 average and of the New Member States. The data regarding continuing vocational training (CVTS2)⁷⁷ indicated a participation rate of only 8% in the case of employed persons, and the **Report of the Employment Agency for 2002** showed that only 2.5% of the unemployed graduated the organised vocational training courses⁷⁸.

The percentage of the persons aged 25 and 64 years participating to continuing vocational training programmes (CVT) was of 1.1%, much below the EU-15 average (9.7%), EU-25 (9.0%) one, and the average of the New Member States (5.6%)⁷⁹.

The Survey on labour force competences and training policies in Romanian⁸⁰ enterprises highlighted:

- A share of 11% of the enterprises ensured training (in 1999 the same indicator for EU-15 was 70%);
- The global access rate to continuing vocational training in enterprises as a whole was of 7.6%;
- The highest participation rates to continuing training were recorded in transport activities and financial-banking and insurance activities, at the other end being activities within constructions and trade;
- Access to continuing vocational training programmes was higher in the case of employees with higher education holding management or administrative positions and lower in the case of employees with occupations corresponding to the technicians' and foremen groups.

The survey regarding the demand of continuing vocational training shows that enterprises and individual persons faced problems with respect to access to continuing vocational training. The two main issues were: **cost of training and low supply at local level**. The private suppliers with the most significant activity in the field were **localised mainly in large cities**, the access to programmes presupposing transport costs and, in some cases, accommodation ones. The system was also faced with the reluctance of companies in investing in vocational training, the **financial effort remaining still at individual level**.

Box no. 30

The European Pact for Youth

The **European Pact for Youth proposed in October 2004 and adopted in March 2005** in Brussels opened the way for a more coherent approach of the issues facing the 75 million youths aged between 15 and 25 years (from Member States and candidate countries) under the conditions of better heterogeneity considering the joint issues related to: access to labour market and education, family life, the statutes of European citizen and the personal statutes of autonomy which is gained more and more later in life.

The Pact comprises three areas for action:

- Employment, integration and social advancement;
- Education, training and mobility;
- Reconciling family life and working life.

The key messages of the pact are:

Granting particular attention to youths in the transition from school education, and vocational training to employment;

⁷⁷ Eurostat, *Statistics in Focus, Theme 3 – 2/2002*

⁷⁸ European Training Foundation, 2003, "Monograph on education and vocational training and employment services in Romania".

⁷⁹ **Source** for EU-25, EU-15 and NMS-10: EUROSTAT, New Cronos: for RO: National Institute of Statistics, Survey of Labour Force in Households (AMIGO); data for 2003 were extended based on the results of the Population and Houses Census from March 2002.

⁸⁰ ETF – Romanian National Observatory, 2003, "Survey on labour force competences and training policies in Romanian enterprises" (Information taken over from the survey "Earmarks of continuing vocational training in Romania" realised by NIS in 2000).

Using local and regional strategies in ensuring high quality measures meant for the better social and professional integration;

Adopting individualised measures for each individual to provide for equal chances of social and professional integration;

A more visible youth dimension by updating the Lisbon Strategy.

The European Pact for Youth was preceded in 2001 by the adoption of the White Paper of the European Commission entitled “A New Impetus for European Youth”, an attempt to answer to the discontent of youth regarding the traditional forms of participation to public life (Ministry of Labour, Family and Equality of Chances, the Directorate Labour Force Programmes and Strategies – National Observatory of Employment and Vocational Training of Labour Force, June 2007, Bucharest, Report – Youth in Europe, p. 3-7).

In October 2005, the Division for Education and Youth of the Pact for Stability in South-Eastern Europe in cooperation with the Initiative for Education Reform in South-Eastern Europe have launched a wide consultation process in view of adopting “**the European Qualifications Framework**”. It ensures a joint set of principles of reference that should deliver information on the relevance and qualification level in the Member States. It also opened the way towards better valuing labour force on the European market, and also towards continuing vocational training.

The Copenhagen Process and the need to mutually recognise qualifications between Member States led to the need of a joint European framework of qualifications and of some correlated educational policies.

The key messages of the European Qualifications Framework in relation to the education system of each of the Member and candidate countries, **intend:**

1. To establish the national standards for knowledge, skills and wide competences providing thereby the basic elements of a **national curriculum, assessment, description of education levels of the national systems by “descriptors” and “education forms”;**

2. To promote quality in education and continuing vocational training by regulating and agreeing on a national framework that should be at the basis of national standards; these standards shall allow to suppliers to organise education programmes, to evaluate performances and to certify;

3. To allow for benchmarking between systems within the European Union for the benefit of the citizens, of education and vocational training suppliers, aspect that finally would lead to increasing confidence in education systems; **a collateral outcome shall be qualifications’ rationalising;**

4. To promote and maintain access procedures to learning, transfer of learning and learning progress by defining input and output points in relation to high-skill or wide skill, the transfer of competences from one qualification to another (by converting some education units or credits) and on this basis to substantiate continuing vocational training.

The European Qualification Framework allows for higher adjustment of education to market demand, gradually replacing the system of supplying graduates, irrespective of demand. *The main effect of implementing the new framework shall be the opportunity to create bridges between compulsory education, vocational training in school and continuing vocational training.* The descriptors of education levels shall open the road for the need of adding new competences, training modules or new programmes.

Romania’s position in answer to the consultation launched by the European Union (finalised in December 2005) was of agreeing to the European Qualifications Framework and of implementing a National Qualifications Framework structured on 8 levels European Training Foundation, April 2006, A Review of International and National Developments in the Use of Qualifications Frameworks, Foreword).

Pursuing the conclusions of the Education Council from 15 November 2004, the Ministries responsible with vocational training from 32 European countries, the social partners and the European Commission agreed in the **Communication of Maastricht from 14 December 2004**, to grant maximum priority to “**developing and implementing an European Credit Transfer for Vocational Education and Training (ECVET) to allow citizens to put to good use the outcomes of previous education in the context of transiting between various vocational training systems**” (National consulting based on the Working Paper of the European Commission SEC (2006) 1431 from 31.10.2006 regarding the European Credit Transfer for Vocational Education and Training).

The European Credit Transfer for Vocational Education and Training (ECVET) was subjected to general consultation in the European Union countries, after consultations with social partners from these countries, at the beginning of the year 2007.

ECVET proposes: an approach in which the outcomes of gained education can be considered with the purpose of obtaining a qualification in another European country; an instrument for VET suppliers, for experts and for competent bodies, allowing them to perform more easily benchmarking of the outcomes of education gained in various countries, to validate them, and to recognise them.

The process is based on describing qualifications in terms of learning outcomes, respectively learning outcomes units, measured by means of a certain number of points.

Implementing ECVET shall make the object of some partnership agreements or cooperation memoranda.

In the year 2005, only 1.6 % from the adults in Romania with ages between 25 and 64 years participated in continuing vocational training (CVT), while the EU-25 average was about 10.8%, while countries with best performances regarding the participation level recorded participations of over 25% (Denmark, 27.4%; Sweden, 32.1%; Great Britain, 27.5%; Island, 25.7%, (Annex 22).

In the period 2002-2005, Romania recorded a growth of only 0.3 percentage points in relation to the number of adults participating in CVT programmes. In the same period, first regulations appeared with respect to the definition of the system, to authorising providers of vocational training and certifying the competences gained in the formal and non-formal system. In 2005 was elaborated the **Strategy, time-horizon 2010 which intended to increase the share of adults participating to continuing vocational training to 7.5%**.

From the year 2002 until 2005, Romania did not record significant progress with respect to adults' participation to continuing vocational training. Next to Bulgaria, Romania continues to be placed on the last places in Europe in relation to the share of adults aged 25 to 64 years who participate to education and training. The expenditure for continuing vocational training continues to be low. This situation is recorded in the case of funds allocated for unemployed training, and in the case of funds allocated by enterprises for training own employees, as well.

The Law regarding adults' vocational training (no. 375/2002) which approves the Governmental Resolution 129/2000 determines objectives for lifelong learning, that are specific to continuing vocational training: **assuring access to continuing training, by including this right in collective contracts, encouraging employers to invest in human resources, recognising competences gained within the formal and non-formal system, as well.** The Law focuses more on the quality of the offer, the accreditation of the suppliers, conferring the quality of "authorised supplier", and organising the final evaluation of programmes and granting the "certificates of national recognition".

An approach of the future for continuing vocational training presupposes also measures of integrated development (on the job vocational training, far distance learning, and other forms outside the institutional framework) and giving impetus for an educational culture for the whole lifespan, starting with initial vocational training. The issue of lifelong education implies its inclusion in a wider framework, correlated with other regulations, institutions, action plans, and targets.

The set up of the National Council for Adult's Vocational Training (CNFPA) with representations in the counties, all of them managed in a tripartite system in which was integrated as well the Council for Occupational and Accreditation Standards (COSA) allows for the functioning of a continuing education system based on national authorisation criteria, and the joining of the elaboration responsibilities of occupational standards with the evaluation.

In view of rendering operational the National Authority for Qualifications, in agreement with the 23 Sector Committees and the Tripartite Agreement on the National Qualifications Framework, the link between the system elements of continuing vocational training, starting with the initial training and continuing with adults' education should become more coherent.

A huge lack of the new institutionalised system of continuing education (CNFPA) was, and still is, the lack of human and material resources, the inexistence of a continuing vocational training system for experts in the field (technical personnel, evaluators and suppliers), and the absence of some European indicators that would allow for real and competitive evaluation of the activities. In accordance with the Eurostat CVTS2 (2002) in Romania is recorded one of **the lowest expenditures with continuing vocational training (CVT) per employee in enterprises – 109 Euros**. These expenditures are, in average, 6 times lower than at EU level, and ten times lower than in countries such as: Denmark (1169 Euros), Norway (1049 Euros) and approximately three times lower than in Hungary (305 Euros), Bulgaria (203 Euros) and the Czech Republic (293 Euros).

The financing sources of CNFPA are constituted mainly from the authorisation fees of the suppliers and from other taxes. Under these conditions, the development, improvement and

provision of resources, in general, is conditioned by the market. The market, in its turn, faces several malfunctions triggered by the lack of information about the vocational training needs and because of the severe under-financing.

As a national system, *continuing vocational training is financed from various sources*: the unemployment fund, employers' fund, contributions of the participants to programmes, sponsorships, donations, etc. With respect to employers' funds⁸¹ very few companies (approximately 7% from the companies taken into account in the **Survey of Labour Force in Households – AMIGO, 2003**) provided in their development plans for a special budget of continuing vocational training, and in the vast majority of cases, these were large companies. The funds allocated on companies for continuing vocational training represented 0.9% from the indirect personnel costs and 0.3% from total cost of labour force.

Nevertheless, the surveys realised about the demand of continuing vocational training show that there is interest and clear motivation for continuing vocational training (about ¾ of employees declare that they are ready to follow one form of training). Even though most of employers provide a rather important future for the vocational training, they still seem reluctant in allocating more than 3% for increasing the training resources from their turnover. *Although the legislation in force provides for fiscal facilities⁸² in the vast majority of Romanian companies, the issue of financing continuing vocational training is not perceived as being the responsibility of the company but, rather, an individual responsibility which makes it inaccessible for most employees due to financial reasons.*

As the main **hindrances** in the way of participating to vocational training courses are regarded: costs (18.7%), timetable (14%), the lack of offers (9.3%), duration (8.7%), and the quality of the programmes (7.3%).⁸³

The obstacle represented by incomes in the way of access to training is combined with the fact that few training suppliers bring module courses on the market, being able to provide for partial qualification. Even if their potential customers feel such need, it seems that training suppliers are faced with difficulties in answering this demand.

The data provided by the National Agency for Employment (ANOFM) shows that in the period 2001-2004 from total public expenditure on labour market, less than 4% represent expenditure for organising continuing vocational training courses. It is noticed that the allocated budget is rather modest a situation which is explained firstly by the fact that the number of unemployed beneficiaries is relatively low as compared to the total number of unemployed. Under these circumstances, the CVT integration in the wide category of "active measures" for unemployment prevention (and not only for unemployed) and allocating some percentages of the ANOFM funds to develop this sector might represent a solution which:

- would allow the development of infrastructure, training and improvement of technical staff in the field and, in general, allocation of adequate resources;
- *would help Romania in the competition with the other European systems for attaining the internal targets and the ones of the Lisbon strategy.*

Any delay in finding some equitable solutions of financial support for the field of continuing education shall increase the lag between Romanian and the rest of the member countries with respect to the education level, and the quality of labour force (in relation to the European market), but also with respect to the level of economic sustainable development which will lead to

⁸¹ European Training Foundation – Romanian National Observatory, Bucharest, 2003, , Monograph regarding education and vocational training and employment services in Romania

⁸² Expenditure for vocational training of employees that are made by the economic agents are deductible expenditures on calculating profit, respectively taxable income; the authorised suppliers of training are exempted from VAT payment for the operations of vocational training.

⁸³ INCSDMPS – Exploration study on the demand of continuing vocational training, 2004

diminishing the attractiveness degree for the potential investors and the potential beneficiaries of the Romanian products and services.

Lifelong learning is on the first position in the European agendas. In accordance with the Eurobarometer for lifelong learning, almost 90% from the citizens of the European Union have regarded this as important for social reasons, but also for economic reasons as well. As result, there are necessary sustained efforts for developing this system also in Romania, at the same time with the recognition of its role for the labour market. In addition, special attention should be granted to continuing vocational training within SME, allowing thereby for facilitating the access and motivation of non-traditional beneficiaries (those with low skills level, elderly workers, etc.).

Box no. 31 Benefits of permanent education

The results of researches on benefits of education and continuing vocational training for people suggest that the results of investments in human capital, in most countries, are higher than the ones of investments in material capital. **Investment in human capital is “an attractive way for ensuring the prosperity of a middle-level person” (OECD, 2003, p.160). The individual recovery rates of investment in upper secondary and higher education (ISCED 3 – 6) and for continuing vocational training is placed, in most countries, around 10 and 15%. Additionally, against these outcomes of material nature, skilled persons are more active on labour market and present a lower unemployment risk. Education, continuing vocational training and competences lead, finally, to a higher quality of life and to better social and professional status.**

Ch. III. PERFORMANCES OF ROMANIAN EDUCATION

The national education system faces problems generated by the reform process on its components, and also with the propagated effects of chronic under-financing during the entire transition period, as well. The performances are adjusted to or even change into losses, especially at the level of qualitative determinations.

Correlation failures with respect to the reform components on levels of education, the frequent legislative changes and, hence, the institutional organisation and functioning adjustments, and the slow change dynamic of the curriculum content triggered significant drops of performance. On one hand we refer to the quality of the system inputs, respectively to human resources in the system, who require knowledge, competences and skills update and participation incentive under the form of rewarding incomes, but also allocations for material and capital expenditures which are insufficient even for maintaining the current state of affairs for fixed assets and didactic materials. On the other hand, we are talking about the exits from the system; respectively the quality of the education gained by the beneficiaries, which is on decrease, does not correspond to labour market demand and assumes complementary costs for vocational training.

The range of quantitative indicators for measuring the performances in education, even if incomplete and partially unadjusted may offer a raw image on the benefits of using educational services.

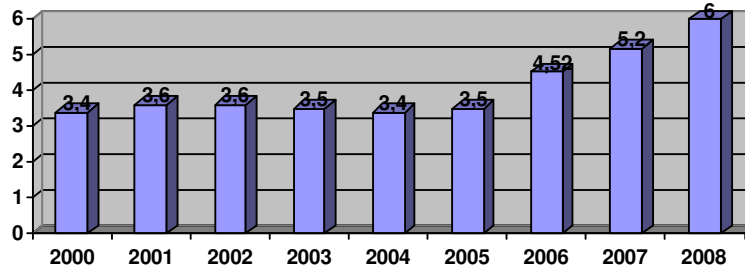
III.1. Global measurement indicators

We shall take into account, in the following, those indicators which by values and recorded developments highlight the deficiencies of the current system:

a) **Public expenditures on education as share of GDP** have varied around 3-3.5 percents in the period 2000-2005, increasing in 2006 comparatively to the previous year with about 1 pp, respectively to 4.52%. Through these shares, Romania succeeded in the year 2006 to come significantly closer to the average of the EU member countries with respect to public expenditures on education as % from GDP. There still remains a significant gap with respect to the absolute value of the budget allocated for education by the EU Member States, generated by

the GDP related to the number of inhabitants⁸⁴. If at EU 27 level public expenditures on education represented about 5.1% of GDP⁸⁵, the values on countries varied between 8.47% in Denmark and 3.93 in Luxemburg, Romania allocating the lowest GDP share, 3.29% at the same time, respectively the year 2004. The efforts of increasing the share of public expenditures on education of GDP aim to the allocation of minimum 6% in the period 2008-2013 (National Pact for Education, 2008).

Graph no 1 Public expenditure on education as % of GDP



Source: Ministry of Public Finances (2000 – 2007); Ministry of Education and Research (2000-2007)

Private expenditures on education⁸⁶ as share of GDP represent at EU 27 level only 0.64%, with extreme values of 0.05% in Norway, 0.13% in Portugal and Finland and, at the other end, 1.17 in Cyprus, 0.95 in the United Kingdom and 0.91 in Germany. Romania allocates for education from private sources about 0.2% of GDP (0.31% in 1999, 0.25% in 2000 and 0.16% in 2002).

If we take into consideration the absolute amount allocated to education, the differences on countries are also important. Thus, the annual expenditures of public and private institutions per pupil/student expressed in pps in full time equivalent⁸⁷, at EU 27 level were of 5535.2 euro in 2004, with a maximum of 8694.5 in Norway and 1821.2 in Bulgaria.

On levels of education it is found that the most important amount goes to pre-school education, against other countries of the world where the most important amounts are for tertiary education or for upper secondary education. Partially, this allocation is justified by the acute need to rehabilitate the education institutions and to endow them with the adequate didactic instruments.

⁸⁴ For instance, at the level of the reference year, Romania had available for education a budget almost 5 times lower than the Netherlands, a country with a population two times smaller than the one of Romania. It should be also noticed that Romania has a value of the GDP per capita (at purchasing power parity) of only 36.2% as compared with the EU 25 average. (Source: Starea invatamantului din Romania 2007, Ministerul educatiei, cercetarii si tineretului)

⁸⁵ Eurostat data 2004, <http://epp.eurostat.ec.europa.eu>

⁸⁶ Include schooling fees, books and other didactic materials, transport to school and lunch, enrolment taxes and employers' expenditures for initial vocational training.

⁸⁷ The indicator measures the expenditures made by central, regional and local public institutions, households, religious institutions and companies. These include staff expenditures, current material expenditures and capital expenditures.

On the other hand, the private sector in pre-school education is weakly developed and the existing one is costly, compared with the public system.

Table 14
Public expenditures on education on training levels (% of GDP 2004)

	Total	Pre-school	Primary	Secondary	Tertiary
EU 27	4,09	0,49	1,16	2,31	1,13
USA	5,44	0,31	1,79	1,98	1,32
Japan	3,65	0,31	1,29	1,40	0,65
Romania	0,66	1,20	0,73	0,73	0,70
Increase (percentage points) in the period 2000-2004					
EU 27	+0,41	0	0	+	+
USA	+0,18	-	-	+	-
Japan	-0,17	-	+	-	+
Romania	+0,45 → +0,66	+	+	-	-0,09

Source: Eurostat.

b) the progresses realised in attaining the targets of the (revised) Lisbon Strategy (SL 2010 R) are still modest and the more emphasised dynamic for some indicators is not enough for significantly diminishing the gaps against other EU countries and against the average values.

Table 15
Progresses in attaining the targets SL 2010 R

Targets determined by the European Council in May 1993	Average level	Average level of realisation EU 27	Achieved progress			
			Romania	EU 27	USA	Japan
1. Early school leaving under 10% (18-24 years)	15,3% (2006)	Constant positive trend but not rapid enough	Lack of statistical data	15,3% (2006)	-	-
2. Diminishing by at least 20% the number of those with weak results in reading (15 years +)	19,8% (2003)	No notable improvements achieved	(*)	+2,1% 19,8% (2003)	+8,4% 19,4%	+88,1% (**) 19,0%
3. At least 85% of young persons should be graduates of upper secondary education (20-24 years)	77,8% (2006)	Slow positive dynamic but sustained	Improvement (remains under the EU average)	77,8%	-	-
4. Increasing by at least 15% the number of graduates in Mathematics, Sciences and Technology (MST) and reduce actual gender differences by 1000 young persons	13,1% (2005)	Realised in 2005 with limited diminishment of gender differences	(*)	• 13,1% (***) • % of female 31,2% graduates • Annual average increase 2000-2005 +4,7%	31,1%	14,7%
5. At least 12.5% of the adult population to participate in continuing education (25-64 years)	9,6% (2006)	Positive trend up to 2005 2006 – slight drop	Under the EU average level		-	-

(*) Improvement of performances above the average EU dynamic (the level remains under the EU average);

(**) change in the percentage of low achievers in % 2000-2003.

(***) average annual growth by 1.6% in the period 2001-2010.

Source: Processing after: Eurostat database, Progress Towards the Lisbon Objectives in Education and Training, Indicators and benchmarks, 2007, Commission Staff Working Document, based on Document SEC (2007) 1284, p.10-14.

c) permanent education registers the weakest performance, the difference against the EU average values with respect to the participation of adult population to education and training being 1 to 7.3 times higher for women;

Table16 Adult participation to education and training (% of adult population aged 25-64 years participating to education and training)

	2000	2004	2005	2006
EU 27	7,1	9,3	9,7	9,6
Romania	0,9	1,4	1,6	1,3

	2000	2004	2005	2006
Female				
EU 27	7,5	10	10,4	10,4
Romania	0,8	1,4	1,6	1,3
Male				
EU 27	6,7	8,6	8,9	8,8
Romania	0,9	1,3	1,5	1,3

Source: EUROSTAT YEARBOOK 2006-2007.

d) the participation to education shall drop due to the demographic decrease of population, but it might increase slightly due to an increased level of comprising pupils/students on levels of education. In accordance with the estimates, in the next 10 years, the school population shall decrease by 10 to 15% but the incidence on the education system shall be smaller because an increase is estimated for the gross school enrolment rate at all education levels;

e) the average period of schooling has increased to 15.6 years (17.6 years at EU 27 level in the year 2005) due to the participation of higher education, but Romania continues to have a low position as compared with other European countries⁸⁸ (20 years and over in Finland, Sweden, and the United Kingdom in 2005).

III.2. The stage indicators of the Romanian pre-university education system at the time of integration⁸⁹

Even though the reform of pre-university education has already a history, and the dynamic of some of the specific indicators was significant as compared with European countries, from the viewpoint of the absolute value of indicators (level, structure, transition rates, etc.) the performances are modest, some of them placing Romania on the last positions in the hierarchy of EU member countries. As result, for multi-dimensional defining the pre-university education we shall present, selectively, a series of indicators for measuring performances (in accordance with the last available information):

a) Early school-leaving rate of the education system – benchmark 10% until 2010

⁸⁸ Report on the state of the national education system 2005, MEdC

⁸⁹ Ministry of Education and Research, Bucharest, 2006, “Starea invatamantului din Romania - Raport 2006”

At the level of the year 2005, the value of the indicator for Romania recorded the highest level from the European Union 20.8% against the one in countries such as Slovenia 4.3%, Poland – 5.5%, Czech Republic – 6.4%, and EU Member States – 14.9%. As a whole, early school-leaving is high in vocational training despite the human, financial and technical investments realised in this sector. Though it was one of the permanent concerns for the Romanian public system, the phenomenon of early school leaving is maintained at the highest shares in Europe. The attempts to diminish it by social measures of the “milk and bun” type did not prove to be the most efficient. *It should be expected that by the programmes aiming to increase the role of the school within local communities, particularly for those in the rural area and those with a majority Roma population, the situation should improve.*

b) The rate of upper secondary level graduates in total population aged 22 years – benchmark 85% until 2010

In 2002, the share of population aged 22 years with upper secondary education (ISCED 3) in Romania was of 75.3%, a level close to the EU-15 average of 76%⁹⁰.

c) The share of pupils with level 1 (and under level 1) of Romanian language knowledge – benchmark 20% until 2010:

At the level of the year 2000, Romania recorded the highest level in Europe (41%) regarding the share of pupils with level 1 (and under level 1) of maternal language knowledge, while the EU-15 average was 17%. The lowest European level for this indicator was recorded by Finland (7%), Ireland (11%), Sweden (13%), and France (15%).

d) The share of population aged 15 to 64 years participating in continuing vocational training programmes – benchmark 12.5% until 2010 (7.5% in accordance with the Romanian strategy on developing continuing vocational training)

In 2005, only 1.6% from the adults in Romania with ages between 25 and 64 years participated in continuing vocational training programmes, while the EU-25 average was around 10.8%.

The problems facing the continuing vocational training system were mentioned during the analysis, but perhaps some important principles should be reminded: this system ensures the chance of an active life for any individual, provides for the perspectives of sustainable development for any society and economy, and the sensitizing factor is the market with its needs and competition.

For these reasons, but also due to a lot of other ones, the role of CVT must be rethought as an independent, self-standing system, but also in interaction with the system of initial vocational training. *If there are attempts to open the doors of the initial education system towards the continuing training system, conversely the competences and credits gained within the continuing training should be recognised within the initial vocational training so that career changes would no longer be a nightmare for those seeking a job.*

e) Romanian pupils’ performances within international evaluations

The performances of Romanian pupils assessed at the level of the year 2003, by the **OECD Programme of International Student Assessment (PISA)** for the categories “reading”, “mathematics” and “sciences” placed Romania on the 34th position from 42 participating countries⁹¹.

⁹⁰ Source: Cedefop; VET European perspectives within the context of achieving Lisbon goals, Eforie Nord, 24-25 September 2004

⁹¹ The Presidential Commission for Analyzing and Elaborating Policies in the Fields of Education and Research, Bucharest, 2007, I Diagnosis.

In accordance with the outcomes of the TIMMSS survey (Trends in International Mathematics and Science Study) which evaluates the performances of 8th grade pupils at mathematics and sciences, in 2003, Romania was placed at an average level in relation to the other participating countries (45 against 48 the international average). The outcomes of the survey also indicated that compared with the first action in 1995 (recorded score 474) at the one from 1999 (recorded score 472) and the one from 2003 (recorded score 475) the performance variations are insignificant. For mathematics, as well as for sciences the score of the Romanian students is at the level of the international average, as they are placed on the 25th position among the 38 countries.

*International assessments succeeded to destroy also the last opposition wall of the Romanian pre-university education: the results of the students at international Olympics. **The moment is the more important as European integration brings with it several such comparisons (benchmarks) relying on two fundamental principles of the EU, that is: the equality of chances for all citizens and free movement of persons on the territory of the European Union. Under the situation of maintaining the Romanian system in a state of self-sufficiency without considering the internal and external disagreements, the performances of the Romanian education shall only be kept afloat, providing social protection to a part of the teaching staff, respectively to the one which proved to be non-performing.***

The international PIRLS study for assessing the Understanding Level of Written Text and which ensures benchmarking between educational systems with the purpose of improving teaching and learning to read in the entire world, places Romania on the 22nd place among the 31 participating countries.

f) Enrolment rate at all education levels

At the level of the year 2003, Romania was placed on the last position in Europe with regard to the participation rate to education of the population aged 15 to 24 years. As compared with other countries, either members or candidates, of the European Union (Lithuania – 67.3%, Poland – 66.95, Slovenia - 59%, Bulgaria - 47%) Romania recorded a level of 46.1%. This situation raises questions about the efficiency of education, about the understanding degree of the population of the role of education, but also about the support given to education by the executive structures of the state. The analyses of the present study revealed the fact that initiated reforms and the financing efforts of the European bodies were substantial and focused on pertinent objectives in relation to the road Romania has to take within a competitive knowledge-based economy, and on eliminating disparities. Nevertheless, reasons, such as: the complex situation of education in the rural area (where 1/3 of the country's population lives), the resistance to reform of some members of the teaching staff, the low performances of some members of the teaching staff (who beyond the reform cannot surpass a certain mentality and routine level), parents' dissatisfaction in relation to the accumulation of practical abilities of the pupils', the rejection of active partnerships in developing practical and key competences (parents, social partners, civil society, etc.), all together lead to weak performance of the pupils on labour market and lack of transparency of the system in relation to the beneficiaries. ***Under these circumstances, the pre-university education system undergoes a deep crisis being mistrusted by those for the benefit of whom it should work***

g) Employment rate of young persons aged 15 to 24 years

If, at the level of the year 2004, the employment rate in Romania was by 7.6% lower than the EU-25 average and by 10.1% than the one of EU-15, in the case of youth aged 15 to 24 years of age the employment rate is much lower than for the rest of the employed population, for all levels of pre-university education (16.8% in the case of lower secondary education graduates gymnasium), 14.1% in the case of those with general studies, or who did not graduate a school, and 26.3% in the case of those with upper secondary education).

In the period 2003-2005, the unemployment rate for youth aged 15 to 24 years increased significantly (from 18.5% in 2003 to 21% in 2004 and 19.3% in 2005), affecting especially youth with a low education level (lower secondary, primary or no education). From these, 77.1% were

youth who never had a job, coming directly from school and with a level of competences tested on the occasion of final school evaluation.

This situation highlights the need to reconsider school curriculum but also the need of involving the business sector in competences' evaluation, so that attesting a competence in a certificate should mean that the pupil "can" perform the respective competence in practice. Otherwise, schools that do not have the capacity to provide for actual competences should be reoriented towards other objectives, in order to avoid generating unemployed. For this purpose the actual decentralization is necessary along with a more active involvement of the business environment and of the local communities in preparing pupils of vocational education.

h) Public expenditure on education at pre-university level are much below the level of needs, fact reflected in: the low level of wages for teaching staff, the precarious state of school buildings, the endowment of schools and, especially, the capacity of the system to ensure monitoring and sustainability of the reforms implemented by the European Union programmes and financing from international banking bodies;

i) Human potential in education: in Romania the teaching staff represents 2% from total active population (Key Data on Education 2005), a percentage placing the country at the average of EU member countries. 34.79% develop their activity in the rural area. At the level of the system, teaching staff have a share of 72.2% from total personnel, and the highest share is recorded in primary and lower secondary education – 80.77%. significant is the dynamic of the staff in pre-university education, and the diminishment by 20% in the period 2000-2005 of the employed personnel in vocational education when this educational level benefited of important amounts allocated by the European Union for reform and development. At the beginning of the school year 2007 – 2008, 65.000 of vacant chairs were taken by unskilled teachers⁹². ***The deficit of the teaching staff correlated with school violence and the high rate of early school-leaving represent phenomena which must be improved by educational strategies and by rethinking the system as a whole.***

Also, in the context of a new challenge of the European Union, respectively the consultation "Schools for 21st Century"⁹³ ***the Romanian pre-university education system shall have to redirect its objectives towards :***

- ***Redefining compulsory education in accordance with the European objective of early education development*** and, consequently, reconsidering the age of entry and of exit from the system of compulsory education;
- ***Orienting the entire pre-university education on gaining "key competences for all", respectively: "traditional" competences (mother tongue, foreign language, basic mathematical and scientific competences, digital competences, etc.) and transversal competences (creativity, the ability to think holistically, lifelong learning, social and civic competences, initiative, entrepreneurial spirit, promoting culture and traditions; the capacity of adjustment before knowledge).***

III. Indicators for higher education

For higher education there is the possibility of measuring its potential by parametric definition of the educational supply and of the material and human resources. From the indicators computed by National Institute for Statistics we shall present in brief only the most representative ones for the purpose of our study, in order to have an image about the sizes of university education⁹⁴:

- a) developing the institutional network and the number of students***

⁹² President of Romania, Newspaper "Gandul", 18.09.2007, Speech on the Pact for Education.

⁹³ Commission of the European Communities, Brussels, 11.07.07 – SEC (2007)10009 – Commission staff working paper.

⁹⁴ Higher education at the beginning of the university year 2006-2007, NIS 2007.

Higher education at the level of the year 2006/2007 included in its network 104 institutions with 755 faculties (public higher education included 56 institutions with 558 faculties) and 785.5 thousand students (520.3 thousand students within public education) on increase by 10% comparatively to the previous year. Private education counted 48 institutions within which function 197 faculties. The number of students was of 265 thousands.

Per 1000 inhabitants there are 364 students.

b) *Distribution of students on education forms*

Within public education day courses are attended by about four fifths from the total number of enrolled students, and open education at distance is of almost 15%. In the case of private education about 44% of the students attend day courses.

c) *Distribution on genders of the beneficiaries of university education*

The feminisation level of higher education is on increase, 55.4% of the students from public entities being women, the highest share being recorded in the case of open education at distance (58.6%). Similarly to the public education, in private education women students are more numerous than students (65.8%) and their number is on increase for day courses.

d) ***Median age*** of students is of 21.5 years of age, lower than the EU 27 average (year 2005), which reflects the weak opening towards promoting tertiary education for adult persons.

In Denmark and Norway the median age reaches and exceeds 25 years of age, and in Greece and Ireland it is of only 20.4 years of age.

e) *Distribution of students on profiles*

On training areas, significant differences are found with respect to the structure in the case of public education against the private one. Thus, within public education there is a trend of increasing the number of students enrolled in faculties with technical profile, for the school year 2006/2007 their share being of 27%, and at the economic profile of 24.3%. Within private education, technical education has a comparable dynamic but only 4% of the students are enrolled at this profile. For the economic profile, the share of enrolled students is almost 44%, but it is on decrease. It should be observed that for the legal profile are enrolled a bit over a fifth of the students within private education and their share is on increase, while their share within public education is four times lower and on decrease.

f) *Distribution of students on university centres*

The students from Bucharest within public education represent one quarter from the total number of students, another quarter being distributed in almost similar shares between Cluj-Napoca and Iasi. In the case of private education almost two-thirds from the students are in institutions from Bucharest, on the second place being placed Brasov with about 7% followed by Constanta with 4.6%. In Iasi and Cluj-Napoca, known as strong university centres in the state education system are found only 2.5% and, respectively, 1.6% of the students enrolled in private university education.

g) *Teaching staff in higher education*

The educational process is ensured by 26.5 thousands teaching staff from which 5 thousands professors, and 4.4 lecturers, the majority being employed full-time. Over one half of the teaching staff within public education is between 25 and 44 years of age. The teaching staff within private education is less represented, totalling about 4200 persons from which 623 professors, 621 lecturers, and 621 readers. With respect to the type of occupation and age of the teaching staff the shares are similar.

h) ***Material endowment*** of the public higher education is about 4 times higher than the one of private education. It includes 2454 amphitheatres and course rooms, 2930 seminar rooms and about 7900 laboratories. The information basis counts about 46 thousands PCs, 85% from them being connected to the network (the private system has only 7251 computers, and more than 73% from them are connected to the network).

This picture about **the potential of university education entitles us to state that there is a starting basis for reforming and increasing the quality of education, but the most significant restrictions are still, the quality of the educational act and the promoted educational**

policies. On them depends not only the supply on labour market on graduation, but also the propensity of students for a career in research, for continuing vocational training on doctorate and post-doctorate education forms.

In this context, the quality of the human potential within university education, its ability to adjust and answer to the challenges of developing the European Area of Education are defining for the success in implementing reforms. The contents and quality of teaching knowledge, the capacity of promoting efficient internal management and the possibility of developing an university career and ensuring a social status along with financial comfort are and remain **important restrictions** in attracting and maintaining human resources in education, in attenuating the migration of teaching staff to the business environment or to universities abroad.

Ch. IV EDUCATION IMPACT ON RDI (ED-RDI)

The training of human resources in Romania for a knowledge based society and for solving in an optimum manner the challenges of markets' globalisation and of the increasing competitiveness at European and world level presupposes the rethinking of the entire educational system in view of strengthening the capacities of **acquiring, accumulating, valuing, applying and creating scientific knowledge** required for the economic-social progress of Romania and for the sustainable development at national and international level, as well.

Promoting education for research, development, and innovation represents a strategic requirement of contemporary education in all countries, considering that nowadays scientific and technological progress, the unprecedented increase of the direct contribution of intangible assets and of intellectual capital represent primordial factors of competitiveness, sustained development of economy and social welfare.

In contemporary society, characterised by more rapid changes, complex forms and continuous diversification of generating economic, social, technological and creative-cultural values, at local, national and global level, university plays an increasing role in the area of RDI, at least for the following reasons:

a) within universities, in their research centres and institutes, through the research activity of professors, students, master and doctor students, a considerable volume of RDI activities is developed, a fundamental component which needs to ascertain itself in the European Research Area and at world level;

b) universities are the main source of educating and training the future research staff on labour market; a fact that imposes for the curricula system to provide for teaching staff not only the learning and acquiring processes of scientific knowledge on classic, traditional issue structures, but also the duty to teach students according to the state-of –the-art in science and technology, as well as the skills and techniques of scientific creation work, axiological or valuing and entrepreneurial competence, along with the one of lifelong learning;

c) universities represent a strong factor of **disseminating and transferring scientific and technological knowledge** within the economic and social environment, of supporting lifelong learning and “digital literacy” of population, a sine qua non condition for training and generating researchers;

d) universities intensify through their RDI component the links with the practical fields of economic-social sectors under the form of partnerships and cooperation, intensifying their **entrepreneurial** dimension on one hand, and assisting in increasing competitiveness of economic stakeholders for shortening the cycle R&D and trading the idea by creating a research and production network, industrial parks and technological platforms on the other hand.

In the present study we shall refer particularly to higher education in Romania which represents the main chain link in educating and training labour force for research, including here lifelong learning and scientific knowledge transfer in the economic and social areas.

A major challenge of scientific research for university education is the one related to **intensifying the inter-and trans-disciplinary character** of the RDI activity, as result of increasing the level of complexity of economic phenomena and processes and of their accelerated change dynamics which, consequently, also triggered a sui generis strategic management of research, adequate for productivity growth on science market at national and international level, but also for developing research processes in multidisciplinary teams of relatively large sizes, the coordination, monitoring and cooperation of which with the academic environment should integrate into a system of networks based on information and communications technology, on e-learning and e-education.

The issues of transition to sustainable development, the new theory and practice of “sustainability” are imperatively and complementary adjoining to the requirement of reviewing and reforming university educational systems in Romania, granting more attention to their **creative-innovative** dimension at fundamental theoretic-methodological, but also at applicative

level. The “conventional” delimitation between fundamental and applicative research and development is undergoing a series of changes related, especially, to the general need and trend of diminishing, as time, the life cycle research-production, of “trading” as quickly as possible the new ideas, scientific discoveries and innovations. This also lead to establishing a direct relation between universities (especially entrepreneurial universities) and economic stakeholders, to public-private partnership forms known also, among others, as “start-ups”, “spill-over” and “spin-offs”.

Currently, along Romania’s accession to EU, and with the process of rendering compatible tertiary education from our country in accordance with the Bologna Process and the European Qualifications Framework, a series of favourable premises is given for universities to turn into true education, training and research centres in a national and European setting, provided that the reform measures to be undertaken shall be encompassed and convergent with the requirements and trends of contemporary science and of integration into the European Research Area on one hand, and to answer immediately to the present economic and social needs, and to the future ones of Romania the development level of which is rather relatively low against the one of other EU Member States, on the other hand. Economic, social and technological gaps working to the disadvantage of Romania could be considerably diminished in a relatively short period of time by improving the performances of Romanian education.

Scientific research in the tertiary education sector represents an important factor of rendering efficient Romania’s integration in EU and of beneficial participation in the globalisation process. In the present study we shall consider the analysis of the main features and evolutions of university education in Romania, from the viewpoint of increasing its contribution to economic, social, technological and environmental efficiency of research-development and innovation, and from the perspective of financial and human resources cost efficiency, and particularly from the one of the outcomes’ and RDI relevance and performances within tertiary education, and for the competitiveness of the Romanian RDI as a whole.

IV.1. External trends and premises of RDI with impact on the RDI system reform within tertiary education in Romania

Integration to EU as component part of globalisation changes into new terms the functions of the educational systems, implying trans-national convergence of the university and research system, of competition between universities with respect to students, teaching staff and resources, students’, researchers and teaching staff mobility.

The relative diminishment and changes of the State’s function and role in regulating the education and RDI market, at the same time with the trend of diminishing public financing in several sectors, including for universities and research, differs from one EU Member State to the other, depending on their historical and sociological particularities with respect to the attributes of the State in society. The deregulation trend of the education system, its increasing decentralisation and autonomy, along with the of knowledge, considering research and education as “private” goods that can be bought and sold by and for private interests, faces the growing requirement to cooperate and coordinate education and RDI at national and community level, involves public-private partnership shaping and strengthening networks.

Intensifying the aforementioned liberal trends has direct influence on reforms, management practices, values and even basic categories within the institutions of the educational system.

The knowledge based society, as post-industrial society involves **production** and dissemination of information increasing the knowledge level for individuals and companies as well. As different from the industrial one, knowledge-based society is characterised by:

- increasing the time share for education and of the free-time, under the coexistence conditions of the labour, education, free-time components;
- scientific knowledge increases exponentially, and technology, demand on labour market and business environment change rapidly; the nature and organisation of labour has a

progressively more complex character, and workers must learn to learn, to learn how to **adjust** and be **creative** in an extremely changing working environment which implies sustainable employability ;

- increasing the importance of jobs and occupations with ever greater degree of high-skills in strictly specialised areas, and of cognitive, social, generic and complex competences.

From the demographic viewpoint, the educational system faces following trends:

- population's ageing which shall affect not only the number of students and pupils, but also those of teaching staff and researchers who, only in a few years from now shall enter retirement on large scale, triggering increased competitiveness at inter-institutional level in the tertiary education;
- due to some factors of economic and sociological nature, the “mass” education process shall intensify with important consequences on environment and learning methods, including here as result of considerable increase of the participation rate in the last two decades.

Science and education are increasingly involved in solving economic and social issues facing mankind, even if there are opinions according to which they are exceeded from the perspective of efficient solving.

In the last decades, in Romania occurs an **increase of women's share** with higher education, simultaneously with the process of “brain drain”, a growing number of elderly persons obtaining skills requiring higher education, at the same time with the early school leaving of young generations.

The higher number of students in Romania as result of private higher education expansion and of the increased number of paid attendance within the state university education **intensifies the level of competitiveness between higher education institutions** with respect to attracting as many students as possible. Unfortunately, in Romania the competitiveness between university institutions in attracting foreign students does not show, as in USA, England and other developed countries, where the number of foreign students for some faculties is equal to, or even exceeds the number of domestic students.

Students are regarded as a direct and indirect income source for private and state universities. From this viewpoint, taxes and other payments for study succeed in diminishing part of the pressure exercised by under-financing, and to contribute to investments in education.

But, in the intention of universities to have more students, and implicitly more incomes, there lies the threat that the level of exigency shall be accordingly lower on admission and students' progression as it is known that at least part of them shall avoid faculties and universities recognized advertised for their “exaggerated” exigencies on examinations. At the same time, the mentality of students contributes as well, as they consider that if they pay, they must also pass the examinations and get diplomas and certificates

The market demand, against the structure and dynamics of the educational offer, determine universities to become **more flexible** and **adjustable** to the economic-social needs which involves the change of educational programmes and curricula, building up competences based education, professionalism and employability with respect to curriculum, modern learning methods, based on issues and projects, on interactive ICT programmes, the priority of experimental, practical knowledge, university-industry partnership initiatives, or partnerships with other foreign partners, for the development, management, financing and/or attending certain programmes within higher education.

The “industrialisation” of university research under the market impact, is shown by the trend of increased share of R&D activities, predominantly of fundamental research, of the exigencies regarding the responsibility, assessment and regulation of RDI activities within the broader context of interdisciplinary researches focused on solving some concrete issues, where the role of heterogeneous research teams working in networks together with partners from the academic environment, and from the influence area of other environment grows.

The institutions and management of the higher education system expand their **functions and attributions** as result of the fact that knowledge generation and dissemination by the educational process becomes the more complex as result of diversifying fundamental and applicative research and of developing innovation and assessment methods and the increased number of interdisciplinary areas.

Against its traditional functions, nowadays higher education extended its mission, spin-off and start-ups encompassing area, to its system being added adults, researchers, students, master and doctor students, post-doctoral studies, etc., along with consulting services, assessment, expertise, industrial park, technological and scientific parks management. Partnerships between universities and private companies for training employees through special programmes of improving skills have become a widespread practice, the public and private partners cooperating complementary for elaborating, managing and financing educational or research projects.

Ensuring the equality of chances with respect to free, non-discriminatory access to the educational and research system from higher education becomes an important issue at EU level and at the level of the member countries, subordinated to the objective of strengthening social cohesion and inclusion. A diminishment of public education financing share, and the selective policies due to increased study fees can turn into actual hindrances for students lacking financial resources.

Increasing the responsibility of public and private higher education towards state and society derives from the fact that they are either directly or indirectly supported (subsidised) by the state. The goods and services of the educational system have an increasingly stronger public good dimension, which generates positive externalities, which on one hand gives growing responsibilities to public and private higher education, and on the other hand confers higher rights to access public funds under the form of subventions and financial assistance, or of any other kind.

University research is accountable towards the state at national and community level, just as the private sector with respect to the quality of the educational process, and of shaping research staff, considering its socio-economic objectives, and the ones pertaining to the knowledge area which it has de plano.

In accordance with the opinions of some experts⁹⁵ in the area of university research, the development of the higher education system within EU might be conceived in the framework of three attitudes, behaviours which could constitute the substantiating element for political options. A first incorporated attitude refers to “laissez-faire” ignoring the existing trends, leaving things to develop by themselves, without the adoption of a pro-active attitude by the decision factors with respect to the relationship education-research.

The second attitude aims to the “active adjustment” which, acknowledging the display of some real trends in the field, considers them as such and attempts to anticipate and actively adjust (improve) the system for its best framing within the respective trends. This attitude also is called “**explorative prospective**”.

The third attitude “proactive” or “teleological” consists in displaying some political options and determining some priorities regarding values, purposes and targets which the system of university research must achieve in the future. The respective options might lead to adjustments, to favouring some trends regarded as positive and counteracting undesirable trends which imply discernment capacity of the decision factors, and the rigorous identification of strategies and priorities that must be implemented within the educational system of universities.

From the three above-mentioned attitudes, we regard as most important for the higher education system in Romania the “proactive” one, the one making the system to be a primordial agent of influence, a pillar of sustainable development of the knowledge-based society, in which public and private stakeholders have the responsibility of supplying educational and research goods and

⁹⁵ See Bourgeois Etienne (rapporteur), Developing Foresight for the Development of Higher Education/Research Relations in the Perspective of European Research Area (ERA) STRATA-ETAN Expert Group, Filial Report, 2004.

services that are specific to their mission to incentive fundamental research in an integrating, multidisciplinary vision, and of supporting innovative processes, in accordance with present and future needs of the society in the respective areas.

IV.2. Objectives and particularities of higher education reform in Romania in the period 1990 – 2007 from the viewpoint of impact on RDI

One of the major components of education system reform in Romania, during the transition period, aimed at **strengthening and promoting creativity, scientific research and innovation** according to the interdependent aspects of the legal-institutional framework, of management, organisation and financing mechanisms, of improving infrastructure, raising the level of professional training and competitiveness capacity of universities and research centres within them.

The indissoluble link between the education and research, development and innovation process within pre-university and university education was strengthened under the conditions of implementing some specific reforms for each type of education, taking into account a series of **objectives and conditions** among which the most important were:

- the needs of Romania's economic-social development under the conditions of transition to market economy, of democratisation and of the most efficient possible integration into EU, in the pre-accession period (1993-2006) and in the post-accession one, as of 2007;

- allocation and use of education funds, taking into account the necessity of improving the infrastructural endowment degree for education units, especially with respect to the alignment to e-learning requirements and to the knowledge-based society;

- integration of Romania's education into the European Research Area and the European Education Area and its adjustment to the specific institutional systems of the EU, and to the requirements of the world market for goods and services from the research-development-innovation area, particularly based on improving the methods and practices for assessing the RDI performances of the curricular systems.

Even though the research and scientific creation activity is developed with various intensities in all components of the educational system in Romania, in our research we shall analyse the **impact of reforms, and also their future implementation directions** within the university education framework in Romania, which holds the most significant share in total volume of RDI activities, realised in the framework of the Romanian educational system.

Integration and "liaison" of the educational system with scientific research and economic-social practice represents a complex and long lasting issue, researched for a long time and debated by the specialised literature from country and abroad, and generating the higher or lower convergence of experts' opinions on the following aspects:

a) **the triad education-research-practice** (industry) must answer to some new requirements of the knowledge-based society, and of sustainable development, **the priority being given to performances** in national and international context, the border between fundamental and applied research being often hard to determine, even if there are specific systems of indicators for the two types of evaluation; in view of increasing the competitive capacity and diminishing the duration of the cycle discovery - product/services, companies cooperate directly with universities which, as a rule, hold the highest share with respect to fundamental research;

The intensity and interdependence degree of the three elements of the triad increase as follows:

- education takes over from research knowledge and the most recent scientific results and outcomes and transfer them to students;
- an increasing number of teaching staff and students is attracted in research projects which turn into an important criteria in assessing, certifying and promoting them;
- universities participate to business incubators, scientific, and industrial parks, and technological platforms, start-ups, spill-over, venture-capital, direct cooperation with

companies in realising some goods and services; the interest of the companies to cooperate with universities and their research centres records steady increases;

- the paradigm “knowledge-based society” associated with the one of sustainable development and the one of “globalisation” lato sensu generates new challenges for education-research-industry, particularly with respect to increasing the importance of interdisciplinary, sustainability, creating scientific and business networks (networking), partnerships at national and international level;

- **increasing “scientintensivity”** of the goods and services production has as basis the development of intense research activities within companies (intra muros) especially in the case of large ones (multi-and trans-national companies) which attract university researchers under part-time conditions);

b) allotting RDI funds based on **competitiveness criteria, and national strategic priorities, objectives** and multi-annual budgetary projects and on assessing the research outcomes ex-ante, ad-interim and ex-post;

c) **promoting young researchers**, teaching staff and students based on the scholarship system, on special funds for research financing, and bonuses for the best scientific research works;

d) 2007-2013 integration into the European Research Area realised by coupling university research from Romania to the Lisbon Strategies and to the ones of Sustainable Development of EU (2001-2010), to the Framework Programme 7 based on implementing the National Strategy of Research, Development, and Innovation (2007-2013) and of the National Strategic Reference Framework (2007-2013) agreed with the EU, and the Sector Operational Programmes (SOP), particularly of those from the field of competitiveness and economic efficiency, human resources, of environment, and the National Development Programme 2007-2013.

The economic and social development programmes and strategies of Romania are based on the strategic vision of the university RDI development system, on the public-private partnership, on the need of speeding up the convergence process, and of increasing Romania’s competitiveness in the RDI area.

The creation in 1994 of the National Council of Scientific Research in Higher Education (CNCSIS) represented an important stage for the higher education reform in Romania with respect to the mechanisms of multi-annual financing based on competitiveness within university RDI, and to the methodology of assessing the outcomes of scientific research in accordance with international standards.

As of 1995, the Grants’ Programme for Multiannual Scientific Research/Artistic Creation Projects was enforced, which was financed from the budget- **projects of type A** to which access can have representatives of the scientific community from Romania, and which are selected based on evaluation criteria (peer review) in conditions of transparency.

In the year 1997 was launched the **Higher Education and Scientific Research in Universities Reform Project** (RO-4096) which was co-financed by the Government of Romania and the World Bank and developed in the period 1997-2002; it benefited of a total fund of 84 millions USD (from which 9.6 millions USD non-reimbursable grant of the European Community; 50 millions USD – loan granted to the Romanian Government by the World Bank; 24.4 millions USD – contribution of the Romanian Government). The main objective of the Programme was to develop management capacity for ensuring the optimum framework required for shaping new generations of experts for higher education and research.

In the last years, the legal framework of higher education, with respect to the last stages of reform has granted a role of major importance to improving the RDI quality based on internal and external promotion and assessment systems (Annex 23), in accordance with the positive experiences at EU level, and at international level, as well as with the valuable traditions of education in our country,

The reform of higher education with respect to doctoral studies (scientific doctorate and professional doctorate) , for the future shall have to lay emphasis on the following aspects:

a) promoting **multidisciplinary** research;

- b) **increasing the level of exigency** with respect to **the quality of the doctor's thesis** from the viewpoint of scientific originality and creativity at national and international level;
- c) putting to good use ongoing research outcomes and exporting them by methods specific to each field;
- d) involvement to a larger extent the doctorate activity in the topics and priorities of the Framework Programme 7, of the Sector Operational Programmes and of the National Programme of Research, Development, Innovation and in the National Strategic Framework of Reference 2007-2013;
- e) enforcing to a larger extent external evaluation, inclusively providing for members of doctorate commissions from among foreign experts;
- f) expanding of **integrated doctoral studies programmes** among two or three universities (from country and/or from abroad), under the conditions of diploma recognition in co-tutorship.

At the beginning of the year 2007, was enforced the Law no. 17/2007 from 09/01/2007 with respect to education of gifted children, apt of high performances, regarding the creation of a **National Centre and Local Centres of Differentiated Education** which has as attributes:

- realising pilot school programmes and differential curricula paths;
- organising a pilot research centre and some experimental classes;
- adjusting curricula norms, standards and international psycho-pedagogical methodologies to the specifics of national issues;
- training experts for teaching methodologies specific to the field of the excellence psychologist-pedagogue;
- disseminating information and issues of the psychological pedagogy of excellence at the level of the teaching staff and associated also to the parents' level;
- distributing through school networks information materials with respect to the field of psychological pedagogy of excellence;
- integrating gifted youth within specific programmes of the psychological pedagogy of excellence.

Within CNCSIS and the National Authority for Scientific Research (ANCS) were created the institutional-legislative premises during the preparation period of Romania's access to EU, 2000 – 2006, in order to render compatible Romanian RDI with the requirements of integration, in general, and of accession to the European Research Area, in particular.

The institutional legislative framework of Romania was deeply reformed with respect to: the role of research, development and innovation; financing methods on competitive basis and on evaluation criteria; principles and criteria for career advancement; developing international scientific cooperation at bi- and multilateral level.

IV.3. Share of public expenditure on RDI against GDP in Romania, against the EU level

The financing of the scientific research within the Romanian higher education is ensured by the following specialised agencies under the authority of the Ministry of Education and Research (MEC):

- the National Council for Financing Higher Education;
- the National Council of Scientific Research within Higher Education;
- the National Agency for Qualifications in Higher Education and Partnership with the Economic and Social Environment.

From the total budget of research, for higher education is allocated a **special fund** for university research, which can be used on criteria of competitiveness, and performance criteria, depending on national priorities, as well as based on the quality of attained or anticipated performances. This fund is allocated, largely, to scientific research within the 56 accredited state higher education institutions (49 civil institutions and 2 military universities). The **accredited** private higher

education institutions and those authorized to function provisory (28) ensure to the largest extent their research financing from own funds.

The higher education research completes its financing resources also from the funds allocated for RDI based on open competitions through the component programmes of the National Programme of Research, Development, and Innovation 2007-2013 or from other sources of the private sector, or from external sources.

Very often, the percentage share of RDI expenditures against GDP is considered as one of the relevant indicators for a country with respect to the role and importance of RDI in the process of economic growth and competitiveness, in general, and of transition to the knowledge-based society in particular. From this viewpoint, Romania is placed, in the hierarchy of the EU Member States on one of the last places, which reveals precisely the necessity of allocating a higher share of GDP for the RDI activity, so as to get closer to the Lisbon Strategy target, in parallel with the requirement of higher exigency regarding the evaluated performances, differentiated on fundamental and applicative research and innovation.

Table no.17 **Public RDI expenditures (% of GDP) in Romania, against EU in the period 1998-2004, in %**

	Years						
	1998	1999	2000	2001	2002	2003	2004
Romania	0,11	0,10	0,11	0,15	0,15	0,22	0,21
EU-10	0,66	0,63	0,58	0,62	0,66	0,60	0,58
EU-15	0,67	0,65	0,56	0,65	0,66	0,65	0,58
EU-25	0,66	0,65	0,66	0,67	0,68	0,69	0,47

Source: European Innovation Scoreboard, 2005-2006; Statistical Yearbook of Romania, 2005; Research-Development Activities, Reports NIS 2005-2006.

It can be seen that in Romania the share of public expenditure on RDI against GDP was several times lower than the EU average for the period 1998-2004, which means a lower potential of this activity sector in our country and, respectively, an important gap against EU developed member countries.

Starting just from this low size of RDI expenditures' share in GDP, and from the requirement of revigorating this strongly "traumatised" sector, due to the effects and economic-social costs of transition, the National Development plan, the National Plan of Research, Development and Innovation, the National Strategic Framework of Reference, all of them programmes of economic-social development, implicitly and explicitly dedicated to rejuvenating the RDI sector from universities in the period 2007-2013 determine the following targets for this indicator: 0.75% in 2008; 0.90% in 2009; and 1.0% in 2010.

Sizing up the budgetary funds for RDI in the period 2008-2010, in accordance with the official programmes and policies envisage the following requirements:

- increasing the funds' absorption capacity of structural funds for RDI area;
- ensuring the financial conditions for the participation to the Framework Programme of Research of EU in the period 2007-2013 – FP7 and other RDI programmes of the European Research Area (Eureka, NATO, ESF/Eurocores, etc.).

Financing the ANCS and CNCSIS programmes is developed under non-reimbursable regime, in accordance with the rules of state aid, being ensured from the state budget, from own incomes of the beneficiary, from outcomes of research projects, and from external sources. In order to answer to future exigencies related to competitiveness, to FP 7 provisions, and to the objectives of the Lisbon Strategy, increasing the public expenditure on RDI, and better coordination of the use made of budgetary funds allocated for higher education represent priorities of the strategy and policies in this area, and efforts for the Romanian economy and society as well.

Volume and structure of university RDI expenditure

In the year 2006, the expenditures of the higher education sector, as execution sector of the R&D activity totalled 277.4 mill. Lei⁹⁶ as compared with 759.2 mill. Lei expenditure in the enterprise sector and 506.2 mill. Lei in the governmental sector. The funding sources for research development in higher education were the following:

- Enterprises - 15.6 mill. Lei (5.6% from total expenditure);
- Public funds - 232.3 mill. Lei (83.7%);
- Higher education entities - 8.9 mill. Lei (3.2%);
- External - 19.9 mill. Lei (7.2%).

It results that university research is financed to the largest extent from public funds, enterprises and external sources of financing representing 12.8% from total expenditure. From the above data, it can be found that R&D from higher education has still few sources of financing from industry (the private sector), which can be also interpreted also as proof of a weak concern of university R&D to answer to research needs of companies, but also as a lack of interest from the latter to spend on RDI activities delivered by universities. Providing for incentives for companies spending on RDI activities in general, and particularly on university RDI, would be a means of increasing the allocation of funds from this source also for university research.

During the transition period of Romania to market economy, the relationship research-industry was unfavourably influenced by the crises and changes of structure within economy, that is diminishing share of some high-tech science-intensive industries, and the presence of some foreign companies with a much higher technological and productivity level which did not require but to a small extent, or not at all the outcomes of domestic research.

Under the conditions of Romania's integration into the EU, and of increasing the accessibility potential provided for university research from RDI funds specific to the European of Research Area, university research from Romania on one hand shall face increased competition on an extended research market, and on the other hand, it has the chance of increasing external financing sources provided that it shall improve its own level of competitiveness and performance in accordance with the requirements of the European and international market and standards.

In the period 2002-2006, the total expenditure volume of the RDI activity in higher education recorded high dynamics, hence being encompassed under conditions of convergence on the line of getting closer to the objective determined by the Lisbon Strategy to reach a 3% level of GDP for total research expenditure until 2010, from which 1% out of public funds and 2% out of the economic agents' funds.

In accordance with official estimates⁹⁷, the 3% target shall be attained by Romania at the time horizon 2013-2015 and the one of 1% public expenditure on RDI as share from GDP only in 2010. This presupposes growth of more than 2 times of public expenditure for RDI in the period 2007-2010; in 2007 the share of this expenditure was of 0.38% from GDP.

Table no.18 **Structure of current expenditure on research –development by types of research and execution sectors in the year 2006**

millions Lei, current prices

	Total		Fundamental research		Applied research		Experimental development	
	Mill. Lei	%	Mill. Lei	%	Mill. Lei	%	Mill. Lei	%
Total	1319.2	100.0	512.8	100.0	672.8	100.0	133.6	100.0
Enterprises sector	649.2	49.3	141.7	27.6	408.0	60.6	99.5	74.5
Governmental sector	435.0	32.9	242.3	47.3	173.0	25.7	19.7	14.7
Higher education sector	212.4	16.1	128.3	25.0	79.8	11.9	4.1	3.1
Private non-profit sector	22.6	1.7	0.5	0.0	12.0	1.8	10.1	7.7

⁹⁶ See: Activity of Research-Development, 2006, NIS, Economic Statistics 2007, p. 13.

⁹⁷ See: „Governmental policies for research-development and innovation in Romania”, Report 2006, the Government of Romania, National Authority for Scientific Research, December 2006.

Source: NIS Data, 2006.

In the higher education sector, in 2006, the highest share in total current expenditure is held by fundamental research (60.4%), a share justified by the role and profile of university research. This share is of respectively 21.8% in the enterprise sector and 55.7% in the governmental sector. The largest part of RDI expenditure in higher education for the year 2006 was held by current expenditures (76.6% from total expenditure) which is explained by the **wages' level** but also by the relatively high **operational costs** that are implied by experiments, materials and necessary consumables. The expenditure on capital had a low share of 24% from total.

Thus results that researchers' remuneration as well as the quality and prices of materials and equipment used in RDI have a significant importance for undertaking those reform measures of higher education, but also of economy, in general, that would ensure a direct, effective interdependence between expenditure and performances.

From Table no.2 with respect to structure of current RDI expenditures could be detached the following more important conclusions:

- a) the higher education sector is on the third position, far from the enterprises' and governmental sector with respect to the size of direct expenditure, which presupposes an increase of its share for the future;
- b) the structure of direct expenditures for fundamental research highlights also the third position of higher education expenditure, but with an increased share, against the enterprises' and governmental sector;
- c) the share of current expenditures share for applicative research in universities is relatively modest (11.9% from total) which is explained by the preponderance of fundamental research in this sector, but also by a lacking representativeness level of applicative research which presuppose intensifying the entrepreneurial character of universities on one hand, and strengthening the cooperation and partnership relationships with the enterprises' sector on the other, with the purpose of increasing the performance-target of university research.

Table no.19 **Percentage structure of projects' financing by CNCSIS grants on important university centres and total universities for the period 2004-2007 (%)**

	Annual financing				Total financing
	2004	2005	2006	2007	2004-2007
Total universities, from which	100.0	100.0	100.0	100.0	100.0
1. University of Bucharest	35.7	32.8	35.6	31.2	33.5
2. University of Cluj	24.2	24.3	22.8	20.6	22.6
3. University of Iași	17.8	19.4	19.7	18.4	18.9
4. University of Timișoara	12.3	10.6	8.7	6.5	8.8
5. University of Sibiu	1.3	1.2	0.8	0.8	0.9
6. University of Tg.Mureș	0.2	0.3	0.3	0.8	0.5
7. University of Galați	1.0	0.9	0.2	0.8	0.8
8. Other universities	7.5	10.5	11.8	20.9	13.9

Source: Own computations based on CNCSIS data from Annex 24.

From the viewpoint of financing by grants, in the period 2004-2007, from the table below the following results:

- during the analyzed period, the total volume of financing by grants recorded slight increases, which signifies an improvement of the under-financing situation with which RDI is faced in Romania;
- about a third from these funds were gained by the university centre from Bucharest (especially by the Polytechnic University, University of Bucharest and the Academy of Economic Sciences), and around one fifth were allocated to projects from the university centre Cluj-Napoca followed by the one in Iasi and Timisoara;

- private universities benefited to small extents of financing by grants either due to the low number of submitted projects, or to the lower scientific level, obtaining scores that did not ensure financing;
- in time, share increases are found for other universities in the country per total financing by grants, which led to a certain diminishment of their concentration level in the university centres from Bucharest, Cluj, Iasi and Timisoara;
- in the case of all universities is found a variation of grants' share from one year to the other in total financing.

Table no.20

**Current expenditures from research-development activity
on execution sectors and types of research**

	Lei					
	2000	2001	2002	2003	2004	2005
TOTAL	264768	404841	499045	673211	861256	1040367
<i>Fundamental research</i>	46083	83644	103213	170755	200083	248578
<i>Applicative research</i>	163622	252400	281282	391634	499687	680300
<i>Experimental development</i>	55063	68797	114550	110822	161486	111489
Higher education sector	23620	32503	47771	42310	76146	120751
<i>Fundamental research</i>	9056	14387	27773	20151	30411	54780
<i>Applicative research</i>	12538	12599	14625	16945	38469	63246
<i>Experimental development</i>	2026	5517	5373	5214	7266	2725

Source: NIS Data

In general, it is considered that research within universities pertain to the area of fundamental research, which implies also priority financing for this field.

RDI expenditure in the Romanian higher education, as of 2004, reveals the **allocation of over 50% from total allotted funds to applicative research**, which constitutes an important premise for creating the fundamentals of entrepreneurial universities that, in partnership with industry and private economic agents, change more rapidly the outcomes of fundamental research in new products and services that are marketable and used by the final beneficiaries.

This change in the priorities regarding the allocation of funds in favour of applicative research in higher education represents the intensification of the pragmatic dimension, with effects on the market, of university RDI, correlation between financial efforts and outcomes, based on standard criteria of assessing results, being more focused on practical applicability of outcomes.

In view of stimulating the RDI activity, at the level of higher education and of economic agents, a series of measures and policies are imposed for the following fields:

- policies aiming to specific measures of promoting **financial instruments and services** for stimulating RDI activities, particularly of those related to venture capital or other forms of supporting spin-offs, start-ups or spill-over;
- **fiscal incentive policies** aiming especially the size and structure of taxes in the field;
- **redirecting state aid** for supporting RDI activities of higher education and economic agents, so that a share of 20% from total volume of state aid should be allocated to this field.

The New Fiscal Code enforced in 2007 provides for a series of fiscal measures meant to stimulate the RDI activity realised by or for supporting economic agents, such as:

- a) taxes' diminishment by **expenditure deductions** referring to:
 - deduction of 20% from the direct investments value with significant impact on economy (L 571/2003, Fiscal Code/art.38);
 - classifying as non-taxable incomes the incomes obtained by natural persons from using (either by the owner or by the patent owners) licences or from the concession of brevets (L 571/2003, Fiscal Code/art.38);
 - deduction, on determining taxable income, of R&D expenditure (as well as the ones for management and information systems improvement, implementation, maintenance and improvement of quality management systems, obtaining the certification in

accordance with the quality standards, including here those for environmental protection and resources preservation (L 571/2003, Fiscal Code/art.21);

b) tax deduction by the depreciation method of expenditure by flexible options of depreciation with respect to tangible and intangible assets⁹⁸.

Measures and methods for the use of structural financial instruments of the EU

Financing the RDI activity from structural funds of the EU (2007-2013) represents an unprecedented challenge for Romania, taking into account the competitiveness level required for the success of proposed projects, as well as the complexity of procedures that must be complied with in the eligibility and implementation stages, in case of successful submitted proposals.

The National Agency for Scientific Research (ANCS) participated between 2005-2006 to elaborating and finalizing the **National Development Plan (NDP) 2007-2013 and to the Sector Operational Programme of increasing the economic competitiveness (SOP IEC)** with respect to the chapters referring to RDI the financing of which shall be realized from the **European Regional Development Fund (ERDF)**, national sources, including here the state budget.

The Intermediary Body for RDI (IB-RDI), created in the year 2005 at ANCS with the rank of directorate general is organized at central level, at the one of the 8 development regions, of universities and/or research institutes representative for the for the respective regions, and has as primary purpose the responsibility of managing for achieving the specific objectives of the **Priority Axis II** of SOP-IEC: **Increasing the economic competitiveness through research, development and innovation.**

In the year 2006, was launched the **Impact Programme** for the development period 2006-2010 with the purpose of identifying and developing RDI projects to be supported from EU structural funds.

ANCS as intermediary body for RDI is responsible for the Priority Axis II SOP-IEC with the following specific purposes⁹⁹: **increasing the research capacity; stimulating innovation by developing cooperation between the institutions R&D and the productive sectors.**

The major areas of intervention to benefit from financing by structural funds are: research partnerships between universities/research-development institutes and enterprises in view of obtaining applicable results; investments in the RDI infrastructure; access of enterprises, especially of SMEs to RDI activities.

The IB-RDI contribution to the preparation process for using structural funds consisted in elaborating the **RDI component** (the variant from April 2006) with respect to reviewing the analysis, finalizing the strategy, determining the monitoring indicators, financial programming of the complementary programme and of the procedures handbook for implementing the documentation to periodical monitoring and evaluation missions of the European Commission.

The categories of selected projects within the Impact Programme aimed to the contribution to increasing competitiveness of economic agents and developing the RDI infrastructure, especially at regional level. Through the Impact Programme were financed the consulting services for project beneficiaries in view of realising the documents for the applications for structural funds. The selection of the consultants was done based on competition, by evaluating their competence.

IV.4. Policies for RDI quality and performances increase in Romania

⁹⁸ In the Fiscal Code/art.24 is provided that: (a) in the case of technological equipment, respectively of machinery, tools and installations, as well as for computers and peripherals, the taxpayer might opt for the **linear depreciation method**, degressive or accelerated; (b) The expenditure corresponding to purchasing brevets, copyright, licences, commercial or factory brands, and other similar values are recovered by means of **linear depreciation deductions** for the period of the contract, or for the period of use, as the case may be, the expenditures corresponding to purchasing or generating software being recovered by means of linear depreciation deductions for a period of three years. For invention brevets the degressive or accelerated depreciation method can be used.

⁹⁹ Vezi Axa Prioritară II POS-CCE, Guvernul României 2006.

ANCS undertook a series of measures with respect to the general improvement of the educational system, of the higher education system, particularly for improving its research quality and potential, in the ante- and post-accession period. For this purpose, we mentioned the increased number, and level of specialization, and the improvement of professional performances of the research staff by **adjusting** the university education system and of the technical and scientific subjects to the new requirements for shaping and developing scientific careers, including by lifelong learning specialization of the staff from high-performance research teams.

The number of doctor students, science doctors and highly-skilled researchers from universities increased in the period 2004-2006, and the **national and international mobility** of professors, researchers and students grew, as it was pursued to gain skills and expertise required by the knowledge-based society and a competitive economy.

The numbers of teaching staff and students, of doctor students and researchers in high education involved in international programmes and projects on medium- and long-term increased slightly in the last years.

Another objective of the growth policy of the RDI potential based on the improvement of the higher education quality consisted in **developing the research-development infrastructure** due to the endowment to performance equipment and devices, the development of information infrastructures, documentation and communication, including of high-speed nets specialized for education and research. A special attention was granted to the development of R&D facilities and installations of national importance, and of the integrated research platforms, within joint projects of universities, research and industry, that would ensure the compatibility with European platforms (manufacturing technologies, nano-electronics, innovative medicine, sustainable chemistry, genomics and biotechnologies for plants, etc.).

The development of the national scientific and technical capacity represented another objective of the improvement policy of the performance level of university RDI. To this end, we mention the creation and strengthening of some **scientific and technological excellence poles** (centres and networks of excellence) recognised in accordance with international norms and exigencies of the European Research Area. Priority was given to institutional legislative instruments and to economic-financial mechanisms which contributed to the development in the country of integrated technological networks, consisting of R&D institutes, centres and profile departments within universities, experiment and testing laboratories, bodies for qualification, technological audit, information and counselling centres acknowledged at national and international level all meant to increase competence and the scientific and technological services of reference in high-tech fields of science and technology.

ANCS undertook a wide range of measures in view of integrating research centres/networks, specialised in the high-tech fields of science and technology in partnerships and representative programmes for the European Research Area (ERA) and within other European platforms.

The main instruments at national level, for implementing higher education policies and reforms for promoting RDI in Romania were the **Research Programme of Excellence (CEEx), the Programme of Scientific Research Grants and the National Plan for Research-Development and Innovation (PNCDI)**.

The CEEx Programme, launched in the second trimester of 2005 pursued to strengthen the Romanian Research Area (ARC) by increasing the integration potential of the Romanian scientific community with ERA and to prepare the participation to the Research Framework Programme 7 (FP7) of the EU, for the period 2007-2013.

Mainly, the CEEx Programme takes into account a series of RDI targets and objectives where higher education is directly and/or indirectly involved, respectively:

- joining within the priorities' and objectives' system of ERA;
- increasing the level of performance and competitiveness of RDI in Romania by increasing the capacity to generate, disseminate and transfer top scientific and technological knowledge;
- forming poles of excellence;
- development of human resources for research and specialised RDI infrastructure;

- integrating the centres and programmes of research-development from Romania in international networks and programmes. More specifically, the CEEEx Programme aims to: developing at domestic level the networks of institutions and specialised bodies (including here increasing the share of universities' participation which have performance research and information equipment and devices) and increasing the performances at national and international level of the research staff and its rejuvenation; **increasing the international visibility** of researchers, institutions, and research programmes, including by increasing the number of publications, patents, indexed or series inventions into international data banks;
- increasing the number of accredited evaluation bodies and for conformity certification in accordance with the EU standards and other international ones.

In accordance with the ANCS report for the year 2006¹⁰⁰, the contribution of the CEEEx Programme is rendered concrete by:

- a) **improving the qualitative structure of the RDI system** (549 partnerships research-industry, 43 integrated technological platforms, 84 infrastructure bodies for evaluating conformity);
- b) **improving the professional specialisation and performances level of the research staff** (development of 54 post-doctoral programmes in universities, and of three programmes in research institutes, 191 research projects for young researchers, under 35 years of age, in which were involved over 794 young doctor students, master students and doctors of science, and return into the country of 23 doctors with doctoral and post-doctoral studies abroad, etc.);
- c) **improving the research-development infrastructure** (36% from the total value of the projects is allocated to new endowments), realised on the principle of integrated platforms, consisting of complementary components localised at the various partners in the same project.

The second module of the CEEEx Programme – **Development of human resources for research** – was realised in the period 2005-2006 by launching the following categories of projects:

- Research projects for young researchers (ET);
- Research projects for supporting post-doctoral programmes (PD);
- Research projects for stimulating the return in the country of researchers (RP);
- Researchers' mobility projects (MD).

From the total of 304 launched projects in the above-mentioned period, 192 pertain to the category ET, 58 categories to PD, 35 categories to RP and 19 categories to MD.

The highest share of this projects was the one of basic sciences (physics, chemistry, mathematic, biology, electric, electronic engineering and telecommunications, materials' science, computers) and of economic sciences.

Grants for university scientific research

The training and improvement of human resources in the RDI area knew important progresses by the creation of the **National Council of Scientific Research In Higher Education from Romania (CNCSIS)**¹⁰¹, under the aegis of which grants are attributed for the following fields: mathematic and nature sciences, engineering sciences, socio-humane and economic sciences, life and Earth sciences; agricultural sciences and veterinary medicine; medical sciences; arts and architecture.

CNCSIS has an important role in reforming of higher education in Romania, with respect to the process of funds allocation for research in universities, and performance evaluation in the field of scientific research. The CNCSIS mission consists mainly in:

¹⁰⁰ See: „Governmental policies for research-development and innovation in Romania” Report 2006, the Government of Romania, ANCS; December 2006, p.26.

¹⁰¹ With respect to history, objectives, institutional structure and activity of CNCSIS see: <http://www.cncsis.ro>; Dumitrache I., CNCSIS 12 in the scientific life from Romania, National Conference of Scientific Research from Higher Education, CNCSIS, 17-19 May 2007, Cluj Napoca (ioan.dumitrache@cncsis.ro)

- strengthening and developing university scientific research;
- allocating research funds based on competition;
- creating regional centres of excellence with advanced facilities for research;
- developing management capacities of university network in the field of scientific research of the capacity to identify internal and external financing resources for research and attracting them into the university network.

CNCSIS has in its functional subordination **the Executive Entity for Financing Higher Education and University Scientific Research**, which ensures the executive activity of CNCSIS with respect to financial resources allocation from the state budget and from other incomes for higher education and scientific research.

The CNCSIS Grants Programme comprises:

- **type A**, multi-annual scientific research grants, launched in 1995;
- **type AT**, multi-annual grants for young researchers launched in the year 2000;
- **type TD**, individual grants for young doctoral students launched in the year 2002;
- **type BD**, scientific research scholarships for young doctoral students launched in the year 2003;
- **type A-consortium**, multi-annual grants for scientific research of the consortium type launched in the year 2005.

In the period 1995-2007 is found an **increase of the volume of allocated funds** by CNCSIS in parallel with the **diversification** of their types and **improvement** of the evaluation process. After 2003, is also found a high dynamic of budgetary financing of grants, especially as result of Romania's efforts to align itself to the Lisbon Strategy requirements with respect to RDI financing.

Table no.21 **Value volume of research grants' financing from the state budget in the period 1995-2007**

Year	Value	
	In thousands Lei	In thousands Euro
1995	427.8	950.7
1996	633.7	1173.5
1997	1191.0	1896.1
1998	2441.2	1952.9
1999	2680.9	1477.1
2000	2755.9	1203.4
2001	4030.0	1439.3
2002	8700.0	2558.8
2003	5659	1316.0
2004	19996	4999.1
2005	32000	8421.1
2006	50000	14450.8
2007	85000	25468.9

Source: CNCSIS

Even if relatively high sums were allocated for the CNCSIS grants in the years 2004 to 2007, against other EU member countries, the respective amounts are still very low, so that it can be further stated that university research is under-financed.

The distribution of research projects on types of project and areas offer a conclusive image with respect to the priorities of the university RDI policies in Romania.

Table no.22 **Grants on types and areas in 2007**

Project type	Areas						
	Mathematics and natural sciences	Engineering sciences	Socio-humane and economic sciences	Life and Earth sciences	Agricultural and veterinary medicine sciences	Medical sciences	Arts and architecture
TYPE A							

-% financed projects from total submitted projects	30.4	28.8	30.2	30.9	28.7	28.6	31.4
- approved value in thousands Lei	4496.6	999.5	7993.5	3169.9	4586.1	5219.8	839.4
TYPE AT							
-% financed projects from total submitted projects	31.7	34.0	29.6	35.0	29.6	26.7	0.0
- approved value in thousands Lei	753.7	909.2	1155.3	408.5	456.5	313.2	0.0
TYPE TD							
-% financed projects from total submitted projects	30.3	30.1	34.8	99.6	33.1	34.2	33.3
- approved value in thousands Lei	646.2	2114.2	736	550.6	1265.7	506.8	65.0
TOTAL A+AT+TD Approved value in thousands Lei	5896.5	13016.9	9884.8	4129	6308.3	6039.8	904.4

Source: CNCSIS data.

From the data of Table, following conclusions can be drawn:

- **Type A multi-annual grants** had the highest sums allocated in 2007, in all areas of scientific research, these representing over 80% from total allocated funds;
- **the highest financing** was approved to **engineering sciences**, followed by **socio-humane** and **economic sciences**, agricultural and medical sciences;
- the share of projects financed in total projects was around 30% which means a relatively “high” success rate which could raise the issue of the “critical mass” size in financing a research project, as well as of the need to focus on “large” research projects with the purpose of avoiding funds’ dispersion.

Evaluation of university RDI performances

The performances obtained by university RDI as result of developing projects financed by grants made the object of the analyses within the annual reports of CNCSIS.

Evaluation was mainly focused on a series of indicators which reflect the fundamental and applicative character of researches developed within higher education. Therefore, we mention that the indicators with respect to performances of fundamental research referred to: number of articles and studies published in ISI quoted magazines, or recognised magazines at national and international level, books with print houses from abroad and from the country with reviews.

With respect to the assessment of applicative research achievements and developments, were used indicators such as: number of new and modernised products; number of created/developed laboratories; research directions, etc.

Before referring to the evolution of fundamental and applicative research performances in the Romanian higher education, we shall make a brief analytical presentation of the situation of the research projects financed by grants, from the viewpoint of their success rate in the competition, and of the evaluation issues by the CNCSIS accredited evaluators.

Table no.23 **New research projects financed by grants in 2007, on types of project and institutions**

	Project type			
	Type A	Type AT	Type TD	Total
Number of submitted projects , from which:				
- Universities	1519	219	582	2320
- Romanian Academy	67	8	18	93
- MEDC Institutes	41	5	0	43

- Others	58	3	0	61
Total	1685	235	600	2520
Number of financed projects, from which:				
- Universities	437	71	181	689
- Romanian Academy	30	1	9	40
- MEdC Institutes	14	0	0	14
- Others	16	1	0	17
Total	497	73	190	760
Success rate, %				
- Universities	28,77	32,42	31,10	29,70
- Romanian Academy	44,78	12,50	50,00	43,01
- MEdC Institutes	34,15	0	0	30,43
- Others	27,59	33,33	0	27,78

Source : CNC SIS 9, 17+19 May 2007, Cluj-Napoca.

The participation to RDI projects' financing by grants' competition is only a recent experience in Romania, at internal and external level. Therefore, the complex of factors should be taken into account which on one hand **stimulate** this participation and, **inhibits** it on the other.

To the first category of factors pertain: **the competitive** (contest) **capacity** of the participant to obtain grants; the size of the obtainable amount; the scientific and economic-social interest of the approached subject; the diminished competition.

The category of factors de-motivating participation refers mainly to: complicated bureaucratic procedures of eligibility; subjectivism and incorrectness in evaluation; delays in announcing results and solving claims; the lack of transparency in evaluating projects, etc.

In the year 2007, the success rate on types of projects and institutions reveals the best position for the Romanian Academy for projects of type A and TD. The highest number of submitted and financed projects on all types of projects is obtained by universities, which generates for competitors outside universities certain suspicion about the respective projects being favoured.

The analysis of financed projects and success rates for projects financed by the Grants' Programme, in the period 2005-2007 for universities in Romania¹⁰², highlights the following:

- for most universities which submitted projects, the success rate varies from one year to the other, the differences being relatively high, which seems normal;
- there is a relatively large number of higher education institutions, especially those of the private sector which, for the analysed period, have a success rate equal to zero because they did not submit projects;
- state universities from Bucharest, Iasi, Cluj, Timisoara, and Craiova recorded a relatively high success rate for all years analysed, under the conditions in which they filed a large number of projects, which reveals a high competitive capacity, at least at national level.

Table no 24 **The number of significant scientific papers published in ISI quoted magazines for 2006 on types of scientific projects and areas**

Areas	Project type			
	A	AT	TD	Total
- Mathematics and natural sciences	238	64	26	328
- Engineering sciences	125	19	7	151
- Socio-humane and economic sciences	10	1	1	12
- Life and Earth sciences	68	1	2	71
- Agricultural and veterinary medicine sciences	18	5	5	28
- Medical sciences	10	1	1	12
- Arts and architecture	2	1	1	4

Most ISI quoted articles were registered in mathematics, natural sciences, and engineering sciences, areas benefiting also by a high number of ISI quoted magazines at international level. In Romania, currently, there is only a number of 10 Romanian ISI quoted scientific reviews and

¹⁰² See <http://www.rezultategranturi.ro>

journals, which represents for the future a major challenge for university RDI, but also for the other sectors developing activities in the field, meaning an effort to increase the number of the respective reviews.

One of the evaluation indicators of efficiency in using the funds allocated by grants is represented by the studies and articles published by Romanian researchers in ISI quoted journals . An analysis of the evolution in the period 2001-2006 of ISI quoted studies, as result of the grants reveals a favourable trend, especially for type A projects of multi-annual researches where in the period 2004-2006 took place almost a doubling of the number of ISI studies, against the period 2003-2005.

Table no.25 **Number of scientific works published in ISI quoted journals as result of the grants developed in the period 2001-2006, by types of projects (A, AT, TD) - number**

Project types:	Period			
	2001-2003	2002-2004	2003-2005	2004-2006
A	290	443	471	801
AT	74	104	92	65
TD	23	48	43	93

Source: CNCISIS Data.

For all categories of projects financed by grants, a growth trend is found for the entire period 2001-2006 for the number of ISI quoted studies, even if for the types AT and TD there were also some drops in the period analysed. Anyway, the highest number of ISI articles resulted from type A projects, which also received the largest volume of allocated funds based on competition grants.

This favourable increase trend for the number of ISI quoted studies represent a promising and necessary beginning for the visibility of Romanian research, but it is not enough, particularly if we compare Romania with other countries in this respect and consider the creative potential of Romania’s scientific community.

Publishing articles in ISI quoted journals depends on a multitude of factors which should be taken into account by the decision factors in the process of elaborating and implementing the regulatory framework of the educational reform. Among these factors we mention:

- **pro-creativity and pro-competitiveness education** on all education levels, based on adjusting the curricula content and favourable mixing of favourable international experiences with the needs and requirements of local particularities;
- **intensifying international cooperation** in the educational field for a diversified range of issues and areas within the European Education and Research Areas;
- **increasing the mobility of teachers, pupils and students** with clear and measurable finality based on grants, including here increasing the number of participants to national and international contests and Olympics;
- **special training of students and pupils for national and international scientific competition** with respect to knowing the most recent achievements of science (state-of –the – art), as well as complex criteria and methodologies of evaluation of research outcomes, including the procedures of application for grants and financing within Framework Programme 7;
- creating a **national system of material-financial and moral incentives** for ISI performances, in general and for the specific scientific ones in particular (for instance, excellence prizes, payment for ISI articles, scientifically gained prizes, facilities for the prize owners);
- extending the practice with respect to **publishing in an international language** of the outcomes of Romanian scientific research and internet access to the latter (Annex 25,26).

Another relevant indicator for the efficiency of competitive financing by grants is represented by the number of **scientific papers published in editorial volumes as result of the participation to international conferences and congresses** with peer review. In the period 2001-2006, this number was on increase, which signifies a positive situation. It is important to analyse the

relationship between the dynamics of expenditure volume and the one of the scientometry indicators' system, so as to be able to outline some efficiency and scientific visibility degree.

Table no. 26 **Number of scientific papers published in volumes of international conferences with peer review as result of the grants developed in the period 2001-2006**

Project types	Period			
	2001-2003	2002-2004	2003-2005	2004-2006
A	834	659	943	1901
AT	384	273	131	192
TD	0	101	109	210

Source: CNCSIS data.

In the period 2003-2006, that is from the moment when the volume of competition financing by grants has recorded sensible increases against previous years, the number of scientific works in editorial volumes of international conferences increased slightly, practically for all types of projects which is a positive factor for the visibility of Romanian research.

The outcomes of Romanian university research, realised under the conditions of grant financing, are valued also under the form of scientific papers published in the country, in volumes of national conferences (proceedings) or in editorial volumes.

Table no.27. **Number of scientific works published as result of grants developed in the period 2001-2006, on types of projects**

Project type	Period		Indicators (%) 2004-2006/2001-2003
	2001-2003	2004-2006	
1. Scientific papers published in volumes of international conferences with peer review			
- A	834	1901	227,9
- AT	384	192	50,0
- TD	0	210	-
2. Scientific papers published in volumes of national conferences with peer review			
- A	1028	2426	235,9
- AT	434	288	66,3
- TD	0	413	-
3. Number of published books			
- A	156	790	506,4
- AT	70	79	112,8
- TD	0	53	-

Source: CNCSIS data

It can be seen that in the period 2004-2006, against the period 2001-2003, the number of scientific papers or books published in editorial volumes with peer review increased slightly, as result of the grants for research.

University research by grants realised also a series of **projects of applicative character** rendered concrete in created laboratories, or in new products, which highlights the trend towards pragmatism of higher education which intensifies its connections to industry and production.

Table no.28 **Number of products and laboratories created/developed as result of grants developed in the period 2001-2006, on types of grants**

Type of project	Period		Indicators (%) 2004-2006/2001-2003
	2001-2003	2004-2006	
1. Products realised by projects:			
- Type A	158	473	299

- Type AT	57	22	38
- Type TD	8	62	775
2. Laboratories created/developed by projects:			
- Type A	281	430	153
- Type AT	119	49	41
- Type TD	83	32	38

Source: Own computations based on CNCSIS data.

The CNCSIS grants had a favourable influence also on the outcomes of applicative research and innovation in the period 2004-2006 compared with 2001-2003, the number of products and laboratories increasing by 2.9 and, respectively, 1.5 times in the case of type A grants. For grants of the type AT and TD is found at the same time a trend of diminishing the number of products (save for the type TD) and laboratories. In the case of AT products the explanation of the trend aims at one hand the increased degree of complexity of products and the ageing of the workforce from research, which led to a relative drop of young researchers in total researchers, and for laboratories must also be considered that a sustained dynamic cannot be achieved on medium- and long-term on the other hand, because the demand for such of RDI infrastructure shall be gradually saturated following an emphasis shift on updating, improving and modernizing equipment, installations and work instruments.

University RDI performances on science areas

Differentiating university RDI performances on science areas represents an important milestone for the policies of allocating funds on certain scientific areas, and for comparing their efficiency and performances, as well.

The economic theory of RDI is still in a clarification and in-depth going with respect to extremely complex issues aiming at RDI strategies and policies, at micro- and macroeconomic level, considering the following aspects:

- a) **the relationship between specialization and development** extended in the science and research area, depending on the countries' potential;
- b) **differentiating evaluation methods** on types of fundamental research (theoretical, advanced), applicative research, development-innovation, and market valuing;
- c) intensifying complexity, increasing the inter- and trans-disciplinary in the field of research, and innovation development;
- d) increasing the need of studying the sustainability requirement of economic-social development, as result of the emergence of some severe phenomena of ecologic imbalance and deterioration of the natural capital.

Knowing the RDI areas in which Romania has comparative and competitive advantages is of strategic importance because, only so we can increase the efficiency of allocating resources in the field. On the other hand, there are a series of top achievements of science and technology for which, even if we do not have such advantages, it is necessary to allocate resources because technological transfer, assimilation in the country of these achievements, require a minimum level of scientific training and research, inclusively with respect to students' training in the newest research directions.

Table no.29 **Number of research directions promoted/strengthened as result of the grants in the period 2001-2006, on areas of science**

Research directions	Period	
	2001-2003	2004-2006
Total, from which	1519	1901
- Mathematic and nature sciences	343	333
- Socio-humane and economic sciences	398	663
- Agricultural and veterinary medicine sciences	208	416
- Arts and architecture	283	145
- Engineering sciences	248	211

- Life and Earth sciences	34	96
- Medical sciences	0	37

Source: CNC SIS data.

At the level of the entire university research activity developed by CNC SIS grants, in the period 2004-2006, the number of promoted/strengthened research directions increased about 1.25 times against the period 2001-2003, the highest leaps being registered in socio-humane and economic sciences, agricultural and veterinary sciences, and life and Earth sciences.

The data highlight that in the period 2004-2006, the highest share in total number of research areas promoted/developed by grants was of the socio-humane and economic sciences, agricultural and veterinary medicine sciences, mathematic and nature sciences, and engineering sciences.

Because research in universities, as a rule, has a preponderantly fundamental character, we have analysed on areas of science the number of scientific papers published in ISI quoted publications, as relevant indicator for the performances of Romanian fundamental research, their visibility, impact and the participation of researcher to various international programmes and projects as well.

Table no. 30 **Number of scientific papers published in ISI quoted publications as result of developing grants in the period 2001-2006, on areas of science**

Areas of science	Period		Indicators (%) 2004-2006/2001-2003
	2001-2003	2004-2006	
Total, from which	387	959	247
- Mathematic and nature sciences	165	569	344
- Socio-humane and economic sciences	130	265	203
- Agricultural and veterinary medicine sciences	15	22	146
- Arts and architecture	45	42	93
- Engineering sciences	22	31	141
- Life and Earth sciences	10	29	290
- Medical sciences	0	2	-

Source: CNC SIS data.

Under the conditions in which in the period 2004-2006 **an increase of 2.5 times is found for the number of Romanian papers published in ISI quoted publications** as compared to 2001-2003 for all areas of science (with the exception of art and architecture), the contribution of the various areas of science to total number of ISI papers is different, the highest shares is held by mathematic and nature sciences. The favourable development of the number of ISI Romanian articles in 2004-2006 is the outcome of career advancement criteria imposed by the enforced legislation for teaching staff and researchers¹⁰³. This favourable evolution, recorded in the last two years, would have to be continued in a sustained manner because, unfortunately, Romania is placed at international level among the countries with modest outcomes with respect to RDI performances evaluated according to international standards.

Table no.31 **Number of scientific papers published in volumes of international conferences with peer review as result of grants developed in the period 2001-2006, on areas of sciences**

Areas of science	Period		Indicators (%) 2004-2006/2001-2003
	2001-2003	2004-2006	
Total, din care	1218	2302	188
- Mathematic and nature sciences	152	415	228
- Socio-humane and economic sciences	178	899	505
- Agricultural and veterinary medicine sciences	197	547	278
- Arts and architecture	348	146	37

¹⁰³ See the legislation in force for the promotion conditions on the positions of lecturer and professor, respectively of scientific researcher of 1st and 2nd rank.

- Engineering sciences	246	202	82
- Life and Earth sciences	97	91	94
- Medical sciences	0	21	-

Source: Computations based on CNCSIS data.

As result of the increased participation number of Romanian researchers to international scientific events, which publish the selected communications in editorial volumes with peer review, in the period 2004-2006 was recorded an increase of 1.88 times of the scientific papers published in this manner, fact which contributed to improving the visibility abroad of Romania science. For this form of valuing the university RDI outcomes, significant is not only the scientific value of the paper which must fulfil certain qualitative criteria, but also the material-financial possibilities of the Romanian researchers to pay participation fees and travel expenditures (per diem, accommodation, transport, etc.).

Table no.32 **Number of books and scientific papers published in volumes of national conferences with peer review as result of the grants developed in the period 2001-2006, on areas of science**

Areas of science	Period		Indicator (%) 2004-2006/2001- 2003
	2001-2003	2004-2006	
<i>1. Books - Total, from which:</i>	202	907	449
- Mathematic and nature sciences	10	102	1020
- Socio-humane and economic sciences	97	351	392
- Agricultural and veterinary medical sciences	49	258	526
- Arts and architecture	36	68	188
- Engineering sciences	29	68	234
- Life and Earth sciences	10	22	220
- Medical sciences	0	8	-
<i>2. Scientific papers – Total, from which:</i>	1191	3197	268
- Mathematic and nature sciences	120	410	341
- Socio-humane and economic sciences	783	1744	222
- Agricultural and veterinary medical sciences	187	585	312
- Arts and architecture	92	117	127
- Engineering sciences	271	242	89
- Life and Earth sciences	9	90	1000
- Medical sciences	0	9	-

Source: Computations based on CNCSIS data.

The same favourable trend of increasing the number of books and articles published in the country is noticed as well especially in the areas of mathematics, socio-humane and economic sciences, and agricultural sciences as result of the CNCSIS grants.

The increased importance of applicative research projects in universities, which are realised based on CNCSIS grants is reflected in the measurement indicators of performances aiming the number of new obtained products and of the created/developed laboratories on areas of science. A part of the universities started to gain a more marked entrepreneurial character being involved in start-up, spin-off and spill-over processes.

Table no.33 **Number of products and created/developed laboratories as result of the developed grants, in the period 2001-2006, on areas of science**

Areas of science	Period		Indicator (%) 2004-2006/2001- 2003
	2001-2003	2004-2006	
<i>1. Total number of products from which:</i>	233	557	459
- Mathematic and nature sciences	63	52	82
- Socio-humane and economic sciences	124	355	286
- Agricultural and veterinary medical sciences	11	53	481
- Arts and architecture	9	35	388

- Engineering sciences	25	43	172
- Life and Earth sciences	1	10	1000
- Medical sciences	0	9	-
<i>2. Total number of created/developed laboratories, from which</i>	423	514	121
- Mathematic and nature sciences	73	85	116
- Socio-humane and economic sciences	112	261	233
- Agricultural and veterinary medical sciences	28	36	128
- Arts and architecture	109	34	31
- Engineering sciences	91	65	71
- Life and Earth sciences	10	25	250
- Medical sciences	0	8	-

Source: On computations based on CNCISIS data.

Also, in the case of the number of products and created/developed laboratories, as a whole, are found notable increases in the period 2004-2006 against the period 2001-2003, particularly for mathematic, socio-humane and agricultural sciences.

The realisation of remarkable progresses in the university RDI activity is also due to CNCISIS, UEFISCSU which from one year to the other improved their functioning way, evidencing flexibility, adjustment to European good practices and receptivity to the improvement suggestion of their working arrangements as result of analysing the outcomes of competition and, especially, of research.

A positive fact is the transparent working arrangement of CNCISIS, the outcomes of each research grant being comprehensively presented on Internet¹⁰⁴.

Other important progresses of the CNCISIS- UEFISCSU cooperation refer to the “Research of Excellence” (CEEEx), to “Platforms/laboratories of interdisciplinary training and research”, the National RDI Strategy for the period 2007-2013 (www.strategie.CDI.ro); Romanian Inventory and Networking for Integration in ERA – ROMNET ERA (2004-2007); COMPERA-ERA-NET on National and Regional Programme and Initiation dedicated to the creation and the support of „Competence Research Centres” (2005-2008), financed by FP6, the financing scheme ERA-NET; European Research Area on Ageing ERA-AGE (2004-2008) – FP6 financing; Reinforcing the globalization of Students and titleholders of social and economics sciences in an European Space of permanent learning FORTIUS (2004-2006); European i-Lab Competence Development Project (2007-2008).

CNCISIS publishes quarterly „Revista de Politica Științei și Scientometrie” (Magazine of Science Policy and Scientometry”), which provides very useful information over the RDI policies and the methods of assessing their performances.

The issue of improving assessment methods of projects financed by grants

CNCISIS attempted to ensure in assessing grants objectivity, transparency, rigorousness and efficiency, in accordance with the requirement of alignment to the procedures used by the European Commission for the RDI project proposals for the Framework Programmes of Scientific Research.

To this end was developed, and improved in time, a procedure which progressed from the laborious and time consuming stage to the assessment stage as of 2005, based on the on-line presentation of the assessment forms and files, as well as on automated allocation of evaluator-experts on projects.

The stages of on-line evaluation aim the assessment at individual level and determining the consumption in cases where the evaluation differences between the three delegated evaluators for the project is higher than 10 points.

¹⁰⁴ See addresses: <http://www.rezultate-granturi.ro> (for the period 2004-2006); http://www.cncsis.ro/granturi_finalizate_2006.php (perioada 2003-2005); http://www.cncsis.ro/lista_granturi-finalizate_2005.php (pentru perioada 2002-2004)

In the case of claims filed during the period set therefore by CNCSIS were constituted new panels of expert evaluators in view of carefully reassessing the projects. Online evaluation was supported by developing a web application of online registering of those who desired to become experts¹⁰⁵, the proposals being selected based on some clear criteria aiming the expertise and scientific activity of the evaluator-experts. As result of improving the procedure of evaluation, in the years 2006-2007 the CNCSIS grants recorded an increase of the success rate of 82.93% and, respectively 98% with respect to online evaluation, from the total of 2349 validated experts, a number of 1526 experts expressing their availability to evaluate. Nevertheless, in the case of the 2007 competition were filed 609 claims, from which only 40 claims were regarded as justified and, consequently, the initial score was changed in an acceptable margin of 0 to 5 points compared with the initial evaluation.

CNCSIS will have to continue the follow up the improvement of the evaluation process in the stage of selecting the projects financed by grants, at least for the following directions:

- re-examining the competitive calendar with the purpose of eliminating some crowded periods and allocating more time for evaluation;
- the periodical analysis of experts who were contested, who evaluated at high differences against the average or required frequent corrections;
- increasing the portfolio of national experts of high professional value, objective and with the proper ethical behaviour, lacking subjectivism;
- attracting in the evaluation process some recognised foreign experts.

If the selection of the RDI projects financed by grants is realised based on competitive bases of the **ex-ante evaluation** of no lesser importance will have to be also the mechanisms of evaluation in the subsequent periods of the respective projects – **ad-interim evaluation** and the **ex-post evaluation** of the research outcomes, in their various implementation and dissemination stages.

With respect to the ad-interim and ex-post evaluations we consider that more rigorousness and correlation between expenditure and outcomes, performances requires elaborated systems for which the implementation presupposes the verification of conformity between what researchers declare as preliminary and/or final outcomes of the RDI activity and the real situation in quantitative and qualitative-value terms.

As known, currently, within the RDI policy, increasingly more attention is given to performances, to its effects. The competitors which were proved as lacking don't have many chances to continue requesting grants.

The adoption of the evaluation systems for university research outcomes, in general, is in a stage of taking-over, and transposing the standards system, the methodologies and indicators used within EU and at international level. In this context, of particular importance, especially for the outcomes of fundamental researches in the field of exact sciences, are the ISI quoted articles as total or related number to a given number of teaching staff, researchers and inhabitants.

From this point of view, the number of ISI¹⁰⁶ quoted articles of the Romanian universities reveal that the best performances are recorded by the Polytechnic University Bucharest and the University of Bucharest, which have together a share of 35.1% from the total number of universities' articles followed by the university centres from Cluj-Napoca (University Babeş-Bolyai and Technical University of Cluj – 17.35%), and from Iaşi (University Alexandru Ioan Cuza and Technical University Gheorghe Asachi – 16.71%).

A number of 16 universities have contributed with more than 1% from total ISI articles elaborated within the universities, and the rest of over 57% state and private universities had an insignificant ISI production.

It is interesting to notice that this hierarchy of the Romanian universities is almost identical with the size order of the financing funds by grants on universities. The same hierarchy of the

¹⁰⁵ See the web address: www.experti-cdi.ro

¹⁰⁶ See ISI web of Science, Current Content Connect și ISI Proceedings.

university centres is obtained also for the indicator “number of articles per 100 persons teaching staff”.

Within the international classification¹⁰⁷, unfortunately, Romanian universities cannot be found among the first 500 universities in the world, in the case of using the hierarchy indicators’ system of the Institute of Higher Education of the Jiao Tong University from Shanghai, which enjoys international recognition.

Applying the Shanghai¹⁰⁸ classification methodology for Romanian universities leads us to a similar hierarchy to the ISI one. Based on these international comparisons with respect to the performance of Romanian universities, we consider as opportune the display of a proactive behaviour with respect to improving the quality of research outcomes, but also with respect to complying with some standards and procedures for ISI monitoring and quotation of the scientific reviews from Romania.

An encouraging beginning is represented by the CNCSIS system by which Romanian scientific reviews are classified into five qualitative groups (A; B+, B, C, D) and the classification of printing houses.

Itemized objectives of the National RDI Plan 2007-2013

For the period 2007-2013, the National RDI plan sets up a series of targets with respect to the performance indicators of the Romanian research-development activities, in which the research of the higher education sector is directly involved.

Table no.34 **RDI system evaluation indicators and their value for 2013**

Ord. No.	Indicator name	MU	Period of reference	Value of reference	Target 2013
1	Scientific papers annually published in ISI quoted magazines	Number	Average 1995-2005	1995	+100%*
2	Quotations in ISI quoted magazines	Number	Average 1995-2005	6898	+120%*
3	ISI quoted Romanian scientific reviews	Number	2006	7	15 magazines
4	National patents	Number per 1 mill. inhabitants	Average 1996-2003	58	+200%
5	International patents registered in EU, USA and Japan	Number	Average 2000-2004	17,4	+600%*
6	Number of transferable products	Number	-	-	100*
7	Participation to international projects	% from the RD public budget	2005	4%	6%*
8	Value of the private sector share to NP II	% GDP	-	-	0,75%
9	Number of doctors of sciences in the RD sector	Number	2004	8954	+100%*
10	International mobilities	Person/month	-	-	5000*
11	National mobilities	Person/month	-	-	1000*
12	Investments in the RDI infrastructure	% from public expenditures	Average 1998-2003	10%	25%
13	Number of SMEs that contracted funds by PNCDI	Number	Media 1999-2006	-	+150%*
14	Number of scientific parks	Number	2006	4	8
15	Value of the technology transfer in authorised territorial transfer centres	Thousands Lei	2006	-	+100%*

*) average 2007-2013

Source: PNCDI 2007-2013

¹⁰⁷ See: <http://ed.sjtu.edu.cn/ranking.htm>; http://europa.eu.int/comm/education_policies/2010/doc/comuniv205-en.pdf

¹⁰⁸ See also Florian R., *Universitățile din România. Performanțe științifice și raportarea lor la clasamentul Shanghai*, Revista Ad Astra, nr.3, 2005, <http://www.ad-astra.ro/journal>

Important targets within the PNCDI 2007-2013 aiming at impact indicators (Table no. 18) which reflect the visibility and acknowledgement of the Romanian research and science value.

Table no. 35 **Impact indicators for the RDI system**

Ord. No.	Indicators' name	MU	Period of reference	Value of reference	Target for 2013
1	Romanian university according to the Shanghai classification (Top 500)	Number	2006	0	2
2	Number of companies developing innovative activities (according to the Community Innovation Survey)	%	2002-2004	19%	+100%
3	Employees in high-tech fields against employees in manufacturing industry	% from total employment	2004	0,4%	+100%
4	Employees in science-intensive services against total employment in services	% from total employment	2004	1,5%	+75%
5	High-tech products for export	% from total export	2004	3,8%	+50%

Source: PNCDI 2007-2013.

Developing some systems of indicators which are rigorous and differentiated depending on the particularities of the three sectors of fundamental and applicative research and experimental development represents a stringent requirement in view of measuring actual performances, the competitiveness of Romanian research, its effect on economy and society.

Within the specialised literature, there are several systems of indicators for evaluating outcomes¹⁰⁹ and effects of the various RDI activity categories, as follows:

- **for fundamental research:** number of publications in prestigious national and international scientific reviews, quotations' index, impact coefficient, etc.

In view of improving the performance and outcomes of fundamental research in universities under the conditions of ever stronger manifestation of the requirement of **increasing the visibility** of Romanian science, there appear as opportune the following measures:

- **publishing in international languages**, especially in the English language of the fundamental research studies and outcomes, which presupposes knowing these languages by the researchers who have so increased and operational possibilities for documentation and establishing contacts with experts from other countries. In particular English has turned into an universal communication vehicle without which, practically, there is no longer possible to learn about the state of the art in one or the other field of science;
- initiating international scientific cooperation within EU, FP+7 based on bi- and multilateral basis.
- **For applied research:** number of innovations, patents, licenses, brands, know-how, new products and technologies recorded at national and international level;
- **For experimental development:** volume of sales, increase of exports, diminishing imports, time and/or staff savings; the quality/price ratio, material resources savings, etc.

The classification in the three groups of the indicators' systems for evaluating the RDI outcomes, to a certain extent, has a conventional character because the RDI activity implies the interference to a larger or lesser extent of the three types of research, in particular under the conditions in which the **integration between education-research and economic-social production** represents a requirement for increasing the research efficiency of the knowledge-based society and of the multi- and inter-disciplinary within extended teams of RDI's project authors.

¹⁰⁹ See, for instance, the EUROSTAT and OECD Methodologies; European Innovation Scoreboard.

The “sterile” dispute about which of the three types of research is more important is often time consuming for RDI theoreticians and practitioners. Determining some hierarchies according to the importance degree of the three categories of the RDI activity is variable in time, depending on the scientific or economic area considered. Rather, it is necessary to agree on the ways of interference and mutually increasing their potential pursuing a final objective that would mobilise the efficient expenditure of the resources involved in the research stages that are required by the respective project.

IV.5. Human resources management aspects in the RDI sector within higher education

Within the development of the RDI activities in higher education, especially for the master and doctoral studies’ cycle, of particular importance is the contribution and education level of the teaching staff in general, and of those directly guiding scientific papers, dissertations and RDI projects at national and international level more specifically.

During the university year 2005-2006, the number of the teaching staff within the Romanian higher education was of 31500 thousands persons, an increase by 700 persons against the previous year, which represents a favourable trend where: professors 5.8 thousands, lecturers 5.2 thousands, readers 8.3 thousands, university assistants 7.9 thousands; and assistants 3.3 thousands and visiting (consultant) professors 1.0 thousand¹¹⁰.

The ratio professors/lecturers in Romania is above-unitary, which reveals an “abnormal” situation in the hierarchy of the teaching staff. Giving up the didactical degree of reader might rebalance in the future the situation. The new exigencies and promotion criteria from lecturer to professor¹¹¹ and the accrediting and authorizing criteria of the RDI institutions for public financing seem to contribute to re-establishing some normal percentage structures of distributing the teaching staff.

The universities have a very diversified and complementary organizational framework in which they can develop their RDI activity. This framework refers to: faculties, departments, chairs, institutes, centres or laboratories, design units, consulting centres, ; university clinics; human resources continuing training centres; micro-production and service delivery entities; scientific or technological parks; experimental stations or other entities for cognitive and technological transfer, as well as other structures that can function based on own statutes, approved by the University Senate. University autonomy allows that the higher education institutions create for determined periods and on projects entities of disciplinary or inter-disciplinary research as distinct entities for incomes and expenditure, having autonomy and own statutes by compliance with the University Chart of the legislation in force.

The research functions of higher education (research assistant, scientific researcher of the 2nd and 1st rank) are taken by competition for determined or non-determined periods. Doctoral students can be university assistants and research assistants of the university where they study for their doctor degree.

The organisation of the university studies’ curricula on the three cycles – licence, master, doctor – has a scientific research component which is increasing from one cycle to the other, which confers to the students either scientific or professional specializations that lay emphasis on assimilating some research skills, on developing the ability of undertaking independently and creatively RDI projects. The entities may offer study programmes for permanent education and post-doctoral type activities.

Doctoral studies and assessment of doctor theses are both developed in accordance with the methodology adopted by the Governmental Resolution at the proposal of the Ministry of Education, Research and Youth. The main concern in this field is to show increased exigency with respect to the level of originality and own scientific contribution of the elaborated thesis, in accordance with some international assessment standards and norms.

¹¹⁰ See: „Sistemul educațional în România – Date statistice”, INS, 2007, p.42.

¹¹¹ See Governmental Resolution 551/2007, regarding the financing of public institutions of research-development.

The research potential in Romania, including the one within universities is found in the number of universities, faculties, students, and teaching staff. The number of students and the one of teaching staff, as well, were on increase, and their analysis for the university year 2005-2006 (Table no. 5) reveals the following:

- Per teacher in total higher education in Romania there were, in average, 22.7 students, a number above average being registered in the development regions South-East, South-West Oltenia and North-West; per one teacher in total higher education in Romania
- Within the public higher education the average number per teacher was of 19.1 while within private higher education it was of 43.5 which reveals the lack of teaching staff in this sector with unfavourable effects on the RDI activity performances in this sector;

The development regions with the highest number of students per teacher within higher education were South- Muntenia (30.7students),South West- Oltenia (25.4 students) and North-East (23.3 students), whereas in private higher education it recorded in South West– Oltenia (81.7 students), South West(67.4 students) and South Muntenia (56.9 students).

The conclusion can be drawn that within the private higher education, the scientific research potential from the viewpoint of the number of students per teacher is disadvantaged, as compared to public education.

The research potential was different on the various regions, most students and professors being in the region Bucharest-Ilfov, where also the highest volume of the RDI activity is gathered.

Table nr.36 **Number of universities, faculties, enrolled students and of teaching staff within higher education on development regions and ownership forms at the beginning of the university year 2005-2006**

Region	Universities	Faculties	Registered students	Teaching staff	Number of students per teacher
Total	107	770	716464	31543	22,7
North-East	14	92	78970	4136	19,1
South-East	7	66	51101	1779	28,7
South-Muntenia	4	51	39609	1233	32,1
South-West Oltenia	5	58	45138	1588	28,4
West	14	94	75001	3842	19,5
North-West	16	123	97616	1216	18,7
Central	13	102	75782	2704	28,0
Bucharest-Ilfov	34	184	253247	11045	22,9
Public education	55	554	513578	26881	19,1
North-East	7	71	69734	3820	18,2
South-East	4	51	36458	1562	23,3
South-Muntenia	3	46	35969	1169	30,7
South-West Oltenia	3	47	38279	1504	25,45
West	7	56	59801	3252	18,4
North-West	8	104	88475	4760	18,6
Central	9	80	54976	2482	22,1
Bucharest-Ilfov	14	99	129959	8332	15,6
Private education	52	286	202786	4662	43,5
North- East	7	21	9236	316	29,2
South-East	3	15	14614	217	67,4
South-Muntenia	1	5	3640	64	56,9
South-West Oltenia	2	11	6859	84	81,7
West	7	38	15200	590	25,8
North-West	8	19	9141	456	20,0
Central	4	22	20806	222	
Bucharest-Ilfov	20	85	123288	2713	45,4

Source: NIS data and own computations.

The analysis of the number of students in higher education on types, education forms and ownership forms highlights a series of relevant aspects with respect to its research potential, that is:

- most students within the public, but also the private sector are enrolled at day courses which is the sector assumed as being the main source of recruiting researchers;
- the economic education, university and technical held the largest number of students.

Table no. 37 **Number of students in higher education on types, education and ownership forms at the beginning of the university year 2005-2006**

	Total	Public	Private
Total, from which	716464	513678	202786
• day courses	518998	413425	105572
Total technical education, from which:	144614	138723	5891
• day courses	132444	127904	4540
Total agricultural education, from which	20094	19595	499
• day courses	16959	16460	499
Total economic education, from which	221647	118809	102838
• day courses	129932	75461	53771
Total university education, from which	218860	168184	50576
• day courses	161440	135035	26405
Total legal education, from which	63586	25523	38063
• day courses	32538	16382	16156
Total arts education, from which	11241	9335	1906
• day courses	9962	8774	1188

Source: NIS data.

Workforce in the university RDI sector has a primordial importance for improving the performances of this sector which must combine teaching activity of training and shaping, including for the field of research of the students, master and doctor students, with the actual research activity in cooperation, partnership with the private sector and with the national and private RDI institutes.

In developed countries, in the last two decades, the number of researchers was increasing permanently, just as the RDI expenditure volume.

In Romania was recorded, for the entire RDI sector, during the transition years a severe decline of the persons employed in research, only in the last two years an increase in their numbers being noticeable.

After a period of a decreasing number of employees in the RDI activity in the university sector, in the years 2004-2005 an increase can be noticed of their numbers for men and women as well, especially within state education.

Table no. 38. **Human resources in the research-development activity. Employees in the research-development activity on execution sectors, and ownership forms.**

- number of persons (by the end of the year)

	2002	2003	2004	2005
TOTAL	38433	39985	40725	41035
From which: women	17818	18334	18352	19280
Enterprises sector	19088	17232	16601	16647
From which: women	8698	7627	7246	7424
Governmental sector	9111	9641	10162	10258
From which: women	4588	5047	5291	5708
Higher education sector	10234	12859	13739	13889
From which: women	4532	5498	5672	6007
Private non-profit sector	...	253	223	241
From which: women	...	162	143	141
<i>From which, by ownership form</i>				

Majority public TOTAL	31132	32227	32836	30261
From which: women	14563	14835	14913	14508
Enterprises sector	12526	10601	9497	7295
From which: women	5808	4749	4229	3320
Governmental sector	8991	9470	10025	9581
From which: women	4509	4957	5212	5401
Higher education sector	9615	12156	13314	13385
From which: women	4246	5129	5472	5787
Private non-profit sector	-	-	-	-
From which: women	-	-	-	-
Majority private TOTAL	7301	7758	7889	10774
From which: women	3255	3499	3439	4772
Enterprises sector	6562	6631	7104	9352
From which: women	2890	2878	3017	4104
Governmental sector	120	171	137	677
From which: women	79	90	79	307
Higher education sector	619	703	425	504
From which: women	286	369	200	220
Private non-profit sector	...	253	223	241
From which: women	...	162	143	141

Source : The research-development activity in Romania, statistical series, years 2000-2005, 2006 NIS

The private sector of higher education from the viewpoint of RDI employees has a share of about 4%, the rest being within the majority state sector.

This trend was continued more intensely in the year 2006 when the RDI employees in higher education represented 18906 thousands persons against 13889 persons in 2005. The RDI sector of higher education, as total number of employees, is on the second position after total enterprises. The share of women employed in university RDI is under 50% from total number of employees. **The increase of the number of employees within university research** is explained by several reasons among which wages' increase in research, the possibility of obtaining financing from EU funds, the increased importance and prestige of the RDI sector, and growing opportunities for a career of excellence.

Table no.39 **Employees in the research-development activity, in full-time equivalent, by execution sectors and occupations**

	2000	2001	2002	2003	2004	2005
Employees - TOTAL	33892	32639	32799	33077	33361	33222
Employed						
Researchers	20476	19726	20286	20965	21257	22958
Technicians and assimilated staff	6482	5952	6436	5434	5525	4995
Other categories of employees	6934	6961	6077	6678	6579	5266
Enterprises sector	22541	19930	18399	16942	16368	16157
Employed						
Researchers	12690	11292	10673	9920	9092	10319
Technicians and assimilated staff	4736	4081	3628	2753	2842	2548
Other categories of employees	5115	4557	4098	4269	4434	3290
Governmental sector	7571	8421	8930	9395	9853	10055
Employed						
Researchers	5244	5599	5934	6043	6326	7082
Technicians and assimilated staff	1303	1474	2066	2038	2187	1870
Other categories of employees	1024	1348	930	1314	1340	1103
Higher education sector	3780	4288	5470	6537	6917	6803
Employed						
Researchers	2542	2835	3679	4941	5654	5386
Technicians and assimilated staff	443	397	742	501	463	549
Other categories of employees	795	1056	1049	1095	800	868

Private non-profit sector	...	...	...	203	223	207
Employed						
Researchers	...	...	...	61	185	171
Technicians and assimilated staff	...	...	...	142	33	31
Other categories of employees	...	...	...	-	5	5

Source: Research –development activity in Romania , Statistical series for the years 2000-2005, 2006,NIS.

The employees in the R&D activity **in full-time equivalent** for the period 2000-2005 were characterised by the following: as number they are less than half, as compared with the total number of university RDI employees (6803 against 13889 employees) which means that almost half of them work part-time having also other jobs.

In the year 2006, from the total RDI employees in national economy, a share of 64.0% were full-time employed, and 36.0% part-time Within higher education, the share of part-time employees in total employees, as different from the other sectors was higher in 2006 that is 74%.

Table no.40 **Number of employees in the R&D activity after the time allocated to the activity by execution sectors and activities on 31. 12. 2006**

	Total employees	From which, employees:	
		Full time	Part time
Total	42220	27012	15208
Enterprises sector by some activities	14438	13914	524
- Agriculture, forestry, fishing	3080	3026	54
- Manufacturing industry	6872	6760	112
- Governmental sector	8706	8000	706
- Higher education sector	18906	4928	13978
- Private non-profit sector	170	170	-

Source: Research-development activities in Romania, 2006, NIS, 2007, p.27.

From the total number of employees in RDI, the ones of the researchers' occupation in universities for the year 2006 had the largest share, which presupposes high responsibilities for the respective sector.

Table no.41 **Percentage structure of the number of employees in R&D by execution sectors and by occupations at 31.12.2006 (%)**

	Employees in the research activity	Researchers	Technicians and assimilated staff	Other categories of employees
Total, from which	100,0	100,0	100,0	100,0
- Enterprises sector	34,2	26,7	48,6	55,8
- Governmental sector	20,6	19,5	35,5	15,4
- Higher education sector	44,8	13,4	15,5	28,7
- Private non-profit sector	0,4	0,4	0,4	0,1

Source: Research-development activities in Romania, 2006, NIS, 2007.

For the occupations of technician and assimilated staff and for other categories of employees, the higher education sector is, as share, on the third position, followed by the private non-profit sector with a share less than one percentage point, which highlights the modest contribution of this sector to the R&D activity.

Table no. 42 **Employees in the research-development activity, by execution sectors and education level (persons end of the year)**

	2000	2001	2002	2003	2004	2005	2006
Employees- TOTAL	37241	37696	38433	39985	40725	41035	42220
Higher education	24214	25273	26102	29268	29663	31622	33620
Post- upper secondary education	2579	2668	3282	2918	3147	2642	2392
Upper secondary education	7540	7327	7432	6386	6291	5432	5000
Other education	2908	2428	1617	1413	1624	1339	1208

Higher education sector	5955	8459	10234	12859	13739	13889	18906
Higher education	5014	7301	8546	11721	12573	12504	17595
Post- upper secondary education	130	181	474	550	286	364	332
Upper secondary education	713	808	928	349	406	642	494
Other education	98	169	286	239	474	379	485

Source : Research development activity in Romania, 2006, NIS, 2007.

The highest share of employees in the R&D activity, from the viewpoint of the education level that is higher education (Table no. 26) is within the higher education sector where in the year 2005 the number of those with tertiary education was of 12504 against a total of 3889.

Table no. 43 **Number of R&D employees (total and full-time equivalent), on occupations, by execution sectors and activities on 31.12.2006**

	Total employees	Researchers	From which: Certified researchers	Technicians and assimilated staff	Other categories of employees
Total employees	42220	30122	9341	4879	7219
• Full-time equivalent	30802	20506		4496	5800
- Enterprises sector Total	14438		3620	2372	4030
• Full-time equivalent	13761	7708	3177	2289	3764
- Governmental sector Total	8706	5864	4014	1732	1110
• Full-time equivalent	8381	5585	3830	1703	1093
- Higher education sector Total	18906	16082	1687	755	2069
• Full-time equivalent	8563	7137	975	493	933
- Private non-profit sector Total	170	140	20	21	10
• Full-time equivalent	97	76	5	11	10

Source: Processed after NIS data from the Research-development activity in Romania, 2006, NIS, 2007.

Contrary to the enterprises and governmental sector where the number of employees in full-time equivalent to researchers is a figure closer to total researchers' employed, in higher education the difference between the two indicators is higher than double (7137 against 16082) which means the distribution of the working time of the employees in education between the R&D activity and other activities, especially the teaching ones, and those of scientific guidance of license, master and doctorate papers.

Regarding this aspect, several experts¹¹² consider that teachers and the other teaching staff can develop, mainly, R&D activities during weekends and holidays. Precisely for this reason, a review and differentiation is necessary with respect to the ratio between teaching time and research time, particularly for the teaching staff with outstanding performances in research, hence in need of a higher share of time for this activity. It should be mentioned that the sabbatical year¹¹³ represents a usual practice for higher education in developed countries.

The differentiated regulation of the teaching and research time falls within the competence of each university and faculty, under the conditions in which the Law of education determines, as principle, such a possibility.

The efficient allocation of RDI working resources on scientific areas represents a process that is as complex and as necessary because, on this allocation depend the quality of the research outcomes, the economic, social, technologic and environmental effect at the macro-, mezo-, and micro-level on various time-horizons.

The mechanism of efficient allotting working force in university research presupposes a multitude of factors, levers and interdependent instruments regulated in a legal, coherent and coordinated inter-institutional framework, under the conditions of the requirements of Romania's

¹¹² See the Frascati Handbook.

¹¹³ In which professor do not develop other activities but R&D ones, inclusively with the purpose of upgrading and updating courses.

integration to EU, in the European Education and Research Area, and of the need to increase the competitiveness and performances of the Romanian economy and society.

The specialised literature implies in the efficient operation of the allocation mechanisms of RDI employees within higher education a multitude of economic, social and cultural factors, together with historical and political ones, which imply the need of using specific multi-factorial analysis techniques. For instance, consensus has not been reached yet with respect to the predominance of the research-development and innovation market, or of the normative one, or the one of regulation specific to the state, considering that the outcomes of scientific research sooner or later, just like education in general, represent **public goods, generating positive externalities** (spin-offs and spill-over) which should be stimulated by a series of specific means.

IV.6. Conclusions

Conclusions of a general character coordinated with the university RDI targets at the level of EU Member States

Romanian universities have a potential enabling them to contribute to increasing the quality, efficiency and competitiveness of RDI activities and to the economic-social development of the country. The present conclusive chapter, starting from the analyses of the situation of the Romanian universities from the viewpoint of reforms oriented on RDI progress took into account also a series of conclusions, recommendations and suggestions resulting from a series of studies, researches and regulations at EU level¹¹⁴.

The existence of organization, functioning and inspection regulations has led to a certain degree of **university uniformity** at the same time fragmenting the sector into small national sub-systems which make difficult the cooperation at national and international level, flatten and impose conditions that do not provide for the opportunity of the universities to diversify their activity and focus on quality.

An important part of the universities in Romania have quasi-similar structures, and attempt to provide the same courses to the groups of students. There is a weak innovative diversification of the university curricula in accordance with the efficient requirements of training and re-training, and of increasing the level of competences for the labour force, so that between market demand for labour, and market supply unacceptable discrepancies are found.

The regulation of an administrative nature still are hindrances in the way of university mobility for studies, research or for developing the RDI activity in other countries, as the recognition procedures for university qualifications encounter difficulties and develop slower.

Even though the RDI area is no longer an isolated activity within universities and the university **research collectives and teams, and research networks** start to take form and strengthen themselves, the transition from traditional disciplinary structures to the **interface between academic disciplines or to multi-disciplinary structures** still encounters obstacles resulting from the old mentalities, low professional level, adjustment and teaching staff upgrading difficulties and non-performing management.

The research of the globalization and competitiveness degree on the RDI market requires closer interaction and cooperation between universities, as it is known that in the market economy competition and cooperation co-exist.

A series of state or private universities are not aware or underestimate the potential benefits of the knowledge-transfer in economy, society and industry. On the other hand, the absorption capacities for the university research are developed insufficiently, so that the relationship between the business community and universities stile remains an unsolved issue. Only a modest part of the persons with the title of a doctor of sciences intend to further their career within the university environment and not as entrepreneurs. Lately more practitioners attend master and doctorate courses in order to improve their professional level, but also to prevent restructurings

¹¹⁴ See, for instance, the communication “The Role of Universities in the Europe of knowledge” COM (2003) 58, the 2004 Liège, Conference and the Report by the Forum on UBR “European Universities: Entrancing Europe’s Research Base”; Commission Communication of 13 February 2006 “Fostering entrepreneurial mindsets through education and learning”.

motivated among others also by the lack of improvement diplomas with respect to the training they require for taking up certain positions or for the scientific career.

The performances of higher education in Romania are to a large extent worsened by the chronic under-financing of the system, inclusively of the university research, the increased number of students in higher education being not accompanied by a corresponding increase in its financing from the state budget, the gap between expenditure per researcher in Romania and developed countries being very wide. Taking into account the fact that research turns into an increasingly costly activity, as well as the severe budgetary restrictions, for the future university research activity shall have to be financed also from other sources than the public ones.

Higher education in Romania is not yet able to value its research potential at the level of the international competitiveness requirements under several aspects, in particular with respect to the capacity of rapid change and adjustment to the permanently increasing dynamic of the science of technology, to the generation of a “critical mass” of financing, excellence and flexibility.

Intensifying the public control under adequate forms with respect to quality and better financing represent favourable factors for the university RDI efficiency and excellence

The development of university research based on own forces, on certain priorities, values and shared responsibilities does not mean the existence of a pattern-proportion between education and research, between research and research training, between consulting services provided by universities and academic subjects.

Even though in the future RDI shall be a primordial task of the entire university system, this doesn't mean by far that the issues are the same and share similar emergency for all entities of higher education.

In order for universities to improve their own performances with respect to RDI activities and to contribute to the creation of the knowledge-based society, as envisaged by the Lisbon Strategy, a strategic approach is necessary for the entire upgrading process of the Romanian higher education, from the viewpoint of increasing the economic-social contribution of university RDI, as well as its level of competitiveness, excellence and visibility at international level.

The main directions of strategic action for university RDI in the period 2007-2013 refer mainly to: **increasing financing** volume; ensuring the conditions for autonomy and accountability, creating partnerships with the business community; intensifying the cooperation between universities and society as a whole; increasing intra- and inter-sector mobility, and also the geographic one of researchers, strengthening the inter- and trans-disciplinary cooperation.

1. Considering the role of scientific research within universities, the Lisbon Strategy by its annual report for 2005 (COM(2005)488 Of 12 October 2005) has proposed that **financing of the educational sector to represent at least 2% of the GDP** within a decade, the efficiency of investments for university qualifications ensuring higher incomes than the real interest rates¹¹⁵. Therefore, a better correlation is necessary between expenditure on students and their research and production performances, taking into account also the necessity of ensuring the equality of chances, accessibility and equity.

Universities' financing should be done to a larger extent depending on relevant performances and to adjust to the diversity of institutional profiles.

The increasing responsibilities of the university for the financial sustainability on long-term, particularly for the RDI segment, imply a proactive diversification of the financing portfolios of research by industrial cooperation and from other sources. Each university needs to determine its own optimum shares between the various forms of financing, in order to develop the RDI activity, for the competitive core financing and for the one based on incomes.

Universities with a relevant dimension for the RDI activities (research-active universities) should not be evaluated and financed based on the same criteria with other universities where

¹¹⁵ Vezi Andreas Schleider, 2006, Economics of Knowledge: Why education is Key for Europe's success? http://www.lisboncouncil.net/files/download/Policy_Brief_Economics_of_Knowledge_FINAL.pdf

RDI is rather weakly represented, but which are better positioned with respect to integrating students from various disadvantaged categories, or to their important role for the economy and society at local level. In the case of research-active universities, next to a series of usual criteria such as graduation percentages, the average duration of studies and the employment rate, it is necessary to consider also research achievements, success rate in accessing competitive RDI funds, publications, number of quotations, patents, licenses, university prizes, international partnerships, etc.

Competitive financing should be based on the evaluation of the systems and on the specific performance indicators, rigorously defined and in accordance with the international standards from the viewpoint of research inputs and outputs at economic, social, technologic and environmental levels.

2. Ensuring the conditions for real **autonomy** and **accountability** of the universities represents a sine-qua-non condition of increasing their innovative capacity and of effectively answering to the rapid changes within an economy and society which increasingly globalises, and marked by swift changes.

The sector of higher education, as a whole, needs a **general institutional-legal framework**, shaped from laws, objectives of the strategies and policies, financing mechanisms and incentives for education, research and innovation, by eliminating supra-coordination and over-regulation. At the same time, universities must fully assure their accountabilities institutionally, with respect to society regarding their performances and to be assessed by competent, neutral entities from country and/or from abroad, in accordance with the national standards compatible with the international ones.

For this purpose, internal governance systems of the university are necessary, which are based on strategic priorities and a superior qualitative management of human resources, investments and administrative procedures which are implemented clearly and rigorously, and eliminating the unnecessary fragmentation in faculties, departments, laboratories and administrative entities, and a stimulating systems for management performances.

3. Intensifying the university RDI contribution in Romania cannot be achieved without **increasing the pro-active role** of universities in economy and society, apt to answer swiftly and efficiently to the market demands and to develop partnerships which would stimulate scientific and technological knowledge. **Creating partnerships with the business community** constitutes for universities not only a strategic objective, but also an undertaking to the benefit of the public interest, a form of positive externality.

Partnerships, including the ones with SMEs, provide for universities multiple benefits and advantages, among which we mention: rapid transfer of knowledge and technologies to practice; intellectual property rights, increased relevance for education and training systems by direct contacts of students and researchers with the business world; increasing the career chances for researchers with entrepreneurial and scientific competence and expertise; better financing opportunities for retraining courses, etc.

Partnerships imply organisational, attitude, behavioural and management concept changes by creating some local clusters for generating and transferring scientific knowledge and technologies, and of some liaison bodies' with the business, for joint researches, offices of technological transfer or scientific parks. Consequently, higher education shall be compelled to integrate and develop entrepreneurial, management and innovative skills for training researchers, and organizing lifelong learning programmes.

4. **Integrating Romanian university RDI into the European Research Area and the European Higher Education Area** requires sustained efforts for promoting the attractiveness, visibility and quality of Romanian universities and state support for cooperation with universities from EU member countries based on bi- and multi-annual cooperation agreements. **Encouraging brain circulation** should not contradict the undertaking of EU member countries **not to promote**

brain drain¹¹⁶. Short-term employment of researchers in EU member countries has advantages for the country of origin and for the one of destination as well. Simplifying legislative and administrative procedures for employment abroad gains a particular importance. Mobility of the highly-skilled labour force should provide for equivalent advantages in the origin country and in the country of destination.

An important role shall be played by financing with a significant impact on university performance by means of the mechanisms of the new programmes for the period 2007-2013 (Framework Programme 7 of EU for R&D, Lifelong Learning Programme, the Programme of Competitiveness and Innovation, as well as the Structural Funds and the loans of the European Bank for Investments.

Structural funds can provide financing for improving university resources and infrastructure, strengthening the partnerships with business communities and for supporting research and innovation with regional impact.

These financing forms are meant to increase synergies between education, research and innovation especially in less developed regions and countries of the EU

The recently created European Institute for Technology offers important chances for the Romanian university research, considering the fact that this institute has a management promoting excellence, inter-disciplinary, and networking between centres, universities and business.

The higher education reform programme in Romania must consider also the **Integrated Guidelines for Growth and Jobs**, particularly the Guidelines no. 7 (S-D), No. 8 (innovation) and No. 23 (investments in human capital), and no. 24 (adjustment to the requirement of new competences) in which the necessary measures are provided with respect to management, real autonomy, accountability, innovative capacity, adjusting the higher education systems to the requirements of new competences.

Implementing the Community Lisbon Programme through dialogue and mutual learning, especially in the framework of the Education and Training 2010 Work Programme based on the financial support of the state represents another direction to which the content aspects of the university education reform pro-RDI should give due attention.

5. **Increasing mobility**, intra- and inter-sector, and also the geographical one, represents a stringent requirement for the researchers within higher education in Romania. In accordance with the estimates of some EU experts, the share of researchers that should perform documentation, formation and training stages, or work jointly with colleagues from abroad at least for three month should be **double**. In accordance with our analyses, all forms of mobility for researchers should be a growth factor with respect to the quality of their work, but also for career advancement.

The fact that the Bologna Process led to programmes structures' and duration convergence will not create conditions per se in order to increase intra-university mobility. Of importance is the **achievement of the key targets** of the Bologna reforms until 2010, regarding:

- credible systems of quality assurance in accordance with the best practices at European level;
- flexible and modernised curricula, at all levels which should answer to the requirements on labour market;
- comparable qualifications (short cycle, maturity, master, doctorate).

The EC Directive 2005/36/EC adopted in September 2005, implemented as of October 2007 is meant to make more rapid and simple the recognition of professional qualifications in all member countries. The academic evaluation procedures should develop more swiftly (at least four month from initiating the evaluation procedure) and with credible outcomes.

¹¹⁶ vezi: European Researchers A broad (ERA-Link) pilot initiative, <http://www.eurunion.org/legislat/st/eralink.htm>

6. **Strengthening inter- and trans-disciplinary** in the university RDI activities, as result of the new developments in the existing scientific areas and of the emergence of new disciplines and areas of science and technology, require focusing on **research on areas** such as nano-technologies, sustainable development, green energy which should interfere to an even larger extent with other complementary areas as, for instance, socio-humane sciences, management and socio-humane skills. In this context, a closer cooperation is necessary between teachers, students, researchers and research teams by higher mobility of persons, disciplines and research programmes.

Inter- and trans-disciplinary presuppose new organisational and management schemes in universities, efficient teaching, evaluation and financing methods, training competitive research staff, education programmes and plans that are more flexible and close to the demands of practice and of the labour force market, especially the ones of the science and scientific research market, a reconsideration of professional organisations and financing councils from the viewpoint of the way in which research funds are applied for, and of the criteria for their distribution.

7. Lifelong learning requires more adjustability of universities to programme and courses change useful for professional improvement at any age. On the general background of the requirement for better coordination between labour force demand on labour market and the supply of university graduates a permanent concern of higher education should be the one of elaborating, structuring and implementing some curricula programmes, to ensure **skills training for research already from the first cycle of license studies**. In other words, higher education by means of innovative curricula, learning methods, flexible training and re-training programmes, by granting credits for studies for stimulating in students and researchers alike the entrepreneurial mindset should have to contribute to increasing the employability degree of graduates.

8. Another direction to which higher education reform should grant even more attention in the future is the **compensation of university excellence**, so that it can offer to RDI a moral motivation, but also a financial, material one and, at the same time, to be an important means for attracting and maintaining best teachers and researchers.

Promoting and rewarding excellence requires the provision of transparent procedures in accordance with the Recommendations of the Commission C (2005) 576 with respect to the **European Charter for Researchers and the Code of Conduct for their Recruitment**, under the conditions of full independence of research and attractiveness for this career.

Within a university, excellence is achieved, usually, at the level of the faculty, departments or research centres much rare being the cases of universities attaining excellence level on a very wide area of fields. As a rule, university policies of promoting competition, mobility and resource concentration are the ones to ensure the excellence basis and provide to teachers and researchers an attractive and stimulating environment.

Reviewing the **master, doctor and post-doctoral** study cycles, the subjects and teaching and assessment methods, constitute a factor for promoting excellence that should be not affected by the lack of exigency and by superficiality. Diplomas must attest/certify an actual increase of the professional training level required to immediate practice and not a mere document without substance.

Among the university master and doctoral excellence criteria are counted: the European performance level; trans- and inter-disciplinary; the critical financing and human resources mass; providing post-doctoral opportunities in careers within recognised areas of excellence, etc.

9. Under the conditions of creating the knowledge-based society in Romania, but not only, **intensifying cooperation between universities and societies as a whole** represents one of the main sources for identifying yet unsolved issues of research, and implicitly of the social needs from this viewpoint, but also a source of inspiration for unanticipated solutions of some previous or newer issues.

Communication and dialogue between researchers and society, the groups of stakeholders is still weak, under management forms very often the researchers bringing forward the lack of time of the inefficiency of this cooperation.

University communication with the public at large and the civil society, and the potentially interested in lifelong learning implies the use of specific means such as direct contacts, conferences, meetings, dialogue with various representatives of the civil society, at regional and local level, with investors and businessmen, etc. The value added of such interaction, is effective for teachers and researchers alike, as well as for the public, because dialogue is established for better knowing and joining the concerns and needs of both parties.

Conclusions and suggestions of concrete character regarding the reform of the university RDI system

1. Substantial improvement of university RDI financing implies:

a) multiplying sources and forms of financing in the public and private sectors,, inclusively from external sources in parallel with granting some facilities and incentive (aids, subventions, preferential interests) in accordance with the national and community provisions legal provisions in this area;

b) co-financing, that is supporting RDI expenditure form own resources of the universities which ascertain themselves as an more and more important factor;

c) **attracting financing from structural funds allocated to Romania for the period 2007-2013** (particularly within sectoral programmes of economic growth and competitiveness, for environment, regional development and human resources), as well as from the Framework Programme 7 considering the priorities and accessing conditions thereof;

d) financing schemes within public-private partnerships, of consortia and of the venture capital forms, start-ups, spill-over and spin-off represent additional financing factors for university RDI.

2. Taking into account that RDI within higher education creates positive externalities that are not always quantifiable in monetary terms it is necessary to ensure an **incentive regime for promoting investments** in this area, including here the case of university-enterprise partnerships.

3. Improving the **principles, criteria and evaluation methods** of university RDI performances requires the adoption of **evaluation systems depending on pursued objectives**. Therefore, we propose the following systems:

- **researchers' evaluation systems differentiated on areas of science** depending on the particularities in view of career advancement (professor, reader, assistant SR I, SR II, SR III, researcher, and research assistant without regarding the compulsory research stages as an elimination criterion;

- **institutional evaluation systems** differentiated depending on the profile of the faculties and universities compatible with international standards¹¹⁷;

- evaluation systems for university RDI performances at national level, aligned to international standards in the area.

Measurement of RDI turned itself not only into a working device for evaluating performances of the sector, but also into an actual research field which requires special skills particularly for research managers.

Special attention should be granted to **ex-post evaluation** for complementary research projects' outcomes, as well as to ex-ante and ad-interim evaluation.

4. Training research abilities must start **in the school and in the first years of university studies** and this must become a complementary imperative to the one of education for practice and life based on information and communication technologies, and on the rapid and efficient transfer of most recent achievements of science ad technology.

In this context, several experts suggest that universities should be classified depending on the RDI intensity and performances in:

¹¹⁷ See for instance European Innovation Scoreboard (EIS) 2003-2006 <http://trandchart.cordis.europa.eu/>; <http://www.proimmo-europe.eu/index>; Innovation Statistics for the European Service Sector; IWNO – Metrics web site; Innobarometer.

a) **universities with high RDI capacity** which have recognised outcomes in the area at national and international level;

b) **universities for education and research;**

c) **universities focused on innovation** and supporting the local and regional business community.

5. Improving RDI management in universities implies rethinking the periodical evaluation manner of the teaching staff position within higher education on strictly value, and excellence criteria and creating some **schools with tradition** based on the contribution of recognised scientific personalities from the country and from abroad, and on strong research collectives with outstanding performances.

6. An important role in the RDI system reform within higher education pertains to the National Council of Scientific Research which has new duties in the framework of the implementation process of the National Plan PNCDI II and with respect to the restructuring and reorganisation measures in the following directions:

- adopting evaluation criteria and procedures for the project proposals taking into account international standards and methodologies;
- improving the activity and structure of the working commissions and of the CNCSIS in accordance with the requirements of the new programmes and projects provided in PNCDI II;
- rendering compatible the specialty areas with the European practice and restructuring specialised commissions;
- introducing the online peer-review evaluation method and expert panels for all categories of programmes and for all specialty fields;
- evaluators should be more efficiently selected for a period of three years, combining professionalism criteria with the visibility and morality ones, and attracting foreign experts with the required discernment;
- increasing the visibility of Romanian research by selecting and promoting scientific journals and reviews with a high impact factor pertaining to the international indexing systems;
- developing research infrastructure in universities, including in the process of master and doctoral preparation;
- creating and developing a tradition of national schools of excellence in universities around acknowledged personalities at national and international level and of performance research teams;
- evaluating scientific research in universities during all three stages: ex-ante, ad-interim and ex-post pursuing the compliance with the TQM criterion of research performance and excellence;
- launching and promoting inter-and trans-disciplinary research programmes within national and international networks and closer cooperation with other profile institutions (ANCS, the Romanian Academy, etc.);
- reorganising the research activities in universities and creating scientific research and knowledge transfer and technologies centres to the economic environment based on various schemes and structures of public-private, private-private, and public-public partnerships.

A general requirement for successful achievement of the reform of RDI in Romanian higher education is directly linked to the necessity of laws and accountability enforcement, on different time horizon, taking into consideration optimal correlation of internal and external determinants of national scientific creativity and values in the context of a globalised world.

Ch.V. OPPORTUNITIES AND RISKS IN EUROPEAN AND WORLD CONTEXT. EXIGENCIES FOR A PERFORMANCE NATIONAL SYSTEM OF LIFELONG LEARNING

The responsibility for building up an efficient system of lifelong learning and training pertains to the states, EU having the role of supporting member countries¹¹⁸ in modernising policies for education and vocational training. The practical support of the European Commission is rendered currently concrete through two programmes, respectively: a) 'Education and Training 2010' Work Programme, as part of the revised Lisbon Strategy having as main purpose to facilitate the exchange of information, data and good practice examples and b) New Lifelong Learning Programme¹¹⁹, a programme by which is pursued to promote new educational opportunities for pupils, students, and teachers and for which a budget of 7 billion Euros was provided for 7 years. It should be mentioned that these programmes come as completion to a larger package of support programmes for development by education and culture in the period 2007-2013 "EU Programmes for education and training, youth, culture and citizenship"¹²⁰ which includes: The Lifelong Learning Programme, the Youth in Action Programme, the new Culture Programme, and a new programme "Citizens for Europe" 2007 – 2013. Each starts from clear objectives, from well substantiated targets and budgets and have as general finality to increase the adjustment capacity of the citizens to current challenges in the context of building up the knowledge-based society. The importance of these programmes for Romania and the high absorption capacity of the funds allocated for 2007 – for instance, in the programme Youth in Action the absorption capacity was of 94.86%, and for the programme Lifelong Learning were contracted almost 99% of the allocated amounts – which allowed for a budget increase by 18% (against 10 to 11% for other member countries) upon request of the National Agency for Community Programmes in the field of Education and Vocational Training (ANPCDEFP) which manages the two programmes for the year 2008, the amount for this year increasing to 25.3 million Euros. This amount is estimated as insufficient comparatively to the financing demands that are likely to be submitted.

The States as they are in charge with the design of the educational system face **two great challenges**: on one hand the need to create a system to promote competence and performance and to provide for competitive outcomes at European and world level, respectively *a performance, open and flexible educational system*, which would allow for the permanent adjustment of the educational supply to the needs of the economic, social and cultural environment, and on the other hand, *the creation of operational and efficient instruments for retaining and putting to good use at local and national level the beneficiaries of the educational system by efficient, performance and career advance employment opportunities, stimulating living conditions and permanent access to new forms of occupational and social improvement and development*. Unfortunately, these are still at the level of desiderates, as the mobility of individuals/graduates towards the best employment, professional fulfilment and social status offers generates and maintains a permanent imbalance between the efforts of the national education systems for performance and excellence and the retention and use capacity of the created and developed potential. Permanently, countries with a lower level of development have deficits. The highest loss, on medium-term or final loss is recorded for highly-skilled personnel, the business environment and/or the RDI network being unable to attract and retain this potential.

¹¹⁸ **Schools for the 21st century**. Commission staff working paper, SEC(2007)1009, Commission of the European Communities, Brussels, 11.07.07

¹¹⁹ http://ec.europa.eu/dgs/education_culture/newprog/index_en.html

¹²⁰ http://ec.europa.eu/dgs/education_culture/newprog/index_en.html

V.I. Challenges for realizing an efficient educational package support for promoting lifelong learning

It is acknowledged by more and more successful entrepreneurs that people are the heart of any business. The significant difference required by the organisation in order to obtain and maintain a high level of performance is achieved with labour force that is dynamic, well-trained and deeply committed to the developed activity. A company investing in its personnel in order to obtain tangible effects by the performances can turn into a leader in the field¹²¹. Just the same, at the level of the national economy, human capital constitutes the support for increasing competitiveness and, in an adequate environment; it can generate an important/major effect on economic growth. In this context, the challenges in the field of education take into account its qualitative aspects of performance considering two aspects, respectively the one of *promoting excellence* in parallel with *ensuring the equity in increasing the general level of training*. In this framework performance in education is required at all levels, from the pre-school level to continuing training. Considering the need to increase significantly the quality of knowledge from the common body of general competences required by the development of the knowledge-based economy, the **substance reform of the initial education system** turns into the driver of reconstruction based on principles of promoting quality for the entire lifelong education system. Education contributes significantly to personal welfare and society development. Any person spends nine to ten years of life learning (compulsory education) and this period is also the one in which the personality of the future mature person is shaped. Therefore, initial education shall remain the source of gaining initial knowledge, competences and skills along with the social norms and standards, and the values that support sustainable human development.

Lifelong learning becomes a way of life in the modern society and initial education must build the **habit and concern for permanent improvement**. Education in school must answer to the exigencies of developing an open democratic society by **training youth to learn to live in society** (solidarity, citizenship, participative democracy). If, according to the Lisbon Strategy, the main concern was for vocational training and more recently, for the reform of higher education, by the Education and Training 2010 Work Programme is pursued to promote **comprehensive education**. The need resides from the current rather important gap between the demand of the economic and social environment and the outcomes of the initial education system, in particular.

The challenges of the future start from these differences which are synthetically defined by the targets of the Lisbon Strategy. From the viewpoint of our study, we consider as significant for the design of the future education system: the training level up to the age of 15 years, the diminishment of early school leaving and improving the graduation rate of secondary education. At European level, one fifth of children of up to 15 years of age have a low reading capacity, 15% of the young people aged 18 to 24 years of age leave school early and only 77% from those aged 22 years have completed upper secondary education¹²².

Competences and vocational training represent the key restrictions for performance and competitiveness. If currently one third of the labour force is low qualified, the future demand on the labour market shall include an occupational structure where only 15% from newly created jobs shall be for individuals with only initial education and more than 50% shall be for high-skilled persons. It is obvious under these conditions that those with weaker training shall also have a range of knowledge and skills adjusted to the modern society, able to use ICT services and be employed in new activities generated by the development of the knowledge society.

Another restriction that must be attenuated as impact on the outcomes of education is represented by **the educational particularities generated by gender differences with respect to the professional profile** – for instance, by tradition it is considered that women perform less in case of exact sciences and more in humane sciences, and that there are “specific” professions and jobs,

¹²¹ William D. Green, Chairman & CEO, Accenture, Skills for the Future, <https://www.accenture.com/NR/rdonlyres/2EE74933-2694-4FDD-A53C-EED8E6E5ECBA/0/SkillsfortheFuture.pdf>

¹²² Progress towards the Lisbon objectives in Education and Training SEC (2006) 639

etc. Even though large disparities are still maintained in the field, the gradual diminishment for an increasingly wider range of professions with respect to the gender barrier should be mentioned.

The greatest issue is still the one of obtaining performance in education, and especially in initial education it is posed by the **diminished/low adaptability of curriculum and of teaching methods to swift changes in the global economy and the weak concern for lifelong shaping under the conditions generated by these changes.**

The current weaknesses of the education and RDI systems from the EU area become at the same time challenges of the future. To them are added a series of adjustment factors which shall maintain and even increase their influence on medium- and long-term. These factors are at the same time entry restrictions for the permanent education system and also effects thereof.

From the **ones with a general character**, which affect as well the system of education and also the one of promoting RDI activities and of using its results, we enumerate:

- **demographic ageing** with effects on the capacity of renewing the labour force supply, especially for newly created jobs. In addition, the increase of economic dependency rate shall stimulate the search for solutions based on territorial mobility and/or profession change for promoting educational policies specific to active ageing.
- **the slow pace of labour productivity increase**, which underpins the gaps between countries and geographic areas. Only in the field of ICT were recorded labour productivity increases, but in this field there are issues related to capitalising specific applications.
- **the weak capacity of efficient, stimulating employment for the highly-skilled personnel and the staff of excellence**, of the one in the top RDI-field and maintenance of the brain drain and brain shopping flows from East to West from South to North from Europe to USA and Canada.
- **the structure of the production system has low flexibility, the slow pace of renewal and structural changes** on fields of activity being much slower against the dynamic of technological progress.

As **specific factors** to the education system we mention:

- *the increasing differences between competences, skills and occupation demands of the knowledge-economy and the supply of the educational system.* The competences deficit shall increase at EU level from 8.1% from total demand in 2005 to 15.8% in 2008 (about half a million persons);
- *the supply of research staff is on decline*, Europe losing its competitiveness in this area, particularly with respect to researchers in the technological and engineering areas. Also, the entrepreneurial spirit in the field is weakly developed.
- *University education has low performance*, among the first 50 universities of the world, Europe, including here Switzerland counting only for nine.

As weaknesses of the European education systems¹²³ are identified the following:

- a) **uniformity, insularity and egalitarianism;**
- b) **excessive regulation, lack of flexibility**
- c) **slow progress in the field of permanent education and e-learning**
- d) **weak communication with the environment, especially with the business community.**

Same issues are faced also by the Romanian education system, and additionally, the disarray generated by the frequent legislative changes and the truncated and/or without preparation enforcement of the various reform components should be mentioned as well.

V.2. New dimensions of the permanent education quality. Coordinates for the Romanian model

¹²³ Boris Cizelj –The Dramatic Implications of Lisbon Agenda for Professional Competence Building. CLAIU International Seminar Brussels

The importance of the permanent education system for attaining the Lisbon Strategy objectives was reiterated by the European Council by highlighting its role in maintaining and increasing on medium- and long-term the economic competitiveness also as a factor of social cohesion. The Joint Employment Reports for 2006/2007 underline the importance of human capital investment through education and vocational training, by gaining new knowledge and competences, by increasing the importance of permanent education within the national reform programmes. Also, the need of diminishing the incidence of early school leaving is highlighted, together with the need of diminishing inequities and focusing education on long-term policies and on promoting the “evaluation culture” as way of increasing the quality of education.

Today education means training for employment mobility and for performance and excellence in activity. Therefore, the school should not remain static, but to anticipate and to promote the adequate supply for tomorrow’s demand. **The education market shall have to turn into the driver of supporting economic growth and social progress.** *The challenges* facing the permanent education system can be synthesized, at least, in the following:

a) in the area of gaining key competences for all, the creation of a common body of **knowledge to allow for adjustment** to the increasing complexity of the contemporary world by creativity, ability of thinking about the development of career not only vertically but also horizontally, the gaining of transversal knowledge, flexibility and adjustability. In the society of the future, it is less probable the relationship a job/field of activity – a career and to an increasingly lesser extent can be estimated the need of knowledge and competences of the individual of adult age. The European Framework of Key Competences¹²⁴ are taken into account knowledge, skills and attitudes that would allow for personal achievement, social inclusion, active involvement in society and employment. It includes, next to classic, traditional competences (such as knowledge of mother tongue, foreign languages, basic mathematical and scientific knowledge, digital competences) also *transversal competences such as learning to learn, social and civic competences, initiative and entrepreneurial attitude, and cultural competences*. This presupposes to **redefine the curricula not by means of inputs but by expected outcomes, respectively through the package of knowledge and attitude that must be gained by each student in various stages of education.** This presupposes *reorganizing the learning system from passive accumulation to participation and (self)education, inside but also outside school.*

b) **Training individuals for continuing education and swift adjustment as personal success basis in the knowledge society.** Graduating compulsory education must ensure not only competences necessary for entering the labour market, but also the motivation to continue personal improvement during the entire active life. In order to create this motivation already during school, there are necessary essential changes in the educational practice, a combination, a balance between traditional knowledge transfer methods and the ones of autonomous education, of co-participation/cooperation between pupil and teacher during the learning process – knowledge building up/creation and gaining skills and competences.

c) **improving the educational knowledge endowment in order to contribute to sustainable economic growth.** The demand of competences is centred on two directions: the first refers to *permanent update and improvement of vocational training in order to face the demands of technological progress*, and the second considers the increased market globalization and the development of new ways of organizing companies (flat hierarchies) which implies *social, communication, entrepreneurial and cultural competences which allow for the adjustment of individuals to the changes of the economic, social and cultural environment.* The package of

¹²⁴ It makes referenc to the request of the European Council of the year 2000 from Lisbon by which is pursued to identify and define those competences necessary for each citizen in order to have a successful life in the knowledge-based society. http://eurlex.europa.eu/LexUriServ/site/en/oj/2006/l_394/l_39420061230en00100018.pdf

knowledge gathered during the period of compulsory education has direct impact on the subsequent demand for continuing training and on labour incomes¹²⁵.

d) education for facing the challenges within the society. The recent evolutions from the social environment have changed the typology of initial education in the sense of diversifying the ways of attenuating the educational and vocational training inequities. Depending on the social realities with which they are faced (migration population, cultural particularities of some ethnicities, cultural diversity, significant group of persons with special needs, or children of single parent families or families with difficulties – alcoholism, drugs, AIDS – linguistic diversity, various attitudes towards school, poverty, etc.) an educational entity might promote specific educational policies, but if these are not linked to the regional/national programmes, with economic and social reforms, their impact shall be limited in time and space. **Inequities in education and vocational training generate significant indirect costs (hidden costs).** These costs may be reduced by *developing integrative educational programmes that would allow for access to education and performance for all categories of persons.* Education performances depend largely on social and cultural particularities of the individuals, on the capacity of integration into the community, and the standard of living in the households to which they belong. In general, the children from social environments with difficulties are predisposed to early school leaving and have lower performance. **The challenge for the school is to ensure that they remain in school and to motivate them for training, to promote equity in education.**

e) promoting inclusive education as support for ensuring the equality of opportunities for all. The starting point is the principle according to which school should provide *flexible educational systems, adjusted to the particular needs of the individuals, using learning practices, monitoring systems, personalized planning and evaluation,* but which should all allow just the same for the education of persons with special needs, but also for the education of gifted and talented persons.

f) training youth for active citizenship. School must prepare young to integrate into community, to act responsibly for developing the community to which they belong, to be active citizens and to participate at the representative democracy. There are concerns for shaping a culture of democracy in schools that should include pupils, parents and teachers, for creating a climate of confidence and trust in school¹²⁶.

g) teaching staff should constitute the factor of promoting change in schools. The responsibility of teachers is not only for transferring knowledge to pupils, but also to work together with them in increasingly heterogeneous groups (as race, religion, gender and skills, etc.). They should know the new technologies, use them in the educational process and develop personalized programmes to motivate pupils for continuing learning, to assume management responsibilities in the process of developing the autonomy of school entities. Also, they should face the environment changes within school – aggressiveness against teachers, violence against pupils between them or caused by persons from outside the school, etc.

h) development of partnership in promoting education, cooperation between school and other stakeholders from the public and private system, developing the links between school and company, between school and community. In this way, the school comes increasingly closer to the realities of the economic and social life, and the curricula can be adjusted to demand, joint educational programmes can be developed with companies, associations, business communities, cultural centres, etc, and the involvement of school in promoting permanent education by special centres and courses for adults.

¹²⁵ For details : Currie and Thomas Early test scores, school quality and SES: Long run effects on wages and employment outcomes. Research in Labor Economics 20 (2001) and Murnane et al. The growing importance of cognitive skills in wage determination". The Review of Economics and Statistics 77 (1995)

¹²⁶ Consiliul European a proclamat anul 2005 European Year of Citizenship through Education. Council of Europe 'Democracy in Schools', http://www.coe.int/t/dg4/education/edc/AspectsCitizenship/DemocracySchool_en.asp

Consequently, performance in permanent education means preparing the human capital in order to face future challenges and implies substance reforms at organizational level, at the level of the curriculum content, of the teaching methods, of educational policies, of the quality and competences of the teaching staff, of the inter-institutional cooperation systems between stakeholders, of the financing systems of permanent education. If for the individual the challenge consists in his/her motivation and shaping the habits for continuing education, during the entire life, for school, education institutions and vocational training, and for the education systems the main challenge is represented by bringing closer their supply to the demands of the labour market and of the socio-cultural environment.

Initial education is developed in perfect symbiosis with adult training and together they create a coherent and flexible system of educational supplies, generate opportunities for learning, continuing improvement for all. Primary and secondary education comes to answer the demand of fundamental knowledge, basic skills and competences and to ensure the transition to tertiary education and to the labour market for low- and medium skills. It is important to create the “hard” framework of professional training by developing applicative learning systems. University education is closer to the demand on labour market for highly-skilled staff, experts, and researchers. It has as responsibility to bring closer the demand of knowledge and top competences to the demand of the productive system and at the same time, at individual level, to develop the entrepreneurial ability for own educational performances, practical skills and abilities to create and use the RDI outcomes and services. The connection with the private sector can be stronger, the recruitment (anticipative, already during the period of studies) of skilled labour force being the main channel of ensuring the transition from school to work. If the first concern of companies is to attract on labour market staff with a professional profile and qualifications’ and competences level as close as possible to the content of the vacancies, continuing training of the personnel remains still a true challenge. The low supply of adequate labour force to the specific demand of the enterprise inevitably generates demand for continuing training on the job or in educational or continuing training entities with total or partial support of the additional costs for education. The investment in human capital even though increasingly costly proves to be the most profitable one under the aspect of the additional value added generated after each stage of continuing training. The outcomes of education are visible and enhance themselves on medium- and long-term. Hence results the relatively low attraction of economic agents for the continuing training of employees, for updating their knowledge and/or vocational re-training. *Yet, the competitive advantages from using adequate and performance labour force are more and more important and lasting which induces the increased concerns of economic agents for facilitating through various forms the vocational improvement and especially of updating knowledge.*

A performance answer to the challenges of the knowledge-based society might be given by a flexible and quality university education system. The quality of education and the performance of educational systems turn into an increasingly important concern for state institutions with responsibilities in the field, but also for the social partners and for the ones of the civil society. In the light of the Bologna Process, the definition and measurement of the quality of higher education assumes the creation of modern measurement and evaluation instruments. After the creation in 2003-2005 of the Standards and Guidelines for Quality Assurance in the European Higher Education Area, in 2007 was created the European Quality Assurance Register for Higher Education. “The Register is an important link in the chain of communication instruments required to make the European higher education more transparent and attractive to our citizens but also for the students and pupils from other continents” (Jan Fiegel, 2007)¹²⁷. The purpose of this instrument is to ensure the transparency of information about the quality of the agencies’ activities for quality assurance, to serve the purposes of the stakeholders (education institutions, students, quality assurance agencies, employers), and to ensure comparable standards in the

¹²⁷ http://www.euractiv.ro/uniunea-europeana/articles%7CdisplayArticle/articleID_12727/UE-a-lansat-un-nou-instrument-pentru-asigurarea-calitatii-in-invatamantul-superior.html

context of maintaining the institutional diversity at national level. By using such instruments performance in education can be assured and certified and the creation of the European Higher Education Area, as well.

V.3. Requirements for a coherent and performance educational model at national level

The dynamic of changes at economic and social level trigger the reform of the support systems, including the one of education. For building up a performance educational system it is necessary, on one hand, *to identify the need of actions in the field of national education that would allow for attaining quality in education* and, on the other hand, *to identify the possibilities of support from EU for modernizing the national education systems.*

In Romania, the process of reform for permanent education continues and, at the same time, the first results show with respect to the functioning of the recently implemented sub-systems – the reform of the pre-university education, the introduction of the Bologna scheme in higher education. In parallel, a new legislative package of national education was launched (regarding pre-university and university education, and the statutes of teachers), which was subjected to public debate. This new package brings about significant changes in the architecture of the initial education system, among which we mention:

- introducing compulsory pre-school education as of 3 years of age and increasing the duration of compulsory education from 10 to 13 years;
- changing the structure of cycles: pre-school (3 to 6 years of age), transition year, primary education (grades 1 to 4), extension of gymnasium cycle up to the 9th grade, inclusively, reducing the high-school cycle to 3 years up to the 12th grade;
- diminishing the number of school hours per week;
- increasing the autonomy of school entities in employing teachers and financing depending on the number of pupils. The financing of universities shall be done on cycle of studies and per student;
- supporting the participation of higher education by creating an Agency of Credits for granting financial support to students with limited material possibilities;
- promoting an increase of management quality in school institutions by compelling school heads to graduate educational management courses.

The laws package was criticized due to the lack of coherence and its incomplete character. But the first and most important critique is that legislative changes are made on each change of the Minister and/or on each change of the legislative body, a fact which cannot ensure the coherence of the system and functionality under normal circumstances, and much less performance.

In reply to the education laws' package, the President of Romania proposed and signed the **National Pact for Education**. The motivation of this pact starts from the weak performances of the education reform up to date and from the need to gradually diminish the risks associated with maintaining the gaps in the performances of the education and research system against the others recorded in EU countries. *The education reform, as other laws in the social area (pensions, health, etc.) can be realized for a period exceeding the period of one legislative mandate.* In addition, it is necessary that the coherence in the system but also in relationship to other reform components at economic and social level.

The pact for education envisages the attainment of some objectives at the time horizon of the year 2013 which would allow for the Romanian school the efficient integration in the European Area of Education. By the pact for education is pursued:

- the modernization of the education system and institutions, in accordance with the exigencies at European level and the requirements of the knowledge-based economy. In this context, the in-depth curricula reform is followed up by guiding it towards gaining key competences clearly determined on cycles and years of study ;
- changing early education into a public good, promoting compulsory education of 10 years and warranting access to free education up to high-school graduation;

- increasing financial allocations from 6% of GDP for education and 1% for research, the financing being made on objectives, depending on clear, coherent and specific outcomes and performance indicators for each level/form of education;
- comprehensive decentralization – financial, curricular and human resources – adjustment of curriculum to the specific needs of personal development, to labour market requirements and to the ones of each community based on the principle of subsidiarity;
- adopting the principle of financing per pupil in pre-university education and of multi-annual financing on projects, programmes and training cycles for higher education; in this context the emphasis is on the performance in the outcomes of pre-university education and on specialization (on bachelor studies, bachelor and master studies, on doctor and research studies) and hierarchy of universities;
- adopting the Charter of Rights and Freedoms in Education that would warrant access to quality education;
- defining the priority areas in education and reducing the inequities and differences in access to education between rural and urban on social categories of citizens;
- defining permanent education as bedrock of the educational system from Romania and increasing the comprising degree to 12% from active labour force up to the year 2013.

We consider that neither the legislative package, nor the National Pact for Education solves the issue of the reform need in the system of permanent education in Romania. The National Pact for Education might be the starting point, the general framework of **reconstruction of the education system in Romania, which could be completed with specific laws for each form of education – initial education (with its components), adult education in the context of framing them in the priorities of education development at European level.** Also, it is necessary to ensure **coherence** within the rebuilt/re-designed system under legislative aspect, but also under the one of institutional development and functionality aspect, as well. It should be started, on one hand, from the idea of *harmonizing the demands of the labour market with the supply of the education system*, and on the other hand, from *creating a functional network between education, research and business community for clearly defining the knowledge, competences and skills required by the economic and social environment*. The flexibility of the **educational offer must be linked to the present demand and anticipate the education needs on medium term.** The National Qualifications Framework shall be created and the National Strategy in the Field of Education and Research shall be outlined. The suggested time horizon of 5 years (proposed by the Pact) is not enough, in our opinion, to create and test the efficiency of the new system of national education. More than the modernization of the Romanian education and research system, which was mentioned on signing the Pact, **it is necessary to have a new design and a new attitude in promoting permanent education in Romania.** Shaping a new culture of education and active participation of stakeholders in implementing a new system can ensure the efficiency of implementing the national system of permanent education. And, this system, should be able to permanently adjust on the demand of competences and knowledge of the business environment and on the requirements of social and cultural progress in increasingly (socio-cultural and under the aspect of issues with which they are faced) diversified communities. The wide access to education must be linked with promoting equity in education and in putting to good use and stimulating the development of performers – gifted and talented persons. **In order for the national system of education to prove its efficiency at national level, adequate instruments and policies must be created not only for training, but also for employment and stimulating the maintenance in the system by creating opportunities for career development, financial comfort, position in society and cultural development.** Without this capacity, any performance of the national education system shall be valued by mobility, to the disadvantage of the contribution to increasing the competitiveness of the national education and to developing the knowledge-based economy.

Annex 1

Education stock, school life expectancy, share of youth in total population by age groups, projections of the development of young population in 2010 and 2015 in EU

Ord No.	Country	Education stock (a) (2000, years)	School life expectancy (b) 2001/2, years	Share of youth in total population, by age groups, 2000 (%)			Projections of young population evolution in 2010 and 2015 by age groups, 2000 data (%)			
				0-9 years old	10-19 years old	20-29 years old	2010		2015	
							5-9	10-14	5-9	10-14
1	EU 25	...	17,4	...	...	...	-7,9	-10,9	-8,9	-12,0
2	Belgium (c)	9,3	19,2	11,4	11,9	12,7	-6,4	-1,6	-9,4	-3,0
3	Denmark	9,7	18,0	12,8	11,2	12,9	-31	16,5	-3,7	11,9
4	Germany(d)	10,2	17,1	9,6	11,3	11,5	-12,2	-13,5	-15,5	-18,9
5	Greece	8,7	16,3	...	11,5	15,2	-7,0	-13,3	-2,7	-12,2
6	Spain	7,3	17,3	9,5	11,0	16,1	14,1	-3,8	19,8	4,7
7	France	7,9	16,6	12,3	13,0	13,1	5,6	-3,8	1,8	1,5
8	Island	9,4	16,6	13,9	15,4	16,3	13,7	-4,5	21,9	4,1
9	Italy	7,2	16,6	9,3	10,1	13,4	0,8	-1,9	-0,8	1,0
10	Luxemburg	...	-14,3	12,9	11,7	12,8	0,2	17,6	-0,8	15,6
11	The Netherlands	9,4	17,2	12,4	12,0	12,7	2,6	4,5	-4,7	8,4
12	Austria	8,4	16,0	10,8	11,9	12,5	-15,6	-5,8	-17,5	-12,0
13	Portugal	5,9	16,9	10,4	11,9	15,4	4,1	-5,9	6,0	-2,1
14	Finland	10,0	19,2	11,7	12,6	12,3	-13,3	-4,3	-12,8	-8,8
15	Sweden	11,4	19,8	11,4	12,6	12,3	-18,21	-12,7	-12,4	-9,8
16	United Kingdom(e)	9,4	20,1	12,4	12,7	12,9	-12,9	-7,1	-12,4	-12,3
17	Bulgaria	9,5	14,6	8,7	13,0	14,5	-26,3	-39,2	-30	-39,1
18	Czech Rep.	9,5	16,3	9,6	12,9	16,6	-23,9	-30,0	-23,9	-29,3
19	Estonia	...	17,5	9,6	15,3	14,0	-21,3	-43,2	-17,3	-40,7
20	Cyprus	9,2	13,7	13,8	15,6	14,7	-25,2	-13,2	-25,1	-25,2
21	Latvia	...	16,6	9,1	15,4	13,8	-30,7	-49,2	-24,3	-46,8
22	Lithuania	...	16,8	11,2	15,6	13,6	-36,8	-32,7	-36,7	-44,1
23	Hungary	9,1	16,8	10,2	12,5	15,7	-19,9	-19,7	-20,2	-24,0
24	Malta	...	14,3	12,0	14,5	14,7	-19,0	-12,7	-11,4	-20,0
25	Poland	9,8	17,0	11,0	15,8	16,0	-29,5	-31,6	-31,2	-40,2
26	Romania ¹	9,5	14,6	10,4	14,8	16,0	-16,7	-36,7	-16,4	-39,7
27	Slovenia ¹	7,1	17,2	9,4	12,6	15,0	-12,6	-84,9	-13,8	-27,0
28	Slovakia	9,3	15,0	11,3	15,7	17,0	-29,7	-29,3	-31,0	-37,4
29	Canada	11,6	...	...	...	...	...	...	...	...
30	USA	12,0	...	...	...	...	...	...	...	...
31	Japan	9,5	...	...	...	...	...	...	...	...
32	Korea	10,8	...	...	...	...	...	...	...	...

Note:

- a) number of school years per person
- b) calculated for children aged 5 years (ISCED 0-6)
- c) Belgium without private institutions
- d) Germany, Romania and Slovenia, tertiary education programmes in advanced research excluded (ISCED 0-6).
- e) Population refers to the year 2001

Source: Human Development Report (2001), Making New Technologies Work for Human Development, UNDP, Oxford University Press, New-York; Ec., Eurydice Eurostat, Kay Data on Education in Europe (2005) Bruxelles, Luxembourg, pg.33

Annex 2.

Education stock of population aged 15 years and over in EU member countries and some selected countries in 1980, 1990, 2000

- no. of school years/person

Ord. No.	Country	1980	1990	2000	200/1980 (%)
1	Belgium	8,2	8,9	9,3	113
2	Denmark	9,0	9,6	9,7	1078
3	Germany	...	9,9	10,2	...
4	Greece	7,0	8,0	8,7	124,3
5	Spain	6,0	6,4	7,3	121,7
6	France	6,7	7,0	7,9	1179
7	Ireland	7,5	8,8	9,4	125,3
8	Italy	5,9	6,5	7,2	122,0
9	Luxemburg	...	...	...	...
10	The Netherlands	8,2	8,8	9,4	114,6
11	Austria	7,3	7,8	8,4	115,1
12	Portugal	3,8	4,9	5,9	155,3
13	Finland	7,2	9,4	10,0	138,8
14	Sweden	9,7	9,5	11,4	117,5
15	United Kingdom	8,3	8,8	9,4	113,3
16	Bulgaria	7,3	9,2	9,5	130,1
17	Czech Republic	...	9,2	9,5	...
18	Estonia	...	9,0	...	...
19	Cyprus	6,5	8,7	9,2	141,5
20	Latvia	...	9,5	...	...
21	Lithuania	...	9,4	...	...
22	Hungary	9,1	8,9	9,1	...
23	Malta	...	...	...	...
24	Poland	8,8	9,5	9,8	111,4
25	Romania	7,8	9,5	9,5	121,8
26	Slovenia	...	6,6	7,1	...
27	Slovakia	...	8,9	9,3	...
28	Canada	10,3	11,0	11,6	112,7
29	USA	11,9	11,7	12,0	100,8
30	Japan	8,5	9,0	9,5	111,8
31	Korea	7,9	9,9	10,8	136,7

Source: Human Development Report 2001, UNDP, Making New Technologies Work for Human Development, Oxford University Press.

Annex 3

Integrated Guidelines of Growth and Employment

I Macroeconomic guidelines

1. Warranting economic stability
2. Ensuring economic sustainability
3. Favours efficient resources allocation
4. Strengthening the coherence of macroeconomic and social policies
5. Supervising the evolution of wages so that these contribute to macroeconomic stability and economic growth
6. Contribution to the dynamics and well-functioning of EMU

II Microeconomic guidelines

7. Development and strengthening of the Internal Market
8. Ensuring market openness and competitiveness
9. More attractive environment of enterprises
10. Encouraging entrepreneurial culture and creating a favourable environment for SME
11. Expanding and improving the European infrastructure and finalizing the approved cross-border projects
12. Increasing and improving the investments in research-development
13. Facilitating innovation and ITC use
14. Encouraging sustainable use of resources and strengthening the synergy between environmental protection and growth
15. Creating a solid industrial basis

III Employment guidelines

16. Enforcing an employment policy aiming to attain full employment, improvement of quality and productivity and strengthening the social and territorial cohesion
17. Favours an approach to work based on the life-cycle about labour
18. Creating a labour market that favours the insertion of job seekers and disadvantaged persons
19. Improving the answer to labour market needs
20. Favours flexibility by conciliating job safety and diminishing labour market segmentation
21. Monitoring the evolution of wages and other labour costs so as to be favourable for employment
22. Increasing and improving the investment in human capital
23. Adopting education systems and shaping the needs in the area of competences

Source: Décision du Conseil relative aux lignes directrices pour les politiques de l'emploi d'Etat membre (en application de l'article 128 du traité CE; COM (2005) 141 final, p.10.

Annex 4.

Key messages of lifelong learning

1. New competences and basic skills for all: guaranteeing general and permanent access to learning with the purpose of shaping, enriching and improving the theoretic knowledge and practical skills package, which are the bedrock of a career/qualification, facilitating the integration into an activity within the cognitive society. Obviously, the package of knowledge and basic skills is permanently on the move, it is enriched with new ones, while the traditional ones diminish their importance as share.

2. Higher investments in human resources: considerable increase of the dimensions of investments in the development of human resources, in order to give due importance to the most important capital of Europe.

3. Innovation in teaching and learning: focus on the quality of learning, concomitantly with its centring on the pupil, more efficient methodologies of teaching, motivation, new types of relations between teacher and pupil, active learning, etc.

4. Evaluation, certification and recognition of studies and qualifications. "In an integrated Europe, the liberalized/open labour market, and the right of the citizens to free movement, to live, study and train, and work in all Member States impose that skills, knowledge and qualifications are appreciated more rigorously and with promptitude and more useful "portable" within the Union" (p. 44).

5. Rethinking vocational guidance and counselling: so that these would guarantee for each person easy and permanent access to pertinent information about jobs, as number, quality and occupation ways within the EU (ENRES Network).

6. Learning closer to home "bringing learning – by means of learning technology closer to the beneficiaries", in the communities where they live, that creates responsibilities for local authorities and in the working and living environment, including the family life of the beneficiaries.

Source: EC (2000) A Memorandum on Lifelong Learning, Bruxelles.

Annex 5.

Defining earmarks of the levels comprised in the EUROPEAN QUALIFICATIONS FRAMEWORK (EQF)

Each of the 8 levels is defined by a series of earmarks that indicate the outcomes of learning corresponding to the qualifications at the respective level within any system of qualifications			
Qualification	Knowledge	Skills	Competence
	<i>Within the European Qualifications Framework (EQF) knowledge are described as theoretic and actual (factual)</i>	<i>In EQF skills are described as cognitive (using logical, intuitive and creative thinking) and actual (involving manual dexterity and the use of methods, materials, tools and instruments)</i>	<i>In EQF competence is described in relationship to responsibility and autonomy</i>
Level 1 Learning outcomes corresponding to level 1 are:	Elementary general knowledge	Elementary skills required for fulfilling simple tasks	Activity or study under direct supervision in a structured context
Level 2 Learning outcomes corresponding to level 2 are:	Elementary actual knowledge in a certain field of activity or study	Elementary cognitive and practical skills required for using relevant information in view of fulfilling tasks and solving routine problems by using some simple rules and instruments	Activity or study under supervision but with a certain autonomy
Level 3 Learning outcomes corresponding to level 3 are:	Knowledge about facts, principles, processes and general concepts in a field of activity or study	A wide range of cognitive or practical skills required for fulfilling tasks and solving problems by selecting and applying some elementary methods, instruments, materials and information	Assuming responsibilities for realizing the tasks corresponding to the activity or study. Adjusting own behaviour to circumstances in the process of solving problems
Level 4 Learning outcomes corresponding to level 4 are:	Actual and theoretic knowledge in a wider context within a field of activity or study	A wide range of cognitive and practical skills required for generating solutions to specific problems in a field of activity or study	Exercising self-management within some fields of activity or study which are, as a rule, predictable, but subjected to change
Level 5 ^{x)} Learning outcomes corresponding to level 5 are:	Comprehensive, specialized, actual and theoretic knowledge in a field of activity or study and awareness with respect to some knowledge limits	A comprehensive range of cognitive and practical skills required for developing some creative solutions to abstract issues	Exercising management and supervision in the context of some work activities or study where unpredictable changes are possible. Analyzing and developing performance of self and of others
Level 6 ^{xx)} Learning outcomes corresponding to level 6 are:	Advanced knowledge in a field of activity or study involving a critical understanding of theories and principles	Advanced skills, demonstrating control and innovation, required for solving some complex and unpredictable issues in a specialized field of activity or study	Managing some activities or technical or professional complex projects, assuming responsibilities in decision making regarding the management of professional development of persons or groups of persons
Level 7 ^{xxx)} Learning outcomes corresponding to level 7 are:	High specialization knowledge among which some are essential in a certain field of activity or study as basis for original thinking Critical awareness about the aspects related to knowledge in a field and about the interface between various fields	Specialized skills of solving of problems required in research and/or innovation for developing new knowledge and procedures, and for integrating knowledge from various fields	Managing and changing some working or study contexts that are complex, unpredictable and require new strategic approaches. Assuming responsibility for contributing to professional knowledge and to practice and/or for analyzing the strategic performance of teams
Level 8 ^{xxxx)} Learning outcomes corresponding to level 8 are	Knowledge at the most advanced level of a field of activity or study and the interface between fields	Most advanced and specialized skills and techniques including synthesis and evaluation, required for solving some critical issues in research and/or innovation and for expanding and redefining existing knowledge and professional practice	Demonstrating substantiated authority, innovation, autonomy, professional integrity and lasting commitment in view of developing new ideas or processes of first order within working or study contexts, including research.

Compatibility with the European Qualifications Framework in Higher Education

The European Qualification Framework in Higher Education provides characteristic descriptors of the cycles. Each characteristic of the cycle expresses the typical expectations of outcomes and associated skills with qualifications that represent the completion of the respective cycle.

Note: ^{x)} Characteristic for the reduced cycle of higher education (within or in relation with the first cycle_ developed by the Common Initiative regarding Quality as part of the Bologna Process, corresponds to outcomes of learning for level 5 of EQF.

^{xx)} The descriptor/characteristic or the first cycle in the European Qualifications Framework in Higher Education (EQHEF) corresponds to level 6 of qualification in EQF.

^{xxx)} The characteristic of the second cycle within the European Qualifications Framework in Higher Education corresponds to outcomes of learning matching level 7 of EQF.

^{xxxx)} The characteristic of the third from the European Qualifications Framework in Higher Education corresponds to the outcomes of learning matching level 8 of EQF.

Source: EC (2006) Implementing the Community Lisbon Programme. Proposal for a Recommendation of the European Parliament and of the Council on the Establishment of the European Qualifications Framework for Lifelong Learning (presented by Commission) COM (2006) 479 final.

Annex 6

Levels of education in England, Northern Ireland, and Wales, by age and year of schooling: 2004

18	Postsecondary and tertiary <i>University, college</i>			ISCED level 4–6
17	<i>Further education college</i>	<i>School sixth forms</i>	13	
16	Upper		12	
15	secondary		11	ISCED level 3
14	<i>Secondary modern</i>		10	
13	Lower secondary		9	ISCED level 2
12	<i>Comprehensive school</i>		8	
11			7	
10			6	ISCED level 1
9			5	
8	Primary		4	
7	<i>Junior and Infant school</i>		3	
6			2	
5			1	
4	Pre-primary			ISCED level 0
3	<i>Nursery school</i>			
Age			Year of schooling	

NOTE: Ages represent the typical age at the beginning of the school year. Numbers in bold print indicate ages of universal enrolment. Box encloses the age at which compulsory enrolment begins through the age at which compulsory enrolment ends. In some countries, enrolment rates may fall below universal before the ending age of compulsory education. No meaning should be inferred from width of subdivisions. Theoretical duration of first university degree is 3 years in England, Northern Ireland, and Wales. (U.S. Department of Education, NCES. (2002). *Comparative Indicators of Education in the United States and Other G8 Countries: 2002* (NCES 2003–026).

Source: Comparative Indicators of Education in the United States and Other G8 Countries: 2006, ICS, National Centre for Education Statistics, Institute of Education Sciences, August 2007, p.75.

Source: Comparative Indicators of Education in the Unites States and other G8 countries: 2006, ICS, National Centre for Education Statistics, Institute of Education Sciences, August 2007, p75

Annex 7

Levels of education in Italy, by age and year of schooling: 2004

19	Postsecondary and tertiary <i>Università, Accademia, Scuola diretta a fini speciali</i>					ISCED level 4–6
18	Fine arts institutes <i>Istituto d'arte</i>	Vocational <i>Istituto professionale</i>	Technical <i>Istituto tecnico</i>	Academic <i>Liceo</i>	13	ISCED level 3
17					12	
16					11	
15					10	
14					9	
13	Upper secondary <i>Secondo ciclo della scuola superiore</i>				8	ISCED level 2
12					7	
11					6	
10	Lower secondary <i>Scuola media</i>				5	ISCED level 1
9					4	
8					3	
7					2	
6					1	
5	Primary <i>Scuola elementare</i>					ISCED level 0
4						
3						
Age	Pre-primary <i>Scuola dell'infanzia</i>				Year of schooling	

NOTE: Ages represent the typical age at the beginning of the school year. Numbers in bold print indicate ages of universal enrolment. Box encloses the age at which compulsory enrolment begins through the age at which compulsory enrolment ends. In some countries, enrolment rates may fall below universal before the ending age of compulsory education. No meaning should be inferred from width of subdivisions. Theoretical duration of first university degree is 5 years in Italy. (U.S. Department of Education, NCES. (2002). *Comparative Indicators of Education in the United States and Other G8 Countries: 2002* (NCES 2003–026).

Source: Comparative Indicators of Education in the United States and Other G8 Countries: 2006, ICS, National Centre for Education Statistics, Institute of Education Sciences, August 2007, p.75.

Annex 8

Levels of education in Germany, by age and year of schooling: 2004

19	Postsecondary and tertiary <i>Universität, Fachhochschule, Berufsakademie</i>					ISCED level 4–6
18	Upper secondary—vocational (often part-time) <i>Berufsschule</i>	Upper secondary—advanced vocational <i>Fachoberschule</i>	Upper secondary—integrated <i>Gymnasiale Oberstufe</i>	Combined lower and upper secondary—academic <i>Gymnasium</i>	13	ISCED level 3
17					12	
16					11	
15	Lower secondary—general <i>Hauptschule</i>	Lower secondary—enhanced general <i>Realschule</i>	Lower secondary—integrated <i>Gesamtschule</i>		10	ISCED level 2
14					9	
13					8	
12					7	
11					6	
10					5	
9	Primary <i>Grundschule</i>				4	ISCED level 1
8					3	
7					2	
6					1	
5	Pre-primary <i>Kindergarten</i>					ISCED level 0
4						
3						
Age					Year of schooling	

NOTE: Ages represent the typical age at the beginning of the school year. Numbers in bold print indicate ages of universal enrolment. Box encloses the age at which compulsory enrolment begins through the age at which compulsory enrolment ends. In some countries enrolment rates may fall below universal before the ending age of compulsory education. No meaning should be inferred from width of subdivisions. Theoretical duration of first university degree is 4 years in Germany. (U.S. Department of Education, NCES. (2002). *Comparative Indicators of Education in the United States and Other G8 Countries: 2002* (NCES 2003–026).

Source: Comparative Indicators of Education in the United States and Other G8 Countries: 2006, ICS, National Centre for Education Statistics, Institute of Education Sciences, August 2007, p.73.

Annex .9

Levels of education in France, by age and year of schooling: 2004

18	Postsecondary and tertiary <i>Université, grande école, IUT, STS</i>				ISCED level 4–6
17	Vocational <i>professionnel</i>	Technological/technologique Upper secondary <i>Lycée</i>	Academic <i>général</i>	12	ISCED level 3
16				11	
15				10	
14	Lower secondary <i>Collège</i>			9	ISCED level 2
13				8	
12				7	
11				6	
10	Primary <i>École élémentaire</i>			5	ISCED level 1
9				4	
8				3	
7				2	
6				1	
5	Pre-primary <i>École maternelle</i>				ISCED level 0
4					
3					
2					
Age				Year of schooling	

NOTE: Ages represent the typical age at the beginning of the school year. Numbers in bold print indicate ages of universal enrolment. Box encloses the age at which compulsory enrolment begins through the age at which compulsory enrolment ends. In some countries, enrolment rates may fall below universal before the ending age of compulsory education. No meaning should be inferred from width of subdivisions. Theoretical duration of first university degree is 4 years in France. (U.S. Department of Education, NCES. (2002). *Comparative Indicators of Education in the United States and Other G8 Countries: 2002* (NCES 2003–026).

Source: Comparative Indicators of Education in the United States and Other G8 Countries: 2006, ICS, National Centre for Education Statistics, Institute of Education Sciences, August 2007, p.65.

Annex. 10

Levels of education in Canada, by age and year of schooling: 2004

18	Postsecondary and tertiary <i>University, university college, regional colle</i>			ISCED level 4–6
17	Upper secondary <i>Senior high school</i>		12	ISCED level 3
16			11	
15			10	
14	Lower secondary <i>Junior high school</i>		9	ISCED level 2
13			8	
12			7	
11	Primary <i>Elementary school</i>		6	ISCED level 1
10			5	
9			4	
8			3	
7			2	
6			1	
5	Pre-primary <i>Pre-elementary</i>			ISCED level 0
4				
Age			Year of schooling	

NOTE: Ages represent the typical age at the beginning of the school year. Numbers in bold print indicate ages of universal enrolment. Box encloses the age at which compulsory enrolment begins through the age at which compulsory enrolment ends. In some countries, enrolment rates may fall below universal before the ending age of compulsory education. No meaning should be inferred from width of subdivisions. Theoretical duration of first university degree is 4 years in Canada. (U.S. Department of Education, NCES.(2002). *Comparative Indicators of Education in the United States and Other G8 Countries: 2002* (NCES 2003–026).

Source: Comparative Indicators of Education in the United States and Other G8 Countries: 2006, ICS, National Centre for Education Statistics, Institute of Education Sciences, August 2007, p.63.

Annex 11

Education system in USA: education levels on ages and years of school 2006

18	Postsecondary and tertiary <i>University, college, community college</i>		ISCED level 4–6
17	Upper secondary <i>High school</i>	12	ISCED level 3
16		11	
15		10	
14	Lower secondary <i>Middle school/junior high</i>	9	ISCED level 2
13		8	
12		7	
11	Primary <i>Elementary school</i>	6	ISCED level 1
10		5	
9		4	
8		3	
7		2	
6		1	
5	Pre-primary <i>Kindergarten and Prekindergarten</i>		ISCED level 0
4			
3			
Age		Year of schooling	

NOTE: Ages represent the typical age at the beginning of the school year. Numbers in bold print indicate ages of universal enrolment. Box encloses the age at which compulsory enrolment begins through the age at which compulsory enrolment ends. In some countries, enrolment rates may fall below universal before the ending age of compulsory education. No meaning should be inferred from width of subdivisions. Theoretical duration of first university degree is 4 years in the United States.(U.S. Department of Education, NCES. (2002). *Comparative Indicators of Education in the United States and Other G8 Countries: 2002* (NCES 2003–026).

Source: Comparative Indicators of Education in the United States and Other G8 Countries: 2006, ICS, National Centre for Education Statistics, Institute of Education Sciences, August 2007, p.79.

Annex 12

Levels of education in Japan, by age and year of schooling: 2004

18	Postsecondary and tertiary <i>Daigaku, Koutousenmongakkou, Tankidaigaku</i>		ISCED level 4–6
17	Upper secondary <i>Koutougakkou</i>	12	ISCED level 3
16		11	
15		10	
14	Lower secondary <i>Chugakkou</i>	9	ISCED level 2
13		8	
12		7	
11	Primary <i>Shogakkou</i>	6	ISCED level 1
10		5	
9		4	
8		3	
7		2	
6		1	
5	Pre-primary <i>Yochien</i>		ISCED level 0
4			
Age		Year of schooling	

NOTE: Ages represent the typical age at the beginning of the school year. Numbers in bold print indicate ages of universal enrolment. Box encloses the age at which compulsory enrolment begins through the age at which compulsory enrolment ends. In some countries, enrolment rates may fall below universal before the ending age of compulsory education. No meaning should be inferred from width of subdivisions. Theoretical duration of first university degree is 4 years in Japan. (U.S. Department of Education, NCES. (2002). *Comparative Indicators of Education in the United States and Other G8 Countries: 2002* (NCES 2003–026).

Source: Comparative Indicators of Education in the United States and Other G8 Countries: 2006, ICS, National Centre for Education Statistics, Institute of Education Sciences, August 2007, p.77.

Annex 13.

Average duration (years) which the children aged 3-7 years spend in pre-school education (ISCED 0) comparatively with the potential duration of provisions 2001/2002

Ord. No.	Country	Average number of years of participating to ISCED 0 for 3-7 years old	Estimated potential duration
1.	EU 25	2,6	...
2.	Belgium	3,0	3,0
3.	Czech Rep.	3,0	3,0
4.	Denmark	3,6	4,0
5.	Germany	2,9	3,0
6.	Estonia	3,3	4,0
7.	Greece	1,4	2,0
8.	Spain	3,0	3,0
9.	France	3,1	3,0
10.	Ireland	0,1	0,0
11.	Italy	3,0	3,0
12.	Cyprus	1,7	3,0
13.	Latvia	2,7	4,0
14.	Lithuania	2,3	3,0
15.	Luxemburg	2,5	3,0
16.	Hungary	3,4	3,0
17.	Malta	2,0	2,0
18.	The Netherlands	2,0	2,0
19.	Austria	2,5	3,0
20.	Poland	2,0	4,0
21.	Portugal	2,3	3,0
22.	Slovenia	2,8	3,0
23.	Slovakia	2,4	3,0
24.	Finland	2,3	4,0
25.	Sweden	3,3	4,0
26.	United Kingdom	1,5	2,0
27.	Bulgaria	3,0	4,0
28.	Romania	2,8	4,0

Additional comments:

- Belgium – excluding private independent institutions
- Ireland –only children from public entities; many children are comprised in private entities but information is not available
- The Netherlands –in terms of pre-school education, this structure is not pre-primary strictly speaking. Children aged 4 to 6 years of age are enrolled in the 1st grade of the primary school and regarded as being in ISCED 0.
- Sweden – pre-primary classes not included
- U.K –Only children comprised in school institutions. Approximately 30% of children aged 3 years of age are comprised outside school institutions.

Explanatory notes:

- The average duration for children comprised in institutions oriented on/based on education is computed by adding the participation rates for various age groups between 3 and 7 years. For instance, in **Belgium** the gross rate of participation to pre-primary education of children aged 3 years is of 98.2%, children aged 4 years – 99.2%, and aged 5 years – 97.8%, children aged 6 years – 4.8% and of children aged 7 – 0.2%. The average duration of participation to pre-primary education is equal to: $0.982+0.992+0.978+0.048+0.02 \times 1 \text{ year} = 3 \text{ years}$.
- The official duration according to estimates corresponds with the number of years – as of the age of 3 years – at which pre-primary institution may enrol children with admission priority in primary school.

Source: Key Data on Education in Europe 2005, EC, Eurydice Eurostat, Bruxelles, Luxemburg.

Annex 14.

Evolution of the participation rate of children aged 4 years to pre-primary education
(ISCED 0) 1979/80-2001/2002

-/-

Ord. No.	Country	Years			
		79/80	80/90	99/2000	2001/2002
1.		...	...	...	...
2.	Belgium	100,0	99,4	99,2	100,2
3.	Czech Rep	...	...	81,0	88,3
4.	Denmark	53,4	73,9	90,6	92,3
5.	Germany	64,2	72,9	81,4	88,9
6.	Estonia	...	...	78,2	82,1
7.	Greece	38,2	51,1	57,6	60,0
8.	Spain	69,3	94,8	99,2	100,6
9.	France	100,0	100,0	100,0	102,4
10.	Ireland	53,8	55,0	2,0	1,8
11.	Italy	...	...	98,4	102,3
12.	Cyprus	...	...	55,7	58,3
13.	Latvia	...	...	60,6	64,7
14.	Lithuania	...	...	51,0	51,6
15.	Luxemburg	93,6	93,5	94,3	98,3
16.	Hungary	...	...	89,5	90,2
17.	Malta	84,0	97,6	100,0	92,6
18.	The Netherlands	96,2	98,1	99,5	99,1
19.	Austria	56,6	65,7	79,6	80,9
20.	Poland	...	...	33,3	32,7
21.	Portugal	18,3	45,7	76,2	78,7
22.	Slovenia	...	...	67,7	72,3
23.	Slovakia	...	...	70,3	68,5
24.	Finland	18,1	26,0	41,9	44,0
25.	Sweden	27,6	48,4	72,8	77,8
26.	United Kingdom	83,0	91,0	100	99,0
27.	Bulgaria	...	...	67,0	74,6
28.	Romania	...	...	59,0	64,2

Additional notes:

Belgium – excluding private independent institutions

Germany – for the years 79/80, 89/90 only the territory of the former Federal Republic of Germany

Ireland – There is no public sector ISCED level 0. Many children follow a pre-primary curricula in private institutions.

U.K. – Data for population refer to the year 2001

Explanatory notes:

The indicator is computed by relating to the number of children aged 4 years comprised in pre-primary education at the number of children aged 4 years in total population aged 4 years.

In some countries the enrolment rate exceeds 100% because it is computed based on two series of data – population and education – originating from different sources.

Source: Key Data on Education in Europe 2005, EC, Eurydice – Eurostat Bruxelles, Luxemburg, p. 133.

Annex 15

Share of children for whom their teachers declare that they use books, children literature or learning soft (%)

Ord. No.	Country	Serial books for reading	Various children books	Computer software for reading (CD- ROM)
1.	Czech Rep	97,7	60,4	0,7
2.	Germany	86,9	34,6	5,1
3.	Greece	97,1	31,9	0,0
4.	France	80,4	63,9	5,9
5.	Italy	92,5	52,8	4,1
6.	Cyprus	99,2	34,9	0,9
7.	Latvia	100	63,9	0,7
8.	Lithuania	100	55,0	0,6
9.	Hungary	100	51,2	1,1
10.	The Netherlands	76,3	68,7	12,9
11.	Slovenia	95,0	39,1	2,4
12.	Slovakia	100	44,1	0,0
13.	Sweden	58,3	90,5	16,4
14.	U.K – England	83,9	96,6	10,4
15.	U.K – Scotland	99,2	80,5	10,6
16.	Bulgaria	99,4	51,1	0,6
17.	Romania	99,7	78,7	0,7

Source: IEA, PIRLS database; Quote after: Key Data on Education in Europe, 2005, p. 269.

Annex 16

Enrolment rate of pupils in upper secondary education (ISCED 3) on programmes of studies (general or vocational) 2001/2002

Ord. no.	Country	Total (B+G)	
		General	Vocational
1.	EU 25	37,3	62,7
2.	Belgium	30,3	69,7
3.	Czech Rep	19,8	80,2
4.	Denmark	47,0	53,0
5.	Germany	37,0	63,0
6.	Estonia	68,5	31,5
7.	Greece	60,0	40,0
8.	Spain	62,0	38,0
9.	France	43,7	56,3
10.	Ireland	100,0	...
11.	Italy	73,2	26,8
12.	Cyprus	86,2	13,8
13.	Latvia	60,9	39,1
14.	Lithuania	71,8	28,2
15.	Luxemburg	36,0	64,0
16.	Hungary	87,2	12,8
17.	Malta	67,2	32,8
18.	The Netherlands	30,8	69,2
19.	Austria	27,7	72,3
20.	Poland	39,1	60,9
21.	Portugal	71,2	28,8
22.	Slovenia	20,7	70,3
23.	Slovakia	23,6	76,4
24.	Finland	42,8	57,2
25.	Sweden	50,4	49,6
26.	United Kingdom	27,9	72,1
27.	Bulgaria	44,5	55,5
28.	Romania	36,0	64,0

Source: Key Data on Education in Europe 2005, p.140.

Annex 17.

Total employment rate of women and persons aged 15-64 years, progresses on the pathway for achieving the Lisbon objectives, 2003

Ord. No.	Country	Total employment rate of population aged 15-64 years		Total employment rate of women		Total employment rate of workers aged 55-64 years	
		2003	Difference to objective 2010	2003	Difference to objective 2010	2003	Difference to objective 2010
		Objective 2010: 70%		Objective 2010: more than 60%		Objective 2010: 50%	
1.	EU 15	64,3	5,7	56,0	4,0	41,7	8,3
2.	EU 25	62,9	7,1	55,0	5,0	40,2	9,8
3.	Belgium	59,6	10,4	51,8	8,2	28,1	21,9
4.	Czech Rep	64,7	5,3	56,3	3,7	42,3	7,7
5.	Denmark	75,1	>	70,5	>	60,2	>
6.	Germany	64,8	5,2	58,8	1,2	39,3	10,7
7.	Estonia	62,9	7,1	59,0	1,0	52,3	>
8.	Greece	57,9	12,1	43,9	16,1	42,3	7,7
9.	Spain	59,7	10,3	46,0	14,0	40,8	9,2
10.	France	62,8	7,2	56,7	3,3	36,8	13,2
11.	Ireland	65,4	4,6	55,8	4,2	49,0	1,0
12.	Italy	56,1	13,9	42,7	17,3	30,3	19,7
13.	Cyprus*	69,2	0,8	60,4	>	50,4	>
14.	Latvia	61,8	8,2	57,9	2,1	44,1	5,9
15.	Lithuania	61,1	8,9	58,4	1,6	44,7	5,3
16.	Luxemburg*	63,1	6,9	50,8	9,2	29,5	20,5
17.	Hungary	57,0	13,0	50,9	9,1	28,9	21,1
18.	Malta*	54,5	15,5	33,6	26,4	30,3	19,7
19.	The Netherlands	73,5	>	65,8	>	44,8	5,2
20.	Austria	69,2	0,8	62,8	>	30,4	19,6
21.	Poland	51,2	18,8	46,0	14,0	26,9	23,1
22.	Portugal	67,2	2,8	60,6	>	51,1	>
23.	Slovenia	62,6	7,4	57,6	2,4	23,5	26,5
24.	Slovakia	57,7	12,3	52,2	7,8	24,6	25,4
25.	Finland	67,7	2,3	65,7	>	49,6	0,4
26.	Sweden	72,9	>	71,5	>	68,6	>
27.	United Kingdom	71,8	>	65,3	>	55,5	>
28.	Bulgaria	52,5	17,5	49,0	11,0	30,0	20,0
29.	Romania	57,6	12,4	51,5	8,5	38,1	12,0

*) year 2002

Source: Employment in Europe 2004. Recent Trends and Prospects, page. 27.

Annex 18.

Indicators – target in the field of education

Ord. No.	INDICATORI LISABONA					
	Country	Early school leaving (2002)	Share of population aged 22 to 24 years graduating at least high-school	Share of pupils aged 15 years who cannot reach the lowest level of achievement	Share of graduates in the field of mathematics, science, technology	Adult participation to permanent education (2002)
		EU target 2010 Max.10%	EU target 2010 Min.85%	EU target 2010 15%	EU target 2010:10%	EU target 2010:12,5%
1.	EU 25	16,4*	76,6	19,4	24,1	10,8**
2.	Belgium	12,4	81,1			6,5
3.	Czech Rep.	5,4	91,7			6,0
4.	Denmark	15,4	79,6			18,4
5.	Germany	12,5	73,3			5,9
6.	Estonia	12,6	80,4			5,2
7.	Greece	16,1	81,3			1,2
8.	Spain	29,0	64,9			5,0
9.	France	13,4	81,7			2,7
10.	Ireland	14,7	69,1			7,7
11.	Italy	24,3	69,1			4,6
12.	Cyprus	14,0	85,3			3,7
13.	Latvia	14,3	73,2			3,3
14.	Lithuania	19,5	79,3			8,2
15.	Luxemburg	17,0	69,8			7,8
16.	Hungary	12,3	85,8			3,3
17.	Malta	...	39,0	...	...	...
18.	The Netherlands	15,0	73,3			16,4
19.	Austria	9,5	85,0			7,5
20.	Poland	7,6	81,1			4,3
21.	Portugal	45,5	43,7			2,9
22.	Slovenia	4,8	90,0			8,8
23.	Slovakia	5,6	94,0			9,0
24.	Finland	9,9	86,2			18,9
25.	Sweden	10,0	86,7			18,4
26.	United Kingdom	...	77,2			22,9
27.	Bulgaria	20,3*	77,5			1,5
28.	Romania	23,6	75,3			1,1

In the year 2005, the percentage for EU 25 dropped to 14.9.

*) 2001;

**) in the year 2002, the level of adult participation in EU 24 (without Malta) was of 7.9%.

Source Eurostat; Survey on Labour Force („Education et formation 2001), COM (2003) Doc.685, final, Brussels, 11.Nov. 2003.

Annex 19

Unemployment rate of persons with tertiary education (ISCED 5-6), on age groups and education levels in EU and member countries

Ord. no.	Country	ISCED 5-6		25-34 years			35-44 years			45-54 years			55-64 years		
		25-34 years	35-44 years	ISCED 5-6	ISCED 3-4	ISCED 0-2	ISCED 5-6	ISCED 3-4	ISCED 0-2	ISCED 5-6	ISCED 3-4	ISCED 0-2	ISCED 5-6	ISCED 3-4	ISCED 0-2
1.	EU 25	6,2	3,3	6,17	9,55	13,8	3,3	7,41	10,3	2,89	7,28	8,57	3,78	7,53	6,64
2.	Belgium	3,5	3,3	3,5	7,8	16,0	3,3	5,2	11,0	2,3	3,4	6,8	...	...	4,4
3.	Czech Rep.	2,0	1,1	2,0	6,7	27,0	1,1	5,3	22,0	1,5	5,0	14,0	2,1	3,5	11,0
4.	Denmark	5,2	3,5	5,2	2,9	...	3,5	3,0	8,2	...	3,5	...	...	4,9	...
5.	Germany	3,2	3,6	3,2	7,3	18,0	3,6	8,1	14,0	4,6	9,3	14,0	7,1	12,0	14,0
6.	Estonia	...	...	...	...	...	...	10,0	...	...	...	...	...	...	...
7.	Greece	13,0	3,4	13,0	14,0	12,0	3,4	8,1	8,2	...	4,7	9,6	...	...	3,8
8.	Spain	11,5	5,1	11,0	12,0	14,0	5,1	7,8	12,0	2,7	7,4	9,6	...	5,9	8,2
9.	France	6,2	4,8	6,2	8,7	20,0	4,8	7,8	12,0	3,4	5,6	8,9	4,5	5,6	5,5
10.	Ireland	2,4	...	2,4	3,7	10,0	...	...	6,2	...	...	4,7	...	...	...
11.	Italy	13,0	2,5	13,0	11,0	14,0	2,5	4,4	8,9	...	2,3	6,0	...	2,1	5,8
12.	Cyprus	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13.	Latvia	...	7,3	...	12,0	22,0	7,3	15,0	25,0	...	9,8	20,0	...	9,2	14,0
14.	Lithuania	6,9	...	6,9	13,0	25,0	...	14,0	...	...	16,0	21,0	...	12,0	...
15.	Luxemburg	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16.	Hungary	...	...	...	5,4	14,0	...	4,0	13,0	...	3,7	7,1	...	...	...
17.	Malta	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18.	The Netherlands	1,7	...	1,7	1,8	4,5	...	2,2	2,5	...	1,7	2,6	...	...	...
19.	Austria	2,3	1,8	2,3	4,5	11,0	1,8	4,0	6,7	...	4,8	7,9	...	6,4	8,3
20.	Poland	9,2	...	9,2	21,0	37,0	...	17,0	29,0	4,3	15,0	24,0	...	12,0	11,0
21.	Portugal	...	...	...	6,2	4,1	...	...	4,2	...	...	3,8	...	...	3,6
22.	Slovenia	...	...	...	6,2	...	...	...	...	...	...	...	...	...	...
23.	Slovakia	...	...	...	16,0	64,0	...	13,0	47,0	...	13,0	32,0	...	15,0	34,0
24.	Finland	5,7	2,9	5,7	10,0	18,0	2,9	7,1	12,0	3,1	8,3	9,5	5,2	8,1	8,9
25.	Sweden	3,7	2,5	3,7	4,9	9,5	2,5	4,0	6,0	2,0	3,4	3,6	1,9	5,2	5,1
26.	United Kingdom	2,8	2,3	2,8	4,3	8,3	2,3	2,8	6,8	2,1	2,8	5,0	1,9	3,5	3,9
27.	Bulgaria	10,9	5,9	11,0	18,0	36,0	5,9	15,0	30,0	6,2	15,0	25,0	...	15,0	20,0
28.	Romania	4,9	2,9	4,9	8,4	7,2	2,9	8,1	6,9	2,0	7,5	6,6	3,6	2,8	0,9

Note: United Kingdom: National Vocational Qualification (NVQ) at level 1 and General National Vocational Qualification (GNVQ) are included at level ISCED 0-2.

. The unemployment rate is computed by dividing the number of unemployed (of a certain age, education level) to the active population in the respective age groups, respectively education level.

The education levels are defined in accordance with the International Standard Classification of Education– ISCED 1997.

Source: Key Data on Education in Europe 2005, Section A, page. 41-43.

Annex 20

STRUCTURE OF THE EDUCATION SYSTEM IN ROMANIA FOR THE PERIOD 1990 – 2003

Age	Grades	ISCED	Educational level						
>18/19	Year								
		7	Post-university studies						Higher education
	VI	6	Long-term higher education						
	V								
	IV	5	Short-term higher education						
	III								
	II								
	I	4	Post-high-school education						Post-secondary education
	I - III								
		I + I/2							
	Grade					Year			
17/18	XII	3	High-school		Year	Vocational school	IV	Vocational education	Upper secondary education
16/17	XI			Apprenticeship school	III		III		
15/16	X				II		II		
14/15	IX				I		I		
13/14	VIII	2	Gymnasium				Lower secondary education	Compulsory general education	
12/13	VII								
11/12	VI								
10/11	V								
9/10	IV	1	Primary education						
8/9	III								
7/8	II								
6/7	I								
5/6		0	Pre-school education						
4									
3									

Source ETF – Romanian National Observatory, October 1998, Sistemul de educatie si formare profesionala in Romania: problematici si prioritati ale reformei in România (The education and vocational training system in Romania: issues and priorities of Reform in Romania)

Annex 21

STRUCTURE OF THE EDUCATION SYSTEM IN ROMANIA AFTER 2003

Age	Grades	ISCED	Educational level		Qualification level	Type
>19		6 5	Post-university education		5 4	Post-compulsory
			University education			
		4	Post-high-school education		3	
18	XIII	3		High-school- upper cycle	Upper- secondary education	3
17	XII		High-school- upper cycle	cycle		
16	XI			Completion years			2
15	X	2	High-school – lower cycle	School of Arts and Trades	Lower secondary education	1
14	IX					
13	VIII		Lower secondary school (Gymnasium)			
12	VII					
11	VI	1	Primary school		Primary education	-
10	V					
9	IV					
8	III					
7	II					
6	I					
5		0	Pre-school education		Pre-school education	
4						
3						

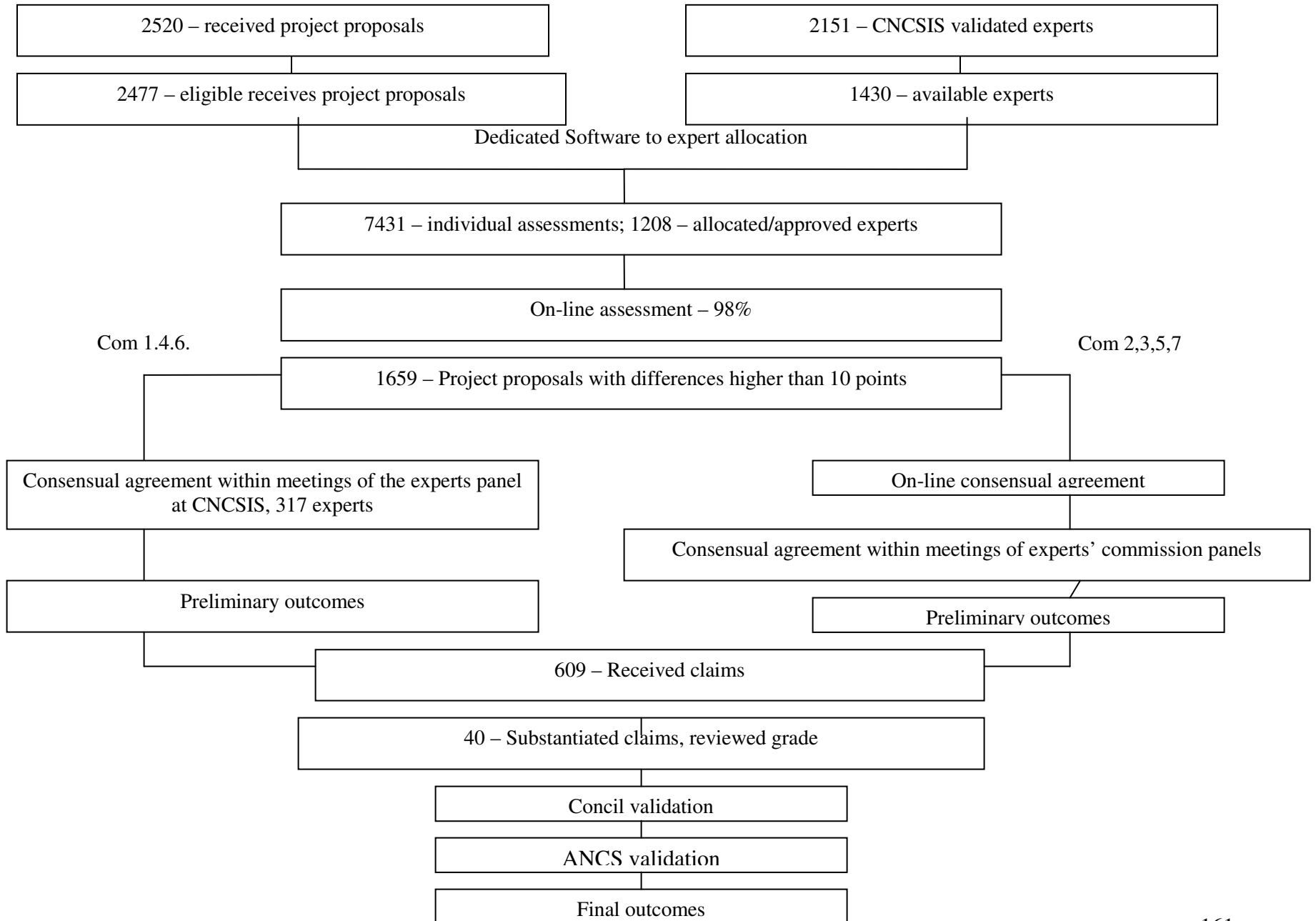
Source: ETF Sharing expertise in training – Monograph about education and vocational training and the employment services in Romania, 2003.

Annex 22

Participation rates of adults (25 to 64 years of age) to education and continuing vocational training in Europe

	2000	2001	2002	2003	2004	2005
EU 25	7,5	7,5	7,6	9,0	9,9	10,2
EU 15	8,0	8,0	8,1	9,8	10,7	11,2
Belgium	6,2	6,4	6,0	7,0	8,6	8,3
Bulgaria		1,4	1,2	1,3	1,3	1,3
Czech Republic			5,6	5,1	5,8	5,6
Denmark	19,4	18,4	18,0	24,2	25,6	27,4
Germany	5,2	5,2	5,8	6,0	7,4	7,7
Estonia	6,5	5,4	5,4	6,7	6,4	5,9
Ireland			5,5	5,9	6,1	7,4
Greece	1,07	1,2	1,1	2,6	1,8	1,9
Spain	4,1	4,4	4,4	4,7	4,7	10,5
France	2,8	2,7	2,7	7,0	7,0	7,0
Italy	4,8	4,5	4,4	4,5	6,3	5,8
Cyprus	3,1	3,4	3,7	7,9	9,3	5,9
Latvia			7,3	7,8	8,4	7,9
Lithuania	2,8	3,5	3,0	3,8	5,9	6,0
Luxemburg	4,8	5,3	7,7	6,5	9,8	8,5
Hungary	2,9	2,7	2,9	4,5	4,0	3,9
Malta	4,5	4,6	4,4	4,2	4,3	5,3
The Netherlands	15,5	15,9	15,8	16,4	16,4	15,9
Austria	8,3	8,2	7,5	8,6	11,6	12,9
Poland		4,3	4,2	4,4	5,0	4,9
Portugal	3,4	3,3	2,9	3,2	4,3	4,1
Romania	0,9	1,0	1,0	1,1	1,4	1,6
Slovenia		7,3	8,4	13,3	16,2	15,3
Slovakia			8,5	3,7	4,3	4,6
Finland	17,5	17,2	17,3	22,4	22,8	22,5
Sweden	21,6	17,5	18,4	31,8	32,1	32,1
Great Britain	20,5	20,9	21,3	26,8	29,4	27,5
Croatia			1,9	1,8	1,9	2,1
Island	23,5	23,5	24,0	29,5	24,2	25,7
Norway	13,3	14,2	13,3	17,1	17,4	17,8
Switzerland	34,7	36,0	34,4	24,7	28,6	26,9

Source: Eurostat – Labour Force Survey 2005



Annex 24

**Volume of financing projects by CNCSIS grants
in the period 2004-2007, on important university centres and total universities (thou lei)**

	Annual financing				Total financing
	2004	2005	2006	2007	2004-2007
1. Universities from Bucureşti	6185,1	8786,7	13453,8	12676,4	41102,1
2. Universities from Cluj	4175,7	6503,0	8645,0	8392,3	27716,0
3. Universities from Iaşi	3090,4	5198,5	7438,1	7519,0	23246,0
4. Universities from Timişoara	2115,6	2845,9	3157,2	2644,6	10763,3
5. University in Sibiu	129,3	325,2	301,2	328,3	1184,0
6. University in Tg. Mureş	40,4	83,7	107,6	326,3	558,0
7. University in Galaţi	179,1	250,9	277,2	268,3	975,5
Total 1-7	16015,6	23993,9	33380,1	31155,2	105544,8
8. Other universities	1303,2	2764,4	4463,3	8501,5	17032,4
TOTAL UNIVERSITIES	17318,8	26758,3	37843,4	40656,7	122577,2

Source: own computations based on CNCSIS data.

Annex 24

Distribution on universities of persons from state universities who published at least one ISI indexed article in the period 2001-2005 comparatively to the university staff.

University	Number of persons who published a minimum number of ISI articles			Number of professors	Number of lecturers	Total teaching and research staff	Percentage of teachers in total teaching and research staff	Percentage of persons who published a minimum number of ISI articles in total teaching and research staff		
	≥ 1 article	≥ 2 article	≥ 4 article					≥ 1 article (AM)	≥ 2 articles	≥ 4 articles
Total/average	4824	2410	1216	5531	4555	28040	20	17	9	4
University Babeş Bolyai	659	347	244	245	239	1285	19	51	27	15
University Bucureşti	792	432	233	355	252	1631	22	49	26	14
University Alexandru Ioan Cuza	449	244								
Polytechnic University Bucharest	750	416	200	532	348	1775	30	42	23	11
Technical University Gheorghe Asachi Iaşi	341	177	92	313	249	1002	31	34	18	9
Polytechnic University Timisoara	192	99	52	194	142	867	22	22	11	6
Technical University Cluj-Napoca	128	60	23	211	125	684	31	19	9	3
Universitatea de Vest	139	79	46	134	132	755	18	18	10	6
Oil and Gas University Ploieşti	68	38	15	64	71	372	17	18	10	4
UMF Tg.Mureş	63	10	1	43	46	377	11	17	3	0
UMF Iuliu Haţieganu	109	43	14	90	118	670	13	16	6	2
UMF Carol Davila	190	55	22	150	143	1407	11	14	4	2
UMF Victor Babeş	87	25	6	95	76	710	13	12	4	1
University Dunărea de Jos	83	36	12	148	170	727	20	11	5	2
UMF Grigore T.Popa	103	33	11	157	111	908	17	11	4	1
USAMV a Banatului	36	14	6	73	53	320	23	11	4	2
University Bacău	25	19	3	39	33	239	16	10	8	1
USAMV Cluj Napoca	24	5	1	68	42	239	28	10	2	0
UMF Craiova	36	13	2	51	57	363	14	10	4	1
University Valahia	30	15	11	46	43	347	13	9	4	3
Universitatea de Nord	18	1	4	32	43	211	15	9	5	2
SNSPA	8	3	0	23	20	104	22	8	3	0
University Ovidiu	51	28	16	75	93	701	11	7	4	2
University Piteşti	32	18	11	69	58	455	15	7	4	2
University Constantin Brâncuşi	9	3	2	24	20	140	17	6	2	1
University Craiova	141	80	45	508	440	2264	22	6	4	2
University Transilvania	58	22	6	264	131	935	28	6	2	1
University Aurel Vlaicu	23	7	5	56	60	371	15	6	2	1
University Petroşani	12	6	5	52	60	214	24	6	3	2
USAMV Bucureşti	20	9	3	82	73	402	20	5	2	1
University Oradea	56	30	16	110	123	1353	8	4	2	1
University Lucian Blaga	27	13	5	126	116	701	18	4	2	1
National Academy Mircea cel Bătrân	3	0	0	9	22	90	10	3	0	0
Technical Constructions University Bucureşti	30	6	1	148	138	926	16	3	1	0
National Arts University	5	3	0	23	20	157	15	3	2	0
USAMV Ion Ionescu de la Brad Iaşi	6	1	1	52	36	193	27	3	1	1
Maritime University	2	0	0	17	10	68	25	3	0	0
University Petru Maior	3	2	0	31	21	145	21	2	1	0

European Institute of Romania – Strategy and Policy Studies (SPOS 2007)

Technical Military Academy	2	0	0	29	36	113	26	2	0	0
Land Forces Academy Nicolae Bălcescu	1	0	0	7	8	75	9	1	0	0
Academy of Economic Studies	10	6	2	250	119	926	27	1	1	0
University Stefan cel Mare	2	2	0	44	44	329	13	1	1	0
University 1 Decembrie 1918	1	0	0	24	26	178	13	1	0	0
University Eftimie Murgu	0	0	0	17	15	87	20	0	0	0
Architecture and Urbanism University Ion Mincu	0	0	0	35	41	292	12	0	0	0
National Music University	0	0	0	50	37	177	28	0	0	0
National Academy of Physical Education and Sport	0	0	0	16	20	91	18	0	0	0
Arts University George Enescu	0	0	0	19	26	134	14	0	0	0
Arts and Design University	0	0	0	5	13	71	7	0	0	0
National University of Theatrics and Movie Arts I.L.Caragiale	0	0	0	28	25	134	21	0	0	0
Theatrical Arts University Tg. Mureş	0	0	0	2	7	31	6	0	0	0
Police Academy Al. I. Cuza	0	0	0	15	25	168	9	0	0	0
National Defence Academy	0	0	0	25	21	113	22	0	0	0
National Information Academy	0	0	0	10	10	42	24	0	0	0
Air Force Academy Henri Coandă	0	0	0	2	6	21	10	0	0	0

Note: The data about the universities' staff are from the White Paper of University Research in Romania, edited by CNCIS in 2005. The values referring to the persons publishing ISI articles are approximations and there can be relative errors of up to 10%.

Source: Florian, R., *Oameni de Ştiinţă din România şi recunoaşterea rezultatelor*, Ad Astra (1), 2006, pp.6-9.

Annex 25

Distribution on scientific areas of persons in Romania who published ISI indexed articles in 2001-2005

Area	Number of persons									
	All institutions					Universities				
	≥1 article	≥2 articles	≥3 articles	≥4 articles	≥5 articles	≥1 article	≥2 articles	≥3 articles	≥4 articles	≥5 articles
Mathematics	476	323	211	149	115	340	231	145	103	76
Physics	2416	1939	1429	1133	943	1008				
Chemistry	2696	2175	1446	1230	997	1713	1389	939	810	655
Computer Science	245	125	75	52	38	181	94	59	42	30
Biology	553	292	131	83	45	297	154	65	38	27
Geography	32	30	20	5	3	20	20	13	4	2
Geology	159	85	49	30	21	66	36	21	12	9
Environment science	101	56	41	26	17	22	14	9	6	5
Aero-spatial engineering	5	2	2	2	0	1	0	0	0	0
Chemical engineering	46	32	23	18	15	29	20	17	12	11
Civil and constructions engineering	23	20	9	5	3	18	15	8	5	3
Electric, electronic and telecommunications engineering	176	119	72	56	42	134	81	53	40	32
Power engineering	6	6	3	3	2	5	5	2	2	1
Nuclear technology	64	42	34	28	24	9	9	9	6	6
Geologic engineering	0	0	0	0	0	0	0	0	0	0
Industrial engineering	59	55	10	9	3	44	40	6	6	1
Materials engineering	563	326	270	230	200	297	158	124	104	88
Mechanical engineering	25	10	4	3	2	22	10	4	3	2
Environment engineering	0	0	0	0	0	0	0	0	0	0
Naval engineering	0	0	0	0	0	0	0	0	0	0
Transports engineering	0	0	0	0	0	0	0	0	0	0
Automation, robotics	12	5	3	3	3	9	5	3	3	3
Mines, oils and gas	0	0	0	0	0	0	0	0	0	0
Biomedical engineering	8	7	3	3	0	0	0	0	0	0
Instruments, imagistic, multidisciplinary engineering	24	5	4	3	2	18	5	4	3	2
Architecture and urbanism	0	0	0	0	0	0	0	0	0	0
Medicine and pharmacy	715	223	112	79	57	302	90	44	29	20
Agricultural and forestry sciences	31	8	8	3	2	6	2	2	1	1
Veterinary medicine	20	2	1	0	0	15	1	1	0	0
Economy and business	13	5	3	2	2	12	4	3	2	2
Psychology, education sciences	33	3	1	1	1	33	3	1	1	1
Sociology, political sciences, journalism	9	2	2	1	0	6	2	2	1	0
Philosophy	5	0	0	0	0	5	0	0	0	0
Language and literature	21	5	3	1	0	18	3	3	1	0
History	10	0	0	0	0	9	0	0	0	0
Cultural studies, folklore	4	0	0	0	0	4	0	0	0	0
Religion	39	10	1	0	0	34	10	1	0	0
Law	2	1	0	0	0	0	0	0	0	0
Arts	2	0	0	0	0	0	0	0	0	0
Sports sciences	4	0	0	0	0	2	0	0	0	0

Note: The columns indicate the number of persons who published at least n indexed articles in the five years taken into account, where n is between 1 and 5. General data are presented as well, as are data regarding scientists from universities. An article can be considered as pertaining to several fields, and the same person may publish articles in multiple fields, cases in which the respective author is counted in the field where most articles were published. The data are approximations and there can be relative errors of up to 12%.

Source: Florian, R., *Oameni de Știință din România și recunoașterea rezultatelor*, Ad Astra (1), 2006, pp.9-10.

Annex 26.

Revised methodology and indicators of innovation used within EU

European Innovation Scoreboard (EIS) covers 27 Member States, Croatia and Turkey, the associated countries Island, Norway and Switzerland, as well as USA and Japan. The EIS indicators synthesize the main elements of innovation performance.

In 2005, EIS was revised in cooperation with the Joint Research Centre (JRC)¹²⁸. The number of categories of indicators increased from four to five and the set of innovation indicators was changed and increased to 26. The methodological EIS report 2005 available on the Trend Chart website¹²⁹ describes and explains in detail all changes. The IES 2006 Report adopted almost integrally the methodology from the year 2005 save for the following three changes:

- eliminating indicators measuring the share of university RDI expenditures financed by the business sector;
- the indicator regarding public RDI expenditures (or GOVERD) and the university RDI expenditures (or HERD);
- the indicator EIS 2005 regarding the share of SMEs that do not use technological change had to be altered with the share of SMEs using organizational innovation following the improvements introduced by Community Innovation Survey (CIS3) and (CIS4).

The innovation indicators are conceived on five dimensions and grouped on two main topics: inputs and outputs. Innovation inputs include three dimensions:

- **Innovation drivers** (5 indicators), which measure the structural conditions required by the innovation potential;
- **Knowledge creation** (4 indicators), which measure the investments in RD activities for the success of the knowledge-based economy;
- **Innovation & entrepreneurship** (6 indicators), which measure the innovation efforts at company level.

Innovation outputs include two dimensions:

- **Applications** (5 indicators), which measure the performance expressed in the terms of activities regarding labour and business and their value added in their innovative sectors;
- **Intellectual property** (5 indicators), which measure the outcomes obtained in terms of successful know-how.

The table below¹³⁰ indicates the 5 main categories, 25 indicators and the source of primary data for each indicator¹³¹.

EIS Indicators 2006

INPUT – Innovation driver		
1.1.	Graduates in 1000 inhabitants aged from 20-29 years	EUROSTAT
1.2.	Population with tertiary education in 100 persons aged between 25-64 years	EUROSTAT, OECD
1.3.	Broadband penetration rate (number of broadband lines for 100 persons)	EUROSTAT
1.4.	Participation to lifelong learning by 100 persons aged between 24 and 64 years	EUROSTAT
1.5.	Schooling level of young persons (in 100 persons aged between 20 and 24 years who graduated at least high-school)	EUROSTAT
INPUT – Knowledge creation		
2.1.	Budgetary expenditures - RD (share in GDP)	EUROSTAT, OECD
2.2.	Business expenditures - RD (share in GDP)	EUROSTAT, OECD
2.3.	Share of high-tech RD expenditures	EUROSTAT, OECD

¹²⁸ Joint Research Centre (JRC), anti-fraud statistical and econometric support unit of the Institute for Citizens Protection and Safety .

¹²⁹ See <http://www.proinno-europe.eu/inno-metrics.html>

¹³⁰ In annex C are the definitions and explanations of indicators.

¹³¹ Where there were no EUROSTAT or OECD data were available, national data sources were used. The statistical offices from Malta and Switzerland provided credible data.

2.4.	Share of enterprises benefiting of public financing for innovation	EUROSTAT, (CIS4)
INPUT – Innovation and entrepreneurship		
3.1.	Innovative SMEs (share in total SMEs)	EUROSTAT, (CIS3) ¹³²
3.2.	Innovative SMEs cooperating with other partners (share in total SMEs)	EUROSTAT, (CIS4)
3.3.	Innovation expenditures (share in turnover)	EUROSTAT, (CIS4)
3.4.	Invested capital (share in GDP)	EUROSTAT
3.5.	Expenditures for ICT (share in GDP)	EUROSTAT
3.6.	SMEs using organizational innovation (share in total SMEs)	EUROSTAT, (CIS4)
OUTPUT - Applications		
4.1.	Employment in the high-tech services sector (share in total employment)	EUROSTAT
4.2.	Export of high-tech products as share in total exports	EUROSTAT
4.3.	Sale of new products on the market (share in turnover)	EUROSTAT, (CIS4)
4.4.	Sale of new products of the company (share in turnover)	EUROSTAT, (CIS4)
4.5.	Employment in the high-tech technology sector (share in total labour force)	EUROSTAT
OUTPUT – Intellectual Property		
5.1.	Number of EPO brevets per one million inhabitants	EUROSTAT
5.2.	Number of USPTO brevets per one million inhabitants	EUROSTAT, OECD
5.3.	Brevet families per one million inhabitants	EUROSTAT, OECD
5.4.	Number of registered trade marks per one million inhabitants.	OHIM ¹³³
5.5.	Number of registered designs per one million inhabitants.	OHIM ⁵

¹³² There are no EUROSTAT data available for the share of innovative SMEs in the case of CIS4.

¹³³ The Office for the harmonization of the internal market (trade marks and designs).

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