What Knowledge-based Society in Europe?

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By its conceptual construction, Europe is the best environment for the proliferation of knowledge and technology based communities and individuals. Creating the appropriate economic and institutional framework that provides incentives for the efficient use of local and global knowledge, that fosters technological entrepreneurship, and that permits rapid adaptation in firms, institutions and markets is a daunting challenge for any country, and particularly so for the new EU member countries. Knowledge, innovation, technology and the new economy became for same time the new issues of the European policies. The purpose of his paper is to present some aspects regarding the state of knowledge society creation in EU member states and to highlight the challenges for the new member states and accession countries.

Keywords: knowledge society, knowledge economy, innovation.

Knowledge is information with meaning and information that acts, according to Mihai Drăgănescu¹. That is why the knowledge society can only be based on the information society, but it is much more than it due to the new role of the information, that becomes knowledge in the society. The features of the knowledge society, proposed by the same author:

- Expansion and deepening of the scientific knowledge;
- Management and usage of the existing knowledge in the form of technological and organisational knowledge;
- Producing new technological knowledge by innovation;
- Extensive dissemination of knowledge using new means (Internet, e-books) and usage of electronic learning methods;
- A new economy in which innovation is paramount; the influence of the Internet as a market and acknowledging the intangible assets value importance, especially knowledge are characteristics of the new knowledge economy;

- Is global and a factor of the globalisation;
- Is essential in ensuring an ecologically sustainable society.

The Lisbon strategy, which states that EU will become "the most dynamic and competitive knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion, and respect for the environment by 2010\(^1\), was adopted by the European Council in 2000.

Although some progress was made on innovating Europe's economy, there is growing concern that the reform process is not going fast enough and that the ambitious targets will not be reached (the Kok Report in November 2004). After the recent global economic downturn, governments seem to have been reluctant to push through difficult and unpopular economic reforms or to focus on increasing their national budgets for research and innovation. Many economists claim that, as a result, the EU has lost valuable ground on its main competitors, the US and Japan\(^2\).

In July 2005, the Commission presented a 'Community Lisbon programme', a list of fifty measures grouped under eight "key measures with a high European value-added"\(^3\): supporting knowledge and innovation; reform of state aid policy; simplification of the regulatory framework; completion of the internal market for services; global agreement on the Doha round; removal to obstacles to physical, labour and academic mobility; developing a common approach to economic integration; supporting efforts to deal with the social effects [e.g. job losses] of economic restructuring.

In its January 2006 first annual progress report\(^4\) on the Lisbon strategy, the Commission has defined four priority areas where more action is needed: more investment in education and research, more support for SMEs and higher employment rates and the new idea, which was up to now not part of the Lisbon strategy, the need to define a common EU energy policy.

The Commission publishes every year a European Innovation Scoreboard (EIS). The 2004 report covers the 25 EU member states, Bulgaria, Romania and Turkey, the associated countries Iceland, Norway and Switzerland, as well as the US and Japan.


The 2004 annual scoreboard shows some interesting results:\(^1\):

- On average, EU member states are less innovative than the US and Japan and the gap is expanding further, especially in the areas of patenting, working population with tertiary education and public R&D expenditure;

- However, the Nordic countries are outperforming the US and Japan on several indicators and also Germany is a high performer amongst EU countries;

- Portugal, Cyprus, Ireland, Latvia and Slovakia are the countries with the best recent progress in innovation but they started from low starting points;

- The correlation between innovation performance and GDP is not always very strong and may point to the need for differentiated policy strategies to translate innovation into economic growth;

- The non-technical dimension of innovation (changes in management or work organisation) plays an essential role in explaining the advance of the US over Europe on productivity growth. "Non-technical innovation may well be the 'missing link' that prevents Europe from taking full advantage of new technological opportunities";

- There are large differences in the innovativeness of specific sectors: the electrical and optical equipment sector is the EU’s most innovative one, where textiles is the least innovative sector.

In a 2006 report prepared for the 2007 EU Spring Council\(^2\) the authors identify two trends of the future of the innovation policy in Europe:

- Europe has developed knowledge based industries comparable in employment terms with the US but has failed to make the underpinning knowledge investment in areas such as R&D, ICT software and higher education;

- R&D must be increased, but targets must be realistic and have a clear justification.

Since the concept of information society is an important building block of the knowledge society, it is important to assess to level of former s development in the EU candidate countries and new member states. The eEurope+ Action Plan (launched in 2001 at the Göteborg European Summit), part of the Lisbon strategy, aims to help accelerate reform and modernisation of the economies in the EU candidate countries, en-


courage capacity and institution building, improve overall competitiveness, and enhance social cohesion.

The results presented in the first progress report (presented in 2002) on the implementation of the eEurope+ Action Plan show that the information society is already very present in EU candidate countries and it is the subject of considerable political interest due to its potential for the economies and societies in the countries. These are some of the initial policy conclusions:

a) All candidate countries have undertaken a clear and tangible political commitment to progress the implementation of the Information Society with the aim to make use of its full potential to modernise their economies and societies and reduce the digital divide. However, substantial work remains as the Information Society is a fast-moving, complex target to achieve and constant and focused political attention is essential.

b) Over the last years, the candidate countries have made great strides in basic access to communications: the average percentage of households that have fixed telephony service is closing in on the EU average, mobile penetration rates are very high and often substantially higher than fixed line penetration.

c) However, there remain substantial problems in the potential use of these technologies for access to Internet.

d) With a few exceptions, there is still a low penetration of computers in schools. In addition, there is substantial divergence between the countries for all three levels (primary, secondary, and tertiary). It seems that about half of the computers in the schools are connected to Internet, in some countries with a very high-speed connection via national research networks.

e) Significant progress is made in the provision of public on-line services through eGovernment actions in all of the candidate countries. In this way, local and federal government plays an important role as a major provider of services, boosting local, multi-lingual content, providing important impetus to eCommerce transactions because of eProcurement initiatives. In a next phase, candidate countries should also give consideration to the possibility for citizens, enterprises and administrations to have access, where appropriate, to the pan-European e-services of any European public administration in a seamless way.

Furthermore, important issues for the next phase of the eEurope+ action plan are: the completion of the implementation of the EU acquis relevant to the Information Society, in particular in relation to eCommerce as a pre-condition in creating trust and confidence in the use of Internet-based transactions; the introduction of alternative Internet access technologies; the provision of computers to schools and their connection to Internet, accompanied by appropriate curricula and training of teachers; increasing the number of public access points to ensure greater participation for all; and the further de-

Some of the trends associated with the knowledge society concept include\footnote{“The puzzle of the knowledge society”(2004), http://www.eurofound.eu.int/pubdocs/2005/134/en/1/ef05134en.pdf}:

- The ongoing evolution of the information society and its related shift towards networked computing power, compared to earlier generations of stand-alone and one-to-one computing;

- The increasing importance of innovation as a source of competitiveness and as an instrument for increasing the efficiency and effectiveness of organisations of all types. Innovation can be defined as the widespread application of knowledge to establish new ways of doing things;

- The development of service economies, a notion at the heart of ‘post-industrialist’ theories, which tended to stress the role of service sectors in delivering intangible products to specific clients (especially information processing and human interaction);

- Social learning – a concept that involves substantial investment in improving education and training, and in determining what type of skills and knowledge are socially and economically important. At a policy level, the idea of ‘lifelong learning’ has been widely recognised as a key priority, with particular emphasis on enabling people to become adaptable and to acquire new skills and knowledge, making them more informed workers, citizens, and consumers;

- Challenges associated with globalisation, which stimulate the above trends and which further reinforce the trend towards globalisation.

In ranking the countries according to how well they accomplished the Lisbon strategy targets the results showed that on top are the Nordic countries, the UK and the Netherlands, in the middle group are the main continental countries, and in the least advanced country group, the Mediterranean countries. The new Member States were not involved in the study\footnote{“The puzzle of the knowledge society”(2004), http://www.eurofound.eu.int/pubdocs/2005/134/en/1/ef05134en.pdf}. 

Among the countries examined, Finland was selected to represent the forerunner countries, Germany the average countries and Greece the least advanced countries. In addition to group and individual differences, there were differences in national perceptions, which were summarised as follows:

- In the Nordic European countries, the knowledge society was very much related to the welfare society and to equal opportunities. The knowledge society was seen in a positive light and as a source of opportunities.

- In the middle European countries, the knowledge society was associated with economic growth and discussed in a practical and technically oriented way, although not as future-oriented as in the Nordic countries.

- In the southern European countries, the knowledge society was much more related to people’s relationships with each other, friends and family. In this sense, it was seen in quite a negative light, as something that would destroy old traditions and structures and that would demand increased modernisation.

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<tr>
<th>Swot of Finnish knowledge society model&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Swot of German knowledge society model&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Swot of Greek knowledge society model&lt;sup&gt;3&lt;/sup&gt;</th>
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<tr>
<td><strong>Strengths</strong></td>
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<tr>
<td>- new media tradition;</td>
<td>- innovation ability;</td>
<td>- high growth rates;</td>
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<td>- good training possibilities;</td>
<td>- great willingness to engage in self-directed</td>
<td>- ‘EU-optimists’, flexible, open to trying out</td>
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<td>- high innovation ability;</td>
<td>learning;</td>
<td>new things, easily adjust to new circumstances</td>
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<td>- high standard of living;</td>
<td>- flexible work forms appreciated by many;</td>
<td>and are able to survive under difficult condi-</td>
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<td>- flexible labour market;</td>
<td>- good broadband access.</td>
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<td>- high educational level;</td>
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<td>- highly trained scientific and technologi-</td>
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<td>- strong efforts to make all citizens ICT</td>
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<td>cal workforce;</td>
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<td>literate;</td>
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<td>- high equality (regional, national,</td>
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<td>international)</td>
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<sup>1</sup> “The knowledge society in Finland” (2004),

<sup>2</sup> “The knowledge society in Germany”, (2004),

<sup>3</sup> “The knowledge society in Greece”, (2004),
<table>
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<tr>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Weaknesses</th>
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<tbody>
<tr>
<td>• high unemployment rate;</td>
<td>• investment in R&amp;D;</td>
<td>• not clear if the preconditions exist to ensure development or is the</td>
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<td>• low entrepreneurship level;</td>
<td>• innovative and highly educated</td>
<td>country just sporadically reacting to external pressures;</td>
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<td>• low PC availability in</td>
<td>workforce;</td>
<td>• the quality of life concept is not integrated in people’s everyday lives;</td>
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<td>schools;</td>
<td>• social innovations may lead to a</td>
<td>• the social dialogue, communication, coordination ad</td>
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<tr>
<td>• low level of business</td>
<td>future innovative business cluster;</td>
<td>collaboration between the actors involved is only effective to a certain</td>
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<td>education and apprenticeship</td>
<td>• immigration and emigration increase</td>
<td>extent;</td>
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<tr>
<td>training;</td>
<td>mobility of workforce and multicultural</td>
<td>• not flexible labour market;</td>
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<td>• stressful working life;</td>
<td>life;</td>
<td>• high unemployment rate.</td>
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<td>• early retirement and sick</td>
<td>• welfare society discourages social</td>
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<td>leave increasing.</td>
<td>exclusion and polarisation, enabling</td>
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<td>Finland to utilise all its potential</td>
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<td>social capital;</td>
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<td>• government willing to accomplish tax</td>
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<td></td>
<td>and social security reforms to maintain</td>
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<td>competitiveness;</td>
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<td>• user-friendly ICT might ease daily</td>
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<td>work and prevent special groups from</td>
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<td>being excluded from the knowledge</td>
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<td>society;</td>
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<td>• expenditure on education is</td>
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<td>relatively high;</td>
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<td>• the use of new technologies is</td>
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<td>considered important.</td>
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<td>• education system lagging behind;</td>
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<td>• electronic media insufficiently</td>
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<td></td>
<td>included in education;</td>
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<td>• rising unemployment.</td>
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- strong indication that knowledge society aspects will have to be taken into account in every field in the near future.

<table>
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<tr>
<th>Threats</th>
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<tbody>
<tr>
<td>risk of rising social exclusion if unemployment rate does not drop;</td>
<td>poorly educated new generation of workers reduces Germany’s innovation ability;</td>
<td>a gap between the knowledge and skills provided and those required by the market;</td>
</tr>
<tr>
<td>increasing labour shortage as baby boom generation retires;</td>
<td>high unemployment prevents the necessary economic boost;</td>
<td>not sufficient willingness to take risks;</td>
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<tr>
<td>lack of innovativeness;</td>
<td>R&amp;D threatened by sluggish economy and budget consolidation.</td>
<td>conservative organizational culture of Greek enterprises and public institutions.</td>
</tr>
<tr>
<td>competitiveness based on ICT production;</td>
<td>risk of welfare society crashing, if tax and social security reforms are not accomplished;</td>
<td>productivity increase mainly in the hands of the ICT sector;</td>
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<tr>
<td>risk of welfare society crashing, if tax and social security reforms are not accomplished;</td>
<td>rising risk of vulnerability due to increasing use of technology.</td>
<td>continuous investment in updating ICT may become very expensive for Finnish society.</td>
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</table>

These results may partly explain the reason for different speeds and levels of advancement of the knowledge society within the EU-15.

Concerning Romania’s level of development of the knowledge society the following SWOT analysis was based on the insight of Filip et. al 2001 study¹:

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Strengths

- Relatively high skilled and low cost workforce;
- Increasing ICT usage in schools, firms and social life;
- Information Society Technologies’ sector is very dynamic;
- Increasing growth of RDI expenditure;
- Economic growth recorded during the past 5 years and the optimistic medium term forecasts.

Weaknesses

- Increasing need to improve the quality of education and correct the mismatch between the skills that the education system produces and the labour market demand;
- Accelerated brain-drain of highly-skilled graduates;
- Low participation rates in secondary and tertiary education and in adult learning in rural areas;
- Investment in telecommunication infrastructure is still insufficient;
- RDI expenditure is far below EU average.

Opportunities

- Increase of competition and larger foreign investments brought by the Romania’s accession to the EU;
- e-Learning services have been developing in Romania at a swift pace;
- Promoting e-governmental services.

Threats

- Current economic competitiveness of ICT sector in Romania is rather determined by low wages than by innovation;
- Lack of a consistent policy to promote an innovative culture;
- Negative trends for business R&D expenditure;
- Lack of cooperation between research institutes and industry.

Conclusions

The knowledge economy has most commonly been defined\(^1\) in terms of technology and knowledge based industries reflecting R&D intensities, high ICT usage, and the deployment of large numbers of graduates and professional and associate professional workers. Building the four pillars of the knowledge economy: education and training – an educated and skilled population, a dynamic information infrastructure, economic incentive and institutional regime – enables the free flow of knowledge, supports investment in information and communications technology, and encourages entrepreneurship,
innovation systems – viable networks of research centres, universities, think tanks, private enterprises and community groups\(^1\) proves challenging.

In building the knowledge based economies the accession countries and the new EU members must first get the fundamentals right. Coherent, consistent, and predictable legal, regulatory and policy frameworks are essential to creating an environment for innovation, foreign investment, and growth of a vibrant private sector, the key driver of a competitive knowledge-based economy. Equally important is finding the proper balance between the role of the government and private sector initiative in driving innovation and creating new economic opportunities. Its role is to create the conditions for fair competition, investment and trade; to promote sound macroeconomic and fiscal policies; and to address, in partnership with the private sector, key structural constraints on economic growth, including issues of infrastructure and human capital. The most competitive countries are those that create favourable conditions for continuous, market-driven and private sector-led innovation.

The knowledge society is still an elusive concept and an emerging reality. The EU-15 members' experience showed that there is not one viable model but several and that specific country conditions may prove to be assets or liabilities in the new context.

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