

The Role of Post-Graduate Education in Research Systems

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Position Paper

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I. Introduction: Challenges for Post-Graduate Education

Today, post-graduate education faces multiple challenges in terms of demand, supply, quality and returns, both for providers and the clientele concerned. Why students decide to pursue this level of study and the incentives offered by institutions and employers are critical factors in changing and understanding trends.

It is thus important to effect a stocktaking of trends in post-graduate research, primarily with regard to the changing content and structure of advanced research degrees, but also taking into account the impact of this with regard to the origins, profiles and choices of the students concerned. This topic links to the UNESCO Forum's mandate to monitor research management in relation to *innovative policy-making, infrastructure, human capacities and investment*.

The current landscape of advanced degrees is increasingly varied. This has resulted from the many changes and developments in recent years within the Higher Education sector where supply must adapt to more diverse demand. On one hand, research degrees continue to denote advanced study in a chosen discipline with a view to the pursuit of an academic career; in this respect expertise in research methodology and investigative skills are acquired. On the other hand, there is a growing demand for Masters and doctorates related to a specific field of professional activity such as business studies or administration. Though sometimes referred to as "taught qualifications" which may be undertaken concurrently with actual workplace activity, these involve a certain degree of research both for the professors and the students involved.

This trend has already become commonplace in Europe and, more widely, in OECD countries. However, there is still much to be learnt about such degrees as they are emerging in other regions of the world. Here again demand is driving supply and national systems are facing increased pressures to rapidly modernize and adapt to the growing interest in these types of qualifications. The issue of quality assurance and measures to ensure this constitute another dimension of this shifting landscape.

An attendant area of interest is the impact of these new degrees on the mobility patterns of students. Traditionally, there are five main receiving countries for international study: USA, UK, Germany, France and Australia. However, with the exponential growth of higher education provision and an ever increasing climate of competition, other countries are emerging as desirable study destinations. Questions also arise concerning the optimal location for these new types of advanced degrees in order to balance exposure to international expertise with the acquisition of skills and knowledge directly related to national contexts – hence the upsurge in off shore campuses to train local experts.

Against this background, five main areas merit special attention:

- *Challenges for students researching advanced degrees in developing countries (notably in scientific fields)*
- *The research component in “in demand” degrees which are awarded on the basis of taught courses*
- *The current advantages offered by open and E-learning with regard to the demand for advanced degrees*
- *The benefits of “jointly delivered” advanced degrees which aim for rapid and quality credentials*
- *The impact of branding and networking strategies for advanced degrees earned from research-reputed universities.*

These areas have features which are often closely linked because they relate to the need for all countries to be competitive in a globalised economy. To do so they must ensure that their own knowledge system (including the critical human capital component of this) remains of the highest calibre or that it is renovated to perform with greater impact.

In reviewing these aspects, the Dublin workshop will address various questions, inter alia:

What are the objectives of national policies related to academic qualifications which may aim to balance the pursuit of scholarship and research with the acquisition of more practical credentials aimed at providing expertise for the labour market?

What type of institutional infrastructure is needed to offer various types of academic qualifications, whether traditional or innovative? This may involve institutions of higher learning taking a more entrepreneurial approach toward the development of niche markets and a response to demand via innovative learning methods such as Open and Distance Learning (ODL).

Which students are seeking this level of study and how are new types of research degrees affecting the traditional mobility patterns (notably the movement from south to north)?

What are the main financial aspects related to this level of study, including the costs involved for the students?

What is the impact of the emerging “caste” systems of higher education institutions caused by ranking exercises?

What are the challenges for the research component of advanced qualifications, whether traditional or more market-oriented in nature?

This paper will comment on these aspects in relation to post-graduate studies as a component of national human capital policies.

II. Post-Graduate Education: A Key Source of Human Capital

- *Building Knowledge Societies*

The last decade of the 20th century witnessed a process of swift and irrevocable change leading to what is now understood to be the third industrial revolution – the advent of new technologies which have facilitated the ongoing march of globalisation. Today the Knowledge Society and the Knowledge Economy place cognitive resources at the centre of human activity and of social dynamics. This situation thus has critical implications for a country's human capital base: its citizens and workers.

What is a Knowledge Society? UNESCO's 2005 report *Towards Knowledge Societies* defines this entity as "... a society that is nurtured by its diversity and its capacities." (UNESCO: 17). Therefore access to education and training for all is clearly the right of all citizens and an obligation for governments. Furthermore each society already has its own kinds of knowledge assets which should be recognised and protected so as to link with the new forms of knowledge promoted by the Knowledge Economy. There are several important guiding principals:

- *This sort of society must foster knowledge sharing*
- *ICT creates new opportunities for reaching this objective*
- *Knowledge Societies are wider and richer than the narrower Information Societies*
- *This society can offer a fresh and relevant approach for the development of countries of the south.*

The UNESCO report considers the foundations for building Knowledge Societies as:

- Ensuring access to information and freedom of expression for all thereby confirming that policies must be based on equity and openness, not just on ICT availability;
- Networking people, their knowledge and their communities via ICT
- Fostering societies where learning can take place in a variety of contexts both formal and informal, thus necessitating new and flexible education systems
- Facilitating lifelong education for all via learning opportunities for all ages
- Protecting the quality and relevance of higher education systems and their institutions. These play a vital role in knowledge societies
- Promoting equitable access to high level research notably in R&D and in science and technology fields. These fields are motors for prosperous societies
- Broadening public awareness and debate on the ethics of science and technology which often leads to complex questions affecting ethical standards
- Understanding the aspects of risk and human security as facets of the knowledge society requiring special attention so as to safeguard the well being citizens
- Recognizing the value of local and indigenous knowledge including linguistic and cultural diversity as legitimate and significant factors in today's knowledge society

- Moving from access for all citizens towards active participation in knowledge societies in order to govern and shape their positive evolution.

In this context human capital assumes new importance because people must possess the necessary capacities to direct their communities as they continue to develop in a globalised world.

Post-graduate education constitutes a particular investment – whether personal or national – in human capital. Its overall objective is to educate highly skilled citizens and professionals able to address the specific issues of their national contexts as part of a wider globalised society. The wealth drawn from people and from their expertise and talents forms a base for finding viable solutions to the issues of sustainable human development – particularly in poverty reduction, wide access to health care, education for all, population, good governance, equitable arrangements for globalised economic trends, trade patterns and so on. For the United Nations these issues are encapsulated in the 2000 Millennium Development Goals (MDGs) which set the development agenda for the first two decades of the 21st century. This provides that progress would be more equitable for all countries. (*See Annex 1*)

- *A Global Picture of Human Capital Issues*

Strengthening education, training and skills is a policy with universal support but one which involves major challenges over a wide range of related areas (*inter alia*, health, economic growth, labour markets, IT connectivity, immigration policies, security levels, and so on). The obstacles facing countries in the developing world are particularly complex.

Of the world's 195 countries, the 25 nations of the OECD bloc command the prime economic advantages, although they have only 10% of the global population. Correcting this discrepancy, known as the 10/90 gap is now a central issue for arriving at more equitable levels of human development in the areas defined by the Human Development Index (HDI).

However, an increasing number of middle and low-income nations are posting very positive results as a consequence of their commitment to innovative policies in the fields concerned. The socio-economic progress resulting from these new approaches could well be replicated on a wider scale as other countries see the tangible benefits produced.

The following statistics illustrate the challenges facing countries in various areas which are vital components of the Knowledge Society:

- *Education Policies*

Education for all goals is most urgent in the E9 countries (i.e. those with the biggest populations with very large youth cohorts - Egypt, Nigeria, India, Bangladesh, Pakistan, China, Indonesia, Mexico and Brazil). For example Egypt has 40 million citizens under 20 years of age - i.e. 60% of the population which requires education and training in the immediate future.

- In Higher Education the world's leading Research Universities (known as the Super RUs) are mainly located in one country (the USA).
- Increasingly countries are adopting dual track Education policies to address the twin challenges of wider access and the development of research capacity (e.g. China, Nigeria and Pakistan)

- *Investing in Human Capital via Education**
- *Expenditure on education as part of the GNP:* Malaysia and Tunisia now spend more than OECD countries; Thailand 25%, Madagascar 24%, Ukraine 18%, St Lucia 16%, Lesotho 13%, Congo 85, Chad 2%
- *Enrolment in tertiary education :* Algeria 21%, Australia 72%, Bangladesh 6%, Central African Republic 2%, Chile 48%, Norway 78%, Poland 64%, Trinidad and Tobago 11%
- *Female enrolments in Tertiary Education:* Sweden 60%, South Africa 55%, Iran 51%, Mexico 50%, Japan 46%, Republic of Korea 37%, Guinea 19%

**(Source: UNESCO Institute of Statistics)*

These figures provide a varied but improving picture. Progress in Africa continues to fall below expectations and has led to additional donor funding such as the G8 contribution of \$500 million in 2007 for Education-related programmes.

- *STI and Scientific Research*
- Israel currently leads the world in R&D investment
- Only 10% of patents (a key indicator of innovation capacity) come from developing countries
- The Arab States suffer an ongoing exodus of PhD recipients, mainly to OECD countries
- In China, the China Academy of Sciences (CAS) lists 100 research institutes with 58 000 students enrolled. At its Graduate University (GUCAS), some 50% of the 33 000 students are doing PhDs.
- Singapore spent \$4 062 million (Singapore Dollars) on R&D in 2004 which is 2.25% of its Gross National Product (GNP) and one of the highest rates in the world.

*IT Connectivity Levels**

- *Connectivity levels per 10 000 persons:* 900 in Norway, New Zealand cf .01 Niger, .03 Nigeria, .06 Gambia
- *IT infrastructure:* Japan 100% cf 0% Bangladesh
- *Connectivity inequalities in developing countries:* Rural areas 30% cf urban areas 70%
- *Language dominance:* 75% of internet content is in English although only 10% of the world is proficient in this language.

**(Source: UNESCO Report for the World Summit on the Information Society 2003 and 2005)*

These statistics show the wide discrepancies in access to information and knowledge, resulting in serious disadvantages countries and particularly within specific areas of their populations.

- *Education and Training in the Knowledge Economy*

Human capital issues have emerged as problematic in a world where many areas of the workforce are more mobile.

For highly qualified workers this presents challenges both old and new. While the Brain Drain continues to be a reality for many developing countries (e.g. the mass exodus of Nigerian doctors and teachers and Philippines-trained nurses), returning experts or the circulation of expertise can offer positive aspects but requires innovative approaches to academic and professional credentials. Examples of this include Silicon Valley IT experts returning to India, a high instance of foreign-educated doctors (41% in New Zealand), mobilisation of the diasporas from Africa and the Arab States, and burgeoning cooperative arrangements such as joint professorships, dual research appointments and laboratories (known as “colloboratories”), and jointly awarded graduate degrees.

III. The Growing Role of Research Universities

Universities inherently assure research-based teaching, which is in contrast with other types of higher education institutions devoted to the provision of training and skills. However given the drastic increase in the demand for tertiary education over the past decade, many universities have been obliged to pursue these two missions with equal vigour – even when funding and other resources have been extremely limited.

Though universities in OECD countries have seen considerable increase in research funding from the end of the 1990s onwards, the research setting is varied and complex with little uniformity of strategies for dealing with this area. As summarised by Helen Connell, editor of the 2004 OECD report on research management: “... the research environment of the university is in constant flux. Research management in universities is management of change and diversity.” (Connell: 21) and “Given that resources that can be put into research are not unlimited, declared national research priorities and agenda have become practically universal within OECD countries.” (Connell: 24)

The ramifications of this trend are further explored by Ellen Hazelkorn in the OECD’s 2005 subsequent report on research capacity in new institutions:

“Underpinning higher education’s role as a key economic driver, governments are also placing greater focus on science and technology disciplines, on the balance between basic and applied research, on knowledge and technology transfer activities, and intellectual property. Institutions able to match research priorities with national priorities, as determined by technology foresight studies, are well rewarded” (Hazelkorn: 22) and “...there is no getting away from the fact that research is ultimately dependent on individuals.” (Hazelkorn: 92)

While the industrialised OECD countries grapple with these challenges, it is no surprise that the hurdles faced by universities in middle and low-income countries are much more critical. In a global knowledge-based society, this is a very serious situation. These issues were examined in depth at the

2006 Global Colloquium of the UNESCO Forum on Higher Education Research and Knowledge which debated the status of research universities worldwide. The conclusions stressed the urgency of resolving the major problems identified:

- The precarious nature of research in non-OECD countries
- The major cleavages in research between wealthy and emerging countries in terms of capacity, agendas, contexts, criteria, climate and partnerships
- The need to accelerate networking and cooperation amongst universities to strengthen research
- The urgency of building improved research capacity in countries of the South and elimination of the isolation of their researchers.
- The rapidly increasing political nature of national research agendas
- The need for countries to map and analyse their research systems, to pinpoint their major challenges and to benchmark themselves in relation to similar emerging economies. (Weiler et al: 20-23)

Thus recent trends have illustrated an important dichotomy: the growing role and potential of Research Universities and the increasing struggle to compete with certain institutions and their researchers. As post-graduate studies evolve in relation to demand and supply this global context must be taken into account.

IV. The Research Component of Post Graduate Studies : Issues at the Dublin Workshop (March 2008)

The specific issues under consideration at the workshop jointly hosted by the UNESCO Forum and the Dublin City University in March 2008 have a common focus on the role of research in advanced academic credentials which are increasingly varied in nature. This discussion will be a fitting opportunity to examine these issues in the present context of Higher Education. It demonstrates the characteristics forecast for this sector a decade earlier by two major UNESCO conferences namely the *World Conference on Higher Education Paris 1998* and the *World Conference on Science, Budapest 1999*. These conferences predicted the advent of the Knowledge Society as the 21st century commenced. They further debated the processes of knowledge generation and dissemination, ranging from those related to the growing demand for access to post-secondary education and training to those dealing with the acquisition of high level qualifications, often in fields related to science, technology and engineering (including IT). These fields are vital in assuring the innovation base for national economic development and growth. The dual challenge in store for Higher Education institutions and especially for universities was anticipated since these processes required that access and equity issues should receive the same attention as those necessary for a country's long-term knowledge base and foresight capacity.

Today, ten years on, as countries address these problems the gap between the haves and the have-nots in the knowledge stakes has widened and constitutes a threat to sharing the benefits of globalisation on an equitable basis. Since research capacity depends on sustained long term investment by governments, the challenge to acquire, maintain and reinforce this capacity is subject to complex and interlinked factors. It would seem that countries can be grouped in three categories:

- Star performers and those whose knowledge-related policies in education, research and innovation illustrate good practice (e.g. Chile, Singapore);
- Those working to formulate more innovative policies which may also help retain their crucial human capital (e.g. Trinidad, Nigeria);

- Countries slow to modernise in these areas for various reasons linked to the poor quality of their infrastructure and limited human resources. These countries risk increased isolation and arrested development due to their lack of competitiveness in a global economy (many low-income countries are in this group).

A few comments on the Dublin issues are as follows:

- *Research degrees in middle and low-income countries (notably in scientific fields)*

The persisting problems in this area are: the low percentage of students in these fields at undergraduate level, inadequate infrastructure of universities in science and technology disciplines and the brain drain caused by the exodus of graduate students and academics working abroad.

The high instance of highly educated people from African and Arab States residing in OECD countries has been pointed out by Johann Mouton (UNESCO 2007), Roland Waast (UNESCO 2007) and Antoine Zahlan (UNESCO 2007) in studies carried out for the UNESCO Forum. Similar statistics are cited for the Latin American and Caribbean region by Roland Waast (UNESCO 2007). Selected examples are:

- 47% of Ghana's college-educated citizens live abroad
- Between 35- 55% of highly educated people from Angola; Burundi, Kenya, Mauritius, Mozambique, Sierra Leone, Uganda and the United Republic of Tanzania live in OECD countries
- African students accounted for the second highest group of international students in the UK in 2003-4 (after East Asia and the Pacific)
- 200 000 LAC science and engineering graduates were working in the USA in 1999
- 1 300 000 graduates of foreign origin live and work in the USA
- Some 82% of students from Arab States were pursuing post-graduate degrees in OECD countries in 1999; on a per capita basis, the Arab brain drain is estimated to be four times greater than that of China
- Immigration policies designed to attract highly skilled persons (e.g. Canada, Australia, New Zealand and Singapore) have an impact on the brain drain issue
- Scientific peer-reviewed literature from Africa is around 1% of current publications
- Brazil graduated 33 000 PHDs in the last 5 years but only 3000 of these in STI fields, according to a recent UNESCO report on LAC trends in research (Waast 2008).

The negative consequences for building and retaining research capacity in these countries are obvious. Currently, there are considerable movements to mobilise the diasporas and to encourage their relocation to their country or origin. In Asia, these efforts have brought rather positive results and even relocation of experts. Linkages with the African and Arab diaspora remain mainly focused on cooperation due to the lack of incentives for reinsertion in local academic communities.

- *"In demand" advanced degrees*

Over the past two decades, there has been exponential growth in demand for certain degrees in non-OECD countries including those at graduate level. This has led to the establishment of numerous local campuses by universities from OECD countries. Particular demand is evident for fields such as

computer science, business studies and English. Major clients include the Gulf States, East Asia and Eastern Europe.

Often these academic qualifications are practically oriented towards the labour market and so the focus on teaching excellence supersedes the traditional research component. Moreover, students are often professional motivated to enrol in this type of study which offers flexible timetabling and modalities of instruction

While leading universities may have the capacity to assure the research dimension notably in areas such as MBA studies, this domain has a very strong competitive dimension which has necessitated the establishment of quality assurance measures to protect academic standards and the value of the credentials earned.

A significant feature of such degrees is the importance attached to assignment-based instruction and to the applied and strategic nature of the research undertaken. Students often work in teams and with their professors to investigate emerging issues with which they may be directly engaged in their professional lives. This type of research also encourages team-building and interpersonal skills as well as the sort of sophisticated analytical and forecasting capacities needed for the top end of the labour market.

- *Open and E- learning Qualifications*

The ongoing demand for access to post-secondary studies via open and E-learning modalities now extends to the level of graduate degrees.

For many years debate has continued on the merits and challenges of this type of educational provision, *per se*. While popular with workers and mature-age students for its flexible delivery, the potential problems for motivation and perseverance posed by individual and mainly isolated study conditions and the heavy dependence on reliable IT connectivity are well documented.

At graduate level the research component required to earn these credentials does not pose particular difficulties for mature and motivated students who have adapted to the specific study mode. In this regard widening access to research is essential and distinguishes initiatives such as the Open Course Ware Project led by the Massachusetts Institute of Technology to ensure equitable entry cross boundaries to the knowledge bases inherent in advanced levels of study. Research is also a feature of the numerous projects designed to promote open collaborative technologies which expand access to learning. By way of example in 2007 the annual UNESCO King Hamad Bin Isa Al-Khalifa Prize for the use of ICTs in Education was awarded to Claroline which is an open-source platform located at the Catholic University of Louvain, Belgium, and reaching 900 institutions in 84 countries. This is a generative network of users, including researchers, who contribute new tools and functions based on their successful experiences of open education.

Judging from the steady or increasing demand for these qualifications at graduate level in industrialized countries, students have consciously selected this form of instruction as being best suited to their needs. Indeed the rage of research-based open and E-qualifications continues to expand. Some examples are:

- The University of Phoenix which is the USA's largest accredited private university with 180 centres of learning spread over America, Latin America, Asia and Europe, has 800 faculties and offers both regular and on-line instruction. Graduate degrees are available in various fields, inter alia, business, health, law, human resources, and information technology.

- The United Kingdom's Open University which has a long standing programme of research degrees with the count of post graduate students at over 1200 in 2007. Special attention is given to training researchers to investigate industrial, commercial and public sectors issues.
- Massey University, New Zealand's principal extramural tertiary institution, is now rated 108 out of the world's top 200 universities and has a strong focus on applied research and community-based education. Research degrees (4 doctorates , 40 Masters and 29 graduate diplomas) are available in business, science, humanities and the social sciences, the creative arts, and education.
- In Dubai, in the United Arab Emirates, 10 universities from the USA are offering Masters or doctoral programmes on line and in mainly work-related fields.

International Academic Cooperation Initiatives

Academic cooperation initiatives are manifold and emanate from a long established concept of promoting equitable access to high level teaching and research. These are the hallmarks of universities. In today's globalised knowledge society, this concept has become more necessary than ever before so that expertise may be shared on a North/South – and increasingly South/South – basis. In this regard, the linkages to stemming the brain drain and to encouraging brain gain and brain circulation are evident.

As predicted two decades ago, there is now enormous growth in the internationalisation of Higher Education, due not only to the growth of the sector as a new and lucrative market but also because of the global nature of research expertise as scholars and experts can interact with much greater ease. Countries now need to design higher education policies which include more attractive career packages for academics.

A significant feature of this international cooperation is the increased joint delivery of research degrees which tend to attract top students aiming for fast track and quality credentials. An interesting example is a recent programme launched by Pakistan's Higher Education Commission in science, technology and engineering which links Pakistani universities to counterparts in nine research-renowned universities in OECD countries. As one of the United Nations' Education-9 countries (those with the highest illiteracy rates and very large youth populations), Pakistan is counting on these sorts of measures in international academic cooperation to help address the critical and urgent problems of its development agenda. Like other E-9 countries, a dual track approach to education which addresses the full spectrum of needs and levels is essential to compete in the knowledge society. Africa has struggled to pursue this duality with the sad result that it has lost much of its previous standing in higher education and STI fields. This has led to a fresh approach to these domains by African stakeholders themselves (for instance via the NEPD initiative) and by multilateral actors including the World Bank with its new ST Forum.

Another example of international academic cooperation is the UNESCO Chairs and UNITWIN Networking Programme which was established in 1992 and now involves over 750 institutions in 125 countries worldwide. Particular priority is given to helping to refocus and reinforce African universities via the Academics Across Borders initiative which is a sub-project of the programme. Research in fields vital to national development policies is a feature of the UNESCO Chairs/UNITWIN Project. To this end, there is close collaboration with the United Nations University (UNU) which is dedicated to linking academic research to the resolution of complex global problems and notably those related to the UN's Millennium Development Goals.

Networking Research-reputed Universities

As the Knowledge Society and Economy progress and accelerate, governments are tending to invest in research over teaching. OECD countries have witnessed this trend since the late 1990s which has offered universities new and important roles as part of the national research base. This emphasis on research has prompted new levels of competition amongst universities both nationally and on regional and global scales. This competition means that key elements such as attractive salaries and related career incentives for career advancement and high quality research facilities must be provided to entice top class researchers. Universities wishing to compete as internationally recognized institutions of higher education have been forced to adopt a more “corporatist” approach to their mission statements, planning and staffing.

Linked to this is the growing influence exerted by the university Ranking Tables notably the THES and Shanghai listings. Though unofficial, these instruments have gained an undeniable role in shaping both government and public opinion of national universities and their place in a global market place where research excellence is demanded. As Salmi and Saroyan note: “The stakes are high. Governments and the public at large are ever more preoccupied with the relative performance of tertiary education institutions and getting the best perceived value as consumers of education.” (Salmi and Saroyan: 30)

However, the objectives of leading branded networks are global in ambit as illustrated by the examples below:

- The Universitas 21 Group of 21 research-intensive universities in twelve countries with a collective research budget of over \$3 billion and a focus on research with global ramifications
- The Russell Group which links the United Kingdom’s twenty best research universities with a view to training future innovators, social leaders and showcasing the best practice and international competitiveness of British research excellence.
- The Global Business Schools Network (GBSN) sponsored by the International Finance Corporation which brings together the world’s top twenty business universities to help strengthen the skills of managers in emerging markets, especially those in Africa, based on the premise that inclusion and efficient performance within the global economy are crucial factors for sustained social development.

Common features are a global focus and perspective, large-scale budgets, a commitment to excellence, demonstrated added value to attract top academics and students, assurance of innovation and multilateral opportunities for members and an awareness of the socio-economic and political role of research in the global economy. These measures may appear to be primarily rooted in prestige and competitiveness but there is also the awareness that the impact of research is global and that development must be equitable to avoid social fragmentation.

V. Concluding Remarks

The aspects discussed in this paper have sought to cover a panorama of issues related to advanced research-oriented degrees and to situate these issues against the wider context of human capital. This concept, originating from Theodore Schultz, the American economist who won the 1979 Nobel Prize, requires “investment of physical resources and monetary capital” (Hudson: 14).

Research capacity cannot exist without this investment because if Knowledge Societies are to flourish, they need to train and retain an adequate cohort of highly skilled experts. This is true for in all countries, whatever their socio-economic status.

Ensuring equity of opportunity and success in this area is a global challenge which, unless adequately addressed, will certainly pose serious risk for the further advancement of the knowledge society. This challenge concerns government policy essentially but also relates directly to the social responsibility of universities as key actors in modern research and knowledge systems.

Countries need to be regularly informed of emerging trends (especially of success stories in dealing with these) in order to formulate appropriate and innovative policies which will help to assure their place in the evolving global socio-economic order.

Annex 1

The 2000 Millennium Development Goals by 2015:

.To eradicate extreme poverty and hunger

- .To achieve universal primary education
- .To promote gender equality and empower women
- .To reduce child mortality
- .To improve maternal health
- .To combat HIV/AIDS, malaria and other diseases
- .To ensure environmental sustainability

.To develop a global partnership for development

Note: Exclusion from full participation in the Knowledge Society and the Knowledge Economy has particular relevance for MDGs 1 and 8.

Exclusion from knowledge constitutes a type of poverty; policies and strategies to assure inclusion require cooperation amongst member states on a global scale.

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