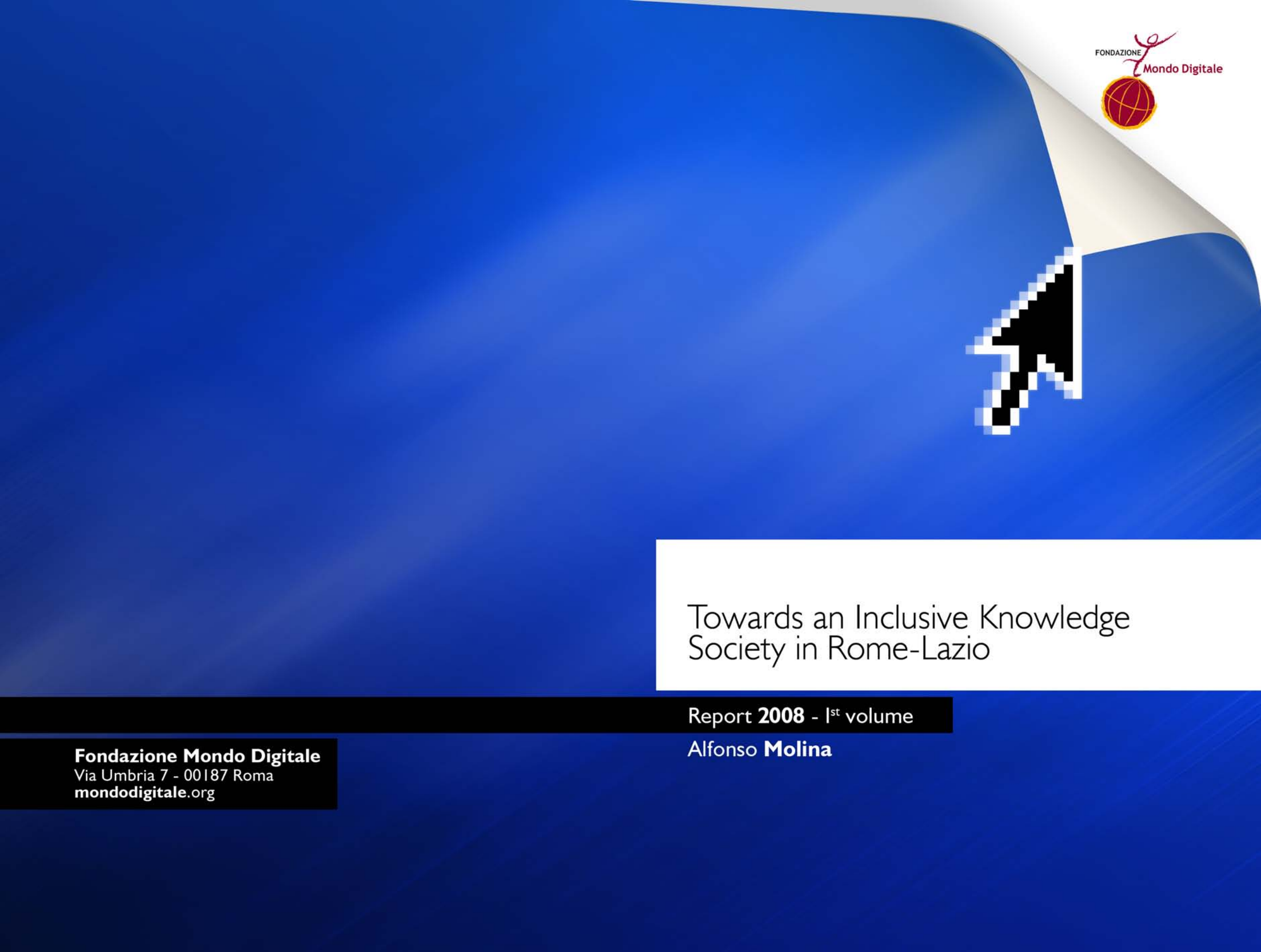

FONDAZIONE Mondo Digitale

Towards an Inclusive Knowledge Society in Rome-Lazio

Report **2008** - I[st] volume

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Report 2008

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Fondazione Mondo Digitale

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Foreword

Tullio De Mauro

I have already pointed out – in the pertinent technical arenas - that Alfonso Molina's annual reports provide us with the most comprehensive range of analytical data for an up-to-date overview of empowerment and development, in terms of ICT, in Italy and particularly for the city of Rome and the Lazio Region. The data, especially that concerning Rome, is profoundly related to the activities currently promoted and implemented by the Fondazione Mondo Digitale and formerly by its progenitor, the Gioventù Digitale, a public-private consortium. The majority of the data presented in this report, as is often indicated, has been painstakingly produced, through steadfast research, comparison and re-elaboration, by a scholar who has wisely employed diverse primary sources to obtain the overall panorama that I mentioned above.

This research project was assigned to Prof. Molina on account of the increasing number of activities conducted by the Foundation. Our experience in this field has revealed the need for a greater general reflection on ICT, on its role in modern society and its development in Italy, as well as on our inspiring philosophy, which regards the development of ICT as an essential catalyst not only for economic and productive growth, but also for the evolution of a society truly embodying equal opportunities and the inclusion of all women and men in the minimal conditions required to actively thrive in a modern knowledge society. In other words, ICT appears to be not only an indispensable accessory to productive growth, but also a fundamental element for a full democratic life in society.

The picture that Molina delineates is not reassuring when compared against the international panorama. With the exception of the enormous development of private mobile telephony, which in Italy seems to have

become essential across all age groups and social levels, every other indicator places our country at the lowest levels compared to other EU and non-EU nations. The cities and surrounding environs of Milan and Rome represent a partial exception to this, a testimony to the fact that the underdevelopment of ICT may be remedied. Moreover, this also presents an interesting correlation with increase in income and a higher degree of cultural life. The case of Rome is particularly interesting as its initial economic-productive conditions were far inferior to those of Milan. The area of Rome is similar to others around the planet, from the gelid lands of the Inuit to the sweltering heat of India, in which the introduction and development of ICT have represented an autonomous element, an independent variable stimulating and nourishing growth. There is hope for all of Italy if this has occurred in Rome and Lazio.

However, with the exception of this positive glimmer, the overall picture provided by Molina's data is not reassuring. It is also, nonetheless, not as hopeless as some might believe. Molina's picture leaves the background of profound causes related to the national difficulties in terms of ICT expansion in an implicit penumbra. In a work that Molina graciously mentions[1], I tried to account for these causes, which include post-elementary school system deficiencies (highlighted as early as 1971 by the first international comparative survey on the results of the scholastic system produced by the Institute of International Achievement as well as by subsequent IEA and OECD surveys, by the Istituto Cattaneo[2] in 1996 and more recently by the tri-annual surveys of PISA (Programme of International Student Assessment); the low number and average quality of university courses of study (which Molina justly addresses); the lack of public reading facilities and multimedia libraries to spark interest in culture and, as happens elsewhere, efficiently integrate the activities of schools and teachers; and the absence of a national adult education and training system, allowing not only the instruction of the unschooled, but especially the continuous improvement throughout adult life of all the competencies and skills acquired in schools and universities. This condition has been denounced by UNLA (Unione Nazionale Lotta all'Analfabetismo, a national union fighting illiteracy), OECD and the TreElle-Life Long Learning Association, but to no avail judging by the continued lack of attention paid by the political, the entrepreneurial

1 Dislivelli linguistici nell'Italia d'oggi, Cristina Bosisio et alii (edd.), Aspetti linguistici della comunicazione pubblica e istituzionale, Atti del 7° congresso AItLA-Associazione Italiana di Linguistica Applicata, Milan 22-23 February 2007, Guerra Edizioni, Perugia 2008, pp.41-66.

2 Giancarlo Gasperoni, Diplomati e istruiti. Rendimento scolastico e istruzione secondaria superiore. Ricerche dell'Istituto Cattaneo, Il Mulino, Bologna 1996

and the managerial world at large. The result is the low level of literacy, numeracy and problem-solving capabilities demonstrated by the working age (16-65) adult population of Italy. Up to ten years ago, this condition was merely an inference, extrapolated from data concerning middle and high school level students as well as information regarding newspaper and book reading levels. Now, however, this situation has been ascertained by two subsequent and accurate international surveys that also scrutinized Italy. Once again, even the Italian version of the surveys received very little attention[3]. Indeed, these results should resound an alarm for the entire executive class. Notwithstanding the fact that school registries indicate that the phenomenon of total illiteracy has practically disappeared, 5% of the adult population (two million people) is hampered by a complete lack of literacy and numeracy. These individuals are not capable of deciphering phrases or numbers, nor are they able to reproduce them. I will not dwell on the bad quality and vast portions of the population affected by relatively less serious deficits that, nonetheless, preclude them from understanding and producing written texts and numbers. I would, however, like to remind you of the bitter conclusion reached by the second and more recent survey: only 20% of the adult Italian population possesses the minimum competencies necessary to orient itself in everyday modern society. At the international level, Italy places first-to-last (only Sierra Leone produces worse results) and at an enormous distance from all the other examined nations. Pockets of incompetence regarding literacy and numeracy can be found in all developed countries and everywhere they pose problems concerning inclusion, but no industrialized country has pockets so dilated that they engulf half of the population, let alone the 80% registered in Italy.

Is this data too pessimistic? Based on the data provided by the last multi-scope Istat (the Italian national statistics institute) survey on culture and leisure time and with the help of a talented young Istat executive, Adolfo Morrone, we devised a research project that pursues various channels. The project seeks to make sense of all the answers provided by different questionnaires aimed at understanding and quantifying the population groups that converge towards the highest level of competencies, skills and cultural habits or, inversely, that suffer from a series of deficits. The survey, which is nearing its conclusion, provides us with a far more positive outlook: 30% of

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3 Vittoria Gallina (edited by), La competenza alfabetica in Italia. Una ricerca sulla cultura della popolazione, Franco Angeli, Milan 2000 [a partire dall'indagine OCSE-IALS, International Adult Literacy Studies]; Eadem (edited by), Letteratismo e abilità per la vita. Indagine nazionale sulla popolazione italiana 16-65 anni, Armando editore, Rome 2006

the adult population (above age 14) possesses a good cultural competency. Dropouts from active life and participation in modern society are only 70%, not 80%.

Moreover, this result may be somewhat improved upon by a careful analysis of this survey. A careful analysis of the data concerning book reading (data gathered by Istat, Mondadori and others) or that concerning attendance of scientific conference series, reveals a positive margin between acquired and consolidated competencies and habits and practical aspirations to improve them. Based on the 20% figure observed by surveys on literacy and numeracy and the 30% figure for people who demonstrate good-level cultural competencies and habits, we may venture to propose a total figure of nearly 40% by also including all those who aspire to a higher level than they presently possess. There is a precious 10% that calls for mobilization.

Assinform and other agencies are surprised by the fact that following the great race towards public and private ICT integration, in the mid-nineties everything seemed to come to a halt. Those who own a PC and use it as a tool to search for information, to acquire documents, news, music and movies, in other words, those who profitably make use of Internet are less than 40%. However, in order to resolve the issue of ICT illiteracy, we must also tackle the issues of literacy and numeracy. The digital divide, the personal and social gap concerning ICT, is the natural consequence of the generally low culture at the national level.

Operating on the frontier of the digital divide, as our Foundation has for so many years, and many other institutions should, entails working to improve the basic cultural level and increase the ability to fully enjoy the tools that are available for orienting one's life in a complex society. Alas, the Foundation only has limited forces with which to tackle the vast mass of cultural and technological outcasts. We have no delusions of grandeur. We simply want to demonstrate, through our experiences, that this divide can be successfully bridge when and if, as we try to do, the necessary stimuli and conditions are induced. This is the spirit with which we present our initiatives and activities for reflection through this vast survey for which we are grateful to Professor Alfonso Molina.

Towards an Inclusive Knowledge Society in Rome-Lazio Report 2008

1 Introduction

Countries and regions in the world are facing the development of the knowledge society.[1] Enormous opportunities and challenges are at stake and the way societies respond today will determine their development for many years to come. The defining characteristic of the knowledge society is the primacy of knowledge, learning, information and communications technologies ICTs), globalization,[2] dynamic capabilities[3] and innovation. This suggests a dialectics of creative destruction and construction that challenges societal institutions to innovate to be able to benefit from the transforming world rather than being swept aside by it. This calls upon the

1 In 1968, Peter Drucker first used the term "knowledge society" to indicate the rise to primacy in society's development of the capacity of "learning how to learn". (Drucker, 1969) About the same time other authors used the term "learning society" to indicate how society was evolving towards the requirement for "life-long learning." (Hutchins, 1968 and Husén, 1974) Since then much has been written on "knowledge" and "learning" societies, sometimes with economic emphasis and with the purpose of assessing the comparative knowledge-society development of different countries. For instance, the UN (2005) report on knowledge societies points to the increased interest in knowledge as a factor for growth and development, which has led to the bestowing of "the term "Knowledge Economy"/"Knowledge Society" on countries with economies featuring a relatively large and growing service sector or on economies in which manipulation of information and creation of knowledge replace industrial production as the main contributor to GDP." (UN, 2005, p.23). On the other hand, UNESCO (2005) gives a more holistic societal content to the concept of "knowledge society," emphasizing particularly human development for all. Thus, "Knowledge societies are about capabilities to identify, produce, process, transform, disseminate and use information to build and apply knowledge for human development. They require an empowering social vision that encompasses plurality, inclusion, solidarity and participation." (p.27)

2 Globalization is here understood as the constant tendency for peoples, economies and cultures of the world to come into contact and interaction regardless of whether this leads to mutual benefit or conflict. In another work I have contrasted globalization driven by selfish power-maximization ('tribal globalization') from globalization driven by "social and planetary responsibility". (see Note 4)

3 "We define dynamic capabilities as the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Dynamic capabilities thus reflect an organization's ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions." (Teece, et al., 1997, p.516) Also, " 'dynamic capabilities' contrast with ordinary (or 'operational') capabilities by being concerned with change." (Winter, 2003, p.992)

leadership distributed in society to envision and pursue the changes that will result in the best-possible knowledge society for the present and future generations.

In this paper such best-possible knowledge society is a society for the benefit of all, or, an inclusive knowledge society in which the opportunities and fruits of knowledge, new technology and innovation in all walks of life, including industry, health, education and culture, accrue to all citizens without discrimination of any kind. As the UNESCO's 2005 World Report has put it:

> A knowledge society should be able to integrate all its members and to promote new forms of solidarity involving both present and future generations. Nobody should be excluded from knowledge societies, where knowledge is a public good, available to each and every individual. (UNESCO, 2005, p.18)

The Fondazione Mondo Digitale seeks to contribute to the dream of an inclusive knowledge society,[4] through the establishment of a synergistic virtuous dynamics among key factors that can be grouped under the general dimensions of education, innovation, inclusion and fundamental values. Figure 1 and Table 1 illustrate this concept.

Figure 1. Virtuous Dynamics of an Inclusive Knowledge Society

4 See *Molina, A.*, Digital World Foundation, Working for an Inclusive Knowledge Society, *Fondazione Mondo Digitale, Roma, 2007. An electronic version of this book can be downloaded free of charge from the website lulu.com.*

Table 1. Elements of a Virtuous Dynamics of an Inclusive Knowledge Society	
Education	Includes knowledge, skills, competences and learning at all levels and contents, in formal or informal institutional settings and for life – very much related to what has become known as 21st century skills, i.e., those skills necessary for successful human development in the knowledge society.
Innovation	Includes new technologies and particularly the mastery of information and communication technologies (i.e., creation, production, diffusion, implementation and use) for wealth creation, growth and enrichment of activities in all walks of life and work. It also contains dynamic capabilities and entrepreneurship to stress the point that the effective pursuit of innovation in the knowledge society requires continuous improvement of individual and organizational capacities to innovate, along with the capacity to transform innovation into sustainable enterprises.
Inclusion (and its ICT-based expression e-inclusion)	Includes equal access and opportunities, participation and di- and multi-alogue to make the point that equality of access and opportunities effectively means participation in the decision-making and benefits of the knowledge society, sustained by bilateral and multi-lateral communication and profound respect for the dignity of people.
Fundamental Values	Includes fundamental virtuous values such as freedom, justice and peace, equality of opportunities, solidarity and fraternity, achievement, fair competition and cooperation.

The borders between education and innovation are completely porous insofar as knowledge, skills, competences and learning are fundamental to innovation processes, in the same way as creativity and research belong to both, and innovation is fundamental to the evolution of education towards 21st century skills. Likewise, inclusion (e-inclusion) in the knowledge society is impossible without education and innovation for the benefit of all and, conversely, without inclusion the latter are unlikely ever to lead to the elimination of the scourges of poverty, disease, hatred and war that prevail in present societies. Last but not least, fundamental values are the ultimate source and force of an education and innovation for the benefit of all peoples and the planet and, conversely, the latter should help nurture and promote these values as the fundamental source and force of an inclusive human development.

In the following, this report presents an overview of the state of development of the economic and enterprise performance in Rome-Lazio, followed by more a specific overview of the state-of-the-art regarding innovation, education and inclusion with particular focus on hi-tech, R&D, ICTs in education and social inclusion in Rome-Lazio. It is worth noting that data gathering exercise is not facilitated by a dearth of systematic information from official sources at city-regional levels. The availability of sound information is of major importance in a knowledge society. With this caveat, the report turns its attention to Rome-Lazio.

2 Economic and Enterprise Performance in Rome-Lazio[5]

Rome is the capital and largest city of Italy and one of the great cultural capitals of the world. Rome is the heart of the Province of Rome and the Lazio Region and fundamentally determines their overall economic and social performance. At the beginning of 2007, the City of Rome had just over 2.7 million inhabitants and Lazio reached close to 5.5 million. Immigrants made up a significant and growing part of the population of Rome reaching 7.4%, although some other sources put the figure at about 9% or a quarter of a million people. This is still lower than Milano's 12% of immigrant population in 2005.

As Table 2 shows, the economy of Rome-Lazio is among the largest in Italy, with Lazio's GDP accounting for 10.8% of Italy's GDP – the second largest after Lombardia's GDP that accounts for almost 21%. In 2006, Lazio's GDP growth was 1.4%, compared with the 1.9% of the country and the 2.7% of the top region Friuli-Venezia Giulia. Rome Province fared better with an added value growth of 2.1%, although this was still substantially lower than Milano's top added value of 5.3%. In terms of employment, in 2006, Rome Province had 1.56 million people in employment and 123 thousand people in search of work or 7.3% of the combined total of those in work and those searching for it. This proportion was slightly higher than the 6.9% for Italy, resulting from 22.6 million in employment and 1.67 million searching for it. In addition, Table 2 shows that in Rome Province and Italy, employment and unemployment disfavour women. In fact, in 2006 the male employed population amounted to well over 50% in both Rome Province and Italy (57.2% in Rome Province and 60.3% in Italy), while the male population in search of work amounted to less than 50% (45.7% Rome Province and 47.8% in Italy).

5 The data in this section refers to the City of Rome and in some cases to the Province of Rome and the Region of Lazio. The City of Rome is the most important component of the Lazio Region, so the Lazio data is also highly indicative of the situation in the City of Rome and vice-versa.

Table 2. Various Indicators of Rome-Lazio's Economic and Enterprise Performance			
Indicator	***Year***	***City of Rome – Rome Province – Lazio Region***	***Italy and Top Performer***
Population (a)	End 2006	City of Rome 2,705,603 Rome Province 4,013,057 Lazio Region 5,493,308	59,131,287
Foreign Population (a)	2006	City of Rome 7.4% of population	Milano 12% of population (2005)
Gross Domestic Product (GDP) (Mn€)	2006	Total Lazio €135,680.5 - 10.8% of Italy (2nd largest)	Total Italy €1,255,848.6 Total Lombardia €260,859.7 - 20.8% of Italy (1st largest)
GDP per capita (€)	2007	Rome Province 34,021 (6th largest in Italy)	Italy: 25,921 Top Province: Milano 39,442
GDP Growth (%) (b) (c)	2006	Lazio 1.4	Italy 1.9 Top region: Friuli-Venezia Giulia (2.7)
Added Value Growth (%)	2006	Rome Province 2,1 (Total AV Mn€95,952)	Italy 1.7 Top province: Milano 5.3
Employment (Population 15-64 years of age)	2006	Rome Province 1,561,601 893,514 males (57.2%) 668,088 females (42.8%)	Italy: 22,618,498 13,647,224 males (60.3%) 8,971,274 females (39.7%)
Unemployment – Searching for work	2006	Rome Province 123,040 56,268 males (45.7%) 66,772 females (54.3%)	Italy 1,668,360 797,775 males (47.8%) 870,585 females (52.2%)

Number of Registered Enterprises	2006	City of Rome 302,618 (4.9% of total in Italy) Rome Province 409,957 (6.7% of total in Italy) Lazio 567,093 (9.3% of total in Italy)	Italy 6,125,514
Rate of Growth of Enterprises (%)	2006	City of Rome 2.71 Rome Province 2.7 (d) Lazio 2.2	Italy 0.8 (d)
Number and % of Active Enterprises in the Service Sector	2006	Rome Province 163,312 (69% of total of active enterprises in the province) Lazio Region 229,207 (61,9% of total of active enterprises in the region))	Italy 2,789,430 (54% of total) Milano 234,935 (68.5% of total)
Active Enterprises in the Real State, Informatics and Research Sector	2006	Lazio Region 32,573 (8.8% of total of 370,423 active enterprises in the region)	-
Registered Enterprises in Informatics and Related Activities	2006	Rome Province 6,455 (1.6% of total number of enterprises in the Prov.) Sector ranks 13th on this criteria 2.1% growth in 2006	Italy 89,090 (1.5% of total number of enterprises in the country.) Sector ranks 14th on this criteria
Active Women's Enterprises	2006	Lazio 98,738 (26.7% of total 370,423 active enterprises in Lazio and 8% of total in Italy) (e)	Italy 1,234,919 (23.9% of total 5,158,278 of active enterprises) Lombardia 165,798 (20.5% of total 808,519 active enterprises in Lombardia and 13.4% of total in Italy)

Growth of Active Women's Enterprises (%)	2006	Lazio Region 2.6	Italy 1.3 Lazio Region 2.6
Immigrant Entrepreneurs (% over total No. of entrepreneurs)	2006	City of Rome 9.6 Rome Province 23,672 (8.8% of total 270,372 for the Province)	Italy 6.3
Rate of Growth of Immigrant Entrepreneurs (%)	2006	Rome Province 12.2	Italy 10

Sources: Centro Studi Unioncamere (2007a), Comune di Roma (2007a, 2007c), Grande et al. (2007), Istat (2008), Regione Lazio (2007), Unioncamere (2007), Istat Website 31.12.2006 http://sitis.istat.it/sitis/html/index.htm

(a) The register of the Municipality of Rome has undergone revision during 2006 onwards and this has resulted in a significant increase in the numbers of Roman population. Thus, Rome's population at the end of 2006 is given at 2,825,077 with 1,485,851 females and 1,339,226 males. The population of foreign nationals resident in Rome reaches 250,640 (8.9% of total) by the end of 2006 with 132,716 females (53%) and 117,924 males (47%). (Comune di Roma, 2007b)
(b) There are a number of studies with national and regional GPD predictions from 2007 onwards until 2010 that are beginning to prove wrong, giving the decline of national GDP started in 2007 (1.5%) and deepened in 2008 (less than 0.5%). Predicted values were optimistic, assuming GDP growth for 2007 at between 1.8% or 2% and a fairly small decline for successive years until 2010. (Centro Studi Unioncamere, 2007a, 2007b, 2007c).
(c) According to Regione Lazio (2007), the GDP of the Lazio Region grew 6.8% between 2001 and 2006 with Italy's GDP growing 3.3 during the same period.
(d) Comune di Roma (2007c) gives rates of growth slightly different (2.9% for the Province of Rome and 1.2% for Italy) due to differences in the mode of calculation.
(e) Data from Grande et al. (2007) says that the number of women's enterprise in the City of Rome is 62,415 and in Rome Province is 89,484.

Considering the number of enterprises in 2006, the City of Rome with over 300 thousand had almost 5% of Italy's 6.1 million enterprises, while Lazio with its 567 thousand accounted for 9.3% of Italy's enterprises. Rome and Lazio, however, showed a more dynamic rate of enterprise growth with 2.7% and 2.2% respectively, compared with 0.8% for the country. Table 2 also shows that Rome Province and Lazio had a much greater concentration of active enterprises in the service sector than Italy – 69% in Rome Province and 61.9% in Lazio, compared with 54% in Italy. Milano showed similar levels of concentration in the service sector to Rome Province with 68.5% and a higher absolute number of service enterprises than Lazio (almost 235 thousand).

The number and rate of growth of enterprises working solely in the ICT sector is not easy to determine since the available data places together "real state" and "informatics and research" in one single category. In the Lazio Region, the 32,573 enterprises within this category amounted to 8.8% of the total 370,423 active enterprises in Lazio in 2006. More specific data for enterprises in "informatics and related activities" tells that in 2006 the Rome Province had 6,455 enterprises in this category or 1.6% of the total number of enterprises in the province, while Italy had 89,000 or 1.5 of the total number of enterprises in the country. These are not large numbers and, indeed, the sector ranked 13th in importance in the Rome Province and 14th in Italy. In the Rome Province the growth of this sector was of 2.1% in 2006. In the first book on the Foundation (Molina, 2007), the audio-visual sector had been identified as growing at a much faster rate (11.2%) in the City of Rome and Italy (13.2%) between 2002 and 2004. At the time, in Rome this meant a growth of 155 companies from 1,331 to 1,486.

Considering the participation of women in the entrepreneurial scene of Lazio and Italy, one finds that in 2006 there were over 98 thousand active women's enterprises or 26.7% of the total of active enterprises in the Lazio Region and 8% in Italy. The share of active women's enterprises in Italy was almost 24% or over 1.2 million enterprises. This placed Lazio at the top in terms of percentage since Lombardia reached a 20.5% share, although in absolute numbers it was the highest with over 165 thousand or 13.4% of the total number of active women enterprises in Italy. In addition, in 2006, Lazio also exhibited the fastest growth with 2.6% compared with Italy's average of 1.3%.

Immigrant entrepreneurs also constitute a significant and growing presence in the general entrepreneurial scene. Thus, immigrant entrepreneurs made

up 9.6% of the total number of entrepreneurs in the City of Rome and 8.8% of the total number of 270 thousand in the Rome Province in 2006. In the same year, in Italy, the proportion of immigrant entrepreneurs was 6.6%. In addition, this is a very dynamic sector exhibiting high growth rates: 12.1% in the Rome Province and 10% in Italy. This means that immigrants entrepreneurs are becoming an ever more important feature in the entrepreneurial life of Rome, Lazio and Italy.

In sum, the data collected in Table 2 reveals that, in 2006, Rome-Lazio remains one of the top economic areas of Italy, with a performance that in important aspects shows greater dynamism than the overall Italian performance. This concerned particularly the rate of growth of enterprises, including women and immigrant enterprises. In other aspects such as Lazio's GDP growth and Rome Province's unemployment the performance is lower than the overall country's performance, although Rome Province does better in terms of added value growth. Considering that Italy's performance in the international scene is one of the least dynamic among the most developed countries, it is possible to suggest that Rome-Lazio also face "important challenges to reach international leadership in the inclusive knowledge society." Molina (2007) The next sections discuss available data on innovation, education and inclusion.

3 Innovation in Rome-Lazio

Lazio is one of the strongest regions of Italy as far as innovation is concerned. Table 3 summarises selected data from the Lazio Region Innovation Scoreboard (Filas, 2007), with the exception of the data for the "proportion of municipalities with wideband connectivity" that comes from Regione Lazio (2007a). The picture that emerges is of a Lazio Region scoring high on innovation in many categories. Thus, the region ranks second out of 20 regions in the "overall innovation scoreboard," after Lombardia. Lazio however is first in five categories: "proportion of population aged 25-64 with tertiary education"; "employment in high and medium-high tech services"; "venture capital investment in hi-tech enterprises"; "technological exports"; and "ICT expenditure per employee by enterprises and public administration." In other 2 categories, the region comes second out of the group of 20 regions: "proportion of graduates in S&T disciplines in 20-29 age group" and "families with Internet subscription;" and third in the category "hi-tech patents deposited at the European Patent Office per million inhabitants."

Lazio's comparative innovation performance weakens significantly with categories concerning the enterprise, particularly manufacturing enterprise. Thus, the region ranks 12 out of 20 regions in terms of "employment in high and medium-high tech manufacturing enterprises" and "innovative enterprises." It ranks 11 in "proportion of enterprise with wideband connectivity" and 8 in "proportion of enterprises with websites."

Table 3. Selection of Indicators for Lazio Region Innovation Scoreboard – Year 2007					
Indicator	*Year*	*Value*	*Ranking*	*Top Performer*	*Italy*
Overall Innovation Scoreboard	2007	0.694	2 of 20	Lombardia 0.731	0.54
Proportion of graduates in S&T disciplines in 20-29 age group (%)	2005	14.6	2 of 20	Emilia Romagna 16.5	11.5
Proportion of population aged 25-64 with tertiary education (%)	2005	13.9	1 of 20	Joint second place Abruzzo and Liguria – 12.2	9.1
Employment in high and medium-high tech manufacturing enterprises (%)	2006	5.3	12 of 20	Piemonte 11.8	7.4
Employment in high and medium-high tech services (%)	2006	5	1 of 20	Piemonte 3.9	3
Hi-tech patents deposited at the EPO (European Patent Office) (per million inhabitants)	2003	5.7	3 of 20	Piemonte 11.5 Lombardia 9.4	4.3
Innovative enterprises	2002-2004	26	12 of 20	Piemonte 36 Veneto & Emilia Romagna 35.5	30.7
Venture capital investment in hi-tech enterprises (% of GDP)	2006	0.0014	1 of 20	Second place Lombardia 0.001	0.0005
Proportion of enterprises with websites (%)	2006	56	8 of 20	Trentino Alto Adige 66.9 Marche 63.2	56.7
Proportion of enterprise with wideband connectivity (%)	2006	65.2	11 of 20	Trentino Alto Adige 75 Emiliaa Romagna 73	69.6

Proportion of municipalities with wideband connectivity (%)	2005	39.3	-	-	32.1
Technological exports (% of total exports)	2005	26.9	1 of 20	Liguria 18.9 Campania 16.4	9.4
ICT expenditure per employee by enterprises and public administration (€)	2004	1,277	1 of 20	Lombardia 1,173 Piemonte 945	805
Families with Internet subscription (%)	2006	40	2 of 20	Lombardia 42	35.6

Source. Filas (2007), Regione Lazio (2007a).

As we shall see, this relative weakness regarding high-tech industry is very much a structural characteristic of Lazio's economy and it probably has a great deal to do with the fact that the regional productive system is also characterized by a high level of fragmentation. In effect, in Lazio 92% of industrial enterprises have a maximum of 9 employees, and another 7% has between 10 and 49 employees, in contrast to the country as a whole where the figures are 82% and 10% of enterprises respectively. In the case of service enterprises, the proportion is even higher with 97.2% of enterprises having between 1 and 9 employees, 2.4% having between 10 and 49 employees, and only 0.4% having over 50 employees (Regione Lazio, 2007a)

Lazio's overall innovation performance as top in Italy is also confirmed by the 2006 European Regional Innovation Scoreboard (RIS) that ranks 203 European regions in accordance with six indicators: knowledge workers, life-long learning, med-hi-tech manufacturing, hi-tech services, public R&D, business R&D and patents. In this European regional classification, Lazio ranks 44 in the set of 203 regions with a score of 0.57. The top place goes to Stockholm with a score of 0.90. Lazio is the first Italian region followed by Lombardia in 71st place with a score of 0.49.

Table 4 shows Lazio' performance in terms of both R & D personnel per 1000 inhabitants and R & D expenditure as percentage of GDP for 2004. Lazio was right at the top of Italian regions in both categories.

Table 4. R & D Expenditure and Personnel per Institutional Sector in Top Regions – 2004						
R & D Personnel (full-time equivalent units)						
	Public Administration	***University***	***Private Non-profit Institution***	***Enterprise***	***Total***	***No. (1000 inhabs)***
Lazio	15,330 51%	8,665 29%	524 1.7%	5,551 18.5%	30,070	5.7
Piemonte	1,208 6.6%	3,287 18%	280 1.5%	13,506 74%	18,281	4.3
Emilia-Romagna	1,567 10.2%	5,405 35%	198 1.3%	8,256 53.5%	15,426	3.7
Friuli-Venezia Giulia	572 13.6%	1,918 45.7%	47 1.1%	1,658 39.5%	4,195	3.5
Lombardia	2,463 8.4%	7,090 24.1%	1,397 4.8%	18,457 62.8%	29,407	3.2
Italy	32,401 19.8%	60,694 37%	3,412 2.1%	67,519 41.2%	164,026	2.8
R & D Expenditure (1000 €)						
	Public Administration	***University***	***Private Non-profit Institution***	***Enterprise***	***Total***	***R&D Expenditure (% GDP)***
Lazio	1,361,812 (50.9%)	638,895 (23.9%)	26,322 (1%)	646,623 (24.2%)	2,673,652	1.9

Piemonte	88,994 (4.7%)	313,429 (16.5%)	16,623 (0.9%)	1,476,232 (77.9%)	1,895,278	1.8
Lombardia	222,433 (6.9%)	608,061 (18.8%)	130,561 (4%)	2,273,319 (70.3%)	3,234,374	1.2
Emilia-Romagna	112,806 (8.1%)	461,074 (33%)	6,775 (0.5%)	818,050 (58.5%)	1,398,705	1.2
Italia	2,721,631 (17.8%)	5,004,511 (32.8%)	232,706 (1.5%)	7,292,850 (47.8%)	15,251,698	1.2

Source. Based on data from Istat (2007), Centro Studi Unioncamera (2007a), Camera di Comercio di Roma (2007).

In terms of R & D personnel, Lazio's 5.7 per 1000 inhabitants ranked first, followed by Piemonte (4.3) and Emilia Romagna (3.7). The Italian average of 2.8 was almost half that of Lazio. In absolute terms, Lazio's 30,070 R & D personnel were also first, above Lombardia (29,407) and Piemonte (18,281). Lazio's distribution of R & D personnel by institutional affiliation is however quite different from those of the other regions in Table 4. Thus, over half of R & D personnel in Lazio work under the public administration, with another 29% affiliated at the university. In total, 80% of R & D personnel work in the public sector, with enterprise accounting for less that one-fifth of the total. In the other regions, this structural pattern is almost the opposite. Thus, in Piemonte and Lombardia, the R & D personnel working at the enterprise is 74% and 62.8% respectively. Only Fruili-Venezia Giulia differs with its 45.7% R & D personnel working at the university.

A similar pattern is found in R & D expenditure for the year 2004. Here again Lazio ranks first in terms of R & D expenditure as percentage of GDP with 1.9%, followed by Piemonte with 1.8% and Lombardia with 1.2%, the same as Italy's average. In absolute numbers, however, Lombardia ranks first with an R & D expenditure of over €3 billion, compared with Lazio's almost €2.7 billion in second place. The distribution of R & D expenditure by institutional affiliation once again reveal a marked structural difference between Lazio and the other regions. Thus, in Lazio almost three-quarters of R & D expenditure is accounted for by the public administration and university and less than one-quarter by the enterprise. In contrast, in Piemonte over three-quarters (77.9%) of R & D expenditure is accounted for by enterprise, followed by Lombardia with 70.3% and Emilia Romagna with 58.5%.

The large influence of the public administration and university in Lazio's R & D expenditure and personnel, and consequent low participation by enterprise, provides cause for reflection. It plainly suggests the existence of a gap between the two sectors. In turn, this highlights the importance of developing effective policies and mechanisms of interaction between the two sectors in order to realize the economic potential of public sector R & D. Perhaps this might also help counteract the negative technology balance of payments that, as shown in Table 5, reached a deficit of €227 million in 2004-2005. In contrast, Piemonte showed a surplus of over €350 million.

Table 5. Technology Balance of Payment of Top R & D Regions – 2004-2005 (1000 €)	
Lazio	-227,003
Lombardia	-214,134
Piemonte	+356,435
Emilia-Rogmana	+8,805
Italy	-231,643

Source. Centro Studi Unioncamera (2007a),

In summary, the City of Rome, Province of Rome and the Region of Lazio are certainly among Italy's top innovation performers. At the same time, there are significant challenges to achieve the best international standards. The conclusion of Molina (2007) remains valid, the "basic trend … points in the right direction, something that should be reinforced by the application of appropriate policies in the coming years." As indicated, one area for such policies concerns the interaction between the public administration-university and the enterprise sectors in order to realize the economic potential of public sector R & D.

4 Education in Rome-Lazio

Rome's investment in education was €Mn 226.3 in 2006, up 0.4% from the €Mn 225.3 invested in 2005 (Comune di Roma, 2007f). Since the writing of the first book on the Foundation, however, little new data has become available particularly on the level of investment in computers, connectivity and other ICTs in the education system of Rome-Lazio. Strong performance in this area is crucial to enable widespread access to the potential benefits of the knowledge society.

In the following, I have chosen to reproduce in Table 6 the figures for selected ICT equipment and ICT laboratories available in the Roman school system in 2003.

Table 6. Selection of ICT Equipment and Labs in Roman Schools						
Selected ICT Equipment in Roman Schools						
N° Schools	***Desktops***	***Laptops***	***Total PC***	***Video-conf. System***	***Web cam***	***Parabolic Antenna***
915	25,661	722	26,383	62	511	352
ICT Laboratories in Roman Schools						
Type of Laboratory	N° Laboratories	Cabled	%	With Internet	%	
Multimedia ICT	1,925	1,371	71	1,545	80	
Multimedia Linguistic	132	95	72	96	73	

Source. DGSI-MIUR (2004).

The total number of computers (desktops + laptops) existing in the 915 schools of Rome was 26,383, giving an average of about 29 computers per school. On this bases, Molina (2007) estimated that the average ratio of students per PC was about 12 in Rome. This was below the student/computer ratio of the most advanced cities of Europe, such as Stockholm with its 5 students per computer average and some schools close to a 1 to 1 ratio (Molina, 2004).

Table 6 also showed that Roman schools had installed 62 video-conference systems, 511 web cams and 352 parabolic antennas. It also showed that ICT laboratories were common in Roman schools with a total of 1,925 ICT labs, an average ratio of 2 labs per school, and a total of 132 multimedia linguistic labs. The connectivity of these labs was also high with 80% connected to Internet and 71% having cable access. The multimedia linguistic labs had over 70% Internet and cable connectivity.

5 Inclusion in Rome-Lazio

Along with innovation and education, the performance of Rome-Lazio in social inclusion and, particularly the e-inclusion of citizens at risk of being left behind, completes the "inclusive knowledge society" assessment for the city-region. Here, the analysis is built on the data available for 2006 since the first book on the Foundation reaches until 2005 (Molina, 2007). Table 7 contains the new data and it must be noted these are not always consistent with the data found in Molina (2007), as a result of the use of different sources. Here, for the sake of consistency, the data for 2005 and 2006 in Table 7 comes from the same sources.

In 2006 the social expenditure of the City of Rome reached Mn€ 303.6, a decrease of 11.8% from the Mn€ 324.3 of 2005. This meant a fall of €15 from €127 to €112 per inhabitant, taking into account that between 2005 and 2006 the population of Rome increased by 6.2% or 157,927 people. Part of this decline is ascribed to failed transfers of funds from the Region, especially for housing emergency. The number of people assisted, however, went up in some cases substantially. Thus the number of adults assisted grew slightly by 0.4% from 31,090 to 31,227, but the number of adults assisted financially grew significantly by 11.8% from 2,589 to 2,895. The number of elderly people assisted grew the most by 16.8% or 26,140 people; while the number of elderly people enrolled at centres for the elderly grew little by 0.6%, from 87,380 to 87,875. The number of disabled people assisted also increased by 1.9% or 219 persons; while the number of minors assisted expanded by 1% or 330 additional minors.

Table 7. Various Indicators of Relevance to Inclusion in Roma			
Indicator	***Value***		***Percentage Growth***
	2005	***2006***	
Welfare Expenditure (Mn €) (a)	324.3	303.6	-6.4 (c)
Welfare Expenditure/ Population (€) (b)	127.2	112.2	-11.8
No. Adults Assisted (d)	31,090	31,227	0.4
No. Adults Financially Assisted	2,589	2,895	11.8
No. Elderly People Assisted	156,012	182,152	16.8
No. Elderly Enrolled at Elderly Centres	87,380	87,875	0.6
No. Disabled People Assisted	11,437	11,656	1.9
No. Minors Assisted	36,339	36,699	1.0
Women and Foreigners (equal opportunities)			
Women's Employment (as % of total female population aged 15-64 years)	55.4	53.8	-0.3
Men's Employment (as % of total male population aged 15-64 years)	70.1	72.6	3.6
Women Entrepreneurs	154,306	159,626	3.4
Number of Enterprises Owned by Foreigners (Province of Rome)	14,333	16,627	16.0
Non-profit/voluntary organizations			
Voluntary organizations (e)	--- 594 ---	721 (Region) 500 (Province) 372 (Municipality)	
Culture			
Culture Expenditure (sport and recreational activities included) (€Mn)	124.1	128.3	3.3
Culture Expenditure (sport and recreational activities excluded) (€)	119.6	120.8	1.0

Culture Expenditure/ population (sport and recreational activities included) (€) (b)	48.7	47.4	-1.3

Source: Based on data from Comune di Roma (2005, 2007e, 2007f, 2008).

(a) The expenditure includes: child care centres; minors – disabled students; minors – other interventions; disabled – in-home assistance; disabled – other interventions; prevention and health education; in-home assistance for elders; elderly – other interventions; services for immigrants and nomads; services for homeless people; interventions for social discomfort; housing emergencies; other expenditures for goods and services; building maintenance services.
(b) Based on data from Comune di Roma (2007e, 2007f) – demographic data: population 2006: 2,705,603; population 2005: 2,547,677.
(c) The decrease is ascribed to failed transfers of funds from the Region, especially for housing emergency (Comune di Roma 2007f).
(d) Based on data from Comune di Roma (2007e).
(e) The 2006 data is based on the official register of voluntary associations – L.R. 22/99 – available on the Lazio Region website www.socialelazio.it on the 2nd May 2008. The 2005 data comes from Bilancio Sociale di Mandato 2005 (Comune di Roma, 2005). It is worth mentioning that the website www.volontariato.lazio.it counts instead 1,014 associations for the province of Rome.

Table 7 also contains data of relevance regarding equal opportunities for women, particularly in terms of employment and entrepreneurship. Additional data in this respect is found in Table 2, showing that in terms of employment and unemployment women fared worst than men, with women making up 42.8% of the employed population but 54.3% of the unemployed population in 2006. Table 7 confirms this picture, showing that in the City of Rome the proportion of women in employment in relation to the total women population aged 15 to 65 in 2006 was much lower than that of men: 53.8% against 72.6 respectively in 2006. Moreover, while the proportion of men in employment grew by 3.6% between 2005 and 2006, the proportion of women in employment actually fell by 0.3%. Regarding entrepreneurship, the situation is also one of substantial disparity, although the position of women seems to be improving gradually. Thus, we have seen in Table 2 that in 2006 the proportion of active women's enterprises amounted to 26.7% of total active enterprises in Lazio and 8% in Italy. However, Lazio's active women's enterprises had the fastest growth in Italy with 2.6% against the Italian average of 1.3%. This dynamism is confirmed in Table 7, showing that between 2005 and 2006 the number of women's enterprises grew by 3.4% from 154,306 to 159,626.

Another important dimension of equal opportunities concerns the immigrant population. Table 7 shows that number of enterprises owned by foreigners in the Rome Province reached 16,627 in 2006 up almost 2,300 units since 2005 or a strong growth of 16%. This is consistent with the data seen in Table 2, showing that immigrant entrepreneurs made up 9.6% of the total number of entrepreneurs in the City of Rome and 8.8% of the total in the Rome Province in 2006. In addition, the growth rate of immigrant entrepreneurs was 12.1% in the Rome Province, compared with 10% in Italy. Since the foreign population amounts to 7.4% of the total population of the City of Rome (Table 2), the 9.6% proportion of immigrant entrepreneurs in relation to the total number of entrepreneurs suggests a picture of good opportunities for immigrants to set up businesses in Rome, especially if one considers the current high rate of growth.

The presence of both non-profit organizations and international organizations entrusted with the task of alleviating poverty, hunger or other malaises in the world is also revealing of the strength of inclusion in Rome-Lazio. Regarding international organizations, little new data exists beyond that provided in Molina (2007). There, it was said that Rome counted on the presence of 183 governmental, non-governmental and inter-governmental international organizations, and 5000 international personnel. Regarding voluntary organizations in 2006, Table 7 identifies 372 in the City of Rome, 500 in the Province of Rome and 721 in the Lazio Region.

Finally, investments and improvements in culture and sports have the potential to reach all citizens in Rome-Lazio. In particular, the rich cultural patrimony of the City of Rome represents a major asset for its citizens as well as for Italy as a whole. In 2006, the cultural expenditure of the city reached €120.3 Mn, a slight increase of 1% from the €Mn 119.6 of 2005. Adding the expenditure on sport and recreational facilities, the cultural expenditure raises to €Mn 128.3, up 3.4% from 2005. However, if one considers the growth of the Roman population from 2005 to 2006, the actual cultural expenditure per inhabitant declined by 1.3% in year 2006.

In sum, in the period 2005-2006, Rome-Lazio's efforts in inclusion showed advances as well as setbacks. There was a decline in the social expenditure and welfare expenditure per user, but an increase in the number of people assisted. There was a small decline in the proportion of women in employment in relation to the total women population aged 15 to 65, whereas the same proportion for men increased. At the same time, the proportion of active women's enterprises showed the fastest

growth in Italy; and the number of enterprises owned by foreigners in the Rome Province jumped by a strong 16%. Cultural expenditure also grew in absolute numbers, although not enough to avoid a decline in the cultural expenditure per population.

This picture suggests achievements and challenges in the path towards better social inclusion. For an inclusive knowledge society, however, one must add the specific dimension of e-inclusion, that is, the degree of access to both the new technology and its benefits for life and work in the knowledge society. Here, Rome-Lazio once again performs very well in the current Italian context, although leaving plenty of work to be done to achieve the e-inclusion of all, or at least the large majority its citizens. Thus, according to the study "Laziale al PC" conducted by Censis for Labitalia the people from the Lazio Region are at the forefront of the country in terms of adoption of new technology, specifically PC, internet access and wide band connectivity (Labitalia.com, 2007). Thus, 48.5% of Lazio families have a PC at home, compared to an average of 46.5% for Italy;[6] 40% have Internet access (2nd place after Lombardia), compared to 35.6% for Italy; and 18% have wideband connectivity (second place after Friuli). (Labitalia.com, 2007) In addition, 60% of the Lazio population over 6 years old has used the web to search for information on goods and services; 39.5% (highest in Italy) has used it to read or download articles from newspapers or magazines; 38.1% (highest in Italy) has used it to search for health information, compared to 31.4% for Italy. Lazio people have also used Internet for educational and work purposes: 16.2% has used it for education and 18.9% to search for work (compared to 15.4% for Italy). Another important use made of Internet by the Lazio population has been to get information from public administration's websites. 40.2% has done so compared to 37.4% average for Italy, and 27.8% has downloaded certificates, and 13.8% has sent them back electronically. There is one area, however, where the Lazio population scores slightly below the average for Italy. This is e-commerce with 20.3% of Lazio people having bought or ordered goods through the Internet, against an Italian average of 20.6%.

6 *A survey of 1000 families in the City of Rome reveals that over 60% possess one or more computers (Comune di Roma, 2007d).*

6 Conclusion

Finally, the report can step back and look at the combined areas of innovation, education and inclusion to conclude that Rome-Lazio is certainly among the leading areas of Italy regarding current state of development towards an inclusive knowledge society. Plenty of work, however, lies ahead if the city-region is to reach a prominent place among the best international standards. The development of effective policies and instruments in the three dimensions of innovation, education and inclusion is required, starting with the improvement of official data sources to enable access to systematic and up to date information to underpin sound analysis and understanding of the strength and weaknesses of Rome-Lazio's development towards an inclusive knowledge society.

Bibliography

Camera di Commercio di Roma, Tavole della Quinta Giornata dell'Economia, 10 Maggio 2007. Found at http://www.rm.camcom.it/Servizi/File/CCIAA_1031.pdf. Accessed on 6th March 2007.

Centro Studi Unioncamere, Rapporto Unioncamere 2007. La Economia Reale dal Punto de Osservazione delle Camere di Comercio, Unioncamere, Roma, 2007a.

Centro Studi Unioncamere, Rapporto Unioncamere 2007. Temi Chiave e Sintesi dei Principali Risultati, Unioncamere, Roma, 2007b.

Centro Studi Unioncamere, Scenari di Sviluppo delle Economie Locali Italiane 2007-2010, Unioncamere, Roma, 2007c.

Comune di Roma, Bilancio Sociale di Mandato 2001-2005, Comune di Roma, Roma, 2005.

Comune di Roma, I Numeri di Roma. Statistiche per la Citta, No.2, April-June, Ufficio Statistico del Comune di Roma, Roma, 2007a.

Comune di Roma, Mosaico Statistico Municipale, No.3. Novembre, Dipartamento Politiche Economiche e Coordinamento del Gruppo Comune di Roma, Roma, 2007b.

Comuna di Roma, Rapporto sull'Economia Romana 2006-2007, Comune di Roma, Roma, 2007c.

Comune di Roma, I Romani e la Nuova Tecnologia. Un'Analisi sul Territorio del Comune di Roma, Roma, October 2007d.

Comune di Roma, Bilancio Sociale 2006, Comune di Roma, Roma 2007e.

Comune di Roma, Relazione al Rendiconto 2006, Rapporto di Sintesi, Comune di Roma 2007f.

Comune di Roma, Rapporto sul Mercato del Lavoro a Roma 2007, Comune di Roma, 2008.

Direzione Generale dei Sistemi Informativi (DGSI), Ministero dell'Istruzione, dell'Universita e della Ricerca (MIUR), Indagine sulle Risorse Tecnologiche per la Didattica nella Scuola Italiana, DGSI-MIUR, Roma, 2004.

Grande, F., Forte, M. and Benedetti, D., Lo Scenario Economico Provinciale. Contesto Produttivo e Dinamiche Territoriali, Camera di Comercio di Roma, Roma, 2007.

Hollanders, H., 2006 European Regional Innovation Scoreboard (2006 RIS), European Trendchart on Innovation, 2007.

Filas, Quinto Quadro regionale di Valutazione dell'Innovazione, Innovation Scoreboard Regione Lazio, Filas, Roma, 2007.

Istat, Annuario Statistico Italiano 2007, Istat, Roma, 2007.

Istat, Principali Aggregati dei Conti Economici Regionali – Anno 2006, Statistiche in Breve, Istat, Roma, 3 Gennaio 2008.

Labitalia.com, Censis, abitanti ottimi internauti ma piace poco l'e-business, 9h November 2007. Found at http://www.labitalia.com/articles/Approfondimenti/20382.html. Accessed on 8 May 2008.

Molina, A., Digital World Foundation. Working for an Inclusive Knowledge Society, Fondazione Mondo Digitale, Rome, 2007. Also in Italian, Molina, A., Fondazione Mondo Digitale. Per Una Societa Democratica della Conoscenza, Fondazione Mondo Digitale, Rome, 2007.

Molina, A., E-Learning Innovation in Stockholm's Secondary Schools: Advances and Set-Backs in "Collaborative-Personalization" in Education, Management School and Economics, The University of Edinburgh, Edinburgh 2004. Also in Italian, Molina, A., Educazione on-line. Sfide e tribolazione di un caso d'innovazione nella Scuola Superiore di Stoccolma. Quaderni di Pensiero No. 1, Consorzio Gioventu Digitale, Rome 2005.

Regione Lazio, Rapporto sulla Società e sull'Economia del Lazio 2007, Ediesse, Roma 2007.

Regione Lazio, Obiettivo Competitività Regionale e Occupazione. Programma Operativo, D.C.R. no.39 del 3/4/2007, Regione Lazio, 2007a.

Unioncamere, Unioncamere, PIL 2007: Il Gap tra Centro-Nord e Sud Vale 713 Euro in Più del 2006, Communicato Stampa, Roma, 2007.

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