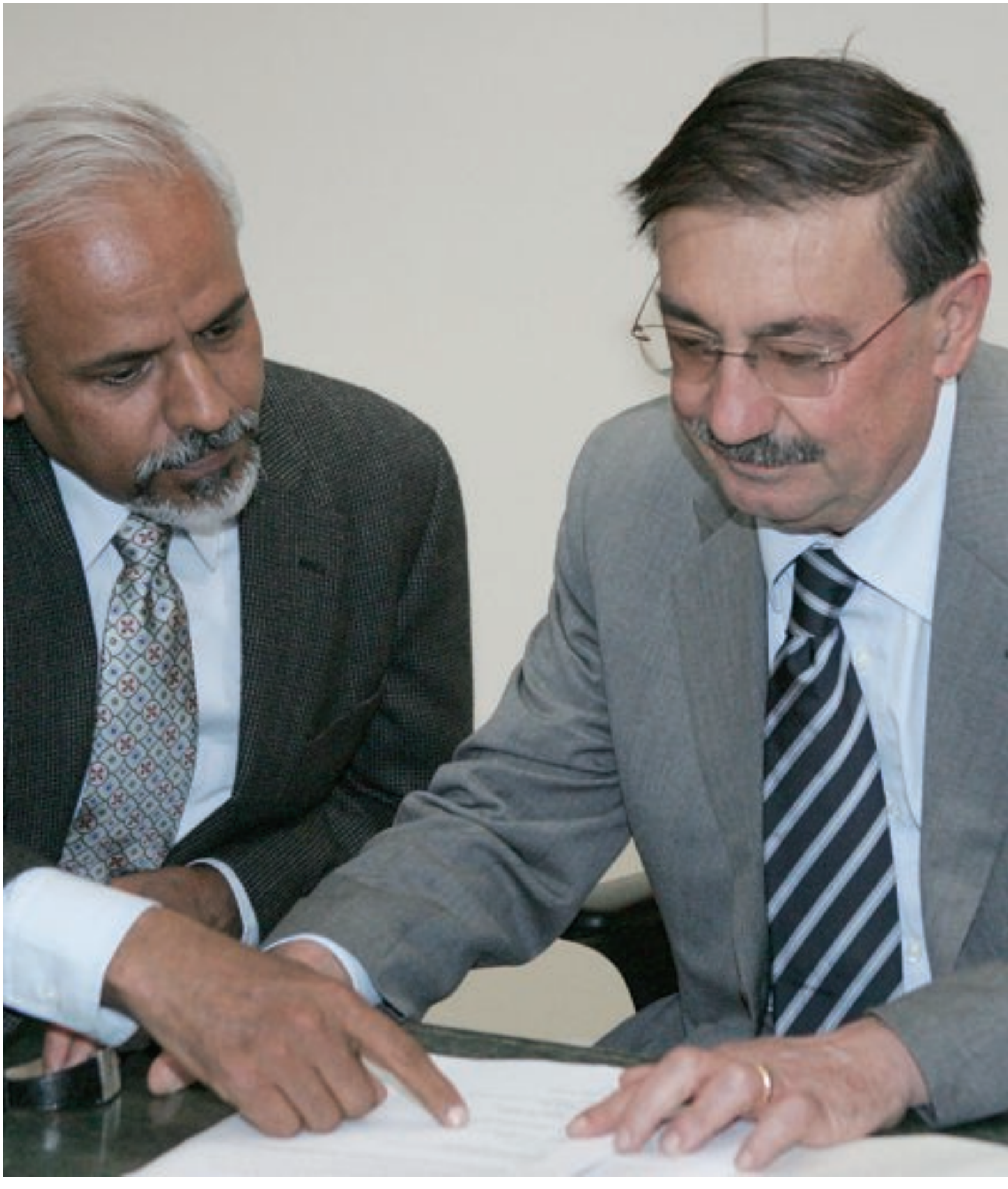
United Nations
Educational, Scientific and
Cultural Organization

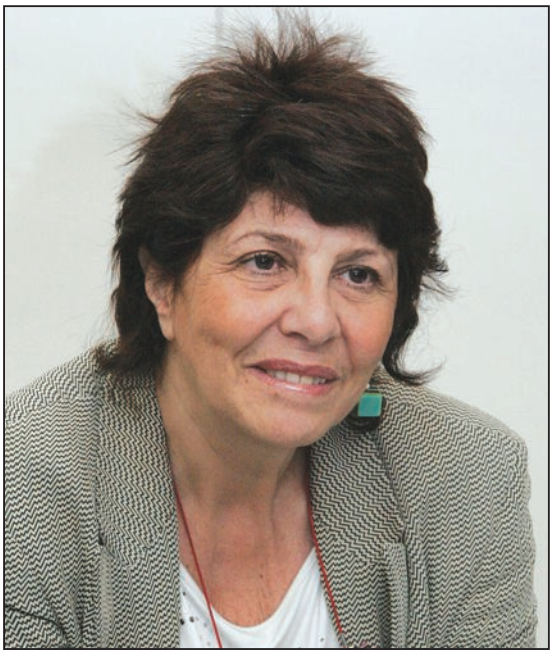
G8-UNESCO World Forum

Education, Research and Innovation: New Partnership for Sustainable Development

web: g8forum.ictp.it

Forum Newsletter - Saturday 12 May 2007 - No. 3





Patrizia Sentinelli

Deputy Minister for Foreign Affairs, Italy

The Italian Government chose to organise the G8/Unesco World Forum in Trieste as it clearly recognises the role which this city has had for a long time in the field of scientific research and international cooperation. The goal of the Forum is to generate high-level discussion of concrete initiatives combining Education, Innovation and Research in the interests of Sustainable Development. The phase of development that the world is now experiencing is unlike anything seen before in history. But developing countries must be helped and the Trieste Forum can make the difference.

This is the reason for which the World Forum has brought together scientists, government representatives and entrepreneurs from 60 countries, including numerous delegates from the developing world. Its main objective is to unite knowledge and power in the interests of effective solutions.

G8-UNESCO World Forum Trieste 10-12 May 2007
No. 3, Saturday 12 May 2007
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Photo first page: Minister Fabio Mussi with ICTP Director Katepalli R. Sreenivasan

THE FORUM VIDEO RECORDINGS AND THE NEWSLETTERS ARE AVAILABLE ONLINE:

www.rvnet.eu/g8forum
www.ictp.tv

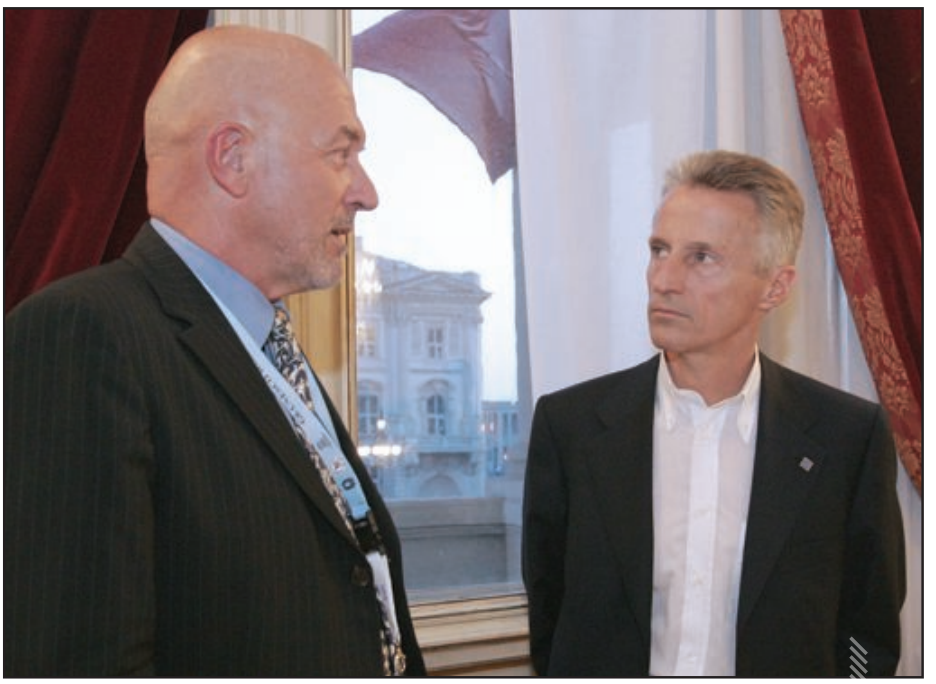
Significance of the Forum for the future

by Claudio TUNIZ, Assistant Director ICTP

The Trieste G8/Unesco World Forum on sustainable development has urged scientists, politicians and entrepreneurs to map out an action plan for the Group of Eight. It brought together researchers, government representatives and entrepreneurs from 60 countries, both from industrialized and developing countries.

The forum, an outgrowth of discussions that took place at the G8 Summit held in St. Petersburg, Russia, last July, examined how governments, universities, research centres and industry can work more closely together to advance the goals of sustainable development. Special attention has been paid to efforts designed to promote entrepreneurship and innovation in science and technology. The goal of the G8-UNESCO World Forum, proposed and hosted by Italy, is to "generate high-level discussion of concrete initiatives combining Education, Innovation and Research in the interests of Sustainable Development". The phase of development that the world is now experiencing is unlike anything seen before in history. But developing countries must be helped, in particular Africa.

One concrete result that comes out of the event is that on the occasion of the forum, Mr. Prodi has asked for an action plan on sustainable development and has invited UNESCO Director-General Mr. Koichiro Matsuura to produce "a page or two of priorities" to send to the G8 summit in Heiligendamm, Germany next month. "We all know what the problems are but we need to know where and how to act," Prime Minister said. The forum is thus very timely and is giving an essential contribution to develop the agenda of



the next G8 Summit, that according to various leaders in the G8 countries could actually take into consideration the possibility of launching a partnership with the developing world while connecting knowledge and sustainable development. Ictp representatives are already working on a draft document together with the other co-organizers of the Forum –Unesco and the Italian ministry for foreign Affairs.

As Mr. Prodi said here, the idea behind this Trieste World Forum is actually that the G8 can become the vehicle through which long term attention is focused on key issues such as the environment, energy and research. German Chancellor Angela Merkel, current duty president of the G8, has said recently one key item on the agenda in Heiligendamm will be the "the struggle against poverty around the globe". According to the official German Presidency website, the summit's motto will be 'Growth and Responsibility' and it will focus on Investment, Innovation and Sustainability, with Africa being a key area of concern. The main objective is to unite knowledge and power in the interests of effective solutions. In this context, our proposal is to use Trieste System's experience of more than 40 years of collaborations with the developing world.

The Role of Technology

Carlo Rubbia, Nobel Prize Laureate in Physics, CERN: *"It is research sectors which drive the technology, as technologies are generally developed when there is already a program which needs them. Unfortunately we still face a gap between political rhetoric about a "knowledge society" and any concrete funding proposals. The current trends are unsustainable though and we need a "new vision. At the same time, I believe there is no innovation though without substantial risk. In the case of energy for example, I would stress that governments need to act now, not later as the total yield now from solar energy is equivalent to one nuclear power plant. In the context, given the fact that many developing countries -in east and north Africa for example- have better access to solar energy, it makes sense to develop special strategies in this fields in various countries."*

Information and the knowledge Economy

Bruno LANVIN, Regional Coordinator for Europe and Central Asia, World Bank: *"Information is the core engine of globalization and the digital divide is less about equipment and technology than about content and value. Moreover, in a global information economy, winners will be 'permanent innovators' and 'continuous learners'. In this context, all economies (not just the most advanced) will strive to be knowledge economies. This phenomenon will put human resources back at the center of competition and development. Also, in this new world, all stakeholders will need to consider accepting new roles (private/public, producers/consumers, importers/exporters) and fundamental concepts will need to be revisited (usage/property). So far, we have learned that building a knowledge economy entails the pursuit of many objectives, which may be competing for the same resources (innovation, education, information infrastructure). This is because knowledge economies will offer highest degree of resilience in the face of upcoming challenges and opportunities (rapid technological change, outsourcing, 'the flat world'). In this context, political leadership and social consensus are essential to sustain efforts".*

Setting new priorities

11 May 2007
Session I, "Innovation and Society": According to Luigi Nicolais, Italian Minister for Reform and Innovation, "there should not be a distinction between basic research and applied research". Nicolais believes that that innovation is a key concept for public administration as "public service has to get more transparent and competitive and we need to introduce inter-operability at all levels of government". Bruno Lanvin, Advisor of the World Bank stressed furthermore that according to the strategy of its organisation, the goal of poverty reduction is tied to the economic development in countries "through innovation, knowledge, competitiveness and development". Moreover, "technology has become the engine of globalisation" and in this context "knowledge-based economic growth will offer the highest degree of resilience in the face of upcoming challenges and opportunities". Lastly, Lanvin presented an "ABC" of e-competition (Access, Basic skills, Content, Desire and Excellence) Umberto Paolucci, Senior Chairman Microsoft presented the various initiative of the Microsoft Corporation, while Mihail Roco, Senior Advisor from the US National Science Foundation focused on Nanotechnology and Robert Aymar Director General CERN on the importance of "fundamental research, as a the primary force for innovation where innovation is understood to be a new idea, method or device that is being realised and exploited".

Session II, "Sustainable Development and Health": According to Giorgio TAMBURLINI, Scientific Director of the Institute of Child Health IRCCS Burlo Garofalo of Trieste "poor health represents an "increasingly unsustainable burden" for development and a threat to global security. "let us not forget – he noted – that 10.7 million children die each year, and other 150 million suffer long-term effects of malnutrition, illness, accidents and neglect". The question is thus "how far development can proceed in the face of a population which suffers from cognitive disabilities that go hand in hand with these problems". Tamburlini, according to whom diseases of poverty are largely preventable--in fact 60% of all deaths under 5 are preventable- noted also that the mortality gap is widening between the richest and poorest, that the public expenditures in health care are low, that the health care system is undergoing a huge human resource crisis. "Developed countries actually aid brain drain, luring away qualified medical personnel". Finally Tamburlini noted that societies must increase the demand for health care through education and that technical advances need to be combined with social policies - "illiterate people will not use the health care solutions you can provide for them". Pratap C. Reddy, Founder and Executive Chairman of the India Apollo Hospitals Group, has presented furthermore the case of the group that he founded - Apollo hospitals, whose objectives are to bring "quality care at effective costs", while emphasizing patient-centric care. "Apolo Hospital has treated 14 million patients, has conducted 59,000 heart surgeries so far with a success rate of 99.6% at one-tenth the cost in USA and introduced telemedicine for the first time in India. Francisco E. Baralle. Director-General, ICGEB noted furthermore that "basic research should be actively encouraged in medical sciences and genetics". Also, the issue of IP in developing countries should be addressed when joint projects are drafted with scientists of developing countries. Their scientists must be provided training on matters of IP. Moreover, according to Baralle "we must simplify technology without lowering quality".

Session III, "Sustainable Development and Energy": At the beginning of the session, Giovanni Manfredi, Italian Minister for Energy Issues, emphasized the need for increased fuel efficiencies and development of alternate energy technologies ."Decouple emissions from economic growth", he noted, while underlining that "fears that too strong subsidies might disrupt market forces". Furthemore, Lawrence L. KAZMERSKI, Director National Centre for Photovoltaics stressed the necessity of a breakthrough in 4th generation photovoltaic devices. Isao YUKAWA from the Japanese Kyocera Solar Corporation, underlined the fact that "there is unlimited solar energy available on the planet if technologies are developed to harness it". Last, Evgeny Pavlovich VELIKHOV, president of Russian Research Centre Kurchatov Institute, stressed that "only real international cooperation can help us meet this energy demands, while keeping in mind the estimates of energy needs for the next 100 years". "Only when this requirement is met can we think of a stable and sustainable development for all countries" he added.

Special Session on Research and Innovation: The Role of the Government (ROUND TABLE): Fabio Mussi, Italian Minister of University and Research stressed at the bening of the session that fact "in order to address the problem of sustainable development we need to have far-sighted policies and political institutions that operate at international levels". Furthermore, Mosibudi MangenaMinister of Science and Technology of South Africa described his country's governmental policies to promote innovative thinking and innovation in science and technology. According to Janez Potochnik, European Commissioner for Science and Research, "innovation is a moving target" and "what works today may not work tomorrow". "There are global challenges - he added- that are not confined to one specific area and therefore we must really work together—this is the value of a "knowledge society." Nobel Laureate from Cern, Carlo RUBBIA noted that Italy has only 1% GNP spending for research and that the private sector funding is much higher in the US than in Europe. Last, Nobel Laureate Martin L. PERL from the Stanford Linear Accelerator of the United Nations gave a talk on education of researchers. According to Perl, "for every good idea we should expect to have 5-10 bad, or wrong ones". Perl also suggested that text books should be shortened and that the Ph.D. could be limited to 3 years or less. According to perl "universities should reduce the "fake" emphasis on original research, since students often join big research groups where the research is already mature and the problems well defined already".
(Joe Niemela, Surya Raghu)

Special Session on "Science, Technology and Innovation: Perspectives for Africa"

The continued interest of G8 countries and UNESCO in the economic development of Africa is well known. The scientific and technological development represents an important part of the economic development. This session focuses on opportunities of scientific cooperation, at both the North-South and the South-South levels.

Coordinator Professor Mohamed HASSAN, *Welcome remarks* Ambassador Armando SANGUINI, *Opening Remarks* Professor Nagia ESSAYED
ROUND TABLE DISCUSSION Hon. Professor Hany Mahfouz HELAL , Hon. Dr. Noah M. WEKESA, Hon. Prof. Romain MURENZI, Hon. Dr. Yaye Kène GASSAMA DIA
Closing Remarks Hon. Dr. Patrizia SENTINELLI

Silvanus Mushi Bonane, Ministry of Technological Research, Democratic Republic of Congo

Call for real action

Noah Wekesa, Minister for Science and Technology, Republic of Kenya: *"Kenya's perspective on science, technology and innovation are understandable within the context of the recently embraked upon long term vision for the transformation and development of the country. In an attempt to structure viable strategies and frameworks for development, Kenya has decided to deliberately take a strategical long-term and well structured framework for development. (...) Kenya, especially Nairobi, is a focal point for major national and international research institutions, especially in the life sciences. We are keen to ensure that an innovative and synergistic enviroment is created to exploit this fact. Clearly a major science, technology and innovation park project is one way of doing this. Such as science, technology and incubation park initiative would obviously have a regional dimension and would have capacity to involve if not attract a huge Kenyan and Eeastern Africa Diaspora scattered all over the world.*
What is happening in Kenya is not an exception but part of the evolving new mood in most of Africa. This is attested by the position taken by the African Union in developing a Consolidated Plan of Action for science and technology and its clear indication that science and technology have become a major priority in its development agenda.(...)
From this year and for the next two years, Kenya will be the Chair of the African Council of Ministers of Science and Technology (AMCOST) and I personally look forward to working closely with the Forum participants as we implement the Africa's Science and Technolgy Consolidated Plan of Action and also exploring other new innovative avenues and initiatives for the benefit of the people of Africa. It is important that we now move from too much talking to real action in ordere to confront real and urgent challenges of deveolpment for our people."

The link with sustainable development growth

Romain Murenzi, Minister of Science, Technology and Scientific Research, Rwanda: *"Slow but steady progress -driven by a new way of thinking-, is healing the nation and instilling a growing sense among people that the future will indeed be better that the past. This hope is due to an emerging consensus within Rwanda that science, technology and innovation must be at the centre of the nation's economic development policies(.) The lesson from countries like Rwanda is this- economic growth is driven by sustained investments in human capital (labour), physical capital (plan and equipment), and intellectual capital (technology). An now more than ever, it is the intellectual capital that determines how prosperous a country will be. It's not by chance that analysts point out our global knowledge society as the primary force driving unprecedented rate of economic development in the developing world. "*

Key challenges facing the international science community

Mohamed H.A. Hassan, executive director of the Academy of sciences for the developing world TWAS, Italy: "*What makes the prospects for international cooperation on science and technology for sustainable well-being so promising, even (or perhaps especially) when it comes to Africa, is that the global scientific community will not be acting alone in this effort. In fact, over the past several years, there have been increasing commitments by governments in the developed world, and particularly among G8 countries, to support science, technology and innovation in low-income countries and especially in Africa. I believe that we have more reason for optimism than cynicism. That we may indeed be witnessing the beginning of a transformational moment in global science and science-based sustainable development. But for us to seize this moment, we need to develop and implement an action agenda designed to sustain and expand international cooperation in science, technology and innovation. The key challenge facing the international science community and the global community more generally is how to take advantage of the rapidly growing capacity in science, technology and innovation now being experienced by some developing countries to forge North-South partnerships that help build the capacity of developing nations that have been left behind. The call for international partnership for sustainable development, the overarching theme of the G8/UNESCO World Forum, could make a huge difference in this worthy campaign. The chances for success have rarely been brighter. The consequences of neglect and indifference have rarely been more troubling. The international science community should seize this moment. If we don't, it could well fade into history as a lost opportunity that we as both scientists and citizens can ill-afford to lose".*

Roger Schjerva

Deputy Minister of Finance, Norway

What is in your view the significance of this event ?
Education, research and innovation have always been important, and have a value in themselves. However, the combination of climate change and poverty that we face today makes it more urgent than ever to educate - to create an understanding of the problems we are facing, and public support for the solutions that are necessary. And urgent to research and innovate, to come up with the technologies that are needed to cover people's needs and still move along the path to a low emission society. That is what makes this Forum so important.
What is your country's message and what are Norway's future priorities in the main areas linked to the topics of this Forum?
One message to this conference is that if we are to move from talking to acting, the economic consequences and economic instruments have to be moved to the forefront. All too often in conferences about sustainable development, there are few or no representatives from the Ministries of Finance. That must change if we are to move on. To quote my speech, I could say that in a world now starting to feel the heat of global warming, there is a growing need for a cool economic perspective. I really believe in that.
As for Norway's priorities in the future - I would mention three things.
Firstly, we try to make ethics and sustainable development a part of our state finances by actively including ethics in the management of our national pension fund. This way we also hope to influence other investors to do the same. During the Forum, we actually had a meeting with Italy's largest financial institution, who told us that our ethics code for managing our national pension fund had inspired them to create ethical guidelines for their own investments. This is of course an honour for us. Second, I think it is important to do research and innovation for an international low emission society. We try to contribute to this by developing a reasonable technology for storing co2 emissions from gas- and coal power plants that can be used internationally.
Finally, based on our own experience as a relatively poor country finding oil and gas, we have made a programme to try to help developing countries with oil recourses to handle their incomes in a way that benefits the whole population and helps build national capital in a way that is sustainable in the long term. We are a small country with limited influence, but we believe this is the way for the future.

Umberto Paolucci

Vice President Microsoft Corporation, President Microsoft Italy

In your Forum speech, you focus on various issues, linked to innovation and to the importance of the collaboration between the public and the private sectors. Can you be more specific?
Take for example the eGovernment .
At Microsoft we feel that in the future eGovernment will need to be more knowledge-based, user-centric, distributed, and networked.
The vision for eGovernment in the EU for the next decade has actually already defined eGovernment as a tool for better government in its broadest sense. But in the future, current eGovernment strategies which focus on delivering greater quality and efficiency of public services will be widened. This new vision also encompasses the provision of better public administration, more efficient, transparent, open, and participative governance and the implementation of more democratic political processes. Furthermore, the implementation of such an ambitious vision needs to address various key issues, which derive from the political, social, economic and technological trends identified. The key issues refer for example to the increasing importance of managing knowledge in governance and in democratic processes; the needs of the citizens and businesses, so far unaddressed). Also, they refer to the need to incorporate in the delivery chain a growing number of intermediaries, which play an increasing role in both the delivery of public services and in democratic processes. Furthermore, we need to underline the importance of networking, co-ordination and collaboration for better government.
What do you mean by "providing better government for greater public value" in a context linked to sustainable development?
The creation of public value is a broad term that encompasses the various democratic, social, economic, environmental and governance roles of governments. Concrete examples of these roles are: the provision of public administration and public services (health, education, social care); the development, implementation and evaluation of policies and regulations; the management of public finances; the guarantee of democratic political processes, gender equality, social inclusion and personal security; and the management of environmental sustainability and sustainable development.
Providing better government for greater

public value depends on government structures, processes, people and culture delivering more cost efficiency (cost reduction, greater value for taxpayer's money, better financial management, and simplification of administrative procedures), more effectiveness, better quality of services, more accountability, transparency and openness, greater participative governance and more accessibility.

Werner Burkart

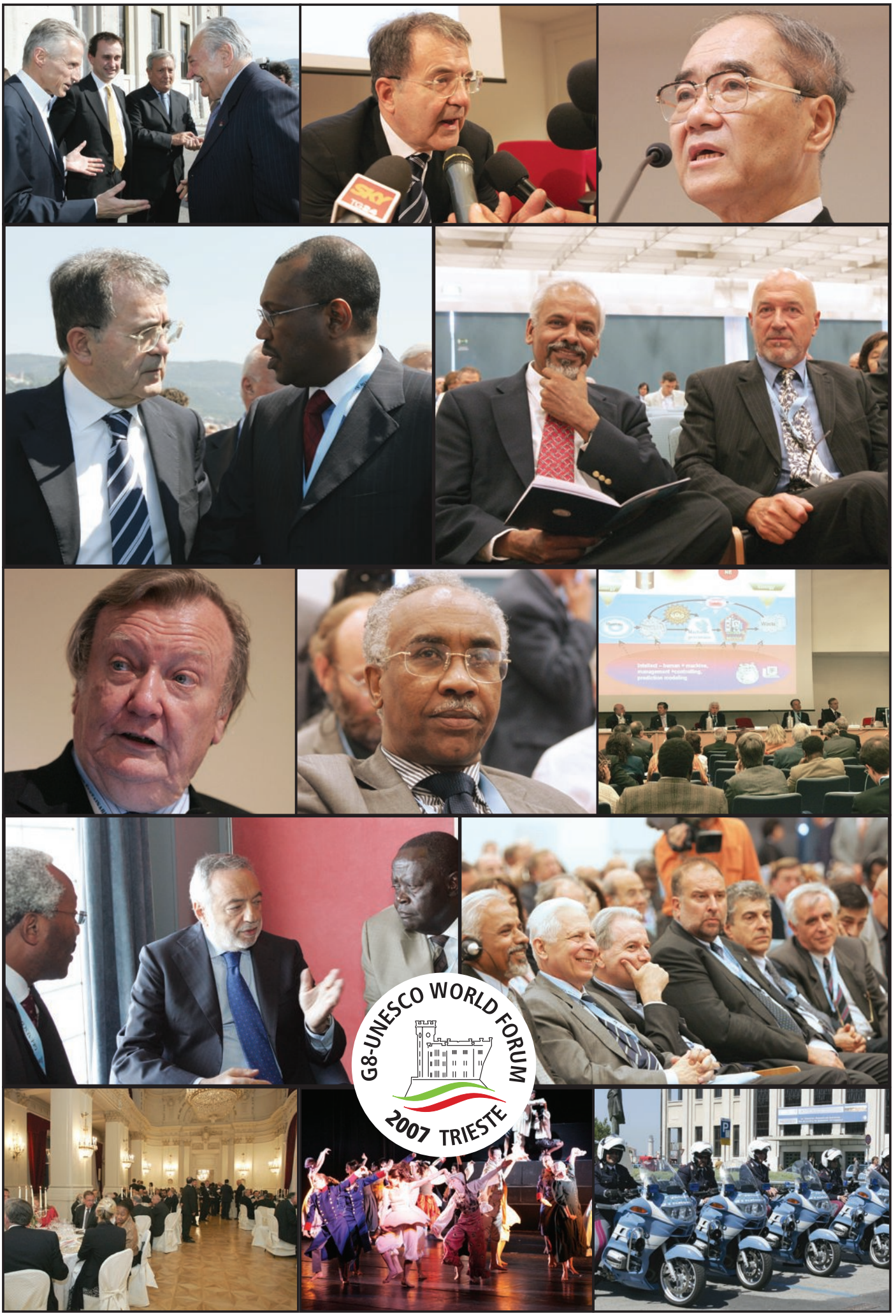
DDG-NA, IAEA, Vienna

It is said that "Knowledge is Power". Almost all the important technological developments accomplished around the world in the twentieth century, that deeply changed our way of life are deeply rooted in invaluable basic knowledge and its effective utilization. The so-called Knowledge Triangle comprising Education, Scientific Research and Technological Innovation as its three sides captures it all. One hardly needs to emphasise the immense importance of education and training, while true intelligence is when one can apply the same for purposeful innovation and tangible benefits. The fine quality of life and high standards of living available today in different parts of the world would not have been realized, but for some considerably knowledge-driven developments. Any society embarking on well-planned growth path requires placing a strong focus on creating, nurturing and preserving knowledge as an important tool for national/societal development. Although all forms of knowledge are valuable in their own ways, scientific knowledge will continue to play the key role in enabling and strengthening technological development across the board, from meeting the simple day-to-day living needs to addressing advanced strategies for conquering the outer space. Knowledge is becoming a key factor affecting economic development. Building up of knowledge-based talents at national level is an important criterion for self-reliance and sustainable development. The roles of ICTP and UNESCO in helping to build such cadres of talented individuals in various countries around the world and the complementary role of the IAEA by adding its share of "nuclear knowledge" for making use of nuclear and radiation sciences are noteworthy in this regard. Discipline-based categorization of knowledge, as physics, chemistry, biology and so on, has already given way to need-based inter-disciplinary knowledge pursuits in almost all fields of science and technology, all the more so in the nuclear field. The significantly higher rate of successes accruing from such multi-disciplinary synergies is an important facet and will guide advances in future too. It brings along with that a set of challenges and conflicts of interests to be addressed, as one often overlooks the fact that the "sum of the parts" is invariably a much larger achievement and credit for sharing, than an isolated highlight of any single part alone. It is also pertinent from the point of view converting knowledge-based developments into practical solutions for real-life problems and socio-economic success stories. It is not an exaggeration to state that in future, "Knowledge Capacity" of nations will be as much an asset as any natural wealthy resources like oil, precious minerals etc. In quite a number of developing countries, as for example in China and India, this feature is already apparent due to their pressing need for faster economic growth, while vibrant knowledge acquiring is a major emphasis in a number of developing countries in Asia, Latin America and Africa. It is therefore quite appropriate to consider in depth the idea of "Knowledge Empowerment" as a key for sustainable progress, for reducing the inequitable status among societies and in turn, for enhancing the prosperity of nations and world peace?

Sverker Sörlin

Director, Swedish Institute for Studies in Education, Sweden

The world is full of pressing issues and the knowledge that we have and that we will create in the future must be implemented to improve the lives of humans on the ground. And the most general and fundamental condition of this improvement is the environment. Climate change, bad land use, and weakening ecosystem services "the silent work of nature to simply function, the sine qua non of any economy" and many other major environmental concerns, are at present imperilling the progress that otherwise lies within reach. In order to deal with this we need science and technology. We know this and the contributions in this session have made it even more clear. We need environmental technology. We need better environmental management. We need climate abatement technologies. It is obvious. Let me point to one of the most crucial findings of research in the social sciences and humanities in recent years which has an important story to tell us in this regard. The message is this: to invest in education and science is to invest in the environment. This is a connection which is of the same kind as the connection that we have seen between the level of women's education and the performance of a society on many welfare indicators. Let me give you an example from research that we have undertaken in the Stockholm Resilience Centre, a newly formed major institute in Stockholm. We have studied urban parks, urban and near urban reserves, and the city itself. We have found that the best possible thing for the environment is to be populated by active, well educated citizens that are well organized and belong to civic groups, in particular if these groups use the landscape or the parks or any particular part of the city. These results are sustained by research world wide on how conservation old style, where reserves were set aside to "preserve" original nature, is not easily compatible with equity and sustainability and with people's interests. Another factor is diversity. Cities and regions which nurture diversity are not only becoming more creative and generate higher income. They also generate biodiversity. In New York City and in Capetown the ethnic and social diversity creates a biodiversity mosaic. Intense use for diverse purposes creates a manifold environment. We think there are deep lessons to learn from this new work. Other cities have been encouraged to join. In cooperation with UNESCO in New York Stockholm Resilience Center has already started a network of cooperating cities including not just Cape Town, Stockholm, New York, but also Delhi, New Orleans, Helsinki, Istanbul, and Canberra to continue comparative this work. The most important capacity that we can see in this research is motivated citizens. They can enhance qualities of their neighbourhoods. They will inevitably make tougher demands on their politicians. They will also act more responsibly in their lives and they will contribute to welfare and economic growth.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