It was also largely acknowledged that STI should be integrated into the Post-2015 development agenda, because this would serve as a means of keeping the focus on STI on the front burner for policy makers.

It has been cautioned, however, that increased resources devoted to innovation and technology should not imply greater demand on natural resources. STI activities need to be further oriented towards sustainability and sustainable development. The sustainability science approach could provide orientation towards this goal. In this sense, new science, technology and innovation policies will need to be designed at all levels, aiming at establishing STI policies for sustainable development.

Monitoring and evaluation is one of the major challenges identified. For many respondents, the absence of proper accountability mechanisms was pointed out as one of the main deficiencies of the MDGs. The Post-2015 development agenda should ensure sustained new indicators and accountability. In addition, indicators need to improve quality, in its wider sense, including relevance, timeliness and policy-orientation.

STEM Education and popularization

Human Capital is seen as one of the key factors for STI development in the countries, leading towards the importance of education at all levels, particularly science, technology, engineering and mathematics (STEM). A Knowledge Society requires knowledge workers, but especially knowledge citizens. Access to quality education for all is the first step in this process.

Education for all has been successful in increasing primary and secondary school education and skills development. But particularly for African countries to contribute more effectively to global sustainability will require investing in higher education and STI. African countries need to tap the innate innovative capability of its 50% population the youth through research and development in education science, technology and engineering. Emphasis in education in Post 2015 must be in higher education and science for society.

Universal primary education though essential is not enough given the rapidly changing scenarios where only specialised skills and knowledge will ensure fruitful employment. At one end of this *continuum* will be vocational skills and at the other end will be hyper-specialized but interdisciplinary skills needed in the knowledge economy. Thus some participants proposed that the MDG goal of universal primary education might transition to a broader approach, such as for example “universal skills education”. There is a need for building more technical and vocational schools, particular in poor areas, both rural and urban. Such schools should seek for orientations according to the needs of the area, including its natural resources, in order to be close to the job market

Schools need to further incorporate ICTs and its application to the classroom. This process, combined with quality science education, can support sustainable development in its various pillars, by educating critical citizens, aware of laws and rights and capable of exercising their rights, in fields such as education, health, or livelihoods.

One of the key aspects to link STI and sustainable development is through Education for Sustainable Development (ESD). ESD gives children, youth and adults the knowledge, information and tools they need to make smart decisions to create a sustainable future for all. It is the collective contribution of the world’s education and

learning systems (formal, informal and non- formal) including preschool to higher education, the world's public awareness and information sharing systems, and the world's public and private sector's training systems.

ESD focuses on concerted activities in five major spheres:

1. Access and retention in quality education.
2. Reorienting the current formal education systems from the current underlying focus on traditional development to one focusing on sustainable development. The engagement of higher education is particularly necessary.
3. Engaging and building public awareness and understanding to build an informed society that not only understands the need for wise reform, but also recognizes current or emerging unsustainable policy and practice.
4. Training and re-orienting current practice in all sectors of society, to achieve sustainability and to address deep-seated attitudes and perspectives to social, economic and environmental issues in order to facilitate future training and professional growth.
5.

proper institutional analysis and design for its success, based on systemic analysis of the STI situation in the country. It needs to be noted, however, that development and transfer of technology no longer follows a North-to-South path. Similarly, knowledge and technology exchange in agricultural sector between the countries of the South will likely continue to increase in the coming years. Another aspect to consider in the technology transfer process is the need for adequate business capacities, particularly in terms of knowledge management.

STI activities, technology transfer, adoption and adaptation in developing countries will be more warmly received if they fit into the lifestyles of the larger part of the population that reside in rural communities. Key in this process is the building of STI capability at all stages of the innovation system to enhance new ideas, processes and products for sustainable development. Technology empowers people by allowing them to expandthe choices in their daily lives with a spill over effect in harnessing such technologies to upgrade subsistence livelihoods to income generation, thus improving

more evenly shared. Countries need to explore these and build capacities for properly making use of the TRIPS agreement, as well as ensuring that enabling national legislation and frameworks for the use of the flexibilities are ready and in-place for their timely use.

At the same time, in order to improve accessibility to scientific research results, open access to research should be encouraged. In particular, it is noted that all publicly funded research should be made available freely and openly in digital repositories. Digital libraries also improve efficiency, requiring adequate internet access and bandwidth.

Gender Issues in STI

Women are still a minority in science and engineering careers, and in particular in decision making positions. The sub-representation of gender represents a violation of the general principle of justice or equity, but it is also a problem of efficiency because it determines the functioning of society at a less than optimal level. In this way, it undermines the functioning of the main rules of the scientific community. It also involves lower investment in education. Moreover, this scenario coincides with the persistence of institutional and socio-cultural barriers for female researchers, which restrict their career opportunities. Still, dates from previous investigations show that, in the last years, at highest levels the gender gap has decreased.

It the last years the position of women in our society and their role in the STI has improved, especially in the education sector, where most national and regional data show that the gap between men and women has decreased. In many countries, women's educational situation has become equal or higher than men's one. Latin America in particular is the region with the highest proportion of female researchers (45% according to the UNESCO Institute for Statistics).

On the other hand, despite the significant improvements made in recent decades, women holding significant positions related to the STI are far from gender parity.

Many reasons can be identified to

One of the main instruments of reducing poverty in Africa is the development and application of appropriate technologies for transformation of the vast informal sector.

Food security could be better with the use of methods of science, technology and innovation, which should always be done to fulfil the need for food and food security controls. But this must be done with a system that is really appropriate for the benefits actually felt by people in need. Agricultural innovation systems should be built by involving at least four stakeholders:government, education institutions, private sector, and farmers. What usually has happened is that many invention could only “stacked up” in education institutions library, due to lack of funds for implementation or further research.

For many years, farmers in developed countries have benefited from the most current technologies to increase their harvest, improve the production of livestock and decrease the time and effort needed to cultivate the land and the livestock. Even within the developing world, we observe big differences in productivity levels from the highest in the Latin America and the Caribbean region to the lowest in sub-Saharan Africa pointing to massive underinvestment in this sector. STI have an important role to play in bridging the existing productivity gaps between regions and countries.

The existing and future technologies need to become more affordable in order to be adapted by the rural poor in developing countries. Innovative solutions, such as decentralized energy options that expand access to energy to underserved populations in rural communities are another example of technology coming to aid for rural development. In recent years, off-grid, decentralized energy options - often based on renewable energy sources (such as solar, wind, hydro or biofuels) – have become more available and offer new opportunities for providing energy access among dispersed underserved rural populations.

Rural communities increasingly see their land and natural resources degraded due to climate change, which further weakens their food security. According to a study by the International Food Policy Research Institute, climate change could increase the numb3(r)-3 e44 68 order ns

civil society to the government). Advice should be "independent", focussed and balanced, and take into account the different cultures between science and policy, including different time requirements on policy needs and provision of scientific advice. Foreign Affairs are one of the key areas for sustainable development; in this field STI advice would become STI diplomacy. Capacity building for STI advisors and STI diplomats is needed, as well as exchanges (Fellowships) between STI institutions and government departments. For the science-policy interface to adequately work, STI advice mechanisms should be well funded.

For the interface between science and policy to work properly, research facilities, particularly at Higher Education institutions, need to be strengthened, down to the grass root levels to inform policy formulation and public awareness about important issues affecting people's lives such as environmental, social and economic issues.

Better use of academic research tools by government at both national and sub-national levelsought to lead to a stronger partnership working between line ministries at the national level, and municipal authorities and college/schools at the regional and local levels. Only through mutual recognition can such a partnership lead to an effective policy formulation informed by scientific discourse. The research centres are not isolated from, but connected to, its local civic community, which can be a source of huge input and knowledge. It's the civic community and its different strands that set the debate agenda, always with an eye for new challenges and opportunities.

Further research on more participative models of governance could be a key feature to strengthen the interface between science and society. So far, institutional tools have frequently been inadequate and in some cases it often happens that the civil society is not sufficiently involved in the decision-making processes. The new challenges require an effective system of governance in which participation is an act of shared responsibility in decision making. This process should start from identification of problems and needs, analysing potential solutions, resources available, priority and options to establish the mode of response and the actions to carry out in order to identify the needs. This could be one possibility to strengthen the interface between science and society and create knowledge societies which might give to everyone equal access to essential living resources. Moreover, managing environmental problems efficiently requires well-designed public policies or coordination among stakeholders and synergies between university-laboratory-policy makers and civil society, through the creation of networks and associations.

STI and the Post-2015 Development Agenda

While STI could be integrated into the 2015-post development agenda in a cross-cutting manner –much as it has been in the MDGs-, there is an opportunity to give it a stronger presence, recognizing it not only as transversal, but as one of the basic building blocks for achieving sustainable development.

Formulation and adoption of a post-2015 framework should definitely not following top-down or donor-driven approach. However, one of the means for giving 0 1 aTBT1 0 0 1 370.75 301

Interesting examples are also projects in China under which companies in developed world and companies in China work together to produce innovations with joint IPRs and then transfer the technology to other countries with joint benefits.

A case of reconversion of a company from a traditional industry (textiles) to a green industry (wind turbines) is India's Suzlon. This conversion has led Suzlon to a very quick grow, installing technology in 28 countries It´s R&D facilities are in China, Germany, India and The Netherlands, co-operating with local universities and R&D centres. At its headquarters, Suzlon reports recycling all water and waste and using only wind and solar as well as low-energy air-conditioning.

Examples of new industrial hubs for innovation in clean tech have emerged in places like Masdar City in United Arab Emirates (UAE), and the innovative green economy

ANNEX: THE PURPOSE OF THE E-DISCUSSION

The purpose of the E-Discussion was to bring together experts, practitioners and policy-makers from around the world to discuss the role of STI and culture in promoting sustainable development, to help define the future global development framework that will succeed the Millennium Development Goals (MDGs). Furthermore the aim was to collect views from a wide range of stakeholders.

ANNEX 1: OPENING MESSAGE

The Role of Science, Technology, Innovation in addressing development challenges by Selim Jahan and Lidia Brito

Dear Colleagues,

We warmly welcome you to Phase I of the e-discussion

A further challenge for policy makers is to create an environment where development and STI policy build on each other in a mutually reinforcing way. Developing genuine partnerships between the public and private sectors but also between scientific community and policy makers will also be crucial to help harness the potential of STI for development.

Considering the above, we would like to present before you the following three questions. Whenever possible, please bring examples of successful application of new technologies and innovations to enhance people's well-being or country experience in leveraging STI for this purpose. In this sense, this platform could be used to contribute to establishing a bridge between achievements (what has been done) and challenges (what we can and must do in the future).

1) Why is STI critical for sustainable development? What is the role of STI in

Lidia Brito, Director, Science Policy and Capacity Building, UNESCO

ANNEX: E-DISCUSSION TIME-TABLE

Monday 18 February: official launching of the e-discussion
Monday 18 February: launching of key issue N1
Friday 22 February: launching of key issue N2
Monday 25 February: summary of discussion week 1
Tuesday 26 February: launching of key issue N3
Friday March 08: summary of discussion week 2
Wednesday13March:Closing of the E-discussion
05 April: Final Report

ANNEX 2: CLOSING MESSAGE

Dear Colleagues,

Thank you all for your very valuable contributions to the first part of the ECOSOC e-discussion “Building the future we want with science, technology and innovation (STI) and culture”. This part was focused on the importance of STI for development and the critical role it plays in informing our understanding of the mechanisms of sustainable development.The discussion has been fed by the active participation of numerous contributors and generated more than 780 views and 40 comments, from different countries around the world in English, Spanish and Portuguese, during the two weeks discussion.
More than 553 members were involved in the discussion. Contributors included UN agencies universities, research institutes, civil society organizations and individual comments. The e-discussion participants shared their personal and professional experiences. I’m pleased to confirm that the recommendations you made on three topics will be a part of the e-discussion final report, which we will share with you as soon as possible.The E-discussion covered a large range of topics related to Science, Technology and Innovation. This made for a rich and wide-ranging discussion.I want to underscore three key points you raised in our discussion:

First, your contributions underline that STI is critical to sustainable development and is an especially important subject for the development of countries. Furthermore, STI can play a critical role to solve global problems related to sustainable development and should be integrated in the post-2015 Development Agenda
Second, it was also clear from the views expressed that future Sustainable Development Goals (and any broad development objective) cannot be achieved without the inclusion of STI. STI can be decisive and a powerful facilitator of economic development, educational programs and environmental protection.
Third, the discussion left no doubt that partnership between public sector and academic, scientific community and policy makers will also be crucial to help harness the potential of STI for development.

As co-moderator of this e-discussion I would like to thank everyone for their valuable participation and for sharing inputs, ideas and experience. The feedback from everyone was extremely positive; it was really interesting to learn about different perspectives on these issues.

Thank you once again for your contributions and holistic approach and for affording me the opportunity to interact with you during this stimulating first part of ECOSOC E-Discussion.

Ernesto Fernández Polcuch