

AN APPENDIX TO THE ICASE NEWSLETTER

Readers may be interested in the following vision on ‘science for the socio-economic benefit of the global society’ as a thrust for UNESCO. Readers will be aware that ICASE was a creation of UNESCO as a NGO partner in promoting science education for all. How do you comment on STI for UNESCO?

A VISION FOR UNESCO FOR THE 21st CENTURY

**By Prof Sospeter M Muhongo, UNESCO DG Candidate,
Visionary Leadership – Excellent Management Skills – Transparency – Innovation –
Efficiency - High Impact Delivery**

[Prof Sospeter Muhongo, 55, Tanzania, is the only candidate for the position of UNESCO DG capable of invigorating the UNESCO agenda of "science for the socio-economic benefit of the global society", and who is mindful of the political diversity of its membership.]

Preamble on UNESCO

The Preamble to the Constitution of UNESCO declares that “since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed.” In order that a unanimous, lasting and genuine peace may be secured, the Preamble declares that the States party to the Constitution believed “in full and equal opportunities for education for all, in the unrestricted pursuit of objective truth and in the free exchange of ideas and knowledge.”

UNESCO's purpose as a member of the UN family of organizations is "to contribute to peace and security by promoting collaboration among the nations through education, science and culture in order to further universal respect for justice, for the rule of law and for the human rights and fundamental freedoms which are affirmed for the peoples of the world, without distinction of race, sex, language or religion, by the Charter of the United Nations."

Objectives of UNESCO in the 21 century

UNESCO was founded in 1945 and it is duty-bound to fulfill its mandate to the satisfaction of its membership. The ultimate goal of the UNESCO's mandate is geared towards attaining sustainable socio-economic benefit for the global society in a safe, secure and peaceful living environment. Consequently, the following objectives are of paramount importance for the UNESCO of the 21st Century:

- Quality Education at all levels (tackling illiteracy and gender inequality)
- Quality Science Education and Research at all levels (science and society)
- Quality Science for Advancement of Technology and catalyst of Innovation (science for economic prosperity)
- The Science of Climate Change and Adaptation
- Culture for Sustainable Development
- Information and Communication for Sustainable International Cooperation
- Education, Science, Culture, Information and Communication for promotion and sustenance of world peace and security

Quality Education for All

One of the most important deliverables of UNESCO to its membership is the generation of ideas and knowledge for socio-economic development. However, quality of education is on the decline at all

levels (i.e. primary, secondary, tertiary and public education) in many nations around the world. Illiteracy and gender inequality in education are still thriving in the developing world. The number of well-trained and competent teachers and tertiary instructors (e.g. university lecturers) are on the decline. There remains a marginalized gender (i.e. female) in education and science. Availability of adequate and functioning educational and scientific infrastructure remains a challenge to many nations around the world. The digital divide between nations is still in existence.

UNESCO has a key role to play in reversing these negative trends and for meeting the expectations of its membership. It has to coordinate efforts leading to availability of e-learning and training facilities, establishment of digital libraries for open source access. It has to promote and facilitate the availability of educational curricula that emphasize science and technology education; enhancing curiosity, creativity and problem-solving learning. In other words, UNESCO has to facilitate the improvement of quality of teaching and of learning, and of coherence of national education systems and national R&D policies. Educational exchange programmes within UNESCO's membership must be strengthened.

Physical education in schools and colleges is neglected in many nations. However, it is well recognized that physical education promotes friendship and competitive attitudes at all ages. Civics and religious classes should be incorporated in educational curricula for the purpose of promoting good citizenship, peace, safety and security of all nations. UNESCO has to work on the linkage between education, science, technology and society. Areas of focus should include: enhancement of scientific literacy for all, mainstreaming female and youth into the Organization's activities, sustainability of new technologies and concomitant innovations, socio-economic development perspectives, improved policy responsiveness and ethics in science and technology. The expected deliverables in UNESCO's Decade of Education for Sustainable Development (2005-2015) have to be evaluated on a yearly basis across its membership. Quality higher education has to be closely linked to R&D and innovation systems for the benefit of all. It is recognized today that quality education and quality science and technology underpin all eight UN Millennium Development Goals (MDGs). Consequently, UNESCO has a key role to play in their realization.

Science in Service of Society

The societal problems and challenges of today require the application of science and technology more than ever before. Science provides the critical underpinning for innovation and technological development. It provides necessary, although not sufficient, input to ensure sustainable socio-economic development of all communities around the world. However, the quality of scientific research is on the decline in many nations. The number of skilled and qualified innovative scientists, engineers, technologists and science policy-makers of many nations is also on the decline. It is estimated that Africa has less than one scientist/engineer per 10,000 of her inhabitants whereas Asia and Europe have 2-5 per 10,000 inhabitants. In 2008, Africa accounted for 1.4% of articles published in learned journals. This implies that much of Africa's economy is not knowledge-driven. This is an S&T reality characterizing most of the poor countries of the world.

UNESCO has to fulfill its mandate by promoting and facilitating the production of critical masses of skilled and knowledgeable human resource for its member states, and inspire new generations of scientists, engineers and technologists. It has to assist some of its member states to work on modern and appropriate educational and training curricula and give evidence-based advice on the sustenance of flourishing national innovation systems. It is estimated that the world's population was 14 million in 3000 BC, 100 million in 500 BC and it will be approximately 10 billion in 2050. The sustainable livelihood of the current and the future world's population will rely heavily on science, technology

and innovation (STI) and hence the following fields of science will be of greatest importance to humanity in the next 50-100 years:

- **The Science of Climate Change and Adaptation**
- **Agricultural Technologies and Industries (e.g. Seed Research and Development)**
- **Life and Health Sciences**
- **Earth System Science (e.g. environment, resources - water and minerals)**
- **Energy Resources (e.g. renewable energies and coal)**
- **Space Sciences and Technologies**

Nano-sciences and technologies, and biotechnologies belong to the modern S&T tools to support research in these leading fields, e.g. research activities on food and nutrition, healthcare and energy resources. If used for peaceful purposes, these science fields will guarantee the world's population the availability of alternative sources of sustainable and affordable energy, food and nutrition security, clean and safe drinking water, sustainable healthcare and well-being, better mitigation of hazards and disasters, and sound protection of the environment, ecosystems and biodiversity.

Crucially, too, UNESCO should greatly enhance the role and relevance of the social sciences, especially in areas such as “quality of life”, “sustainability”, “mitigation and adaptation”, as these are strongly related to the areas detailed above. Rural decline, immigration and rapid urbanization are major areas of concern, particularly in the developing world and should, therefore, enjoy equal status of attention within UNESCO. Some of the fields mentioned above do not constitute the mandate of UNESCO directly hence, collaboration with other UN-agencies, member states, the private sector, NGOs and cognate professional bodies is obligatory. By engaging itself in the society-relevant science agenda, UNESCO will act as a catalyst for an accelerated shared economic growth leading to poverty reduction in the world. It will be one of the international bodies fighting financial meltdowns through sound STI that supports the prosperity of robust and predictable economies. UNESCO also has to promote the sustainable utilization of earth resources for all generations Excellence in STI should be closely linked to the policy-and decision-making processes. Science provides a vital base for rational and prudent policy formulation (pro-people oriented policies) and informed decision making. This is one of the most important salient features of socio-economic prosperity for any nation. Consequently, UNESCO is duty-bound to promote this developmental paradigm by supporting its member states to put STI in service of their respective citizenry, including the utilization of STI for good governance and democracy. Here, too, the involvement of the social sciences is of paramount importance. Since education, science, culture and ICT cut across all sectors of the entire UN family; UNESCO has to play a servicing, supporting and/or complementary role to other UN bodies in the fulfillment of their respective mandates.

The Science of Climate Change and Adaptation

Since the pre-Industrial Era (~ 1750), green house gases (GHS) accumulations due to human activities have increased tremendously, e.g. CO₂ by 30%, CH₄ by over 100%, N₂O by 15%; and these concentrations are higher now than at any time during the last 420,000 years. It is estimated that 20-30% of plant and animal species have an increased risk of extinction with projected global average temperature rise exceeding 1.5 – 2.5°C. Hence, climate change is a translational issue and is of great concern to all nations. UNESCO, being the custodian of science within the UN family, has a fundamental role to play in issues pertaining to global environmental change, including climate change and adaptation. Protection of carbon sinks, such as natural ecosystems that absorb a substantial amount of the carbon produced daily is essential. UNESCO has to partner with national, regional, international professional scientific bodies and inter-governmental bodies (e.g. UNEP,

WMO, UNCCD and IPCC) in promoting and facilitating quality research activities in this domain, i.e. climate change and its consequences.

The consequences of global warming call for scientific investigations through international cooperation in the following topics: changes in ambient temperature, rainfall patterns (and its impact on floods and droughts), air, water and soil pollution, water resources and sanitation, ocean basins and coastlines (e.g. sea-level changes and ocean acidification), land degradation, biodiversity loss, health problems (e.g. infectious diseases), resilience for renewable energies and for food systems.

UNESCO has to promote and facilitate collaborative multi-disciplinary research programmes on the above subjects. It has also to disseminate quality knowledge, quality data and skills to its membership for mitigating and adapting to the consequences of climate change. Capacity building in the developing world in this domain is a necessary initiative. UNESCO has to be involved in establishing and maintaining well-functioning Earth Observation Systems, especially in the developing world.

Sustainable Energy Resources for All

The world is endowed with enormous energy resources. The classical or primary sources of energy are: oil, natural gas, coal, nuclear and hydro-power. Despite this enormous potential of energy resources, almost all countries around the world have repeatedly experienced the volatility of fuel prices. The situation is worse in the developing world, especially in sub-Saharan Africa where over 75% of its population has no access to electricity and hence, has resorted to utilization of biomass (fuel wood and charcoal). This has led to immense deforestation and land degradation.

The world's reserves of fossil fuel are on the decline. Hence, UNESCO should focus on renewable energies for the benefit of its membership. For instance, it is estimated that 1 km² of desert receives annual solar energy equivalent to 1.5 million barrels of crude oil. Renewable energies include: solar, wind, geothermal, bio-energies, rotting garbage (producing biogas), ocean waves and tides, hydrocarbons on the sea-bed and hydrogen. UNESCO has to focus on those which are less capital intensive. There is a strong linkage between climate change (i.e. global warming) and gases emitted from various industrial, transport, agricultural and other anthropogenic activities. Hence, UNESCO must strengthen research on development and utilization of energy resources to support the climate change agenda of the international community.

UNESCO, using its core competencies and in collaboration with cognate partners, has to work on the science and the technology for sustainable utilization of all types of energy resources, including coal resources (i.e. multiple sources of energy). It has also to promote and facilitate efforts leading to an increase of the world's population with access to electricity in a sustainable manner.

Through its membership and cognate professional scientific bodies, UNESCO has to promote and facilitate the availability of knowledge and data that stimulate the growth of low carbon industries and green manufacturing (i.e. efficient energy utilization) that ensure quality jobs and businesses.

Culture for Sustainable Development

Cultural diversity is often the hallmark of all nations. In principle, there is no culture that promotes hatred, discrimination, intolerance and killings. Hence, the cultural activities of UNESCO have to aim at promoting peace and security for sustainable development of all peoples and for all nations. It has to engage in activities promoting and strengthening the relationship between science/education

and culture for development. Universality of education and science can be of help in the harmonization of the world's cultural and religious heterogeneities.

Traditional “flagship projects” of UNESCO – World Heritage and Biosphere Reserves (living laboratories) have to be continuously maintained and well-managed for educational, scientific and economic benefits, and for environmental protection. UNESCO has to venture into heritage science and a new type of heritage, e.g. scientific objects (such as geo-parks) of importance to education, science, technology and global environmental change.

Peace and Security of All Nations

The Preamble of the Constitution of UNESCO is clear and sound to the whole of its membership. It is today estimated that 1 billion people around the world go to bed hungry each night. There is increasing insecurity of life and property, while violence related to food scarcity and religious intolerance has become more frequent in recent decades. Other main causes of conflict include poverty and the inequitable distribution of resources, competition for limited resources, denial of basic human rights, break-down in communication and the “culture of war.”

The ingredients for maintenance of peace and safety of any nation include economic prosperity and socioeconomic advancement, inter-cultural dialogue and good channels of communication, the existence of the “culture of peace” (as opposed to the “culture of war”) and assurance to all of the enjoyment of national wealth and exercise of basic human rights.

Using its core competencies, and in collaboration with its partners, UNESCO should utilize STI to facilitate the promotion of responsible use of S&T, good governance, democracy and a culture of peace in the world. STI is a catalyst for sustainable socio-economic development (a major activity in peace-building), a facilitator of intercultural dialogue and communication, and for peace education.

Education, science, culture, information and communication have to promote and sustain peace and security throughout the world. This will be achieved if UNESCO pays much more attention to the promotion of intellectual cooperation and involvement in its activities of the widest possible constituency in its membership. UNESCO should also complement the work on responsible use of science and technology (i.e. dual-use S&T) through international outreach and collaborative programmes.

UNESCO of the 21st Century should possess a high level of political awareness that will permit it to act diplomatically and promote science diplomacy for peaceful relations around the world. Science diplomacy is a modern tool that uses scientific partnerships among nations to address the common challenges and problems facing humanity.

Information and Communication: publications and conferences

Effective and timely communication using all possible modern media is a major requirement for UNESCO. Coherent communication on an informed level with UNESCO's General Conference, Executive Board, high-level representatives of member states, UNESCO's National Commissions, other UN-agencies and cognate partners is obligatory.

High quality and attractive publications and reports of the activities of UNESCO should be readily available and produced on time. Newsletters and the Organization's web pages should be user-friendly. All UNESCO's publications should aim at increasing its visibility; and provision of knowledge, data and skills to its membership. UNESCO should convene meetings of tangible

benefits to its member states, and avoid being seen as an Organization that spends much of its financial and human resources on unnecessary meetings lacking any visibility and measurable benefits. Outreach initiatives should aim at attracting and buying-in the general public, the private sector, NGOs and member states into the activities of UNESCO. UNESCO's Dakar Declaration on Media and Good Governance should be translated into the establishment of learned information communities amongst its membership.

Mobility of Experts around the World

One of the salient features of globalization is the free movement, across territorial borders, of knowledge and skills, and of human and financial capital for socio-economic prosperity. Consequently, UNESCO has to promote and facilitate the mobility of quality experts and joint utilization of educational and research facilities within its membership. Diaspora programmes of the developing nations have to be supported by UNESCO. Such an undertaking also calls for international collaboration.

Global Partnerships for Global Challenges

UNESCO has to assist its membership to develop and maintain R&D programmes, some of which should have a greater coherence and convergence with those of the international development agencies. It has to promote and facilitate North-South, South-South and North-North cooperation for resolving problems of transnational dimensions (e.g. climate change, peace and security). Facilitation of public-private, national-regional international collaborations is an important task for UNESCO. Consequently, it has to promote and facilitate the growth and maturity of global partnerships for sustainable socio-economic benefits of all nations. UNESCO has to continuously promote and facilitate the generation of ideas and knowledge for socio-economic benefits of the global society, and this may be attained through the promotion of international collaborations in its activities. Global alliances, networks and consortia of implementers are essential.

Governance: leadership and management of the Organization

UNESCO could realize the above objectives and their concomitant challenges by having the following in place:

- Well-focused, prioritized and delivery-oriented strategic plans and annual business plans with measurable parameters of achievements of the described objectives and milestones
- Efficient, innovative, productive and cost-effective utilization of human and financial resources
- Availability of performance indicators for all activities
- Efficient and well-coordinated inter-sectoral initiatives (intersectoriality, cross-cutting platforms) within UNESCO through inter-and multi-disciplinary approaches
- UNESCO to always remain mindful that it is not a funding agency
- Partnership with member states, UN agencies, the private sector, NGOs and other appropriate development agencies for successful implementation of UNESCO's activities and those of its membership and partners.

Good leadership is characterized by consultancy, listening and learning. UNESCO requires a visionary leadership that listens to and consults its member states and other stakeholders. Leadership and management of UNESCO's programmes and projects should be in the hands of well-trained, competent, efficient and delivery oriented staff. Excellent management skills are obligatory. The staff of UNESCO should be aware of the broad strategic objectives of its membership and of relevant cognate organizations and professional societies.

UNESCO has to create a conducive working environment for its staff to discharge their duties with greater motivation, confidence, efficiency, accuracy and accountability. Decentralization, regionalization and clustering of programmes and projects as well as of human and financial resources have to be sustainably intensified and should be guided by clear intentions and by efficient-and quality delivery-oriented operation. Performance indicators and measurable deliverables have to be important ingredients of all UNESCO's activities. UNESCO has to work very closely with its member states especially the National Commissions (including grassroot civil society), for sound and beneficial utilization of human and financial resources, and of educational, scientific, cultural and communication infrastructure.

Financial Resources of the Organization

Besides its annual budgets, the leadership of UNESCO has to increase budgets for the implementation of its projects and programmes through fundraising campaigns. This may be done through creation of partnerships with the private sector, joint projects and programmes with member states, other UN agencies, NGOs and other development partners. It has to attract bi-and multi-lateral programmes and projects dealing with educational, scientific, cultural, humanitarian and communication issues. Hence, fundraising campaigns aiming at increasing extra-budgetary resources shall be a priority of the new UNESCO leadership. However, UNESCO's mandate and principles should not be compromised in this endeavour.

All financial resources available in its annual budgets should be wisely used and in a cost-effective manner. Priority has to be given to the approved and high-impact activities of its member states. UNESCO has always to remain mindful that it is not a funding agency and hence it can not do everything everywhere and at all times. The management of financial resources shall be in full compliance with the Organization's financial policies and regulations, and shall be strongly supported by a rigorous and a comprehensive external auditing exercise at the end of each financial year. Transparent auditable trails have to be available to all financial contributors to assess progress, quality of delivery and probity in resource allocations and utilization. UNESCO of the 21st Century has to establish durable cooperation with both the private and public sectors in fulfilling its mandate and in the realization of the changing needs of its membership.

External Review of the Organization

UNESCO programmes and activities at the Head Office in Paris, and at its Regional and Cluster Offices shall undergo international external reviews every five years. The impact of sometimes poorly resourced UNESCO national, regional and/or cluster offices shall be evaluated for the benefit of its member states.

Leadership Qualities of UNESCO DG

The realization of the above vision for UNESCO of the 21st Century requires leadership which is visionary and dynamic. Excellent management skills, transparency, innovation, efficiency, quality productivity and high-impact delivery are obligatory. High integrity, impeccable morals, respect and diplomacy are a must. The UNESCO DG should be an excellent communicator and public speaker.

The candidate from Tanzania, Prof Sospeter Muhongo, possesses all of these leadership qualities.