Science and Technology Cluster: Report to the 11th Session of the Regional Coordination Mechanism (RCM-Africa)

14-15 November 2010
Addis Ababa, Ethiopia

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Prepared by the United Nations Educational, Scientific and Cultural Organization (UNESCO) – Coordinator of the Cluster

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Background

Science and technology have enhanced the capacities of human beings in utilizing and transforming environments to meet their needs. In the past few decades, scientific and technological advances have caused very rapid changes in human societies and not only have they evolved together but they are also indicators of one another. Human needs may vary, but everyone needs at least the four basic necessities for life, namely, food including water, habitation, clothing and medicine. The cross–cutting nature of science implies there is hardly a social problem where science cannot make a contribution; hence, meeting the MDG's will require a focus on key sources of economic growth, especially those associated with the use of new scientific and technological knowledge.

The UN Science and Technology (S&T) Cluster was established at the Fifth Regional Consultation in May 2003 designating UNESCO as the Convener and the UN Commission for Africa (UNECA) as the Vice-Convener. The Cluster supports the AU NEPAD in the implementation of the Consolidated Plan of Action (CPA). This plan creates an ambitious framework for building Africa's research and development capacities. It demonstrates an awareness of the crucial role played by science and technology in sustainable development.

One of the factors preventing Africa from mobilizing its rich resources is the lack of a framework for building and sharing scientific and technological capacity. The Consolidated Plan of Action seeks to address this need. The Plan focuses on putting in place governance systems that will enable African countries to harness and share their resources to lead scientific research. This requires not only improving policy conditions in African countries, but also strengthening the capacity of regional bodies to mainstream science and technology into their sectoral programmes and projects.

The AU Consolidated Plan of Action endorsed by AMCOST and the AU Summit (2002, January 2007) places particular emphasis on the need to reinforce the human and institutional capacity for scientific research in Africa. It anticipates the creation of a veritable continent-wide system of innovation, based upon centers of scientific excellence, supported by

institutions of higher education, and linked to new science and technology parks.

The UN S&T Cluster Members (13 UN Agencies) workplans, focus on the CPA and building capacity in the there inter linked pillars: capacity building, knowledge production and technological innovation.
Given the focus of the RCM ie Rio+20 and "climate change", this cluster meeting was convoked on the theme "climate change and sustainable development". However, all activities that contribute to the CPA are also cited. Cluster members provided information on the application and use of science and technology in understanding climate change and adaptation strategies within their respective mandates.

This progress report is being submitted to the eleventh UN RCM on behalf of the members of the Science and Technology Cluster, following the recommendations of the 9-10th RCM.

1.0 The cluster system of the RCM

1.1 Accountability/Structural/Systemic

1.1.1 Meetings held, dates, objectives, outcomes and follow-up actions

UNESCO and UNECA, organized the Sixth Meeting of the UN Science and Technology Cluster in Addis Ababa on 11 October 2010. The meeting was convened in preparation for the 11th Session of the RCM. The theme of the 11th Session of the RCM is Rio+20 that will address two main issues: international environmental governance and green economy. The UNCST meeting focused on the following issues:

- Agencies report on activities in Africa in support of the AU/CPA Implementation;
- Activities undertaken in the last year to support the Climate Change Initiative;
- Report on inter agency joint initiatives and activities as recommended by the RCM;
- Cycles of programming; and
- Cooperation between UNCST and the AU.

The UNCST was convened as a pre event to the 7th African Development Forum, jointly organized by ECA, UN Agencies, African Union and its partners the 10-15 October 2010. The theme of ADF VII selected as preparation for the Rio+20 was: "Acting on Climate Change for Sustainable Development in Africa".

The following UN Agencies participated: WFP, WMO, WHO, UNEP, UN-ECA, and UNESCO. UNU- MERIT sent their report and regrets. The meeting was attended by 41 participants from different countries, institutions and international organizations.

The meeting discussed the following crucial points relative to the functioning of the Cluster:

- the governance structure for the Cluster:
- role and mandates of Cluster Focal Points ; and
- reinforcing the reporting and communication mechanisms to the RCM and among agencies.

Whilst the Cluster Members are actively implementing activities in support of the CPA the following was noted:

- the challenges and constraints in the implementation of joint activities;
- programming and activities in support of the CPA- identification of a "niche" for the Cluster;
- needs of the AUC and NEPAD as regards the CPA implementation;
- role of the AUC and NEPAD in collaboration with the Agencies to carry out an evaluation and base line study of existing programs;
- identify a common action plan with "in built" monitoring plan; and
- given the sectoral implementation of the CPA, identify under the various pillars of the CPA the lead agencies.

The debate on climate change and sustainable development in Africa addressed the following issues:

- the role of the Cluster in networking to collect data and research on science of climate change and adaptation;

- supporting national meetings and action plans on mitigation and adaptation;
- the role of earth sciences in contributing to climate change knowledge in Africa;
- initiating climate change policies;
- assessing the climate change research necessary to advise and inform policy makers; and
- supporting the Network of the Academies of Science in Africa as a potential source of knowledge for governments.

1.1.2 Preparation of a joint Business Plan

Cluster Members have their own workplans based on their individual mandates of their respective institutions and follow their Organization's planning cycles. However, it was recommended that the Cluster identify a common "niche" among the pillars of the CPA for joint implementation and drawing up a common action plan. In 2009, common activities were identified and agencies have been working together to deliver on the joint initiatives.

1.1.3 Joint activities implemented

"Unlocking the potential of Science, Technology and Innovation to contribute to the MDGs"

This project that was developed by UNESCO, ECA and its partners under the umbrella of the One UN in Rwanda. The first workshop (January 2010) of its kind on this theme, brought together all the UN Agencies and the different Ministries and stakeholders to take stock of the application of S&T through effective policies in contributing to the MDGs. The result is the promotion of an "innovation culture" through an effective innovation policy and implementation of the Rwanda Innovation Fund which will build capacity of scientists in the field of innovation towards "home grown solutions".

Science with Africa II

The ECA, the African Union Commission (AUC) in collaboration with the Government of Finland, UNESCO and their partners organized the second Science with Africa conference (SWA II) from 23 to 25 June 2010. The first conference (SWA I) outlined the roadmap for advancing science

and technology development for socio-economic prosperity of the African continent. The remarkable achievements include: (i) the development of the African Innovation Framework (AIF); (ii) Preparations for the establishment of the African Science Technology Endowment Funds (ASTIF); and (iv) hosting a consultative forum on the Science of Climate Change and economic prosperity in Africa.

As main recommendations, African scientists have resolved to:

- Practically utilize their research findings to accelerate economic growth in Africa;
- Establish a working partnership with both the private and public sectors (education-research-private sector-economic growth-society)
- Support African leadership in global negotiations on Climate Change (e.g. facts, figures and projections on Climate Change and its consequences in Africa)
- Accelerate the development and growth of emerging fields in S&T (e.g. biotechnologies, nano sciences & technologies) that may drastically reduce poverty on the continent. The main focus being their applications in food security, energy, water and health sectors.
- One of the immediate action lines is the utilization of the proposed new national indicators of progress, the Ecological Footprint, which complements the Gross Domestic Product (GDP) measure of economic prosperity.

Science component of the One UN Programme in Tanzania

UNESCO's participation in the One UN Programme for Tanzania is in response to the request from the Government for UNESCO's assistance in conducting a comprehensive review and in repositioning the Tanzanian STI system. A Science component has been included in the One UN programme within three joint programmes (JPs) for an amount estimated at about $10 million, to be financed from the One UN fund and other sources. In addition, UNESCO heads the Innovation and Technology Thematic Area, also involving the World Bank and Finland. UNESCO participates as well in the development and implementation of two important actions in science education and environment. The three JPs with STI components are the following:

- *JP on Wealth Creation, Employment and Economic Empowerment*: UNESCO coordinates the section on policies and plans of action for the explicit integration of STI into the economy.
- *JP on Capacity Strengthening for Development Management*: UNESCO coordinates the section on improving management and governance of the STI system.
- *JP on Education*: UNESCO coordinates the section on strengthening STI capacities in higher education.

Role of Science Academies in the socio economic development of Africa

Academies of science, representing the diversity of scientific disciplines, can make an invaluable contribution to shaping, monitoring and evaluating the national science and technology landscape. The Academies independence in promoting the culture of science and education among national institutions and the public, allows them to generate evidence-based policy advice to governments and to set national priorities in national development strategies. The workshop organized by UNESCO and ECA in June 2010 in the margins of the SCWAII, aimed at sharing experiences on the roles of Academies in the national science, technology and innovation landscape. The workshop concluded with concreted pan-African programs to promote and strengthen the role of Academy's of Science in socioeconomic development in African countries. The following recommendations emerged: ECA, UNESCO and other partners should support the implementation of the following programs; (i) Creation of Academies of Sciences in all African countries, and promote a network of these Academies; (ii) Capacity building on management of STI for Africa's sustainable development; and (iii) Support the development of a Pan-African wind and concentrated solar power systems.

Capacity building in STI policies

Capacity building in STI policy review and or reformulation and evidence based policy was conducted through a sub-regional workshop held in Bamako, for the 15 Member States of the Economic Commission for West Africa (ECOWAS) (May 2010), in close collaboration with the Government of Mali, the NEPAD Office for Science and Technology and the ECA. Over 60 policymakers from the region were trained. UNESCO cooperates with Member States in the formulation STI policies based on evidence and the collection and use of STI data, with the UNESCO Institute for Statistics

(UIS). This involves building of national statistical capacity; training of national personnel, and provision of advice and support to in-country statistical activities.

The Millennium Village Project

This is a joint inter agency program of 13 UN Agencies (UNDP , UNESCO, UNFPA, WHO, UNIDO, UNICEF, FAO, UNIFEM, WFP, ECA, UNAIDS, ILO, HCR), and intends to improve the living conditions of the target population in 2 clusters of Cameroon (Meyomessi and Maroua Ier) by offering them a range of supports designed to contribute to the achievement of the Millennium Development Goals (MDGs).

The "First International Conference on girls and women in science and technology for Africa"

Organized under the auspices of UNICEF and UNESCO in Mali (2009), the conference focused on the promotion of gender parity in science and technology in Africa by: reviewing the achievements and initiatives undertaken in Africa; stimulating the mainstreaming of activities; and strengthening the capacity of teachers in the areas of pedagogy, guidance and counseling.

Health cluster approach to address emergencies

One of the three main pillars of the humanitarian reform is now being implemented in 13 countries[1] with the WHO as cluster lead and full time health cluster coordinators assigned to Chad, DRC and Zimbabwe. In addition, in countries in emergencies in AFRO, the WHO was the lead agency in health response with or without formal declaration of a cluster approach. A total of 16 deployable health cluster coordinators were trained in 2009 and should be able to establish coordination mechanisms using the cluster approach during emergencies. The WHO in the African region has initiated partnerships with UN International Strategy for Disaster Risk Reduction (UNISDR), regional humanitarian groups (OCHA Nairobi, Dakar and Johannesburg) and NGOs (Merlin, Save the Children). The sub-regional teams are also providing leadership for the humanitarian health groups in Nairobi, Johannesburg and Dakar.

1 Burundi, CAR, Chad, Cote d'Ivoire, DRC, Ethiopia, Eritrea, Guinea, Kenya, Liberia, Niger, Uganda and Zimbabwe

Building capacity and knowledge in ICT policies

The ITU HIPSSA project supports African countries through the AU and RECs to harmonize and adopt harmonized ICT policies and regulations by having these transposed to national policies and regulations in each beneficiary country. The project which is funded by the European Union and ITU is coordinated by ITU and also supported by a Steering Committee with members from the AU, ATU, ITU, ECA. The following support was provided to RECs: development of ECCAS and CEMAC regional acts on cyber security in collaboration with UNECA; and a review and update of the SADC ICT Policy & Model Legislation and the SADC Universal Access and Service Guideline.

Through its ICT and Law Reform Programme, UNCTAD continued to assist governments of the East African Community (EAC) (Burundi, Kenya, Tanzania, Rwanda and Uganda) in harmonizing their cyber laws. In May 2010, the EAC Legal Framework for Cyber laws was adopted by Ministers. UNCTAD furthermore launched its first ICT Policy Review for Egypt. UNCTAD actively participated in the organization of the first ever Open Consultations on "Meeting the Challenges of Financing ICT for Development" organized by the UN Group on the Information Society (UNGIS).

Operational weather/climate observations

As a specialized agency of the United Nations for about 60 decades, WMO has acquired considerable infrastructure which has enabled it serve the international community and national governments, in various capacities, especially on weather, climate and water related issues. WMO has well-established partnerships with satellite operators, airline companies, ship operators and others required to support its comprehensive suite of observations with FAO, UNESCO-IOC, UNEP and ICSU in GCOS. This comprises: international coordination: institutionalized practices and commitments for monitoring including analysis, assessment, publication and informing on "climate", particularly its anomalous behaviors. WMO Members and partners maintain infrastructure through: networking among the 11 000 stations; hold vast quantities of climate-relevant, observed data, quality controlled and documented with metadata; set and uphold standards for the instrumentation, and observing procedures, formats, data and quality, and the exchange of its information through its

eight Technical Commissions and expert working arrangements, WMO provides the technical oversight on all data observation activities.

Ocean observations and marine environment

The Intergovernmental Oceanographic Commission of UNESCO (UNESCO/IOC) provides Member States of the United Nations with an essential mechanism for global cooperation in the study of the ocean, with programs that focus on marine environmental protection, ecosystem dynamics, climate change, global observing systems, data and information management, coastal area management, and disaster management. Through the Joint IOC/WMO Technical Commission for Oceanography and Marine Meteorology (JCOMM) it coordinates and manages the implementation of an operational ocean observing system, the Global Ocean Observing system (GOOS) and the Global Climate Observing system (GCOS) in support of the United Nations Framework Convention on Climate Change. Global Ocean Observing System - GOOS is a permanent global system for observations, modeling and analysis of marine and ocean variables to support operational ocean services worldwide. GOOS is working with national agencies and regional networks to provide accurate descriptions of the present state of the oceans, including living resources, continuous forecasts of the future conditions of the sea for as far ahead as possible, and the basis for forecasts of climate change.

The IOC Ocean Data and Information Network for Africa (ODINAFRICA)

ODINAFRICA brings together more than 40 marine related institutions from twenty-five countries in Africa (Algeria Angola, Benin, Cameroon, Comoros, Congo, Cote d'Ivoire, Egypt, Gabon, Ghana, Guinea, Kenya, Madagascar, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Nigeria, Senegal, Seychelles, South Africa, United Republic of Tanzania, Togo, and Tunisia). With the support of the Intergovernmental Oceanographic Commission of UNESCO and the Government of Flanders (Kingdom of Belgium) the network strives to address the challenges faced in ensuring that ocean and coastal data and information generated in national, regional and global programmes are readily available to a wide range of users in an easily understandable format.

Assessments of marine environments

The "Assessment of Assessments" (AoA) is being undertaken under the co-leadership of UNEP and UNESCO/IOC as part of the Start-up Phase of the Regular process for global reporting and assessment of the state of the marine environment, including socio-economic aspects (in accordance with paragraph 64 (a) of UNGA resolution 58/240). It was requested for by governments in order to serve as one of the main foundations for the development of a regular process for the global reporting and assessment of the state of the marine environment, including socio-economic aspects. It builds on the work done by other international forums and, either directly or indirectly through those forums, by national authorities concerned with the marine environment.

1.1.4 Alignment of Cluster Plans with UN 10- YCBP for AU

All agencies align their activities in support of the AU, NEPAD and RECs business plans. In addition, the activities contribute to the UN Ten-Year Capacity Building Program

1.1.5 Addressing cross cutting issues (gender, human rights, youth, culture, regional integration, climate change and employment)

The mandates of the Agencies address the above specifically and in particular promote the use of science, technology and innovation across the cross cutting issues.

1.2 Coordination/Collaboration

1.2.1 Inter-cluster communication and collaboration (joint meetings, joint activities, information shared etc)

In the absence of a formally agreed S&T Cluster secretariat, UNESCO assumes the secretariat function of the Cluster and works in close cooperation with the Vice Coordinator, UNECA and the AUC. A dedicated Cluster web site maintained by UNESCO was launched in 2008. However, designated Focal points should contribute with information to update the Cluster website. It is recommended that Members of the Cluster communicate activities / projects they have undertaken regularly. The website

should also be harmonized with that of NEPAD and the AUC to reflect recent ongoing initiatives and serve as a platform for both discussion and information sharing.

1.2.2 Participation of the AU Commission, the NEPAD Secretariat and the RECs in cluster activities

The 11th Cluster meeting was honored by the presence of the AU Commissioner for Human Resources, Science and Technology. An update of the implementation status of the CPA was presented by the AU/NEPAD Secretariat. The RCM Secretariat was also invited to the Cluster meeting. Cluster Members were informed that REC's were regularly invited to participate in their regional and national activities. The AUC/HRST and REC's are actively involved in activities of UNESCO and UNECA.

1.3 Resources and capacity building Support (human, technical, financial and material)

1.3.1-3 The AU Commission, NEPAD and RECs

All Agencies work closely with the above institutions.

1.4 Monitoring and Evaluation

1.4.1 As part of Business Plans (Indicators, qualitative and quantitative)

The AMCOST endorsed the establishment of the African Cluster for Science and Technology, an initiative set up by the AUC/HRST, as a means to coordinate activities in science and technology and avoid duplication. It is foreseen that the UN Cluster will work in close cooperation with the ACST and the AUC in developing this framework. However, to date there has only been one meeting of the ACST in 2008. Thus there is a need for the AUC to be more pro active so that the ACST can execute its mandate.

1.4.2 Availability of data

All agencies have their individual reporting and evaluation mechanisms for their programs. However, it would be useful for the Cluster to be engaged in an evaluation and monitoring of the S&T activities that contrib-

ute to the implementation of the CPA based on the three pillars defined in the CPA.

1.4.3 Reporting to the RCM Secretariat

Measures are necessary to improve communication between the RCM secretariat and the Cluster, the Advocacy and Communication Cluster and the S&T Cluster.

1.5 Communication/outreach/advocacy

1.5.1 Information provided by AUC, NEPAD, RECs

Strengthened communication between the AUC/NEPAD/RECs would facilitate the process of information sharing. Regular information meetings and participation in joint activities would enhance cooperation.

1.5.2 Advocacy in support of AUC, NEPAD, RECs

Programs of the different Agencies are aligned with those of the AUC, NEPAD and the RECs. This is subsequently used to mobilize resources. However, an advocacy strategy developed by the Cluster in collaboration with the AUC would benefit visibility for priorities.

2.0 Achievements, results and impacts

When the United Nations endorsed the eight Millennium Development Goals (MDGs) in 2000, with aspirations including ending poverty and hunger; the promotion of gender equality and a reduction in child and maternal mortality, there was little mention of science and technology. Nevertheless, it is sine quinoa that achieving the goals would rely on the successful application of science, technology and innovation. The interface of science and technology and innovation with the MDG's holds the promise of saving millions of lives, empowering women, addressing the scourges of illiteracy, hunger and malnutrition and ensuring that children have access to high quality education and good health services to lead to productive lives.

UN Agencies are ensuring that science is targeted at socio economic development; managing capacity-building programmes for science institutions; facilitating collaborative partnerships in science and advocating the role of science and innovation in decision-making and in development processes is part of that exercise. Science and technology is also playing an extremely important role because of the issue of the impact of climate change on the potential fulfillment of MDGs and in the interaction between human activity and the environment.
UN Cluster Members have implemented programs and projects in support of the AU/CPA Implementation in cooperation with Member States, the AUC and NEPAD. The detailed report of the 6th UN S&T Cluster meeting bears testimony to this.

The section on achievements and impacts below provides a resumé of activities in support of the CPA implementation and in contributing to "climate change and sustainable development" in Africa. For a more comprehensive report on the Agencies activities, please refer to the 6th UN S&T Cluster Report, Addis Ababa, 11th October 2010.

2.1 Achievements in the CPA implementation

2.1.1 Science, Innovation knowledge development and management

Activities undertaken under this area aims at promoting the development and access to scientific knowledge, technologies and innovation opportunities; such as databases and other information resources to demonstrate the application of innovations and technologies to real world situations.

- UNU-MERIT has co-ordinated a training workshop for participants in capacity building in areas related to innovation and innovation indicators at the Tshwane University of Technology (TUT) in South Africa in the Institute for Economic Research on Innovation (September 2010). UNU-MERIT has also delivered tailor-made training on the Design and Evaluation of Innovation Policy to Senegal and Ethiopia (September, February 2010), with a special emphasis on sectoral innovation systems on agriculture and services (particularly, tourism), and policies

to promote non-traditional exports, FDI, and micro and small enterprises.

- At the end of 2009, the UNESCO Chair for Innovations in Physics Education was established at the Université Cadi Ayyad in Marrakech, Morocco, and leads the University Centre for Innovations in Physics Education. It is involved in organizing workshops and teacher-training activities for introductory university level and secondary schools in physics education research and innovation, emphasizing the active learning pedagogy, conceptual evaluation and research in didactics, use of simple and inexpensive materials and kits, computer-assisted experiments, e-learning and tutorials.
- UNCTAD's technology and Innovation report, 2010, focused its first issue on the question of enhancing food security in Africa through science, technology and innovation. The 2010 Report examined the challenges of improving agricultural performance in Africa and the role of technology and innovation in raising agricultural production and incomes of all farmers, particularly smallholder farms. UNCTAD helps African countries create a favorable environment for e-commerce and e-business. UNCTAD, together with UNECA, organized three training courses related to measuring of the information economy, The UNCTAD Information Economy Report (IER) 2009 focused on Trends and Outlook in Turbulent Times.
- The ECA African STI knowledge hub is a platform to help guide decision-maker and scientists on STI policies, education, regulation, business environment best practices and important multi-lateral agreements. Its' development has started with a number of studies in pilot countries, i.e. Ghana, Zambia, and Kenya.
- The African Science to Business Challenge (ASBC) is a pioneering initiative launched by the ECA and RTI International (RTI) aimed at strengthening links between scientific research and business development. As a call for proposals organized every two years, ASBC will to provide awareness amongst African researchers as a means of equipping them with the skills, knowledge and experience necessary to bring research-based ideas, inventions and innovations to market.

- As one of the first "Science with Africa Conference" recommendations, ECA and its partners created the African Science, Technology and Innovation Endowment Fund (ASTIEF) to link African research institutes and local companies/Industry for a mutually beneficial relationship and to help refine the research findings churned out in laboratories into commercial products and services. ASTIEF is mobilizing Africa's growing pool of entrepreneurs that are willing to promote innovation. ASTIEF was officially launched in June 2010.
- ECA initiated the development of a continental Innovation strategy, the African Innovation Framework (AIF), to chart the way towards developing a concrete and implementable framework to guide Science, Technology and Innovation (STI) development on the continent. The Framework is a useful tool for policymakers which will bring together the elements of good practice required to foster innovation. It will provide a coherent analytical tool for handling the disparate processes of knowledge creation, distribution and use, as well as the ways in which these affect productivity, competitiveness, and economic and social development. It involves four vital areas: (i) Strategic vision, planning and governance; (ii) Education; (ii) STI Enabling policies and (iv) Science Popularization. The objectives is to focus on the opportunities and challenges towards the development of African innovation strategy to complement national, sub-regional and sectoral ICT, Science and Technology policies and strategies. The African Innovation Endowment Fund was launched by UNECA, as a follow up to the Science with Africa Conference II, with resources from within African governments and the private sector, generate funding for innovators and better venture capitalism.
- Since 2001, six "Women, Science and Technology" UNESCO Chairs in the following countries were created: Brazil, Côte d'Ivoire, Morocco, Pakistan, Sudan and Togo. In 2005, these UNESCO Chairs decided to unite in one network, "Women, Science, Technology and Development", with the main purpose of transferring scientific and technological knowledge to largely illiterate women in rural areas. Also, the network has organized numerous trainings of trainers in popularization of science to combat poverty.

2.1.2 Science, technology and innovation (STI) policy

UNESCO will work closely with UNECA, UNIDO and WIPO and other Agencies in the STI policy reviews of Mdember States, whereby contributions from the respective specialized Agencies would be an asset and harmonized within the policy for joint implementation.

- To date over 25 African member States have requested assistance from UNESCO, via their Governments, for the review and reformulation of their national STI policies. During the last year, UNESCO continued its assistance to the African Member States and the various countries are in different phases of the policy review process. Certain MS have already defined their national STI landscapes and are in the process of drafting the revised STI policies. Whereas others, are designing implementation strategies and action plans in line with national development plans. The activities and roadmaps for the review process are drafted in close partnership with the Government nominated international and national experts and the Ministries concerned.
- UNESCO has commissioned international expertise to develop an STI policy formulation training module that can be used in an e-learning format aimed at training an unsupervised large number of policy-makers, in collaboration with the African Technological Policy Studies (ATPS).
- The Government of Mali requested ECA's support to develop its' Science, Technology and Innovation (STI) Policy and Plans. The draft of the policy document is ready and the review process is in progress
- ECA also received requests from Benin, Burkina-Faso, Cote-d'Ivoire, Gambia, Mali, Niger and Togo.
- The ECA study on Gender mainstreaming in STI in East Africa Community and SWOT analysis to assess the consideration of gender perspective in STI policy, programs and applications would contribute to the policy analyses in other African countries.

2.2 Other activities in support of the AU/CPA

2.2.1 Science and engineering education

The AU/CPA underlines the "declining quality of science and engineering education at all levels of educational systems'. UNESCO's Basic sciences programme addresses this objective of the CPA (among others) and deals with molecular biology, biotechnology, chemistry, pure and applied physics and mathematics, as well as interdisciplinary areas that underlie human health, the preservation of the environment and human well-being. Capacity in specific disciplines is strengthened in all regions and at all levels through science education and the fostering of a science culture.

- The Intersectoral Platform on Science Education gives an overview of the implementation of science, technology, engineering and mathematics (STEM) education programmes in UNESCO, and aims to highlight the importance of STEM education for development and poverty eradication.
- The Global Microscience Experiments Project promotes education in the basic sciences, through the use of microscience kits to enable primary and secondary school pupils to conduct practical experiments in chemistry, biology and physics. To date, 30 African countries participated in the introductory workshops on Global Microscience Experiments Project to promote education in the basic sciences.
- UNESCO has been providing assistance to develop mathematical physics in Africa through the activity of the International Chair in Mathematical Physics and Applications (ICMPA) in Cotonou (Benin), through 5 annual COPROMAPH (contemporary problems in mathematical physics) international schools held in Cotonou from 2005 to 2009. The 2009 workshop attracted 120 participants from 11 African countries.
- In 2009, the central African Network on geometry and topology was formally launched in Cameroon. Mobile science exhibitions for Central Africa. Intended to encourage and raise awareness, has just been launched.
- The role of engineering in innovation should not be ignored. The recent UNESCO Report, "Engineering: Issues, Challenges and Opportunities for Development", published in September

2010, has a particular focus on engineering in Africa. Other activities included:

- The third edition of Conference of Vice-Chancellors, Deans of Science, Engineering and Technology (COVIDSET, Kampala, November 2009) deliberated on the theme: "Revitalizing Science, Engineering and Technology Research and Deployment for Sustainable Development in Africa. COVIDSET serves as a forum for university leaders responsible for science and engineering education to meet and dialogue on strategic issues in science and engineering education.
- In preparation for the International Year of Chemistry 2011, UNESCO in collaboration with the West African Society for Chemistry held a regional conference in Bamako in 2010. The young scientists debated on the field of research/innovation in chemistry focusing on climate change, environments and sustainable development issues.

2.2.2 Building ICT policies and strategies

Open access

Several initiatives were underlined by Agencies that support the access to scientific information and knowledge.

- Since May 2007, ECA has been managing an on-going e-discussion via an on-line platform on STI for development in Africa (http://www.dgroups.org/groups/sti4d-africa), which is supporting the building of an electronic community of stakeholders around Africa's science agenda and ECA's programme. With over 600 participants it has identified and mobilized a core set of African S&T policymakers, experts, consultants and other stakeholders who have a keen interest in STI4D. It has enabled discussions and sharing of knowledge and experiences on emerging STI issues.
- UNU MERIT has initiated pre-conference ICT events in Ghana on open software.
- CERN/UNESCO established a package to encourage open access to African research through electronic repositories in universities deploying the CERN digital library system "Invenio". *Invenio* is a full-fledged digital library infrastructure that has

been developed by CERN to facilitate the free dissemination of scientific results.

- ECA continued to develop the Access to Scientific Knowledge in Africa (ASKIA) to support and promote access to scientific knowledge by African scientists, decision makers, students and researchers. ASKIA will make available to African scientists existing global scientific knowledge. It will also promote the production of indigenously owned knowledge that supports local competitiveness and economic and industrial growth.

2.3 Achievements in climate change and sustainable development

2.3.1 ICT and climate change

Climate-neutral status: ICT industry and monitoring

ITU is working to limit and reduce GHG emissions and promote the use of more energy-efficient devices and networks and the development of corresponding technical standards in order to ensure that those equipments are climate-friendly. This encompasses more standardized power supplies and batteries, smart ICT devices and buildings, new low-consumption devices, research and development on consumption and power supplies. As a member of the global community, ITU is working to lead by example through achieving climate-neutral status within 3 years. In this regard, ITU is pioneering the use of ICTs to reduce GHG emissions through paperless meetings and virtual conferencing; this expertise will be shared with other organizations in optimizing the use of ICTs as a vital component of energy-efficient working methods.

ITU has voted different resolutions and recommendations pertaining to ICT and climate change; among which one can quote: Plenipotentiary Resolution 35 (Kyoto, 1994), WRC (World Radio communication Conference), RRC (Regional Radio communication Conference) and WTDC-06 (World Telecommunication Development Conference) resolutions related to climate change. Recommendations related to call priority in emergency situations (e.g. recommendation E.106 on the International Emergency Preference System for disaster relief, assignment of the E.164 special country code 888 to OCHA to coordinate disaster relief activities, etc.)

ICT for environment management

ITU is assisting Member States to take full advantage of ICT applications for environmental management and sustainable development and in the use of Telecommunications/ICTs to adapt to and mitigate the effects of climate change. That assistance comprises of (1) environmental monitoring, (2) adoption of energy efficient, (3) dematerialization and disposal standards, (4) carbon abatement (e.g. use of videoconferencing to reduce business travel), (5) helping countries to adapt to climate change (e.g. use of ICT to manage natural resources, environmental protection, and for monitoring natural and man-made disasters through emergency telecommunications). ITU is also working to encourage more Member States to ratify the Tampere Convention on Emergency Telecommunications, whereas in many cases when disaster strikes, wired telecommunication infrastructure is significantly or completely destroyed and only radio communications services can be used for disaster-relief operations (radio amateurs and satellite systems).

ITU is also working to develop strategic partnership with Member States, Sector Members and other organizations such as GeSI (Global e-Sustainability Initiative), WEF (World Economic Forum), ETNO (European Telecommunications Networks Operators' association), WWF (Worldwide Fund for nature), UNEP (UN Environment Programme), WMO (World Meteorological organization) with an interest in using ICTs to combat climate change.

2.3.2 Global Framework for Climate Services (GFCS)

The GFCS, which is a substantive outcome of World Climate Conference (WCC3) and its goal is: *"the development and provision of relevant science based climate information and prediction for climate risk management and adaptation to climate variability and change, throughout the world."* At its core is the mission to increase and improve interactions between climate service providers and those who make use of the services.

All Agencies and in particular UNEP has several programs in climate change and on the "4 building blocks" for Cancun. The decision makers in various sectors, fishery, water, health, forestry, transport, tourism, energy are increasingly concerned by climate risks but are ill-equipped to assimilate the available climate information and apply it for various rea-

sons. Thus the GFCS can provide information to national negotiators in Africa.

2.3.3 Climate change and society

ClimDev-Africa

The ClimDev-Africa programme is a unique regional initiative jointly undertaken by UNECA, the African Union Commission (AUC), and the African Development Bank (AfDB) with highest-level political endorsement. It is designed to respond to Climate Change challenges for Africa's development, with focus on climate-sensitive sectors such as agriculture and food security, water resources, energy and health. The aim of the ClimDev programme include increasing the resilience of Africa's population to Climate Change by enabling effective adaptation activities; and addressing the need for improved climate information for the socio-economic development of the continent. ClimDev-Africa programme is being implemented progressively starting in 2009 with an indicative budget of about US $140m for 4 years (including provisions for additional capacity at AUC and RECs).

Climate Change and Migration in Africa

In partnership with migration research communities in Africa, this UNESCO activity will initiate studies on the nexus between climate change and migration in the region, focusing on the social implications of this 'new' global challenge on local populations. Results generated from this study (or studies) will be utilized to promote dialogue between decision makers and researchers, with the aim of designing policy options on how governments can better tackle the problem both at the national level, as well as, in cooperation with their counterparts at the regional level. The findings will also be utilized to begin a sustained public information campaign on the social implications of climate change in Africa. Through collaborative partnership with the INDEPTH Network, a Ghana-based international non-governmental scientific organization, will contribute to the study, trends between weather/climate changes and migration/mortality for the period 1995-2009 is being analyzed.

On the Frontlines of Climate Change – "indigenous knowledge"

Developed at UNESCO, "Climate Frontlines" is a global online forum for community-based experiences with climate change and provides a platform for sharing observations, concerns and adaptation strategies., "Climate Frontlines" also supports small field projects such as studies with Tarrafal settlements in Cape Verde, Konso pastoralists in Ethiopia, Gabbra in Kenya, Sihanaka in Madagascar, Hadzbe hunter-gatherers in Tanzania, and farmers in Central Zambia.

2.3.4 The First Conference of Ministers Responsible for Meteorology in Africa

WMO has well-established partnerships with satellite operators, airline companies, ship operators and others required to support its comprehensive suite of observations with FAO, UNESCO-IOC, UNEP and ICSU in GCOS. WMO's role in international coordination includes: institutionalized practices and commitments for monitoring including analysis, assessment, publication and informing on climate, particularly its anomalous behaviors.

In order to enable more direct involvement of high level policy makers in climate related issues, the WMO organized the First Conference of Ministers Responsible for Meteorology in Africa convened on 12- 16 April 2010 under the theme "Investing n Weather and Climate Services for Development." The Conference, organized by the World Meteorological Organization (WMO) in partnership with the African Union (AU), was attended by 48 African countries with more than 30 ministers, In total there were more than 300 participants, including technical experts and specialists from the weather and climate communities as well as several leading users of climate information in Africa and beyond, development institutions, universities and financial organizations. The Ministers committed themselves to: strengthen and sustain National Meteorological Services. WMO is currently working with partners to ensure that the outcomes of the conference are well implemented:

- Establish the African Ministerial Conference on Meteorology (AMCOMET) as a high-level mechanism for the development of meteorology and its applications in Africa with a Bureau composed of Kenya (Chair), Mali (First Vice-Chair), Zimbabwe (Second Vice-Chair), Congo (Third Vice-Chair) and Morocco

(Rapporteur) representing the five African sub-regions. This Bureau will represent AMCOMET during the intercessional period;

- Designate during this Conference a Task Force of ten (10) members comprising the five Bureau members and Algeria (North Africa), Cameroon (Central Africa), Ghana (West Africa), Uganda (East Africa), and a representative of Southern Africa (to be designated). The Task Force will define the institutional framework and internal arrangements of AMCOMET with WMO as the Secretariat with the support of AU. The Task Force should submit a proposal to the first session of AMCOMET which should meet regularly and at least every two years;
- Take the necessary measures, within two years, to develop an African Strategy on Meteorology for enhancing cooperation between African countries;
- Establish, with the support of WMO and partners, a sub-regional structure for climate monitoring and adaptation to climate change for sustainable development in Central Africa;
- Involve the technical and financial partners, the international community and the United Nations system and its agencies to support AMCOMET and the preparation and the implementation of the African Strategy on Meteorology; and
- Ensure that African National Meteorological Services and Regional and sub-regional centers have access to the Copenhagen Green Fund for Climate Change through the African Development Bank and other mechanisms.

2.3.5 Climate infrastructure

As a specialized agency of the United Nations for about 60 decades, WMO has acquired considerable infrastructure which has enabled it serve the international community and national governments, in various capacities, especially on weather, climate and water related issues. Overviews of the infrastructure at its disposal and aspects of the future plans within it mandate and competencies are highlighted as follows:

Within the Africa Region, more specifically, plans are on towards

- Enhancing the activities in the WWW Programme (improvement of GTS in RA I in order to improve exchange of information within RA I and between members, accompanying capacity enhancement in GTS, TC and NWP, data processing and data management and improvement and maintenance of observing networks –RSBN);
- Strengthening relationships with external stakeholders (the African Union and its sub-regional economic groupings, private sector and multilateral development partners (to ensure NMHSs in the Region are fully engaged in continental GCOS initiatives such as AMESD and CLIMDEV-Africa);
- Facilitating WMO's World Climate Programme in the Region (active involvement of NMSs in regional Programmes and projects such CLIMDEV, AMESD and participation in climate change matters especially in the IPCC, UNFCCC and UNCCD among others);
- Increasing involvement of NMHSs in Disaster Risk Reduction (Strengthening the activities of the RAI and NMHSs to work with partners in dealing with natural disasters and poverty);
- Increase focus on the applications and Services (Strengthening of early warning systems such as those for Tropical Cyclones, drought and Flood also promoting the establishment cost recovery and quality management framework).

2.3.6 Climate Change Conference (COP15)

The Intergovernmental Oceanographic Commission (IOC) of UNESCO implements activities in Africa through global programmes in coordination with regional subsidiary bodies (IOCEA—Central Eastern Atlantic Ocean Region; and IOCWIO—Western Indian Ocean Region). In the lead up to the Climate Change Conference (COP15), the African Union Commission, with support of UNESCO/IOC and a network of marine institutions, highlighted the increasing costs attributed to climate change impacts on the coastal zones of Africa – presented and discussed during consecutive AMCEN meetings in both Nairobi and Addis in preparation for COP15. Subsequently, support was provided to African ministers and negotiators in preparation for the Climate Change Conference (December 7-18, 2009). This included expert advice and documents at meetings

before the conference, and coordination of a team of African experts at COP15.

2.3.7 Ocean Science and Observation

Activities to enhance Ocean observing systems and data exchange standards are implemented largely through UNESCO/IOC ODINAFRICA IV - Ocean Data and Information Network for Africa (http://www.odinafrica.org/), now in its 4th phase. In the current biennium ODINAFRICA IV will strengthen its networks in over 25 countries assisting National Ocean Data Centers and scientists to: (i) improve web based portals and data and information services; (ii) develop national and regional mapping (www.africanmarineatlas.net), forecast, and scenario development products, and (iii) produce communication tools including policy and media brief for coastal management decision making:

- In the last biennium, ODINAFRICA-III included 40 institutions from 25 countries. Results include development and training on: (i) a network of National Oceanographic Data and Information Centers; (ii) the African Marine Atlas; (iii) Ocean Docs African e-repository, and (iv) the sea level network;
- The development of the African Sea Level Network included establishment of 15 stations, also contributing to the Global Ocean Observing System in Africa (GOOS-AFRICA). GOOS-AFRICA supports national, regional and international networks such as GEO, and GCOS for Climate Change;
- In collaboration with the Global Sea Level Observation System (GLOSS), new tide gauges were installed in Cameroon, Congo, Djibouti, Egypt, Ghana, and Mauritania;
- The installation of Global Navigations Satellite Systems- receivers at the sea level stations in Takoradi (Ghana), and Inhambane and Pemba (Mozambique) provides the connection between the horizontal and the vertical datum at these locations. This brings the total number of tide gauges installed along the African coastline to more that 40. Information on the network is available on the African Sea Level Network website (www.iode.org/glossafrica), while the data from 22 of the stations can be accessed near-real time at http://www.ioc-sealevelmonitoring.org/.

2.3.8 Coastal zones

The Adaptation Fund (AF) was established under decision 10/CP.7 to finance concrete adaptation projects and programmes whose main goal is to adapt and increase climate resilience in developing country Parties to the Kyoto Protocol that are particularly vulnerable to climate change. The funds disbursed by the AF are managed by entities accredited with the AF Board. These entities can be National and Multilateral, also Member States can endorse entities as Executing Entities to assist them on projects and programme implementation.

- IOC has launched the IOC 50th Anniversary Fellowship Programme. From more than 50 applicants from 23 African countries, 12 applicants have been selected as the IOC 50th Anniversary Young African Science Fellow (http://www.ioc-cd.org). This fellowship programme offered by the NOAA (National Oceanic and Atmospheric Administration) will address ocean and coastal adaptation to climate change.
- Models developed by institutions, addressing coastal management issues and adapting to climate change in East and West Africa was offered to participants from the regions in November 2010 at a workshop in Kenya. The "Adaptation to climate and coastal change in West Africa", (ACCC), project was funded by the Strategic Priority on Adaptation and focuses on implementing measures to strengthen the resilience of vulnerable communities to the impacts of climate change on coastal resources. The project contributes to better understanding and management of shoreline change, induced by climate variability, in the five participating countries (Cape Verde, Gambia, Guinea Bissau, Mauritania and Senegal). Results during the biennium included training of experts on mangrove and dune restoration, and training on climate change in coastal zones.
- IOC also delivered training in the use of Decision Support Tools (DSTs) for coastal management, inundation mapping, and natural disasters risk assessment and management.

2.3.9 Climate change impacts on the hydrological cycle, and consequently impacts on water resources

The UNESCO International Hydrological program (IHP) acts as a vehicle through which Member States can upgrade their knowledge of the water cycle, thereby increasing their capacity to better manage and develop their water resources, the first theme is concerned with how climatic and human-induced changes will affect the world's water resources. UNESCO's programs on managing water as a shared responsibility across geographical and social boundaries, is providing capacity building in the following areas.

WMO is further capacitating the Region's Hydrology and Water Resources Programme (collaboration between NMSs and NHSs in data exchange, flood forecasting and Warning and implementation of HYCOS projects with respect to inland lakes and underground water resources).

2.3.10 Natural disasters mitigation and preparedness programmes

- The role of WHO during emergencies has evolved over the last decades in response to the number and magnitude of health crises affecting different populations. Following the tsunami disaster of December 2004 Member States requested the Organization to improve its emergency response operations and play a more pro active role in the different crises. This was to be done through a framework that emphasized emergency preparedness, focused on building health systems while increasing community resilience.
- The WHO launched the Three Year Programme to strengthen its institutional capacity to assist Member States to prepare for and respond to emergencies within the context of humanitarian reform. Four major humanitarian donors that is CIDA, DFID, ECHO, and SIDA funded the TYP programme. The TYP gave WHO the opportunity to respond to the need for enhanced emergency response operations by expanding its field presence and building its capacity to respond to crises. The programme was first rolled out in thirteen conflict affected countries and at sub-national locations in Chad, Central African Republic, the Democratic Republic of the Congo (DRC) and Uganda in 2004.

Some of these were also countries where the cluster system was being piloted.

- The Emergency and Humanitarian Actions (EHA) programme of WHO in the African Region has set up a weekly emergency situation monitoring system to make useful information available to member states and all health partners in order to assist individuals and communities to respond efficiently and adequately to emergencies. The main sources of data are reports received from WHO country offices, supplemented by the international humanitarian press.
- Countries on the African continent are affected by different types of natural hazards such as earthquakes, floods, landslides, droughts, windstorms, tsunamis. The UNESCO regional program to enhance the resilience of Sub-Saharan African Countries to address hydro-hazards disasters will concentrate on Mali, Burkina Faso, Niger, Ghana, Benin and Togo. This activity aims at attenuation/mitigation of climate change effects such as droughts and floodplains by: mapping urban areas with high flooding risks; and producing guidelines for sustainable management of floodplain areas.
- Through its programs, WMO facilitates digitization and archiving of data and metadata; develops and implements new technologies for observing and monitoring ; and in particular increases focus on the applications and Services (Strengthening of early warning systems such as those for Tropical Cyclones, drought and Flood also promoting the establishment cost recovery and quality management framework).
- WMO is increasing involvement of NMHSs in Disaster Risk Reduction (Strengthening the activities of the RAI and NMHSs to work with partners in dealing with natural disasters and poverty).

2.3.11 Ecology and earth sciences

Knowledge of geology and its processes is one of the preconditions for economic growth. Geology and geological processes determine the conditions of today's fauna and flora and the conditions in which we live. The development of our society has been intimately linked to natural history and the resources of our planet. Studying geological diversity and pro-

cesses, allows us to identify viable resources, and renewable geological processes, which may benefit or threaten society.

- In 2009, UNESCO organized two workshops in Africa (Senegal and South Africa) in order to assess regional capacities and needs in Earth science education, research and industry; as a follow up UNESCO will support the implementation of the Earth Science Education Initiative in Africa (ESEIA);
- The Man and the Biosphere- program proposes an interdisciplinary research agenda and capacity building aimed at improving the relationship of people with their environment globally. The United Nations declared 2010 the International Year of Biodiversity (IYB). The UNESCO IYB Science Policy Conference (January 2010), provided an opportunity to present new scientific findings on biodiversity and ecosystem services, including in relation to global and climate change and to assess related implications for policy-making;
- AfriMAB is the Africa Sub-Saharan network of Biosphere reserves and was created in 1996. By June 2010, there were 59 Biosphere reserves in 26 countries in Africa;
- UNESCO organized the Regional Meeting of the African Network of Biosphere Reserves – AFRIMAB in Nairobi, Kenya from 13 – 18 September 2010. The theme 'Sustainable Financing of Biosphere Reserves' brought together participants from 22 African countries and various international institutions. It provided a platform for participants to exchange information on the status of implementation of the Madrid Action Plan for Biosphere Reserves in Africa.

2.3.12 Renewable energy

Approximately 80% of the African population lack access to electricity services. For low density rural populations, decentralized energy technologies based on renewable sources offer a viable alternative to grid extensions and meeting the "basic energy needs".

- Technical assistance from UNESCO to African countries ranges from support provided for enhancing local capacities, to advisory services and technical assistance to national governments or regional and national entities in developing the national/regional renewable energy plans and strategies, active partner-

ship and cooperation with the Community of Sahel-Saharan States (CEN-SAD) and Africa Energy Commission (AFREC). In Africa, six UNESCO Chairs on renewable energy have been already established in different countries; namely: Malawi, Niger, South Africa, Togo, Zambia and Zimbabwe.

- To promote local knowledge and the adaptation of new energy technologies to local needs, UNESCO initiated the " First African annual summer school on solar electricity for rural areas" was launched in Bamako, Mali;
- UNESCO provided technical assistance to Comoros in the formulation of "Renewable Energy Policy in Comoros". Similar initiatives leading to the formulation of a renewable energy policy will be developed in four other African countries (Burkina Faso, Mali, Niger and Togo). The main objective of implemented activities is to increase the number of African countries producing quality evidence-based renewable energy policies/strategies, integrated into national development plans.

3.0 Discussion

3.1 Governance structure for the UNCST

UNCST reports to AMCOST. UNESCO successfully reported to AMCOST III in March 2010 in Cairo. The following suggestions were made to strengthen the roles of the Coordinator and Vice Coordinator:

- Agencies to identify Cluster focal points and mandates and communicate these to all Cluster Members, the RCM and the AU;
- Mandates for Agencies in support of the CPA to be clearly defined and communicated to the highest level in each agency; and
- Assigned the proper resources to be more active.

3.2 Reporting mechanism and communication

The designation of identified Focal points for each agency will facilitate both reporting and communication.

- Whereas individual agencies had their respective reporting mechanisms, the interaction within the Cluster and between the Cluster and the RCM could be strengthened.
- Agencies are expected to report on ongoing activities in past year and joint interventions.
- It was recommended that the Cluster Members communicate at least every two months with each other, to forge better communication, cohesion and synergy in planning and implementation.
- A mechanism of communication should be established.
- Frequent communication is also necessary with the AUC/HRST and NEPAD.
- A reporting mechanism on how to monitor implementation of Cluster activities in support of the CPA would facilitate the "needs assessment" by the AUC/HRST and NEPAD.

3.3 Joint Cluster activities-business plans

The three pillars of the CPA are: capacity building, knowledge production and technological development. All agencies are contributing in the sectoral implementation of CPA. The AUC/HRST recommended that the Cluster could carry out a review of Members existing programs and activities to ascertain who is doing what under the pillars of the CPA. This baseline study will enable the identification of a common niche for an action plan for joint activities.

One such activity could be the STI policy reviews in MS. To date a STI policy framework for Africa is lacking.

3.4 AUC/HRST, NEPAD and the African Cluster for Science and Technology (ACST)

The ACST, AUC/HRST and NEPAD could play a vital role in determining baseline studies on the programs and projects that contribute to the CPA. However, to date there have not been any meetings of the ACST convened despite it being a reporting working group of the AMCOST. Stronger links between this Cluster and the ACST would work towards the elimination

of duplication and promote coordination and synergies in programs and activities both at national and sub- regional level.

In this regard, the AUC/HRST and NEPAD may envisage a "needs assessment" and inform the UN Cluster on the progress made in implementing the pillars of the CPA. Technical assistance on priority subjects can be submitted to AMCOST.
In terms of coordination, NEPAD and the AUC/HRST could be more pro active, undertaking analyses on focus and the potential role for each agency. In the same manner, the AU and NEPAD could play a more effective role in coordination with other stakeholders on the continent via the ACST.

3.5 Harmonization and synergy

Various Agencies were establishing centers of excellence on different areas of science and technology. UNEP is currently setting up a centre of excellence on water. It is unsure how the different centers relate to each other and whether they are in synergy. In the quest for harmonization and to avoid duplication of efforts, there was an appeal to NEPAD and the AU to coordinate and evaluate these centers.

Evidence based policy making depends upon reliable statistics and indicators which serve as benchmarks for governments. Different Agencies are contributing to build capacity in this area raising the question of harmonization with that of the AU/NEPAD. This would be an area that would require coordination between the Cluster and AUC /HRST and NEPAD

3.6 Climate change

Participants discussed the role for the different Agencies, AU and NEPAD in climate change adaptation and mitigation on the continent. The African Technology Policy Studies Network (ATPS) is a multi-disciplinary network of researchers, practitioners and policy makers that promotes science, technology and innovation policy research, dialogue and practice, for African Development. With a regional secretariat in Nairobi, it operates through national chapters in 23 countries. The representative from the ATPS presented the program "Make Sense of Climate Change" for the "Quadruple Helix: Policy Makers, Civil Society Actors, Science

Experts and Private Sector Actors. The ATPS believes that only through equal partnerships and cooperation amongst the key actors in the Quadruple Helix, can sustainable development be achieved. ATPS is also engaged in "integrating environmental and indigenous knowledge" for climate change mitigation in 11 countries and would like to partner with the UN Agencies and improve Africa's participation and negotiation skills at global conventions such as the COP 16 and beyond.

Can we support detailed collection of science of climate change and cost of adaptation?

The need to collect reliable data on climate change and adaptation through science based research was discussed at length. It was also pointed out that this was a major problem of the Africa group in the Copenhagen negotiations. The following recommendations emerged:

- Can this Cluster support network on collection of data and research on climate change
- How could we work in synergy in collecting existing knowledge in Africa
- How can we prepare better for Cancun and better inform the national negotiators
- What strategies can be used to finance climate change adaptation and mitigation programs in Africa
- What kind of climate change research is needed for national governments
- What are the appropriate national and regional policies that would address climate change.

Technology adaptation and transfer

The meeting agreed that there is an urgent need to promote the transfer of knowledge, science and technology to build the resilience capacity of African countries in all spheres that impact climate change. In recognition for the International Year of Planet Earth, an award was presented to a young earth scientist who addressed the Cluster and stressed the importance of earth sciences and the environment.

The NEPAD Global Monitoring environmental system is providing capacity building for African countries on technology adaptation and transfer.

All UN agencies are encouraged to contribute. It is timely to carry out a "climate change technology needs assessment" for the region.

- What can the Cluster offer to help countries acquire technology transfer and develop appropriate technologies e.g. the geothermal energy program in Kenya
- Can the Cluster Members provide technical assistance in IP rights
- How can the Cluster increase the capacity of the institutions to deliver on science and technology for climate change.

Challenges that climate change poses to Africa

Following the consultative workshop on the science of climate change in March 2010 convened by UNEP, ECA, ICSU and the Network of African Science Academies (NASAC), a draft Action Plan on Climate Change and Mitigation emerged. The draft joint report by the latter partners was presented to the Cluster meeting. The role of science and technology to enhance research and development efforts, and to better inform and influence climate change decisions is not negligible.

- An Action Plan on climate change for Africa was essential.
- NEPAD informed the meeting that they were assisting governments with developing national action plans and in climate change policies.
- There was a call for national and sub regional level meetings on climate change action plans and all Agencies were advised to contribute.
- It is expected that the IMF will allocate Strategic Climate Funds of ~20-40B$ to Regional Banks for climate change adaptation and mitigation. Hence it is primordial that Agencies assist the AU, NEPAD and MS to develop an African Action Plan to be submitted to the African Development Bank.

3.7 Key Recommendations of the Cluster

It is imperative that Agencies designate the Focal points and communicate these among the Cluster Members to facilitate coordination and communication. The AUC/HRST recommended that the Cluster Members identify a particular "niche" for the Cluster whereby all Agencies would be able to deliver on the pillars of the CPA. As was noted in the previous year, Cluster Members have their individual systems of report-

ing in the Results Based Management System which takes into account the benchmarks, achievements, challenges and lessons learnt. Thus the identification of joint initiatives in an "inter agency approach" in a bid to deliver better and more coherent programming is the main challenge facing Cluster Members given their respective mandates and the cycles of programming.

4.0 Conclusions

The AU Commissioner for Human Resources, Science and Technology addressed the Cluster and thanked all stakeholders and the AU partners recognizing the UN as *the* traditional partner. All these partners are strategic for development of the continent. HE. underscored the importance of "speaking with one voice and avoiding duplication", thus the Cluster is the best forum we have with the AU on issues of S&T. The various partners outside of the UN and within, can be used to assess the S&T situation in order to maximize our benefits from these partnerships. The AU/CPA has reached the 5 year landmark and it is now appropriate to revisit its objectives, the progress achieved and constraints and challenges experienced by MS. The Commissioner urged the UN Cluster to consider assisting the Commission in monitoring and evaluation of the implementation of the CPA.

Recommendations of the 8-10th RCM were discussed, with a focus especially on the governance structure and reporting mechanism of the Cluster. Due to the lack of continuity of Agency's Focal Points, communication among Cluster Members and the RCM is a challenge. The Cluster therefore appeals to the DSG for the highest level commitment from Agencies.

An enhanced reporting mechanism to the RCM and to the AU would strengthen cohesion and visibility of implementation. The role of the AUC/HRST and NEPAD in a "needs assessment" under the different pillars of the CPA would facilitate the mandate and role of the Cluster in implementation.

The Cluster was called upon to assist the AUC/HRST, NEPAD and African MS in promoting the collection of reliable data on the science of climate

change and adaptation. In providing technical assistance to national governments on mitigation plans the role of science should be considered in the following domains: human capital (eg awards for climate change scientists as incentives), research infrastructure, ocean science, carbon sinks and African forests.

All Agencies could have a role to play in the draft Action Plan on Climate Change in Africa and are invited to participate and contribute to the draft initiated by ECA specifically on: measures to promote the legitimacy and role of science in policy-and decision making processes in Africa; international collaborations in Climate Change initiatives and a possible Climate Change Roadmap for Africa for sustainable growth and development.