



United Nations
Educational, Scientific and
Cultural Organization

Executive Board

Hundred and eighty-second session

182 EX/INF.7
PARIS, 2 September 2009
English & French only

Item 5 of the provisional agenda

REPORT BY THE DIRECTOR-GENERAL ON THE FOLLOW-UP TO DECISIONS AND RESOLUTIONS ADOPTED BY THE EXECUTIVE BOARD AND THE GENERAL CONFERENCE AT THEIR PREVIOUS SESSIONS

Progress Made and Results Achieved in Implementation of the UNESCO Strategy for Action on Climate Change and its Enhanced Plan of Action

SUMMARY

In accordance with 179 EX/Decision 15 and 181 EX/Decision 15, the Director-General presents to the Executive Board a detailed report on progress made and results achieved in the implementation of the UNESCO Strategy for Action on Climate Change together with an enhanced Plan of Action for the Implementation of the UNESCO Strategy for 2009 and 2010-2011.

1. At its 179th session the Executive Board requested the Director-General to report at each autumn session on the progress made and results achieved in the implementation of the UNESCO Strategy for Action on Climate Change (179 EX/Decision 15). The first such progress report is subsequently presented here as an information document accompanying 182 EX/5 Part II.
2. In line with the UNESCO Strategy (180 EX/16 Rev. Annex) a Detailed Plan of Action for the Strategy was prepared (181 EX/15 Annex). At its 181st session the Executive Board took note of the Plan of Action presented in 181 EX/15 requesting the Director-General to present, in his report to it at its 182nd session on progress achieved, an enhanced Plan showing increased programme concentration, reinforced synergies and stronger efforts to achieve a climate-neutral UNESCO, as well as enhanced budgetary information. The enhanced Plan of Action for 2009 and 2010-2011 for the Implementation of the UNESCO Strategy for Action on Climate Change is presented in the Annex to this progress report.
3. The report, together with the annexed enhanced action plan, has been prepared by the UNESCO Intersectoral Platform for Action to Address Climate Change based on inputs from all major programmes, including secretariat units at and away from Headquarters.

PROGRESS MADE AND RESULTS ACHIEVED DURING THE 34 C/5 IN THE IMPLEMENTATION OF THE UNESCO STRATEGY FOR ACTION ON CLIMATE CHANGE

4. This progress report takes stock of progress made and results achieved during 2008-2009 in the implementation of the UNESCO Strategy for Action on Climate Change together with a brief assessment of the effectiveness of the UNESCO Intersectoral Platform on Climate Change which was conceived to support the implementation of the UNESCO strategy. Annexed to the report is an enhanced Plan of Action for the remaining part of 2009 and for 2010-2011 that incorporates the debate of the Executive Board on the initial Plan of Action presented to the Board in May 2009.

5. The report is structured around the three main strategic objectives contained in the Strategy and in the Plan of Action, namely:

- (a) building and maintaining the climate change knowledge base: science, assessment, monitoring and early warning;
- (b) promoting mitigation of and adaptation to climate change, including through enhanced education and public awareness; and
- (c) moving towards a climate-neutral UNESCO.

Strategic objective I. Building and maintaining the climate change knowledge base: science, assessment, monitoring and early warning

6. As the co-convenor with WMO within the United Nations for this cross-cutting area, UNESCO has planned and continues to implement activities contributing to building the knowledge base for science, assessment, monitoring and early warning. In addition to addressing the continued global knowledge base needed for climate science, these activities place strong emphasis on building the capacity of climate-related institutions and training the next generation of scientific and technical personnel in all regions in order to ensure that all Member States are able to participate in addressing climate at the regional and national level. These activities give priority attention to Africa, Small Island Developing States (SIDS), Least Developed Countries (LDCs) and indigenous peoples.

Objective I.1: To develop the role of UNESCO as co-United Nations lead agency for the climate change knowledge base and guide UNESCO's adaptation work at the country level

7. The World Climate Conference-3 (31 August to 4 September 2009) is a major outcome of UNESCO and WMO's convening role in the climate science knowledge base. It will be instrumental in achieving United Nations-wide collaboration on a Global Framework for Climate Services aimed at delivering climate information to enable national policy-makers and other end users in all sectors of society to adapt to climate change. UNESCO is contributing to the high-level segments and is organizing a scientific working session (climate of oceans and coasts), fora (gender and climate; capacity-building, education and training) and a side event (groundwater and climate), as well as contributing to the drafting of the final Declaration of WCC-3. UNESCO also actively participated in the overall United Nations climate change efforts led by the Chief Executives Board and its High Level Committee on the Programme's working group on climate change, summarized in Acting on Climate Change: the United Nations system Delivering as One.

8. An international experts' meeting, Climate Change and Arctic Sustainable Development: scientific, social, cultural and educational challenges, was held in Monaco (3-6 March 2009), to ensure that the scientific, social, cultural and educational challenges were comprehensively assessed in a holistic way and with the participation of the indigenous people of the Arctic region who will be challenged by this rapid change. The International Polar Year focal points participated in the meeting. Follow-up, including a publication with recommendations for future action, is anticipated to be launched at the United Nations Framework Convention on Climate Change

(UNFCCC) 15th Conference of the Parties (COP 15) in Copenhagen in December 2009. Planned participation at COP 15 includes side events by IOC on ocean observations, by UNESCO on ethical implications of climate change, and an exhibition, plus sponsorship of additional joint events with other United Nations organizations and partners.

9. UNESCO participated in the first scoping meeting for the fifth assessment report by the Intergovernmental Panel on Climate Change (IPCC), and provided comments on the resulting draft report plan. The planning for the next IPCC assessment report includes much expanded sections on oceans and on impacts, and addresses questions directly related to adaptation. The WMO-IOC-ICSU World Climate Research Programme (WCRP) held a modelling summit which recognized the urgent need for regional climate models, despite the fact that they currently face scientific and computational limitations. WCRP recommended the establishment of a world climate research facility.

10. Beyond its contribution to the international coordination of scientific input needed to study climate change, UNESCO continues to foster and provide advanced educational training for the next generation of climate scientists, particularly those from LDCs. Such training is currently provided by both science-related category 1 centres/institutes, the UNESCO-IHE Institute for Water Education and the Abdus Salam International Centre for Theoretical Physics (ICTP) for water management and earth science and meteorological modelling, respectively. IOC's capacity-development unit ran programmes for at-sea training for young scientists, as well as training for the developing country research institutions in scientific leadership, thus ensuring that young scientists who have received advanced training abroad can return to their country of origin and find an enabling environment in which to work. The Academy of Sciences for the Developing World (TWAS), also affiliated with the sector, co-sponsors the joint visiting scientist programme and runs the TWAS associateship programme at centres of excellence in the South. Expansion of specific advanced training opportunities for young scientists in developing countries to address adaptation to climate change and climate science is contingent upon additional programme funding.

Objective I.2: To further develop the role of IOC as United Nations focal point for the permanent observation of the ocean and coordination of the study of ocean and climate

11. IOC has committed to the UNFCCC to continue sea-level monitoring and prediction through the Global Ocean Observing System (GOOS). In March 2009, IOC participated in a UNFCCC workshop to identify data and observations needed for understanding impacts, vulnerability and adaptation to climate change and at the UNFCCC's 30th meeting of the Subsidiary Body for Scientific and Technological Advice in June 2009, IOC reported on the climate module of GOOS, announcing that deployment of the Argo and drifting buoy arrays which provide open ocean data worldwide have achieved their design targets, while the total *in situ* networks has tapered off at just over 60%. GOOS, along with the Global Climate Observing System (GCOS) and the Global Terrestrial Observing System (GTOS) are parts of the Global Observing System of Systems (GEOSS) developed by the Group on Earth Observations as an outcome of the WSSD. GOOS, GCOS and GTOS are all sponsored in part by UNESCO and each provides data in a different realm that is essential to global climate science and predictions.

12. GOOS continued to lead the planning of the "OceanObs'09 Symposium", to be held in September 2009, which will strengthen and enhance the international framework under GCOS, GOOS, WCRP and the International Geosphere-Biosphere Programme (IGBP) and support regional and national frameworks for sustained world ocean observing and information systems supporting the needs of society about ocean weather, climate, ecosystems, carbon and chemistry. This will support the regular needs analysis undertaken by GOOS and reported to sponsors and the UNFCCC.

13. In addition to GOOS, UNESCO-IOC also continued sponsorship of the WCRP itself, thus contributing to the scientific research that will go in to the next IPCC assessment report. In the framework of WCRP and GOOS, the national space agencies of France and the United States of

America successfully launched the Jason-2 satellite, assuring continuity in high-quality sea level measurements from space, information essential to resolve medium- to long-term climate forecasting models.

14. The Global Sea-Level Observing System (GLOSS) established a sea-level station monitoring web service, with over 300 stations participating as of June 2009 while the International Oceanographic Data and Information Exchange (IODE) trained 118 technicians on ocean data and information management.

15. Following its role in major international scientific meetings (the Second Ocean in a High CO₂ World Symposium; Fourth Global Conference on Oceans, Coasts and Islands; the International Symposium on the Effects of Climate Change in the World's Oceans; and the World Conference on Marine Biodiversity) and the production of policy briefs and guidelines, IOC also began work on an international strategy for a decadal survey of large scale ocean circulation and carbon cycle processes in the oceans (2013-2023). The largest global dataset of surface ocean carbon ever assembled was developed to improve studies of ocean uptake of anthropogenic carbon dioxide (CO₂). This will be a major contribution to climate change research, as ocean acidification due to increased uptake of CO₂ has already begun to influence not only chemical processes, but the health of life within the oceans and thus fisheries.

Objective I.3: To support assessment of and adaptation to impacts of climate change on water, including hazards such as floods and droughts

16. Water is the primary medium through which climate change will affect livelihoods, shape economies and alter the natural environment. How water is managed largely determines the effectiveness of adaptation to climate change. UNESCO's activities related to the effects of climate change on fresh water and water management are extensive. In addition to the release of the Third World Water Assessment Report *Water in a Changing World* with its focus on climate change, and numerous climate-related sessions at the Fifth World Water Forum in March 2009, highlights include the workshop "Adapting to the impacts of global changes on river basins and aquifer systems" in Paris; a workshop in Addis Ababa, Ethiopia, "Training in water and climate risk management: managing hydroclimatic risk in the water sector"; the Spanish-MDG funded China climate project with its regional adaptive plan, and the adoption of climate change recommendations in the water resources sector in the commonwealth of independent States.

17. The effects of climate change on groundwater were addressed through the Global Network on Water and Development Information for Arid Lands (G-WADI) which increased access to remotely sensed global data products – including real-time rainfall distribution – to improve scientific management of groundwater in arid lands and formulated guidelines to identify and assess climate change impacts in specific regional situations; and the Groundwater Resources Assessment under the Pressures of Humanity and Climate Change (GRAPHIC) project which conducted a case study on sustainability in small islands.

18. A regional course with a practical training component was held in Nepal in spring 2009 on glacier mass balance, the universally accepted method for monitoring changes in the volume of water held in a glacier. Concern over the melting of glaciers in the Himalayan region, and the effects this may have on water availability downstream, necessitate a coordinated glacier monitoring scheme, for which this was an essential first step.

Objective I.4: To address the social consequences of climate change

19. The UNESCO World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) prepared a report on the ethical implications of climate change. On the basis of the report, COMEST recommended that UNESCO develop an ethical framework of principles in relation to climate change. The COMEST report will be launched at UNESCO's side event at the UNFCCC COP 15.

20. UNESCO collaborated in the production and French translation of the *Training Manual on Gender and Climate Change*, led by IUCN. The *Manual* responds to the needs of policy-makers and scientists to better understand and address the gender dimensions of climate change mitigation and adaptation. UNESCO serves, along with UNDP, as the co-convenor of the Interagency Task Force on Gender Equality and Climate Change, with the goal of enhancing the integration of gender equality into the climate change efforts of the United Nations system. As noted earlier, UNESCO organized the Gender and Climate Forum at WCC-3. The Forum will explore gender and climate issues in order to inform WCC-3 discussions and lead to the adoption of a gendered approach to the expected conference results and outcomes.

Objective I.5: To support climate change management in biosphere reserves and World Heritage sites, especially through space-based remote sensing

21. Ten biosphere reserves have started implementing the Global Change in Mountain Regions (GLOCHAMORE) *Research Strategy* looking at the impacts of global and climate change on the biophysical environment in mountains and the livelihood conditions of people, and an additional programme proposal was prepared. The second phase of the Sustainable Management of Marginal Drylands (SUMAMAD) project received funding approval so that scientists can develop climate change scenarios in drylands of Africa, Arab States, Asia and Latin America.

22. The World Heritage Centre published a policy document on the impacts of climate change on World Heritage properties, as well as case studies on specific World Heritage sites (both available in English, French and Spanish). In addition, the Open Initiative for the Use of Space Technology now includes 20 space agencies, plus remot-sensing laboratories to collaborate on improved monitoring and management of UNESCO designated sites. Extrabudgetary funding is sought to expand and enable similar monitoring of biosphere reserves, in particular for the Mesoamerican corridor. One of the Open Initiative partners, the Chinese Academy of Sciences, has proposed a UNESCO category 2 centre, the International Centre on Space Technologies for Cultural and Natural Heritage, to be reviewed at the 35th session of the General Conference. Such a centre would enable scaling up of remote sensing data processing and thus increase tangible results from the monitoring of UNESCO sites.

Objective I.6: To develop geoscience and the basic and engineering sciences for climate change assessment and monitoring

23. Earth Observation networking activities continued to be developed in the framework of GEOSS. UNESCO is actively fostering network and partnership activities related to climate observations. Negotiations have started with GTOS to reform its work and function to better integrate it with the work of GEOSS and other Earth Observation systems. This is essential because data on land systems (including the living portion, or biosphere) are a major missing piece in global climate modelling. UNESCO is taking an active part in the ISCU-led multi-year review of global earth system research priorities, as a member of the Global Environmental Change Research Programmes and the Earth System Science Partnership.

24. The International Geoscience Programme (IGCP) attracted more project proposals in global and paleoclimate change. Planning has begun for a 2010 workshop to systematically review and critique proposed methods of geo-engineering or technological fixes to compensate for increasing CO₂ levels, such as carbon sequestration or solar radiation management.

25. ICTP has continued its collaboration with the Natural Sciences Sector in the areas of ocean variability, climate variability and impacts of climate change on human societies and natural ecosystems. The ICTP physics of weather and climate group conducts research and training activities on the development and testing of limited area climate models and the refinement and verification of a simplified atmospheric general circulation model. Issues related to seasonal predictability, climate-chemistry aerosol interactions, uncertainties in regional climate change predictions, recent inter-annual and inter-decadal climate variability, and the predictability of Asian

monsoon circulation have shaped its research agenda. It regularly conducts targeted training activities aimed at scientists in less developed countries, such as “Seasonal prediction of African and Asian monsoon”.

Strategic objective II. Promoting mitigation and adaptation to climate change, including through enhanced education and public awareness

Objective II.1: To promote education on climate change

26. The UNESCO International Seminar on Climate Change Education took place from 27 to 29 July 2009, organized in collaboration between the Intersectoral Platforms on Climate Change, Education for Sustainable Development and Sustainable Development in SIDS, plus the Education, Natural Sciences and Social and Human Sciences Sectors with contributions also from the Science Education Platform. It focused on the role of education in addressing climate change, linking the local, regional and global contexts with particular emphasis on the challenges faced by SIDS. Outcomes of the seminar will be to promote the effective integration of climate change education into educational programmes and school curricula, contribute to the establishment of a UNESCO clearing house on climate change education and contribute to highlighting education at UNFCCC COP 15 and other relevant fora.

27. As lead agency for the United Nations Decade of Education for Sustainable Development, UNESCO and partners organized the UNESCO World Conference on Education for Sustainable Development – Moving into the Second Half of the United Nations Decade (Bonn, 31 March–2 April 2009) which included the workshop “Strengthening the educational response to climate change internationally”. The resulting Bonn Declaration in its paragraph 16 (g) requested UNESCO to “Intensify efforts and initiatives to put climate change education higher on the international agenda, in the framework of the DESD, in the context of UNESCO’s strategy for action on climate change, and as a component of United Nations-wide action”. Arrangements were completed for the establishment of a UNESCO Chair in Climate Change at TERI University, related to the Energy and Resources Institute in India, whose Director is the Chair of the IPCC. Focused educational training activities included providing regional climate impact studies for the Nile basin under the climate change risk management in Egypt project; the International Conference on Climate Change, Biodiversity and Food Security in the South Asian Region, which trained trainers and began development of a module for use in e-learning; and a workshop to, *inter alia*, exchange good practices on climate issues through the UNESCO Associated Schools network and other educational networks such as CarboSchools Europe, UNESCO Chairs/UNITWIN and in cooperation with partners such as the UNEP Ozone Division. In addition, activities on environmental ethics teaching, including curriculum development, are ongoing in Asia-Pacific, CIS and West Africa.

28. Cooperation was established in April 2009 between IOC and the African Union Commission for technical advice and support to African Ministers of Environment and UNFCCC negotiators, for adaptation and mitigation strategies in coastal zones up to and beyond COP 15.

Objective II.2: To enhance public awareness of climate change

29. UNESCO in partnership with UNEP has planned the International Conference on Broadcast Media and Climate Change: a Public Service Remit, to take place on 4 and 5 September 2009. The focus is on identifying solutions to the needs of broadcasters from developing countries and to discuss ways in which the public debate on climate change mitigation and adaptation can be facilitated. Modalities for improving the exchange of resources and training programmes will be addressed. Capacities of media professionals to report on climate change were improved through media training workshops or congresses in the Pacific and Central Asia. *The Media as Partners in Education for Sustainable Development: A Training and Resource Kit* was developed (currently available in Arabic English, French, Russian and Spanish), including a specific chapter on reporting on climate change, and it has been used for training in Fiji and Rabat. Fifty hours of

quality science documentaries were provided to the national television station of the Lao Peoples' Democratic Republic.

30. Patrimonto's World Heritage Adventures "Climate Change and the Great Barrier Reef" comic was produced to raise awareness of youth in the World Heritage context. Articles on climate change were distributed to more than 50,000 SIDS and indigenous contacts via the global Internet forum "On the Frontlines of Climate Change". These generated many inputs and exchanges among SIDS and indigenous communities worldwide. The global intersectoral Sandwatch Project on beach monitoring and sustainable management of coastal environments was further expanded including with a revised *Manual* which mainstreams climate change.

Objective II.3: To support education, training, information exchange, best practices, and national strategies related to renewable energy

31. Working with partner organizations, and within the context of UN-Energy, UNESCO continued to enhance the knowledge base for the rational use and application of renewable energy through institutional and human capacity-building, sharing of scientific knowledge and best practices, and the promotion of national and regional renewable energy policies and management. Progress was achieved in all regions, with continued emphasis on Africa. Capacity-building continued through the global renewable energy education and training programme in six countries, including seminars on the proper management of solar photovoltaic (PV) systems in Benin and Tanzania, the latter following the rehabilitation of the solar PV system in a village in Zanzibar. Regional workshops in the Caribbean were supported through the CARISCIENCE network, training on energy self-sufficient villages was broadcast to 25 universities in South-East Asia and training was conducted on energy efficiency and renewable energy in South-Eastern Europe.

32. UNESCO conducted a regional consultation in Central Asia to review the use of renewable energy including local best practices as a follow-up to the Almaty Declaration¹, provided support for a regional experts meeting in Uruguay on second generation biofuels and contributed to three international conferences and exhibitions on solar PV, wind energy and biomass. The Organization supported the Uruguayan Solar Board with drafting and submission of thermal solar energy legislation in Uruguay and held regional and/or national expert meetings in Brazil, Morocco, Nigeria, Saudi Arabia, Togo and Uzbekistan for the development of regional and national renewable energy policies, strengthening of related public service capacities, increasing awareness of the use of renewable energy and integration of energy policy into local development planning for over 100 policy-makers.

Objective II.4: To support education, training, and awareness on climate change impacts and risks related to water

33. UNESCO regional workshops on water education have looked at ways of addressing global climate change in education at all levels. In participation with TERI in India, UNESCO developed tool kits for childhood education on climate change and water.

34. The Adaptation to Coastal and Climate Change in West Africa (ACCC) project in five countries was taken up in the Action Plan for the Environmental Initiative of NEPAD with the major objectives of performing adaptation actions in pilot sites particularly vulnerable to natural climate changes and to anthropogenic degradation and formulating national and regional strategies of adaptation. Evidence of climate variability and change impacts on water resources in three West African countries was documented and shared with decision-makers and scientists in three East African countries were trained on issues of hydroclimatic risk.

¹ The Almaty Declaration resulted from the 2006 Regional Conference on The Strategic Role of Renewable Energies in the Sustainable Development of Central Asia.

Objective II.5: To mobilize UNESCO sites for field learning on climate change impacts and solutions

35. In August 2009 UNESCO, the United Nations Development Programme and the United Nations Volunteers signed an MoU to establish the United Nations Collaborative Programme on Community-Based Adaptation to Climate Change in Developing Countries Multi-Donor Trust Fund (CBA). Making full use of United Nations resident coordinators and United Nations country teams, the CBA will fund community-based organizations in and around biosphere reserves, indigenous and community-conserved areas and other important ecosystems to develop and implement climate change adaptation projects. The focus will be on national action, reinforced at the regional and global level. CBA projects intend to “consult, utilize and acknowledge the immense indigenous knowledge and understanding of women in environment in developing countries”. To further set the stage for expanded UNESCO action in this area, the 21st session of the UNESCO Man and the Biosphere (MAB) Programme’s Coordinating Council created a Global Network of Island and Coastal Biosphere Reserves Contributing to Action on Climate Change and Sustainable Development. With this additional impetus, development continued to set up and seek funding for the “World Network of Biosphere Reserves as an Observatory and learning Platform for Climate Change, Monitoring, Mitigation and Adaptation” programme’s two component parts, the UNESCO MAB Africa Bio-Carbon Initiative, and the Network of Sites of Excellence in the Sustainable Futures of the Congo Basin.

36. In the context of the Mesoamerican biosphere reserve network’s plans to address climate change, a UNESCO Chair in Biosphere Reserves and Mixed World Heritage Sites was established in 2009 as part of a platform of Chairs for Sustainable Development and Environmental Education in Latin America, Africa and Asia. In the Asia region, MAB has begun a survey to identify needs and opportunities at biospheres to demonstrate linkages between climate change adaptation/mitigation and biodiversity conservation. Implementation continued in the Bandjari Biosphere Reserve in Benin and the Sundarbans Biosphere Reserve in India to share climate change adaptation strategies, while in the latter country the World Heritage Biodiversity Project at four World Heritage sites is assessing climate change impacts and devising management strategies to cope with change. Three additional programme proposals related to World Heritage sites have been short-listed for funding consideration. The World Heritage Centre and the MAB Secretariat have spared no efforts to cooperate in the planning and execution of several of the above-mentioned activities.

Strategic objective III. Moving towards a climate-neutral UNESCO

37. In line with the decision by the United Nations Chief Executives Board (CEB) in October 2007 to move towards a climate-neutral United Nations, and the ensuing United Nations Climate Neutral Strategy, all the organizations of the United Nations family committed to specific goals by the end of 2009 including estimating their greenhouse gas (GHG) emissions, undertaking efforts to reduce GHG emissions, and analysing cost implications of purchasing carbon offsets. Subsequent to the “Green Audit” of the Fontenoy building in 2007-2008, and the 27 May 2009 Blue Note on this initiative, UNESCO’s climate-neutral focal point initiated an inventory of 2008 GHG emissions in all UNESCO units and field offices following the common methodology being used across the United Nations system. Results of this baseline inventory will be reported at the CEB meeting in September 2009 and become part of the Secretary-General’s Report on the United Nations Climate Neutral Initiative to be presented at UNFCCC COP 15.

38. Further, based on the 2008 inventory, the UNESCO Focal Point is preparing a list of recommended actions to reduce UNESCO’s GHG emissions. Such actions will likely include changes to policies, administrative rules and procedures, as well as identification of a dedicated unit to support UNESCO’s carbon-neutral activities. Additionally, subject to emerging United Nations guidelines, UNESCO is reviewing options for both purchasing carbon offsets and is identifying UNESCO projects and sites for receipt of such offsets on the basis of ethical, economic

and scientific validity. These outcomes will also be part of the reporting to the CEB in September 2009.

39. A questionnaire on awareness raising and seeking suggestions to improve the climate-neutrality of UNESCO, including its statutory meetings, will be distributed to delegates attending the 35th session of the UNESCO General Conference.

Brief assessment of the effectiveness of the UNESCO Intersectoral Platform on Climate Change to support the implementation of the UNESCO strategy

40. By facilitating information exchange, dialogue and joint activities, the Intersectoral Platform on Climate Change has proved to be a useful structure in the implementation of the UNESCO Strategy. The fact that the UNESCO Strategy for Action on Climate Change was adopted after the 2008-2009 work programme had been established made it in some cases difficult to fully exploit opportunities for intersectorality in line with the Strategy, as budgets already had been earmarked for specific activities by respective sectors and programmes. The Platform has therefore perhaps been particularly effective in relation to the planning and execution of new extrabudgetary activities involving several sectors and programmes, as well as other intersectoral platforms (e.g., on SIDS and ESD), such as in the case of the international experts' meeting on "Climate Change and Arctic Sustainable Development: scientific, social, cultural and educational challenges" held in Monaco last March, and the UNESCO International Seminar on Climate Change Education.

41. With the Strategy in place, backed-up by an enhanced Plan of Action, it is expected that it will be easier for the Platform to facilitate enhanced intersectorality and interdisciplinarity in the implementation of the Strategy for the 2010-2011 biennium. The Platform is an effective mechanism to bring interdisciplinary teams together, cross-fertilizing the work of the different sectors. However, the staff time required for joint programme planning, execution and reporting should not be underestimated in an organization with a broad field of competence and a decentralized structure, such as UNESCO. The final success of the Platform depends heavily on the availability of resources through the "Additional Programme" mechanism.

ANNEX

ENHANCED PLAN OF ACTION FOR THE UNESCO STRATEGY FOR ACTION ON CLIMATE CHANGE (2009 AND 2010-2011)

The present Plan of Action (the "Plan") is an enhanced version of the Plan presented to the 181st session of the Executive Board in document 181 EX/15 Annex. It has been prepared by the UNESCO Intersectoral Platform for Action to Address Climate Change based on inputs from all major programmes, including Secretariat units at and away from Headquarters. The enhancements to the Plan have been guided by the Board's discussions on the Plan at its 181st session calling for:

- increased programme concentration, focusing on the needs of vulnerable groups (small island developing States (SIDS), least developed countries (LDCs), indigenous peoples), gender equality considerations; contributions of local and traditional knowledge, education for sustainable development, the social and ethical implications of climate change, with particular reference to migration, and the legacy of the International Polar Year campaign;
- reinforced synergies among UNESCO's international and intergovernmental science programmes, in particular IOC, IHP and MAB, taking full advantage of their experience;
- stronger efforts to reduce greenhouse gas emissions in order to move towards the target of achieving a climate-neutral UNESCO; and
- improved presentation of the budgetary information contained in the Plan of Action, providing, in particular, indications on regular programme resources allocated to the Plan of Action, as well as extrabudgetary resources required and mobilized for its implementation.

The Plan is structured around the following three main strategic objectives:

- (i) building, making available and maintaining the climate change knowledge base: science, assessment, monitoring and early warning;
- (ii) promoting mitigation of and adaptation to climate change, including through enhanced education and public awareness; and
- (iii) moving towards a climate-neutral UNESCO.

In conformity with the decision of the Executive Board, the Plan outlines for each strategic objective contained in the UNESCO Strategy for Action on Climate Change (180 EX/16 Rev. Annex), activities planned, resources to be mobilized, expected results and performance indicators.

Driven by the vision of developing a multidisciplinary approach to guide UNESCO's climate change adaptation work at the country level, the Plan builds upon the work UNESCO has done in specialized areas of the natural and earth sciences including oceanography to contribute to build the existing knowledge base on climate change. It also covers areas where UNESCO has a clear comparative advantage and expertise and where there are special needs not covered by other organizations, notably in the areas of social and human sciences and education. The objective of the enhanced Plan is the incremental implementation of the refined UNESCO Strategy for Action on Climate Change (the "Strategy"), the overall aim of which is *to help Member States to build and maintain the requisite knowledge base, and to adopt measures for adapting to the impacts of*

climate change, contribute to the mitigation of its causes, and enhance sustainable development. Consistent with the Medium-Term Strategy for 2008-2013 (34 C/4) and as reflected in the Strategy, special emphasis is placed in the Plan on Africa and gender equality, as well as on Small Island Developing States (SIDS).

The Plan, in line with the Strategy, seeks to ensure that UNESCO's actions are supportive of and coherent with the United Nations system-wide climate change action framework initiated by the United Nations System Chief Executives Board for Coordination (CEB) and the Bali Road Map launched at the UNFCCC COP 13 in Bali in December 2007. As outlined in the publication "Acting on Climate Change: The United Nations System Delivering as One" presented by the Secretary-General of the United Nations to UNFCCC COP 14 in Poznań, UNESCO together with WMO is entrusted within the CEB climate change action framework with the responsibility *as convener for the cross-cutting area of climate knowledge: science, assessment, monitoring and early warning.* Consequently, the Plan is designed to facilitate effective discharge of this important responsibility. In addition, the Plan is also drafted to promote strong UNESCO involvement on key strategy issues related to several of the other cross-cutting areas under the CEB framework.

It is the intention of the Director-General to implement the enhanced Plan through all UNESCO Sectors, Field Offices, relevant UNESCO Centres and Institutes, existing networks and programmes of the Organization, drawing on the Intersectoral Platform on Action to Address Climate Change, and in close cooperation with Member States, the United Nations system and other organizations, NGOs, civil society and the private sector.

More detailed information on the enhanced Plan and the Strategy, together with news on implementation, are available on a dedicated UNESCO web portal (www.unesco.org/en/climatechange) linked to the gateway to the United Nations system's work on climate change (<http://www.un.org/climatechange/index.shtml>).

STRATEGIC OBJECTIVE I. BUILDING, MAKING AVAILABLE AND MAINTAINING THE CLIMATE CHANGE KNOWLEDGE BASE: SCIENCE, ASSESSMENT, MONITORING AND EARLY WARNING

In line with the Strategy and as the convener within the United Nations of this cross-cutting area, UNESCO is implementing and planning activities contributing to building the knowledge base for science, assessment, monitoring and early warning. These activities focus on further developing the role of IOC as United Nations focal point for global collaboration in the scientific observation and study of the oceans; assessing and adapting to impacts of climate change on water, including water hazards such as floods and droughts; addressing the social consequences of climate change; assessing and managing climate change in Biosphere Reserves and World Heritage sites, including through space-based remote sensing; and developing geoscience and the basic and engineering sciences for climate change assessment and monitoring. These activities give priority attention to Africa, local and indigenous communities, SIDS, and gender issues.

Objective I.1: To develop the role of UNESCO as co-United Nations lead agency for the climate change knowledge base and guide UNESCO's adaptation work at the country level

The World Climate Conference-3 (31 August to 4 September 2009) is a major outcome of UNESCO and the World Meteorological Organization's (WMO) convening role in the climate science knowledge base. It will be instrumental in achieving United Nations-wide collaboration on a global framework for developing climate services worldwide, as a mean to systematically make the existing knowledge on climate available and to further improve climate forecasts at the regional and local level (see Box 1). UNESCO will also actively participate in overall United Nations climate change efforts led by the Chief Executives Board leading up to UNFCCC COP 15 in Copenhagen in December 2009 and beyond, and will participate in further scoping exercises for the fifth assessment report by the Intergovernmental Panel on Climate Change (IPCC). UNESCO will

promote follow-up to the international experts' meeting on "Climate Change and Arctic Sustainable Development: scientific, social, cultural and educational challenges", that was financed by and held in Monaco (3-6 March 2009), including a publication with recommendations for future action, anticipated to be launched at COP 15. Planned participation at COP 15 includes side events by IOC on ocean observations, by UNESCO on ethical implications of climate change, and an exhibition, plus sponsorship of additional events.

Beyond its contribution to the international coordination of scientific input needed to study climate change, UNESCO will continue to foster and provide advanced educational training for the next generation of climate scientists, particularly those from LDCs. Such training currently is provided by both science-related category 1 centres/institutes, the UNESCO-IHE Institute for Water Education and the Abdus Salam International Centre for Theoretical Physics (ICTP), for water management and earth science and meteorological modelling, respectively. The IOC's capacity development will continue to organize at-sea training for young scientists, as well as training for the scientific leadership of developing country research institutions.

Box 1. World Climate Conference – 3 (WCC-3)

WCC-3 (Geneva, 31 August-4 September 2009) will establish a Global Framework for Climate Services to guide and develop climate services to bridge the gap between the IPCC assessment reports and the services required to adapt to climate variability and change at regional and sectoral levels.

The Framework is an emerging key component of the climate change knowledge base requiring important collaboration efforts among a number of United Nations organizations. As a co-convenor with WMO for United Nations collaboration on the knowledge base, UNESCO will help ensure the successful implementation of the Framework, and its Climate Services Information System component, drawing on its interdisciplinary competencies.

Concerning UNESCO's direct engagement at WCC-3, UNESCO will contribute to the high-level segments and is organizing a scientific working session (climate of oceans and coasts), fora (gender and climate; capacity-building, education and training) and side event (groundwater and climate) as well as contributing to the drafting of the final Declaration from WCC-3. (for more information on WCC-3, see: <http://www.wmo.int/wcc3/>)

Activities:

- World Climate Conference-3 (WCC-3), Geneva, 31 August-4 September 2009 and UNESCO-WMO joint activities in support of United Nations collaboration on the climate knowledge base.
- Follow-up to the recommendations of the UNESCO international experts meeting, "Climate Change and Arctic Sustainable Development: scientific, social, cultural and educational challenges" (Monaco, 3-6 March 2009).
- UNFCCC COP 15, Copenhagen. UNESCO side events will be proposed on ethics and climate change and on the climate change knowledge base. UNESCO stand (7-18 December 2009).
- Training activities at UNESCO centres/institutes and elsewhere sponsored by UNESCO sectors.

Indicative regular programme budget: \$90,000. **Extrabudgetary resources:** mobilized: \$0; to be mobilized: \$200,000.

Expected results: Enhanced climate change knowledge base promoted through United Nations collaboration and UNESCO training programmes and activities. UNESCO-WMO effective conveners for United Nations knowledge base cooperation leading up to WCC-3 and the implementation of global framework for climate services. UNESCO and its IOC contributing to the success of the WCC-3 and UNFCCC COP15 through side events, UNESCO stand and targeted interventions and publications. Publications and recommendations to UNESCO and other partners identifying priorities for future work. Ethical, gender, local and traditional knowledge considerations featuring more prominently in the elaborations of the climate knowledge base.

Performance indicators: UNESCO recognized by CEB and Member States for effectively fulfilling its convening role together with WMO. Extrabudgetary support to UNESCO's climate change activities in the areas of sciences, ethics and gender.

Objective I.2: To further develop the role of IOC as United Nations focal point for the permanent observation of ocean and coordination of the study of ocean and climate

IOC has committed to the UNFCCC to continue sea level monitoring and prediction through the Global Ocean Observing System (GOOS). The OceanObs'09 Symposium, to be held in September 2009, will strengthen and enhance the international framework under the Global Climate Observing System (GCOS), GOOS, World Climate Research Programme (WCRP) and the International Geosphere-Biosphere Programme (IGBP) and support regional and national frameworks for sustained world ocean observing and information systems supporting the needs of society about ocean weather, climate, ecosystems, carbon and chemistry. IOC will also sponsor the WCRP itself, thus contributing to the scientific research that will go into the next IPCC assessment report. IOC will also continue work on an international strategy for a decadal survey of large-scale ocean circulation and carbon cycle processes in the oceans (2013-2023). This will be a major contribution to climate change research aiming at improve our understanding of ocean uptake of anthropogenic carbon dioxide (CO₂).

Activities:

- Sponsor World Climate Research Programme and its contributions to the next IPCC report.
- Sustain climate module of GOOS at 60% of design specification and develop scientific consensus on future targets for ocean observations and information through the OceanObs'09 Symposium.
- Sponsor Global Climate Observing System.
- International Ocean Carbon Coordination Project: developing an internationally agreed strategy for decadal ocean surveys; a publicly available global surface ocean CO₂ database; and internationally agreed best practices for ocean acidification research.
- Climate change impacts on sea-level rise, coastal zones and island aquifers.

Indicative Regular Programme budget: \$620,000. **Extrabudgetary resources:** mobilized: \$360,000; to be mobilized: \$40,000.

Expected results: Permanent observation of ocean and coordination of the study of ocean and climate enhanced. Plan and organize research contributing to the work of the IPCC. Enhanced national engagement in GOOS via UNFCCC process. Improved coordination and optimization of resources for global hydrographic survey. Improved data access, interoperability and quality for

global carbon cycle studies. Enhanced ability to compare results from different experiments. Sea-level rise impacts in critical areas due to climate change assessed.

Performance indicators: Number of papers contributing to IPCC report. National reporting to I-GOOS. Number of scientists participating in coordinated surveys. Number of peer-reviewed scientific papers using the database. Number of peer-reviewed scientific papers using best practices guidelines.

Objective I.3: To support assessment of and adaptation to impacts of climate change on water, including hazards such as floods and droughts

Through its impacts on water and associated ecosystems, climate change will affect livelihoods, shape economies and alter the natural environment. How water is managed will largely determine the effectiveness of adaptation to climate change and hazards such as floods and droughts. UNESCO's activities related to the effects of climate change on fresh water and water management are consequently extensive. Increasingly, these activities will build on interdisciplinary and intersectoral UNESCO cooperation taking full advantage of the experiences, expert and field networks of its international and intergovernmental science programmes. Focus will be placed on the needs of vulnerable groups (SIDS, LDCs, indigenous peoples), gender equality considerations; contributions of local and traditional knowledge, and the social and ethical implications of climate change impacts on water, including migration. Member States will be assisted and encouraged to assess climate change related risks (see Box 2).

**Box 2. Assisting Member States to Assess
Water-related Climate Change Related Risks**

UNESCO is providing coordinated assistance to Member States to assess critical water-related climate change risks in vulnerable ecosystems. This assistance ranges from training on glacier dynamics, monitoring, and mass balance in the Himalayas, to assessment of climate change impacts on sea-level rise, coastal zones and island aquifers in Viet Nam.

Climate change effects on water will differentially impact men and women, as well as posing special challenges for not only mountain and coastal ecosystems, but also the Arctic, drylands, deltas, and other fragile zones. Recognizing the complexity of water-related climate change risks, UNESCO's assistance to Member States is multidisciplinary and intersectoral.

With the combined expertise of the IHP, IOC, MAB, and SHS, water-related risks are understood from the perspective of hydrology, coastal zone impacts, ecological and development challenges, and social impacts. From assessing the impacts of global climate change on the eco-hydro-system in the Pandjari Biosphere Reserve in Benin to developing a gender-sensitive understanding of the social impacts of water scarcity, UNESCO activities strive to increase the capacities of Member States to prepare for, mitigate, and adapt to the water-related impacts of climate change.

Activities:

- Research programmes, projects and assessments (e.g. FRIEND project (Flow Regimes from International Experimental and Network Data); UNESCO-GRAPHIC project (Groundwater Resources Assessment under the Pressures of Humanity and Climate Change); Urban water systems and global change; impacts of climate change on water quality; trends in low flows and stream flow droughts; climate change impact on

groundwater extraction and food security; water harvesting; climate change risk management.

- Support to Member States to assess climate change associated risks.
- Conferences, workshops and training seminars (e.g. Second International Conference on Integrated Water Resources Management and Challenges of the Sustainable Development, Morocco, March 2010; Conference on Climate Change at the Eve of the Second Decade of the Century, with sessions on climate change and ecohydrology and hydrological extremes, Serbia, September 2009; Workshops on climate change, coastal mangroves and freshwater reserves; Training on glacier dynamics, monitoring, and mass balance.

Indicative Regular Programme budget: \$230,000. **Extrabudgetary resources:** mobilized: \$575,000; to be mobilized: \$180,000.

Expected results: Enhanced understanding and preparedness in Member States to reduce, manage and adapt to impacts of climate change on water, including hazards such as floods and droughts, with a special emphasis on vulnerable groups and regions particularly at risk. Scientific knowledge of climate change impact on the availability and quality of water resources and associated ecosystem services improved. Establishment of interdisciplinary, global and regional networks of groundwater and climate scientists. Strategies to respond to global changes developed.

Performance indicators: MDG indicators related to relevant MDG targets (e.g. water and sanitation). Networking and knowledge transfer, adaptation strategies developed. Guidelines on design and management of urban water systems published. Platform for exchange of information on climate change impacts on water resources among scientists established. Science and policy-relevant recommendations provided based on GRAPHIC case studies.

Objective I.4: To address the social and ethical consequences of climate change

As outlined in the draft report on the ethical implications of climate change prepared by the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), “the mere fact that climate change demands a response or rather elicits questions such as ‘what is to be done’, ‘what is my responsibility’, and ‘what is the criterion for proper (good) action’, illuminates the explicit ethical nature that surges from any serious engagement of climate change. In other words, far-reaching ethical questions can be asked about the continuation of human actions that not only cause climate change, but also contribute to its intensification and acceleration. Moreover, it is well known that global climate change has the potential to bring about global conflict mobilized by the quest for scarce resources. The need for an ethical approach to the nexus of these issues is therefore of the highest order.” On the basis of the report, which is expected to be launched at UNESCO’s side event at the UNFCCC COP 15, COMEST recommended that UNESCO develop an ethical framework of principles in relation to climate change (see Box 3).

Efforts will be made by UNESCO to introduce relevant ethical concepts and considerations in UNESCO climate change related activities at large, as well as to seek to highlight the ethics of climate change in international fora, such as WWC-3 and COP 15.

UNESCO will also support interdisciplinary climate change related work linking the natural and social sciences and will ensure collaboration among its international and intergovernmental science programmes for this purpose (e.g., MOST, MAB, IHP, IOC).

Box 3. COMEST Report on the Ethical Implications of Climate Change

The World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) report on the ethical implications of climate change will be published in late 2009. The report was discussed at the extraordinary session of COMEST held in Paris November 2008 and was developed through two meetings of the COMEST environmental ethics working group in March and May 2009.

The aim of the report is to serve as a point of departure for discussion among Member States of UNESCO, members of the scientific community of UNESCO and the NGOs working with UNESCO on the ethical challenges posed by global climate change. The document focuses on:

- The central ethical issues that are brought about by global climate change.
- The general and specific principles that could be adopted to form a basis of responding to these issues.
- Possible recommendations on different levels, contexts, and scales of intervention that follows from a sound ethics of climate change.

On the basis of the report, COMEST recommended that UNESCO considers developing an ethical framework of principles in relation to climate change. This recommendation will therefore be presented to the Executive Board at its 182nd session (see document 182 EX/56). Of special note is the report's attention to the ethical dilemmas surrounding climate change migrants, a theme that is being further explored by UNESCO through a scoping review on climate change and migration.

Activities:

- Preparation, publication and follow-up of COMEST report on ethical implications of climate change, including possible elaboration of a declaration on ethical principles in relation to climate change.
- Climate change to be incorporated into ethics education curricula.
- Scoping review on climate change and migration.
- Case studies on the cultural and social response to climate change.
- Contribution to the strengthening of scientific and policy climate change related networks.

Indicative Regular Programme budget: \$165,000 (+ \$245,000 if a declaration on ethical principles in relation to climate change is developed). **Extrabudgetary resources:** mobilized: \$100,000; to be mobilized: \$100,000 (+ \$385,000 if a declaration on ethical principles in relation to climate change is developed).

Expected results: Better understanding of the link between climate change and its social and cultural consequences and responses, including on migration. Ethical climate change implications explored. Better understanding of regional climate change issues as basis for policy support. Establishment of network of relevant stakeholders. Climate change science and policy research networks strengthened. Possible elaboration of a declaration on ethical principles in relation to climate change.

Performance indicators: Book on climate change and migration published and disseminated. COMEST report on ethics and climate change. Social and cultural climate change dimensions integrated into scientific and policy responses. Number of case studies produced. Cooperation among UNESCO programmes and associated networks.

Objective I.5: To support climate change management in biosphere reserves and World Heritage sites, including through space-based remote sensing

The Open Initiative for the Use of Space Technology including 20 space agencies and remote sensing laboratories will collaborate on improved monitoring and management of UNESCO designated sites. Some 10 biosphere reserves will implement the Global Change in Mountain Regions (GLOCHAMORE) *Research Strategy* looking at the impacts of global and climate change on the biophysical environment in mountains and the livelihood conditions of people. The second phase of the Sustainable Management of Marginal Drylands (SUMAMAD) project will allow scientists to develop climate change scenarios in drylands of Africa, Arab States, Asia and Latin America.

Activities:

- Support to assessment study of the climate change impacts on biosphere reserves and on ecosystem functions of biosphere reserves in the regulation of climate change impacts in selected regions.
- Assessment of local change and associated climate change effects using space technologies. Applications on selected World Heritage sites and Biosphere Reserves. Implemented in partnership with UNESCO space partners.
- Capacity-building on the use of space technology on monitoring the impact of climate change on ecosystems.
- Development of a joint UNESCO-TERI (The Energy and Resources Institute) Programme on Climate Change.

Indicative Regular Programme budget: \$120,000. **Extrabudgetary resources:** mobilized: \$60,000; to be mobilized: \$400,000.

Expected results: Improved climate change management in biosphere reserves and World Heritage sites. Assistance for decision-making on sustainable land use. Overall change detection identified and related climate change impact assessed. Capacity-building of biosphere reserve managers in East Asia. Capacity-building on climate change space technology in the Arab region. Implementation of the Madrid Action Plan on Biosphere Reserves. Knowledge on ecosystem functions in the regulation of climate change and guidelines for assessing climate change impacts on biosphere reserves in the Arab region. Increased UNESCO expertise, credibility, visibility and impact on climate change and biodiversity.

Performance indicators: Improved biosphere reserve management. Climate change actions in Madrid Action Plan implemented. Research programmes on space technology and climate change initiated in the Arab region. Guidelines formulated, studies published in LAC and Arab Region. Policy briefs and results in work of UNESCO, UNFCCC and the CBD.

Objective I.6: To develop geoscience and the basic and engineering sciences for climate change assessment and monitoring

UNESCO will foster network and partnership activities related to climate assessment and monitoring, such as in the framework of the Global Earth Observation System of Systems (GEOSS) and Global Terrestrial Observing System (GTOS). The International Geoscience

Programme (IGCP) will support project proposals in global and paleoclimate change. Planning is under way for a UNESCO workshop in 2010 to systematically review and critique proposed methods of geoengineering, or technological fixes to compensate for increasing CO₂ levels, such as carbon sequestration or solar radiation management.

Efforts will be made to increase collaboration with the ICTP on climate variability and impacts of climate change on human societies and natural ecosystems, such as through the ICTP Physics of Weather and Climate group and its research and training activities on climate models.

Activities:

- Support to the Global Earth Observation System of Systems (GEOSS) and its component systems.
- Continued support of international paleoclimate research through the International Geoscience Programme (IGCP).
- Workshop on geoengineering options (2010).
- Contribution of basic and engineering sciences to climate change knowledge base in different regions.
- Collaboration with ICPT on climate variability and impacts of climate change on human societies and natural ecosystems.

Indicative Regular Programme budget: \$120,000. **Extrabudgetary resources:** mobilized: \$100,000; to be mobilized: \$200,000

Expected results: Enhanced climate change assessment and monitoring. United Nations agencies to contribute to and sustain Earth observing systems, including GCOS and GTOS. Continued long-running scientific contributions to the state of knowledge about the climate system as a part of an international network. Experts' workshop convened to discuss the future of geo-engineering. Database on BES institutions active in climate change research in south-eastern Europe and Mediterranean countries.

Performance indicators: UNFCCC endorsement of GCOS work activities. International working network. Peer-reviewed publications. Research plan highlighting priorities for geologic research related to climate developed. Educational brochure produced by workshop. Number of database entries. Number of joint research projects and new partnerships.

STRATEGIC OBJECTIVE II. PROMOTING MITIGATION OF AND ADAPTATION TO CLIMATE CHANGE INCLUDING THROUGH ENHANCED EDUCATION AND PUBLIC AWARENESS

UNESCO is planning and implementing activities with the aim of promoting mitigation of and adaptation to climate change, including through enhanced education and public awareness. In collaboration and synergy with other United Nations agencies, including via the emerging United Nations Global Climate Change Adaptation Network, these activities focus on education on climate change in support of UNESCO's role as lead agency for DESD; public information and communication; renewable energy; climate change impacts and risks related to water; and mobilization of biosphere reserves and World Heritage sites for field learning on climate change impacts and solutions. Within these focal areas, priority is given to LDCs, Africa, SIDS, local and indigenous peoples, gender issues and contributions of local and traditional knowledge.

Objective II.1: To promote education on climate change

As lead agency for the United Nations Decade of Education for Sustainable Development, UNESCO will, in line with the Bonn Declaration (adopted at the UNESCO World Conference on Education for Sustainable Development – Moving into the Second Half of the United Nations Decade, Bonn, spring 2009), intensify efforts and initiatives to put climate change education higher on the international agenda, in the framework of the DESD, in the context of UNESCO's Strategy for Action on Climate Change, and as a component of United Nations-wide action in support of the New Delhi work plan around Article 6 of the UNFCCC Convention. UNESCO will also actively support follow-up to the UNESCO International Seminar on Climate Change Education which took place from 27 to 29 July 2009 (see Box 4). IOC will maintain cooperation with the African Union Commission for technical advice and support to African Ministers of Environment and UNFCCC negotiators, for adaptation and mitigation strategies in coastal zones up to and beyond COP 15.

Box 4. Follow-up to the UNESCO International Seminar on Climate Change Education

The UNESCO International Seminar on Climate Change Education took place at UNESCO Headquarters from 27 to 29 July 2009. Organized with financial support from Denmark, the seminar was a collaboration between the UNESCO Intersectoral Platforms on Climate Change, Education for Sustainable Development and Sustainable Development in SIDS, plus the Education, Natural Sciences and Social and Human Sciences sectors with contributions also from the Science Education Platform.

The seminar highlighted the central role that education has to play in understanding, mitigating, and adapting to climate change, linking the local, regional, and global contexts with a particular emphasis on the challenges faced by SIDS.

In follow-up to the International Seminar on Climate Change Education, UNESCO will work to support the development of guidelines for the effective integration of climate change education into educational programmes and school curricula; to enhance networking for sharing of experiences and good practices in climate change education and to mobilize support for teacher training on climate change education. A clearing-house function on climate change education will be established in cooperation with the UNFCCC secretariat.

Local field-based education on climate change will be promoted through networks such as the UNESCO Associated Schools Network, World Heritage sites, biosphere reserves, CarboSchools Europe, UNESCO Chairs/UNITWIN and the IHP networks of centres and institutes. UNESCO will actively promote a focus on climate change education in events at WCC-3 and COP 15 and beyond.

Activities:

- Follow-up to the UNESCO International Seminar on Climate Change Education with special focus on SIDS and implementation of the Bonn Declaration.
- Collaboration with the UNFCCC and other United Nations agencies on educating on climate change.
- UNESCO clearing house on climate change education.
- Enhancing sustainable climate-sensitive behaviours: development and piloting of awareness-raising tools to encourage acting in environmentally, economically, socially and culturally sustainable ways in addressing climate change and its effects.

Indicative Regular Programme budget: \$100,000. **Extrabudgetary resources:** mobilized: \$300,000; to be mobilized: \$500,000

Expected results: Enhanced climate change education. Promote school networks for ESD on climate change; include SIDS- and gender-specific climate change issues and indigenous knowledge in education programmes and policies; participate in joint programme framework for children and youth and climate change; Enhance clearing house function on climate change education; Develop e-training for UNESCO staff on ESD on climate change; Follow up UNEP/UNESCO YouthXchange on youth and sustainable lifestyles.

Performance indicators: Jointly developed environmental education resource pack for child-friendly schools; climate change education materials produced; climate change research integrated into curricula. E-learning module developed; educators, researchers, decision-makers, students mobilized; sustainable practices integrated in UNESCO activities. clearing house function developed.

Objective II.2: To enhance public awareness of climate change

UNESCO recognizes the critical importance to enhance public awareness of climate change and is working at different scales with a number of partners and networks for this purpose. In partnership with UNEP, UNESCO will organize an international conference on broadcast media and climate change: a public service remit, to take place on 4 and 5 September 2009. The focus is on identifying solutions to the needs of broadcasters from developing countries and to discuss ways in which the public debate on climate change mitigation and adaptation can be facilitated. Modalities for improving the exchange of resources and training programmes will be addressed.

Capacities of media professionals to report on climate change will be improved through media training workshops to be held in all regions. These training events will be conducted using various resources developed by UNESCO, such as the *Media as Partners in Education for Sustainable Development: A Training and Resource Kit* (currently available in Arabic English, French, Russian and Spanish), including a specific chapter on reporting on climate change.

Articles on climate change will be distributed to more than 50,000 SIDS and indigenous contacts via the global Internet forum "On the Frontlines of Climate Change". The global intersectoral Sandwatch Project on beach monitoring and sustainable management of coastal environments will further expand and contribute to global monitoring efforts (see Box 5).

Box 5. Frontlines Forum and Sandwatch – Supporting indigenous peoples, small islands and vulnerable communities

Internet forum On the Frontlines of Climate Change

The Frontlines Forum provides a platform for indigenous or rural communities in small islands, high altitudes, the Arctic, desert margins and other vulnerable environments to share observations, concerns and innovations related to climate change impacts, opportunities and adaptation strategies. The grassroots Frontlines Forum was launched in June 2008 by UNESCO, in partnership with the Secretariat of the Convention on Biological Diversity (SCBD), the Secretariat of the United Nations Permanent Forum on Indigenous Issue (SPFII) and the Office of the High Commissioner on Human Rights (OHCHR). The Government of Denmark has provided a total of \$500,000 towards Climate Frontlines for the period 2009-2011, allowing the consolidation and expansion of activities under the project.

Most significantly, the Danish funding has allowed Climate Frontlines to issue a call for proposals to undertake community-level research projects on local climate change observations and adaptation strategies. The deadline for submission of project proposals was 15 July, at which time a total of over 2,700 proposals for small-scale research undertakings had been received from every region of the world. The overwhelming interest and response to the call for proposals highlights the relevance and significance of the Climate Frontlines objectives. The current funding available for Climate Frontlines only allows the financing of a fraction of these proposals.

(For more information, see: <http://www.climatefrontlines.org/>)

Sandwatch

Supported by UNESCO, Sandwatch is a volunteer network of schools, youth groups, non-governmental and community-based organizations working together to monitor and enhance their beach environments. Sandwatch was launched in the Caribbean in 1999 and now involves islands as far apart as the Cook Islands in the Pacific, the Seychelles in the Indian Ocean, and the Bahamas in the Caribbean; as well as countries in Europe, Africa, Asia and South America. The network is coordinated by the Sandwatch Foundation, a non-profit organization.

Recently, the Sandwatch Foundation has entered into a partnership with UNESCO and the Government of Denmark for the implementation of a new project aimed at strengthening and developing the use of Sandwatch as a resource for climate change education. Funded by the Government of Denmark, the project includes the development of new educational material related to observation of and adaptation to climate change as well as enhanced Sandwatch networking and communication. Also under development is a Sandwatch-Climate Change web-based database that will allow Sandwatch teams to upload their observations and data, thereby allowing them to contribute to a global monitoring network for coastal areas. The project also includes several training events and the development of a Sandwatch instructional DVD, serving to extend the reach of Sandwatch particularly in small island countries.

Activities:

- UNESCO International Conference on Broadcast and Media and Climate Change (4-5 September 2009, UNESCO Headquarters) plus regional media training.
- On the Frontlines of Climate Change – an Internet-based forum for indigenous peoples, small islands and vulnerable communities.
- Sandwatch – an educational tool for sustainable development.
- Attitudes of Youth Climate Change Issues.
- Workshops with policy-makers for strengthening awareness.

Indicative Regular Programme budget: \$190,000. **Extrabudgetary resources:** mobilized: \$1,820,000; to be mobilized: \$320,000.

Expected results: Enhanced public awareness of climate change. National public service broadcasters and regional associations act as key partners investigating climate change mitigation and adaptation. Improved participation of vulnerable communities in climate change debate; database and global online clearing house of local climate change observations; Enhanced capacity to respond to climate change among students/communities; Integration of Sandwatch in

national curricula. Mainstreaming climate change management in national and sub-national policy, planning and investment frameworks. Perspectives of youth on climate change understood.

Performance indicators: Broadcasters' platform for collaboration and exchange on climate change reporting. Detailed local observations of climate change submitted; databases and clearing house established and documents available; DVD developed, training courses held, curriculum integration achieved. Dissemination of mitigation and sustainable energy technologies; number of policy-makers trained on climate change issues.

Objective II.3: To support education, training, information exchange, best practices, and national strategies related to renewable energy

UNESCO, working with partner organizations within the context of UN-Energy, will seek to enhance the knowledge base for the rational use and application of renewable energy through institutional and human capacity-building, sharing of scientific knowledge and best practices, and the promotion of national and regional renewable energy policies and management. Seminars on the proper management of solar photovoltaic (PV) systems will be organized through the Global Renewable Energy Education and Training Programme, with special emphasis on Africa. Support will be given to Member States to assist them in the development of regional and national renewable energy policies.

Activities:

- Participate in UN-Energy and United Nations events on energy and climate change.
- Support to and participation in three international conferences and exhibitions on Solar PV, wind and biomass energy.
- Regional expert meetings to review renewable energy profiles, identify regional and national priorities.
- Thematic regional training seminars/workshops and summer schools on the conversion and management of renewable energy sources for climate change mitigation.
- Definition of national renewable energy strategy and policies for sustainable development and climate change mitigation in Africa.
- Promoting energy policies and management.

Indicative Regular Programme budget: \$160,000. **Extrabudgetary resources:** mobilized: \$0; to be mobilized: \$110,000.

Expected results: Sharing of knowledge on renewable energy and S&T development; integration of renewable energy in local development; promotion of regional cooperation; climate change mitigation promoted; enhanced United Nations coordination and visibility of UNESCO's activities; development of human and institutional capacities on renewable energy. Energy policies, management and conservation for sustainable development.

Performance indicators: Number of reports and scientists; number of experts meetings organized; strategy/policy document produced; UN-Energy reporting; number of training activities organized; number of beneficiaries (trainees and countries).

Objective II.4: To support education, training, and awareness on climate change impacts and risks related to water

UNESCO will undertake to support education, training, and awareness on climate change impacts and risks related to water through workshops, conferences and field project activities. Special focus will be given to Africa, such as through the Adaptation to Coastal and Climate Change in West Africa (ACCC) project, which in five countries was taken up in the Action Plan for the Environmental Initiative of NEPAD with the major objectives of performing adaptation actions in pilot sites particularly vulnerable to natural climate changes and to anthropogenic degradation and formulating national and regional strategies of adaptation.

Activities:

- Field projects (e.g., adaptation to climate change in the coastal zones of West Africa; global change impacts on the Pandjari biosphere reserve with a focus on eco-hydro-system; Establishment of two pilot sites in the framework of Integrated Coastal Area Management (ICAM) in Latin America).
- Workshop and training events (e.g. training in water and climate risk management: managing hydroclimatic risk in the water sector for Africa; application of tools for sustainable management of hydro-hazard risks such as floods in West Africa; enhancing capacities in the governance of shared water resources in the context of climate change in South-eastern Europe).
- Identification of indigenous knowledge relevant for climate risk prevention and management.

Indicative Regular Programme budget: \$170,000. **Extrabudgetary resources:** mobilized: \$870,000; to be mobilized: \$1,300,000.

Expected results: Enhanced education, training, and awareness on climate change impacts and risks related to water; pilot activities reducing climate-driven and anthropogenic coastline erosion; mainstreaming of adaptation. Water resources professionals trained in managing hydro-climatic risk; climate change impacts on water cycle documented and disseminated; flood mapping guidelines and hydro risk management techniques; regional prevention and management of climate risks, e.g., floods and droughts; knowledge bases for transboundary water management.

Performance indicators: Coastal erosion rates in sites; integrated coastal management plan formulated. Adaptation actions under ICAM framework implemented. Seasonal forecast model developed and evaluated; familiarity with market-based climate change mitigation risk tools demonstrated; national document on evidence of modification.

Objective II.5: To mobilize UNESCO sites for field learning on climate change impacts and solutions

UNESCO through its unique and vast networks of World Heritage sites and biosphere reserves is in a good position to assist Member States to promote field learning on climate change mitigation and adaptation. The World Heritage Centre and the MAB Secretariat, in partnership with all UNESCO sectors and field offices, will spare no efforts to cooperate for this purpose. In August 2009, UNESCO, UNDP and the United Nations Volunteers (UNV) signed a MoU to establish the United Nations Collaborative Programme on Community-Based Adaptation to Climate Change in Developing Countries Multi-Donor Trust Fund – UN-CBA (see Box 6).

Box 6. Biosphere Reserves, World Heritage Sites and Climate Change

and the

United Nations Collaborative Programme for Community-Based Adaptation to Climate Change in Developing Countries

A new United Nations Collaborative Programme for Community-Based Adaptation to Climate Change in Developing Countries (UN-CBA) between UNESCO, UNDP, and UNV has established an innovative global funding mechanism to support small-scale community-based adaptation projects in developing countries with a special focus on UNESCO sites. All UNESCO sectors and field offices will be invited to work with UN-CBA to identify local community-based projects that would benefit from small grants, technical assistance from volunteers and support from UN-CBA partners. This programme especially targets least-developed countries, vulnerable ecosystems, women's groups, and indigenous communities. Making full use of United Nations resident coordinators and United Nations country teams, the UN-CBA will fund community-based organizations in and around biosphere reserves, indigenous and community-conserved areas and other important ecosystems to develop and implement climate change adaptation projects. The focus will be on national action, reinforced at the regional and global level. UN-CBA projects intend to consult, utilize, and acknowledge the immense indigenous knowledge and understanding of women in environment in developing countries.

Biosphere reserves are also developing thematic networks to tackle specific constellations of climate change-related challenges. Climate change in mountain regions was a focus of the "Global Change in Mountain Regions" (GLOCHAMORE) initiative, and MAB continues efforts to promote biosphere reserves as learning sites on climate change in mountains and other ecosystems. Furthermore, a new Global Network of Island and Coastal Biosphere Reserves Contributing to Action on Climate Change and Sustainable Development was established at the 21st MAB ICC in May 2009, under the co-leadership of the Jeju Initiative and the Menorca Biosphere Reserve.

World Heritage sites and biosphere reserves are the subject of monitoring, including using space technology, in order to assess climate change impacts and vulnerability. World Heritage sites in tropical forest landscapes are also piloting techniques of adaptive and carbon-financed forest management in Indonesia and Madagascar, and a toolkit is under development for the assessment of Reducing Emissions from Deforestation and Degradation (REDD) opportunities in World Heritage sites.

Working together through their networks and especially around common sites, the MAB Programme and the World Heritage Centre play a vital role in testing and demonstrating approaches to climate change mitigation and adaptation.

Indicative Regular Programme budget: \$135,000. **Extrabudgetary resources:** mobilized: \$50,000; to be mobilized: \$3,500,000

Activities:

- Implementation of the United Nations Collaborative Programme for Community-Based Adaptation to Climate Change in Developing Countries (UN-CBA) between UNESCO, UNDP, and UNV.
- Global network of island and coastal biosphere reserves contributing to action on climate change and sustainable development.

- Workshops and seminars (e.g., regional capacity-building workshop on assessment of vulnerability of world cultural and natural heritage properties to disasters and climate change in WHITR-AP, Beijing, China, 6-12 December 2009; Cultural landscape in global climate change. Osnabruck, Germany).
- Field project activities (e.g., UNESCO-MAB's Africa Bio-Carbon (ABC) initiative; the network of sites of excellence for the sustainable future of the Congo Basin; biosphere reserves as learning places for sustainable development – a contribution to UN-DESD from south-eastern Europe and the Mediterranean; adaptive forest management in the rainforests of Atsinanana World Heritage site (Madagascar); adaptive and carbon-financed forest management in the tropical rainforest heritage of Sumatra).
- Developing a toolkit for the assessment of landscape-level opportunities in the application of REDD (Reducing Emissions from Deforestation and Degradation) mechanisms for World Heritage forest site management stakeholders

Expected results: UNESCO sites mobilized for field learning on climate change impacts and solutions. UN-CBA supportive of community-based adaptation projects in developing countries in and around UNESCO sites. Bio-carbon projects in African biosphere reserves and in World Heritage sites. Biosphere reserves used as learning places for ESD, climate change assessment and mitigation. Stakeholders enabled to assess World Heritage forest site landscapes towards applying REDD mechanisms; National capacities for World Heritage conservation and management enhanced.

Performance indicators: Number of UNESCO sites involved in climate change learning, public awareness, research, monitoring, mitigation and adaptation activities; the number of hectares of land brought in to REDD mechanisms through UNESCO; deforestation data; number of officials and site managers informed and trained; number of books distributed.

STRATEGIC OBJECTIVE III – MOVING TOWARDS A CLIMATE-NEUTRAL UNESCO

In line with the decision by CEB in October 2007 to move towards a climate-neutral United Nations, and the ensuing United Nations Climate Neutral Strategy, CEB members, including UNESCO, are committed to achieving the following by 2009: estimate greenhouse gas emissions consistent with accepted international standards; undertake efforts to reduce greenhouse gas emissions to the extent possible; and analyse the cost implications and explore budgetary modalities – including consulting with governing bodies as needed for purchasing carbon offsets to eventually reach climate neutrality. Consequent to the Director-General's Blue Note "Achieving a Climate-Neutral UNESCO" (DG/Note/09/25), UNESCO's climate-neutral focal point initiated an inventory of 2008 GHG emissions in all UNESCO units and field offices following the common methodology being used across the United Nations system. Based on the 2008 inventory, the UNESCO Focal Point is preparing a list of recommended actions to reduce UNESCO's GHG emissions. Such actions will likely include changes to policies, administrative rules and procedures, as well as identification of a dedicated unit to support UNESCO's carbon-neutral activities.

Objective III.1: To move towards a climate-neutral UNESCO

Indicative Regular Programme budget: The cost implications for the purchase of carbon offsets, for acquiring, managing and verifying emission data, and for efforts aiming at reducing GHG emissions and for interagency coordination are presently the subject of detailed study.

Implementing entities: ADM, IOC, UNESCO United Nations Climate Neutral Focal Point.

Other UNESCO entities involved: Climate Change Platform.

Activities:

- GHG Inventory for 2008 conducted by all CEB members, including UNESCO, using common methodology and verified by external assessors. Results will be part of the reporting to the CEB in September 2009.
- EMG Chair, in conjunction with EMG Issue Management Group (IMG) on Climate Neutrality, develops proposals on common approaches to emissions reduction targets, best practice and purchase of offsets for United Nations system, including changes to policies and administrative rules, and proposals for financing. UNESCO participation at meetings.
- Efforts to reduce GHG emissions, and analysing cost implications of purchasing carbon offsets and proposing UNESCO projects and sites for receipt of such offsets on the basis of ethical, economic and scientific validity.
- A questionnaire on awareness raising and seeking suggested actions to improve the climate neutrality of UNESCO, including its statutory meetings, will be distributed to delegates attending the 35th session of the UNESCO General Conference. An emissions reduction strategy will be based on a comprehensive climate neutral policy including the implementation from 2010 of an environmental management system (EMS) in line with United Nations requirements and as called for in the Green Audit. It will include updating of travel policies in the Administrative Manual and Staff Rules to reflect the new environmental realities and pressing climate neutrality concerns, green procurement strategies and making staff more aware of alternatives to reduce emissions. The EMS will be coordinated and monitored by the UNESCO Climate Neutral Team with the support of contact persons in all sectors, field office and units.

Expected results: All-agencies consolidated report on the Climate Neutral Initiative presented to CEB for approval, after which it will be issued as the Secretary-General's Report on the United Nations Climate Neutral Initiative. UNESCO will have undertaken concrete efforts towards achieving climate neutrality.

Performance indicators: UNESCO GHG inventory for 2008. Contribution to Secretary-General's Report on the United Nations Climate Neutral Initiative. Emissions reduction strategy produced. Climate-neutral policy developed. Environmental management system created or at least vetted.