United Nations
Educational, Scientific and
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Organisation
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Organización
de las Naciones Unidas
para la Educación,
la Ciencia y la Cultura

Организация
Объединенных Наций по
вопросам образования,
науки и культуры

منظمة الأمم المتحدة
للتربية والعلم والثقافة

联合国教育、
科学及文化组织

# Report by the Director-General on the execution of the programme (34 C/5) (01 January 2008 - 30 June 2009)

## Major Programme II - Natural sciences

# Part II – Programmes and programme related services
# II.A – Programmes

## MAJOR PROGRAMME II - NATURAL SCIENCES

### Biennial sectoral priority 1: Promoting research and technical capacity-building for the sound management of natural resources and for disaster preparedness and mitigation

### Para. 02025 - MLA 1: Fostering policies, technical capacity-building, research, networking, education and international cooperation in the fields of water, ecological and earth sciences for enhancing societal responses

| **Regular budget: Activities** (rounded to $ thousand) | |
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| **Planned: $10 427** | **Actual: $ 8 097** |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| Knowledge base relating to the impacts of global change (including climate change) on river basins and aquifer systems improved – particularly in arid and semi-arid regions – via development of adaptation strategies and sharing of strategies with national authorities and other decision-makers. | • The knowledge base on climate change was enhanced within the FRIEND programme, via collaboration with the WATCH project. UNESCO is leading adaptation on water on the UN joint initiative on China Climate Change Partnership Framework. HELP seminars on governance response to climate change were organised in 3 regions. Aquifer-related projects were implemented in several Member States; in particular the first Assessment of Transboundary Rivers, Lakes and Groundwater was finalized and the second volume of the legal and institutional setting of 68 transboundary aquifers in the Americas was published.<br><br>• Human capacities raised and knowledge transfer enhanced via training courses and workshops, including on Water Resources Management in Arid and Semi-arid zones; Future Models for Energy and Water Management; on geophysics and field work in the Kenya Rift Valley and participation in the scientific committee of the MAWARI project; on groundwater management (Benin); water-related programmes at the Kenya Water Institute; on Water and Climate Risk Management: Managing Hydroclimatic Risk in the Water Sector (Ethiopia); the VII Latin American Meeting of Youngsters Environment and Sustainable Development (Colombia), the International Conference on Integrated Water Resources Management (IWRM), the 2nd Africa Regional Meeting of the IHP National Committees (South Africa), the ISI International Workshop Erosion, Transport and Deposition of Sediments (Switzerland), Adapting to the impacts of Global Changes on river basins and aquifer systems; Climate Change on the Andes Regions (Colombia); the 3rd International Conference on Managing Shared | • Local involvement at the institutional and technical levels can be challenging but is important for successful project implementation. The promotion of South-South cooperation can enhance efficiency.<br><br>• Countries within the same region may have similar environment systems but very different development contexts and social-economic conditions and different needs for support. UNESCO's contribution and implementation therefore must adapt according to the specific country needs and conditions. HQ and inter-cluster office cooperation also important. | Partnerships and collaboration with national IHP committees, category 2 centres and other partners (such as the European Union) helped achieve cost effectiveness of meeting, training events and publications and to pave pathways for implementation.<br><br>Achievements are often attained mainly through EXB funding, with only seed money from RB. | IHP programme is designed with inputs from Member States and implemented in close collaboration with IHP National Committees and other governmental bodies.<br><br>Involvement of governmental bodies, including IHP National Committees and Focal Points, and target beneficiaries enhances projects sustainability.<br><br>Sustainability is considered during the project design phase.<br><br>The trained experts were carefully selected in order to ensure that they are those professionals who will continue in the field at the national level. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | Aquifer resources in Africa (Libya); the International Conference on Groundwater and Climate Change (Uganda); and on GIS & RS G-WADI (China). ISI and GWADI portals developed (respectively with IRTCES and University of Arizona's U.S. National Science Foundation). GRAPHIC North Andros case study launched. (Bahamas). Continuation of Managing Aquifer Recharge (MAR) project in Binh Thuan. | | | |
| Knowledge base relating to sustainable water governance improved, by means of policy-relevant cultural, social and scientific responses, with a special focus on urban water management. | • Key river basin sustainable water governance activities include the launching of Phase-III of the HELP network with more than 50 river basins. The IHP secretariat developed and launched IWRM guidelines at the River Basin Level. Several meetings to enhance capacities and disseminate knowledge were organized on Integrated River Basin Management (Stockholm Water Week); Water Resources Management: Practices and Strategies in Arid and Semi-Arid Zones of Asia (Turkmenistan); Water and Sanitation (Ghana); on Groundwater Management (Tunisia); International Symposium on Rainwater Harvesting: Bringing Green Revolution to the Dryland (India); Program UNESCO/OEA ISARM Americas; MAB-IHP workshops (Turkmenistan); A Sacred Look to Water (Iran; jointly with CLT); PCCP training courses in 19 Member States across 4 regions.<br><br>• The conceptual framework and directions for protecting water quality developed. Scientific base on impacts of pollution on river basins and groundwater systems enhanced through IHP's cooperation on the preparation and development of the GEF project on" Joint Actions to Reduce PTS and Nutrients Pollution in Lake Baikal through integrated basin management". Knowledge and science base relating to urban water management further strengthened through 3 new volumes of UNESCO-IHP Urban Water series. Approaches to urban water management further expanded to address relevant social issues and to strengthen intersectoral cooperation in this area; the cooperation of SC/HYD urban water management programme with SHS/SRP/URG-MIG and with UNESCO urban-related programmes strengthened, resulting in a joint activity during the Fourth World Urban Forum (China).<br><br>• Through PCCP initiative, thorough research on transboundary water issues was undertaken and integrated into the WWDR, and the review of the situation of the Ostua-Metapan aquifer system and the | • The simultaneous interpretation and translation into 6 languages at the IHP IGC raised the costs of the meeting enormously.<br><br>• Cooperation with other UN organizations and UNESCO water-related Chairs was strengthened.<br><br>• Unnecessarily complicated publication procedures tend to make publications labour intensive, leading to delays and raising costs.<br><br>• Receptivity of women professionals is critical for the success of gender policies.<br><br>• Incorporating the multiple and diverse voices pertaining to the topic can be challenging but is important and needed. | Sustainable management actions through category 2 regional centers are beneficial.<br><br>Shared financial and technical cooperation with other organizing institutions. Seed money provided by UNESCO.<br><br>Experts often contribute with their expertise on a voluntary basis, with only travel expenses supported by UNESCO. | Collaboration with IHP National Committees and international organizations enhanced, and key experts identified. The cooperation with GEF will continue. Cooperation with UNESCO Chairs in the region will be strengthened through their involvement in project implementation.<br><br>The UNESCO-IHP Urban Water Series will be further expanded with the publication of new books.<br><br>The UNESCO-IHP Expert Group on Water Quality will continue to provide scientific advice for the entire period of the IHP-VII phase up to 2013. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | Mono River were conducted. Launching of the Mexican Working Group on Water and Gender. Preparation and finalization of the UNESCO-GEF project on Joint Management of Coastal Aquifer System of the Gulf of Guinea; establishment of an African Groundwater Commission under the auspices of AMCOW. Project on water and cultural diversity launched. G-WADI is promoting access to remotely sensed global data products, including near real-time rainfall distributions from University of California, Irvine's PERSIANN system. Several publications were issued. Co-operation with Brazilian government supporting the implementation of the Federal Water Resources Management Plan. Consolidation of Category 2 centres via technical inputs. | | | |
| Freshwater education programme developed within the framework of the United Nations Decade of Education for Sustainable Development. | • Water education capacities raised by the development of case studies and recommendations via 5 UNESCO Regional Workshops on Water Education (Paraguay, Indonesia, South Africa, The Netherlands and Sudan), all organized with several partners from UNESCO and related networks, and further discussed at a workshop on water education held at the UNESCO World Conference on ESD (Germany), co-organized by IHP, UN-Water DPC and the German Government.<br><br>• Status of water education raised via the inclusion, for the first time, of a theme on water education at the 5th World Water Forum co-organized by IHP, in close collaboration with UNESCO-IHE and other partners. Youth involvement strengthened via the organization of the Water and Youth Forum (Guatemala), in coordination with the Water Resources Regional Committee (Central America).<br><br>• A UNESCO Tertiary Water Education Grants Programme was developed and launched to raise capacities of water professionals in developing countries, to foster related research and to further strengthen the links between UNESCO-IHE and IHP. Two MSc students (from LAC and APA) have been admitted to UNESCO-IHE with support from this programme.<br><br>• The concept of a global water education needs assessment, to be carried out by UNESCO-IHE and IHP in collaboration with ED, was developed and launched.<br><br>• Water education capacities of 1,518 teachers and | • The water sector needs to be more competitive in the job market. Gender is sometimes not well balanced, and thus needs attention.<br><br>• Optimization of impact by training young professionals.<br><br>• Investments in water infrastructure are often not followed by the needed investments in water education and training.<br><br>• High receptivity of the education system actors (teachers) for the implementation of the programmes with children is fundamental. | Seed money is used. Shared costs with partners and co-organizers (e.g. most regional workshops supported by academia, IHP National Committees, etc; the training of journalists was carried out in the framework of the Intersectoral Platform "Contributing to the Dialogue among Civilizations and Cultures and a Culture of Peace" and costs shared with CI sector).<br><br>The grants require considerable funding to cover all costs but are an extremely effective investment in the long term, as the number of water professionals needs to be drastically raised in developing countries and a very large share of UNESCO-IHE students (>90%) return to their countries of origin and work on the water sector for decades, with a considerable impact in the development of their regions.<br><br>The IHP Nagoya Training Course was commended as very useful to the beneficiaries and the Forum has reduced the cost for printing and distribution of learning. | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | facilitators of 7 Member States enhanced via training in UNESCO-IHP/Project WET Water and Education Programme for the Americas and the Caribbean methodology at 62 workshops. Development of learning and teaching materials for school children on water in China and India. Technical support provided to new UNESCO water-related Chairs (China, Mongolia and Japan); training and support to the launching of Ecohydrology Chair (Haiti and Costa Rica).<br><br>• Capacities of journalists on water issues with a focus on transboundary waters strengthened via a PCCP/CI workshop in preparation to 5th World Water Forum. Awareness raised for cultural and artistic dimensions of water through an exhibition by Y. Toidé at UNESCO HQ. The IHP Nagoya Forum has brought wider attention to the training courses through distance learning (3,660 downloads up to May 2009). Dissemination of course and publication "Water resources management in the Pantanal" (Brazil) and, in co-operation with the University of Brasilia, promoting and supporting the specialisation course of "Water as an Eco-pedagogical Matrix". | | | |
| State of the world's freshwater resources monitored, assessed and reported for improved water management policies and governance. | • The 3rd edition of the World Water Development Report (WWDR), a flagship product of UN-Water, prepared by the UNESCO-led and hosted WWAP, was launched by the Director-General of UNESCO in the presence of about 1,100 participants at the 5th World Water Forum (Turkey), with several contributions from IHP.<br><br>• The Iranian experience on long-term policies and water allocation included in the World Water Development Report as case study. Development of a WWAP case study in Pakistan included in the UNDAF Workplan at the country level. Update on the project of development of La Plata Basin water balance at the Coordination Meeting for the Integral Water Balance of the La Plata Basin (Brazil). Coordination of the South American Process to the World Water Forum. State of the Maghreb's freshwater resources monitored, assessed and reported for improved water management policies and governance through the edition of a book on peer reviewed papers. In co-operation with the Brazilian government, support of the operation of the National Hydrometereological Network as information source for the report.<br><br>• WHYMAP: The Groundwater Resources Map of the World 1:25 000 000 was published. It includes a set of | • It is challenging to apply a common methodology to assess water resources of widely shared water basins.<br><br>• Receptivity of diverse water sectors involved in this initiative.<br><br>• Optimisation of the impact by reaching the media. Inadequate awareness in some Member States about WWAP and WWDR delayed government agreement for including the case study. | Financial support from host and partner organizations, in particular from the Governments of Italy and Japan. | Involved IHP National Committees endorsement<br><br>Global initiative involving all water sectors.<br><br>The comparison of Groundwater Resources Map with thematic maps helps to understand the global picture of groundwater and surface water resources and provides an insight into the pressures, in particular the priority use of water for drinking purposes. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | thematic global maps on “Mean Annual Precipitation”, “Groundwater Recharge per Capita”, “River Basins and Mean Annual River Discharge” and “Population Density”, combining groundwater related data. | | | |
| Institutional capacities in ecosystem management and applied geosciences strengthened to foster policies, research and learning for reducing biodiversity loss, for mitigating and adapting to global change, and for enhancing earth system understanding and monitoring, including the fight against desertification. | • 20 MAB Young Scientists Research Grants in 17 countries, including 16 women;<br>• 23 MS trained from 12 African countries in ERAIFT in DRC, Kinshasa<br>• Continuing reform of IGCP with greater applied geosciences projects Nearly 40 IGCP projects are underway, many addressing sustainable development issues linked to mineral resources, climate change etc<br>• Continuing growth of the Open Framework Agreement between UNESCO and Space Agencies<br>• As a follow-up to IYPE, an Earth Sciences Education initiative for Africa launched | • Increasing the number of grants offered to more than 20 per biennium<br>• Moving ERAIFT from a "project" status to an African Regional Institution with UNESCO recognition<br>• Moving beyond project and activity based operation mainly targeting WH sites, to a programmatic approach with focus on themes such as biodiversity, climate change, cultural heritage etc.<br>• Ensuring that Earth sciences, particularly geosciences, becomes an attractive career development option for young Africans | High; the model is being requested for adaptation to other parts of Africa and efforts to create one in West Africa started<br>Very high cost effectiveness as modest UNESCO RP contributions per project generate several hundred thousand dollars’ worth of multiplier effect<br>Moderate; funding predominantly EXB and activity or event specific | At 20 grants/year, US$ 5,000 per grant, the scheme is sustainable for 20 years purely based on RP.<br>Financial sustainability for 2009-2013 assured via a EU/Government of Belgium<br>Considerable EXB resources would be needed to meet African Member States expectations of the Programme during 2010-2011 |
| Sustainable development promoted via establishment of interdisciplinary learning laboratories using sites of the World Network of Biosphere Reserves for research on biodiversity and sustainability. | • Adoption of the Madrid Action Plan (2008-2013) and its publication in all 6 UN languages<br>• Global compendium of biosphere reserves (BRs) under preparation<br>• All regional and thematic networks encouraged to document examples on use of BRs as learning places for sustainable development (SD); special events on BRs as learning places for SD organized at international DESD conferences in Tokyo (2008) and Bonn (2009)<br>• Two new networks, one on coastal and island BRs focussing on climate change and sustainability and a | • The broad based participatory approach used was welcome by Member States as useful; the implementation challenge has begun and is being addressed with full vigour<br>• Obtaining information from all 531 BRs is taking more time than initially estimated<br>• Developing a standardized format for case study or reports on BRs as learning places for SD that would facilitate inter-regional comparisons is a challenging one; outcomes could be better assessed at the at end of 2010-2011 biennium<br>• Co-ordinating island BR networks dispersed across Pacific, Atlantic, Caribbean etc. | The use of RP and EXB resources for drafting, discussion and adoption of the MAP as part of the 3rd World Congress of BRs and the 20th session of ICC in Madrid, Spain in February 2008 is considered highly cost effective | The MAP implementation (2008-2013) is considered sustainable given the estimated RP and EXB resources likely to become available |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | sub-regional network for Pacific MAB launched and will also contribute towards testing the learning laboratories idea | requires considerable Member State support. The new network launched has strong support from Spain and the Republic of Korea | | |
| Ecological, biodiversity and biological resources management knowledge improved, and capacities enhanced for socio-ecological research including eco-hydrology, to attain the MDGs and other internationally agreed development goals. | • Direct links between ecological and biodiversity and geological resources work of UNESCO and One UN and UNDAF frameworks established in countries such as Rwanda, Tanzania, Uruguay etc.<br>• Ten new biosphere reserves become part of the GLOCHAMORE network for mountain BRs | • Liaising and backstopping the appropriate regional and country Offices in negotiations with in-country UN teams | Difficult to comment as funds for these purposes are held centrally. It would be advisable if these funds are retained in SC/EES during the next biennium with targets and timelines for delivery agreed between all concerned offices | At the country level the financial resources mobilized through One UN and UNDAF sources in Rwanda and Tanzania appear quite substantial in the short-to-medium (1-3 years) term |
| | • Phase II of the SUMAMAD Project for drylands initiated; a South-South Co-operation Programme for Humid Tropics launched linking Amazonian, DRC and Indonesian institutions collaborating with the SC/EES | • A successful network developed out of phase 1 through EU funding; financing for phase 2 approved by the Flemish Government of Belgium | | SUMAMAD funding is sustainable for 3 years; the South-South Co-operation network will benefit from ERAIFT and other existing institutions co-operating with SC/EES but additional financial resources and partnerships are sought |
| | • Following the adoption of the Madrid Action Plan (MAP), MAB and WNBR priorities for work on urban ecosystems re-set targeting climate change and sustainability issues in urban ecosystems and interactions between urban areas and biosphere reserves | • Promotion or establishment of "urban biosphere reserves" is no longer a priority; the challenge is to promote mutually beneficial relationship between urban areas and biosphere reserves | | |
| | • Case studies collected and sharing of solutions and technology transfer opportunities through North-South and South-South cooperation promoted at the International Conference on the International Perspective on Environmental and Water Resources (Thailand); the HydroEco '2009: 2nd International Multidisciplinary Conference on Hydrology and Ecology (Austria); the participation of UNESCO in the IHDP Open Meeting 2009 (Germany); the international conference on “Ecohydrology for Sustainability in the context of Global Change” (Paraguay). Thematic WG on Coastal Ecohydrology in ENA, resulting in the publication of a training manual in Coastal Ecohydrology entitled “Practical Experiments Guide for Ecohydrology”. | • Targeted information can ensure that interactions between groundwater, surface water and ecology are better understood, measured, simulated, and managed.<br>• Technological basis is needed for policy decisions (including WFD implementation) related to the reconstruction of ecologically valuable environments and the use of water resources in these environments.<br>For the WG, the achievements were attained mainly (80%) by EXB funding. | UNESCO is in a unique position to bring together experts from different regions around the world to promote ecohydrology as transdisciplinary science.<br>Very high, since learning materials and many other publications were delivered and category 2 centres are being established to continue dealing with the issue. | |

## Para. 02026 - MLA 2: Oceans and coastal zones: improving governance and fostering intergovernmental cooperation through ocean sciences and services

| Regular budget: Activities (rounded to $ thousand) | |
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| Planned: $3 773 | Actual: $ 3 221 |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| Management of ocean resources and coastal areas improved via development of policy-relevant information on impacts of climate change and variability on marine ecosystems and coastal zones. | • Translating knowledge and observations to West African communities through the GEF-funded project on Adaptation to Climate Change in Coastal Zones (ACCC) launched in November 2008, jointly led by IOC-UNDP and coordinated from Senegal involving 5 neighbouring coastal countries.<br>• Support to African Minister's of Environment on climate change and coastal issues in Nairobi, May 2009 related to the collaboration with the African Union Commission to prepare and support in the lead-up to the UNFCCC COP-15 in December 2009. | | Very high. The relatively small IOC investment in this project has led to the obtaining of a US$ 4 M GEF Grant. | |
| | • Coordinated the 100% deployment of the Argo and drifting buoy arrays. Immediate gaps in satellite coverage have been addressed. Reported to the UNFCCC in June 2009 the implementation of the open ocean module of GOOS is plateauing at 61%. Extended secretariat support provided to governing bodies and technical expert groups under GOOS and the WMO-IOC Joint Technical Commission on Oceanography and Marine Meteorology (JCOMM).<br>• Established an IOC Sea Level Station Monitoring web-service with contributions from more than 70 institutions in real-time (314 stations involved compared to 25 stations in December 2007). | • Initial goals of GOOS are being met, but at a slower rate than originally planned; timely completion of the 2012 target goals do not seem plausible; GOOS is developed based on in-kind opportunistic national commitments of observing components and this process depends on international coordination and capacity development and technology transfer. | Raised extra-budgetary funds for these activities at a rate of approximately 10 EB to 1 RP. | Commitment of sustained funding to coordination process of GOOS is a major challenge<br><br>Mainstreaming of recommended actions in National Plans |
| | • Production of policy-relevant information and policy briefs focusing on impacts of climate change in marine and coastal areas through major science meetings including the 2nd Ocean in a High $CO_2$ World Symposium held in Monaco, October 2008 and the 4th Global Conference on Oceans, Coasts and Islands held in Hanoi, Vietnam (April 2008). Co-organisation of the International Symposium on the Effects of Climate Change in the World's Oceans held in Gijón, Spain (May 2008) and; the World Conference on Marine Biodiversity held in Valencia, Spain (November, 2008) resulting in publications, assessments and opportunities to network for the average 350 experts from over 50 countries that attended each of these events. | • Need to improve media coverage and impact of major events by involving BPI during the initial planning stages of the events.<br>• Diversity of interests in ocean management and governance need to be harnessed and translated at the national level<br>• The identification of future research priorities requires the establishment of an international forum in which experts can exchange ideas and define areas of collaboration | High, several partners have cosponsored these events. | Number of publications arising from the Conferences<br><br>IOC and partner organizations have agreed to make the symposium on Effects of Climate Change in the World's Oceans a regular event to be held every 4 years; next one in 2012 (Yeosu, Republic of Korea) |
| Healthier ocean ecosystems and sustainable coastal and ocean | • Assessments of Assessments (AoA) report finalized and submitted to the UN General Assembly following 7 | • Information regarding the opportunity to peer-review the AoA as well as the pre- | High, several partners have cosponsored the process | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| environments achieved by means of development and dissemination of scientific research, better information and procedures on which policies can be based. | meetings of the AoA Group of Experts organized between March 2007 and 2009. The draft AoA report was peer-reviewed and presented to the Ad Hoc Steering Committee in April 2009 (UNESCO, Paris). Supporting activities: establishment of an on-line virtual office to facilitate the exchange of resources for the Group of Experts; a website to inform Member States on the progress of this project; a dedicated brochure and literature; database of existing marine assessments (GRAMED) containing more than 400 individual entries.<br><br>• Initiated development of an international strategy for a decadal survey of large scale circulation and carbon cycle processes of the oceans (2013–2023). The largest global dataset of surface ocean carbon ever assembled was developed to improve studies of ocean uptake of anthropogenic $CO_2$.<br><br>• Policy-relevant reports and guidelines published and disseminated on coral reef status, oceanic $CO_2$ measurement, Marine Spatial Planning, GOODS and Harmful Algal Blooms<br><br>• Capacity Development activities were conducted in two streams:<br>(i) Eight Self-driven capacity development workshops with participation from over 100 developing country institutes for strengthening skills in leadership, raising funds and decision support tools for environmental management<br>(ii) Training and Research: 4 UNESCO/IOC Chairs in Oceanography and 4 Training-at-Sea cruises with participation from over 200 young researchers (often with a majority of women)<br><br>• Ocean Data and Information Network in Africa completes third phase; funding obtained for fourth phase (2009–2013); Caribbean region successfully completes Atlas pilot project and obtains funding for Caribbean Marine Atlas (2009-2012), contributing to coastal management. IODE network reaches 77 IODE National Coordinators for Data Management and 34 IODE National Coordinators. Between January 2008 and May 2009, 8 training courses in ocean data and information management were organized involving 118 | release of the AoA Report and SDM did not reach all Member State governments through UN delegations and IOC designated focal points<br><br>• Commitment of sustained funding to the coordination of the regular process is a challenge<br><br>• International data sharing is hindered by the need for scientists to publish results before making the data publicly available. This situation could be improved through collaborative publications and recognition for data collectors.<br><br>• IOC Guidelines are well received by Member States as indicated by 9 countries implementing the ICAM indicators (7 more in test phase)<br><br>• The weak perception in some governments of what UNESCO does besides education in some cases prevents access to more substantial extra-budgetary resources and institutional commitment to achieve the expected results.<br>Improved information sharing between prime institutes in a country would improve delivery of scientific solutions.<br><br>• Data management is often not considered a core objective in ocean science and observation programmes; the development of data management plans and reaching agreement on standard methods will need to be a medium-term goal<br><br>• Staff turnover remains a problem in many developing countries cooperating in ODIN projects – we will need to aim towards | High. Achievements are primarily through concerted action of Member States and thus reflect a significantly larger investment than the funds and manpower provided by IOC. RP funding covers coordination and framework activities.<br><br>Three workshops were harmonised within IOC through sharing lecturers and logistical arrangements.<br><br>The IOC Project Office for IODE (Oostende) is a cost-effective facility for hosting meetings as well as training events. The staff has quickly gained all necessary experience to plan and implement events taking care of all related tasks thereby reducing pressure on HQ | Several Member States confirmed HAB as a national priority and have developed national plans and centres; secured funding from Spain beyond 2012<br><br>Strengthened capacities to lead, obtain funding and manage projects according to local priorities<br><br>The ODINs are nationally driven and owned activities. 25 African Member States agree on project document for 4th phase of ODINAFRICA (2009-2013) |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | participants | training larger number of national experts to counter this challenge | | |
| IOC Biennial Strategy 2008-2009 implemented and results achieved reported to UNESCO governing bodies. | • XXV Session of the IOC Assembly took place in June 2009. Achievements include: decisions on the Future of IOC, in terms of relocation of the Secretariat partly or wholly; identifying category II institutes and centres; 50th Anniversary of IOC; the Regular Process for Assessment of the Ocean, including topics for the Ministerial Round Table scheduled during the 35th General Conference of UNESCO, and the adoption of the TEOS-10 formulation of the Thermodynamics and Equation of State of Seawater to replace the EOS-80 UNESCO standard<br>• The IOC Biennial Strategy 2008-2009 is reflected in the approved 34 C/5. This ensures that reporting for both the General Conference/Executive Board and the IOC Assembly are consistent though with different level of aggregation. | • Member State input regarding the screening process for the selection of the post of Executive Secretary of the IOC (ADG/IOC) is that the search process should have been more intense in order to achieve a better geographical balance of applicants<br>• Incorporation of the TEOS-10 formulation in scientific literature indicates the acceptance of the new standard among the scientific community. | | |

## Para. 02027 - MLA 3: Promoting science, knowledge and education for disaster preparedness and mitigation, and enhancing national and regional coping capacities, including through support for the development of risk reduction networks and monitoring and assessment measures, such as tsunami early warning systems

| **Regular budget: Activities** (rounded to $ thousand) | |
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| **Planned: $ 1 409** | **Actual: $ 997** |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| Risks from tsunami and other ocean-related hazards reduced through early warning systems and preparedness and mitigation measures. | • Extended support to all Intergovernmental Coordination Groups (ICGs) for Tsunami technical matters and capacity building to Member States; technical support groups optimized in view of future merge; Secretarial support and assistance provided to ICGs, enhanced interaction with all stakeholders, including NGOs and IGOs.<br>• Pacific Ocean: The 23rd ICG/PTWS session was hosted by Samoa, February 2009 and adopted a medium-term strategy. Human resources enforced through establishment of an IOC National Officer post at the UNESCO Apia Office to support tsunami-related activities in the SW Pacific. This system is operational. Working Group for the SE Pacific met in Bogota, Colombia, (May 2009). The PTWC is providing interim service support to the Indian Ocean and Caribbean | • Cooperation between different cultures on the non-technical level (downstream) needs stronger and long-term support.<br>• General language adaptation of all documents and procedures improves acceptance.<br>• Continuity of activities with community strongly improves performance and implementation rate.<br>• Special emphasis still needed to develop and maintain cross-national, regional | Member states own, control and operate systems.<br><br>Criteria as operational effectiveness provide day-today indication of performance indicators, and suggest remedial action.<br><br>Experienced Secretariat support improves performance and effectiveness of regional TWS operation and implementation. | As ownership by member states is increased, sustainability is increased and nearly ensured.<br><br>The ICG Secretariat for the Indian Ocean Tsunami Warning System (IOTWS) is now funded through 2013 by Australia.<br><br>The ICG Secretariat for the Mediterranean and North East Atlantic (NEAMTWS) is now established in Bonn, Germany. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | early-warning systems.<br>• Indian Ocean: The 6th Session of the ICG/IOTWS was hosted by India in Hyderabad, April 2009. Three potential Regional Tsunami Watch Providers (RTWP) initiated operations (Australia, India, Indonesia) with intent to take over operationally in 2010. The system is currently operating under an interim service provider with support from the Pacific Tsunami Warning Center (PTWC) and the Japanese Meteorological Agency (JMA). Training courses on bathymetric data acquisition, processing and multibeam training for shallow waters (March 2008, Goa, India) and GIS and Inundation Mapping training (April 2008, Bangkok, Thailand)<br>• Caribbean: Funds secured to establish the Caribbean Tsunami Information Center (CTIC) in 2009. 4th ICG/CARIBE EWS held in June 2009. System operating under an interim service provider with the Pacific Tsunami Warning Center<br>• Mediterranean: Task team established to review regional structure of Tsunami Watch Centers agreed to harmonize tsunami warning nomenclature among regions and to initiate a pilot warning system using existing resources, data and software (January 2008) | operation, stakeholder attitude.<br>• Preparedness and mitigation measures need broader and deeper implementation efforts.<br>• Small and efficient support unit at Secretariat needed, and continuously supported | | Moving from tsunami to ocean-related hazards optimizes technical infrastructure and improves acceptance and support on the national level.<br>Mainstreaming into national disaster management plans ensures political and financial support |
| Risks from hydrological extremes (floods, drought, etc.), earthquakes, landslides, volcanoes as well as risks from human-induced disasters mitigated through integrated approaches focusing on policy advice, strengthened networks and capacities for monitoring and assessment, knowledge dissemination and education. | • International and Regional networks of experts on capacity building for earthquake risk mitigation were established (IPRED) or activated in the Mediterranean and Asia Regions. Landslide risk reduction was promoted through contribution to the implementation of the Tokyo 2006 Action Plan on Landslides, as well as within the First World Landslide Forum.<br>• UNESCO has been actively associated with the preparation and launch of the 2009 Global Assessment Report (GAR) on Disaster Risk Reduction. As a key agency of the UN International Strategy for Disaster Reduction (ISDR) Thematic Platform on Knowledge and Education, UNESCO continued to help promote education for disaster risk reduction and safer schools initiative through policy events and workshops. Bangkok Office has furthered the project Education for Natural Disaster Preparedness (ENDP) in the Context of Education for Sustainable Development. | • Partnership with authoritative regional institutions ensures quality of cooperation in strengthening regional networks and capacities on disaster risk reduction. Revitalizing new regional networks on disaster risk reduction remains challenging.<br>• UNESCO is expected to continue coordinating partnership and further its role in promoting education for disaster risk reduction and safer schools initiative. There is a need to work more closely with ED sector, thus enhancing intersectoral cooperation. The challenge to solicit stakeholders in educational sectors for promoting education for disaster risk reduction is crucial.<br>• There are recommendations to specify stakeholders in Asia region for revision of national policies and related curricula and | Cost-effective, as funded by extrabudgetary sources.<br>Playing a catalytic role in encouraging cooperation among key partners involved in education and disaster risk reduction was a cost-effective mission. An ensuing result is that collaboration was extended with new stakeholders.<br>A positive cost/benefit ratio is ensured for UNESCO as funds are raised from government donors. | The continual activation by UNESCO of international and regional networks should establish a durable cooperative framework for stakeholders involved.<br>As curriculum development was done in close consultation with policy makers who were designated to follow up activities in country, this should be sustainable. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | | teacher training for infusion of disaster risk reduction into schools, integrating of disaster reduction education modules into curriculum, stand-alone disaster reduction education courses and co-curricular activities. | | |
| | • Montevideo Office reported on current possibilities for consolidating regional capacities in the use of remote sensing technologies for the identification and observation of areas at risk in Latin America and Caribbean Region, with recommendations for a regional cooperation dialog towards the strengthening of natural disaster research and management.<br>• Montevideo, Islamabad and Tehran Offices contributed to UN country programming on natural disaster risk reduction.<br>• The UNESCO International Flood Initiative developed a compendium of the major floods around the world. A summary has been used as an input to WWDR-3. A Concept note drafted and shared with ICHARM for regional project: “Enhancing the resilience of Sub-Sahara African countries against hydro-climate-disasters”. Preparation of methodologies and guidelines for floods mapping in West Africa sub-region. An experimental drought monitor on Africa was developed. Integrated approaches by local, national and international specialists to flood management improved by implementing the Assessment of Flood Forecasting and Warning Systems project for the Tropical Region in Indonesia, Malaysia, and Viet Nam. | • Consideration should be given to possible sub-regional strategies to consolidate shared use of technology.<br>• Mobilization of funds remains critical in this area.<br>• Priorities on performing related activities influenced by occurrence of critical events. | | Need to be incorporated as a State priority to become sustainable. |

## Biennial sectoral priority 2: Strengthening national and regional research and innovation systems, capacity-building, the use of technologies, and scientific networking, and encouraging the development and implementation of science, technology and innovation policies for sustainable development and poverty eradication

### Para. 02032 - MLA 4: Supporting science, technology and innovation policies for sustainable development and poverty eradication, and developing capacities in basic sciences, energy and engineering

| **Regular budget: Activities** (rounded to $ thousand) | |
|---|---|
| **Planned: $ 5 435** | **Actual: $ 3 948** |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| Evidence-based national science, technology and innovation policies formulated and adopted, integrating the principles of sustainable development and, as appropriate, the contribution of local knowledge, formulated and adopted. | • Capacities in policy formulation enhanced in Africa, South East Europe and Latin America. Skill of STI policy-makers in Asia Pacific region improved and awareness of current and emerging STI policy for sustainable development (through publication and website) raised. | Training courses provided to policy makers; training on S&T indicators also provided in cooperation with UIS | These activities were all covered with large contributions from extra-budgetary resources | The policy makers trained are involved in policy formulation with UNESCO. This gives them the occasion to put in practice what they learnt. |
| | • Policy advice and capacity building in STI policy formulation provided to 20 Member states in Africa (see Priority Africa section), Arab States (regional), Asia (Nepal, Afghanistan), Central Asia (Armenia, Azerbaijan) SE Europe (Albania, Serbia) and Latin America (regional, Central America) & Caribbean (Guyana) | • Requests by Member States exceed the means available within UNESCO to respond. Need to mobilize cooperation with other agencies and seek external funding. | Whenever possible, national consultants were recruited. Sub-regional and cluster approached encouraged. | These programmes given top priority by Governments |
| | • Status of STI and actions taken in Latin America over the last 10 years assessed. Regional consultations organized and a general statement agreed upon. | • UNESCO having helped put the STI systems in the 70s and 80s is being asked to accompany Member States in revitalizing it and putting a new system in place. | Marginal cost to UNESCO | Full engagement by stakeholders |
| | • A regional Plan of Action for Science and Technology for the Arab States elaborated by UNESCO in cooperation with the Arab Leagues Educational Scientific and Cultural Organization (ALECSO) and submitted to the summit of Heads of States (Kuwait, January 2009). | • Several such plans were developed in the past. Care must be taken to ensure their implementation by putting the necessary implementation mechanisms. | UNESCO joined by partners: ALECSO and ISESCO | Uncertain |
| | • Governance and management of Science parks promoted through capacity building and technical assistance to Member States in Arab region, Asia and Africa. Two pilot projects initiated (Egypt and Kenya) | • The development of science park and technology business incubator is spreading | Extra-budgetary funds mobilized from KOICA and ISESCO | UNESCO need to strengthen its capacities in this area |
| | • South-South Cooperation promoted through establishment of the International Centre in Kuala Lumpur. | • Centre already operational. Need to inform Member States of its potential | No cost to UNESCO. Centre's activities fully funded by Malaysia | Secured. Government of Malaysia granted special budget line for the Centre |
| | • Participatory governance of S&T systems promoted through two regional forums of scientists, parliamentarians and civil servants in Brazzaville, March | • This effort with parliaments needs to be sustained. Collaboration with organization such as IPU and regional parliaments is | Cost effective because supported by the host country (Congo, Kenya) or organized as a part of already foreseen meetings. | The building-up of autonomous networks of parliamentarians may ensure the sustainability of this effort. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | 2008 and in Mombasa, April 2009. | essential. | | |
| Policies and practices for sustainable development of SIDS, including in the light of climate change, shared within and across SIDS regions. | • A high level intersectoral UNESCO mission was carried out to the Republic of Mauritius September 2008. Its aim was to identify areas of cooperation to advance sustainable development policies and practice.<br>• Fifteen articles in English, French and Spanish related to climate change were distributed to more than 50,000 SIDS and indigenous contacts via global internet forum 'On the Frontlines of Climate Change'.. These generated many inputs and exchanges among SIDS and indigenous communities and SIDS worldwide.<br>• The global intersectoral Sandwatch Project on beach monitoring and sustainable management of coastal environments was further expanded including with a revised Manual with inclusion of a Chapter on climate change. A four-day training workshop in the Bahamas was conducted in June 2009, to test the revised manual with Sandwatch teams from four Caribbean countries. | • Numerous hurdles were overcome in organising this mission and the MOU that required close collaboration across sectors, and between headquarters and field.<br>• Maintaining the trilingual capacity by translating articles and inputs has been challenging and time consuming. | Greater outreach and global visibility were ensured through partnerships with other UN organizations. Collaboration with CI sector is underway to use Multimedia Centres and networks to increase outreach. | The MOU provides a solid basis for furthering UNESCO action in Mauritius and the Indian Ocean.<br>Interest and funding confirmed by the Danish Government ensures its continuation and expansion this biennium. |
| National and regional capacities for research, training and education in the basic sciences strengthened to foster applications for societal needs and to encourage careers in science, taking into account gender equity and equality. | • Within framework of IBSP research and technical capacities of over 800 scientists built through support for over 78 international and regional conferences, courses and workshops in the biological sciences and biotechnology, mathematics, optical spectroscopy, physics and astronomy, in collaboration with specialized partners in the fields of the basic sciences. Capacity-building activities through regional and sub-regional networks in chemistry, mathematics and theoretical physics supported; 12 of these training activities organized in Africa in the areas of neurobiology, molecular biology, genetics and biotechnology. Four major cooperative ICSU/UNESCO projects have been launched under UNESCO/ICSU Framework Agreement.<br>• > 20 graduate fellowships awarded to young researchers, several from Africa. Support provided to strengthen centres of excellence, scientific networks (such as ANSTI) and organizations in Africa (such as ICSU-Africa) towards the implementation of AU/NEPAD CPA.<br>• Establishment and networking of electronic libraries and repositories for African universities and scientific institutes is being developed for African scientists via | • Strong partnerships are vital to effective programme implementation and development of worthwhile capacity-building activities.<br>• Concentration on fewer activities with major partners has streamlined capacity-building activities;<br>• Scientific activities promote exchange between local scientists and stimulate research collaboration between centres in different countries.<br>• Guidelines to be developed for mobilizing diverse knowledge systems as a contribution to scientific research networks. | Cost effective on a cost-sharing basis or where costs largely covered by government funds or activity organizers.<br>Cost-sharing with partners for capacity-building is an effective mechanism for achieving goals but is hindered by low RP.<br>UNESCO funds were leveraged considerably by the contributions of other partners, including donors. | Sustainable with support of national governments.<br>In Africa, regular regional capacity building activities such as advanced Summer Schools in Africa are dependent on good levels of sponsorship from donors and UN agencies |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | CERN/UNESCO partnership.<br>• 50 countries (15 in Africa), assisted to develop national capacities in physics, mathematics and science education through attendance of researchers and teachers in training activities. Increased in response to demand by Member States, practical science education was promoted through 16 Microscience Experiments workshops organized in several countries (8 in Africa). Active learning methodology introduced in Optics and Photonics in workshops for trainers. Initial information on status of science and mathematics education in UNESCO Member States gathered from literature review. New teaching and learning materials on microscale practical experimentation were developed in Malaysia and Thailand.<br>• UNESCO participated in Global Ministerial Forum on Research for Health in Bamako, Mali (November 2008), a successful exercise of intersectoral and inter-agency collaboration serving as basis for future activities dealing with broader issues of research for health.<br>• Consultations held in Libya (June 2008) on UNESCO/Libyan funds-in-trust programmes, to evaluate progress and consider continuation and development of these programmes in cell and molecular biology and macromolecular chemistry. Expansion of research and training activities at the Libyan institutions in particular the Biotechnology Research and Training Centre, to the rest of the region also considered.<br>• The “soft” inauguration of SESAME marked the handing over to SESAME of its building and the move there of its staff, as well as the installation of the microtron. SESAME/UNESCO users’ training programme held. | • Propose possible sub-regional strategies to consolidated shared use of technology<br>• Opportunity to focus on science teaching in key areas that call for greater human capacity development<br>• Lack of budget. Mobilization of extrabudgetary funds remains a challenge for development of projects.<br>• Intersectoral task-teams provide a valuable mechanism to provide UNESCO’s added-value to global and interagency actions. The Call to Action arising from the Global Forum and the relevant follow-up activities require an intersectoral approach and should be included in the forthcoming 35 C/5.<br>• Ensure the presence of UNESCO at activity of high visibility at the national level, and at the regional level. | | |
| National capacities and knowledge base for the rational and balanced use of alternative sources of energy enhanced, and energy policies, management and conservation for sustainable development promoted with a view to translating them into national development plans which ensure food security and climate change mitigation. | • Human and institutional capacity-building in renewable energy and the sharing of related scientific knowledge and best practices were furthered through regional/national seminars and workshops organised in Benin, Guinea, Tanzania, Togo, Qatar and Uruguay. Summer schools on renewable energy were initiated in Malaysia, Mali and Uzbekistan. In the Caribbean region, support was provided to the CARISCIENCE Network for the implementation of two regional workshops on renewable energy and, in South America, UNESCO | • Responding to the enormous needs for enhancing local capacities to manage, use and maintain renewable energy systems will require the mobilization of additional institutional and financial resources.<br>• In particular, the management and maintenance of installed solar photovoltaic (PV) systems will require local appropriation by end-users through proper training. | Renewable energy activities are implemented in partnership with other international institutions and benefit from external funding. UNESCO’s contribution often serves as a catalyst to initiatives with a multiplier effect.<br><br>Several non-financial contributions have been made to various | The concrete outputs of implemented activities will likely remain as long-term tools for enhancing national capacities, thereby ensuring the sustainability of the results achieved.<br><br>The achieved development of local competencies will |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | participated in the Selection Committee of the MERCOSUR S&T Prize and supported the elaboration of a solar thermal law submitted to the Uruguayan Congress. The concept of energy self-sufficient villages (ECO-Villages) was promoted through lectures broadcast to 25 universities throughout South and South-East Asia.<br>• The development of regional/national renewable energy policies was promoted concurrently in Africa and the Arab region through regional expert-meetings held in Morocco, Niger, Nigeria and Saudi Arabia.<br>• In supporting pilot initiatives, a project was implemented in Tanzania to rehabilitate a solar photovoltaic (PV) system and another project was initiated in Benin to electrify two rural schools via solar PV systems and to supply them with an Internet connection.<br>• Collaboration with UN entities continued to be furthered through the activities of UN-Energy and technical support was provided to the Community of Sahel-Saharan States (CEN-SAD). | • To maintain the interest that is raised in seminars, workshops and expert meetings, appropriate follow-up is necessary and should be integrated into the original implementation plan.<br>• In many instances, the coordination of multiple actors presented a particular challenge which should be overcome through improved communication and planning. | initiatives. | contribute towards ensuring the sustainability of renewable energy programmes and initiatives.<br><br>Sustainability has been further ensured through the consolidation of cooperation between UNESCO and the CEN-SAD and CARISCIENCE networks, thereby promoting respectively the development of long-term energy policies in Sahel-Saharan States and the promotion of renewable energy sources in the Caribbean. |
| Human and institutional capacities in engineering, technology and innovation strengthened, with a focus on knowledge management in engineering, engineering policies and a culture of maintenance. | • The development of networks, partnerships, exchange of information and good practice around the world were promoted by follow-up to the 2008 World Engineers' Convention and co-organisation of WEC2011 – to be held in Geneva. International networks and related activities on women and engineering, engineering ethics, problem-based learning in engineering and engineering studies are being developed following international conferences on "Women Engineers and Scientists", "Ethics and Human Values in Engineering", "Global Perspectives on Engineering" and research symposia on "Problem-Based Learning in Engineering" and "Research on Engineering Education" held in 2008 and 2009, in conjunction with associated UNESCO Chairs and networks of "Problem-Based Learning in Engineering" and "Development Technologies".<br>• Follow-up to the OECD-UNESCO international workshop on innovation for development held in January 2009 is developing activity in this important field. This activity was conducted with support from the UNESCO Forum on Higher Education and Research and SIDA, with whom there was general cooperation in the field of knowledge management and associated policy issues. Policy advice to establish national and regional research systems also includes work with the | • Lessons learnt include the difficulties of emphasising the importance of engineering in development and addressing the MDGs - with insufficient engineers there will be no prospect to address the MDGs and such areas as water supply and sanitation, renewable energy, disaster response and reconstruction.<br>• There is a pressing need to strengthen engineering around the world, and at UNESCO to help address the above issues and challenges. | Most of the Regular Programme and extra-budgetary activities are conducted with partners – including NGOs such as the World Federation of Engineering Organisations, Engineers Without Borders, other UN and international agencies, SIDA/SAREC, IDRC and OECD. These partnerships are vital in organising programme activities and associated publications. | The fact that the Engineering Sciences programme is now generating more than twice the Regular Programme budget also underlines the sustainability of the programme, and the need to strengthen what is already a successful and cost-effective activity. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | UNESCO Forum on Higher Education and Research on policy relating to research and innovation systems for development. The 2008-2009 round of the award-winning Daimler-UNESCO Mondialogo Engineering Award continues with a record number of team registrations.<br>• Publications include the production of the first UNESCO Report on engineering "Engineering: Issues and Challenges for Development", a WFEO-UNESCO "Guidebook on Capacity Building in Engineering for Development" and an ongoing project on engineering education, sustainable development and climate change.<br>• The development of activity in the engineering sciences to promote the Culture of Maintenance includes the development of a UNESCO Toolkit on "Asset Management in Engineering". | • One of the challenges of working to promote the Culture of Maintenance is that asset management and the management of maintenance is not regarded by governments around the world with any sense of priority, although this situation appears to be changing in response to the economic crisis. | | |

## Para. 02106 - UNESCO-IHE Institute for Water Education (UNESCO-IHE)

**Funding is provided exclusively from extrabudgetary sources**

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| Impact of water education and training for sustainable development increased, primarily aimed at developing countries. | • Four fully accredited 18-months Masters' Programmes offered with 190 graduated students in 2008 and 156 graduated in 2009. A new cohort of 180 students enrolled in October 2008. Over 90% of the MSc students are from developing countries.<br>• Joint Masters' specializations are offered with Mondsee (Austria), Hohai (China), Sri Wijaya (Indonesia) and Dundee (Scotland).<br>• About 90 registered PhD students, 12 graduated in the period January 2008 – June 2009.<br>• Some 900 professionals trained in short courses in 2008. | • Acquisition of fellowships for participants in developing countries is a continuous challenge. Member States will be invited to make use of the Tertiary Water Education Grants Programme for the sponsoring of multi-year fellowship arrangements.<br>• Innovation in education is in progress and should lead to more joint programmes with partners in the South and to more flexible programmes (more elective modules, more online learning options). | The Institute operates on a 100% extra-budgetary basis. Currently about 75% of all funds are received from public and private sources in The Netherlands.<br><br>Investments are being made in more online courses and joint programs so as to reduce the price of education for students. | Demand for MSc programs is consistently high, but availability of fellowships is too limited. The Tertiary Water Education Grant Facility is an example of a measure taken to generate fellowships. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | • The IHP Council approved a resolution establishing a tertiary Water Education Grants Programme, a facility to attract funds for water education fellowships.<br>• An improved 5-year subsidy-arrangement was negotiated with the Dutch Government, thus ensuring financial stability. | | | |
| Research capacity in the water sector increased, focusing on MDG-related topics and primarily aimed at solving problems in developing countries. | • All of UNESCO-IHE's research is relevant to development and 90% is carried-out in partnership with professionals and institutions from the South. During this reporting period, the volume of research further grew: 25 new PhD fellows started and over 300 scientific publications were produced, of which a growing percentage in peer-reviewed scientific journals.<br>• The institute started implementing the research component of the programmatic cooperation agreement with the Dutch Ministry of Foreign Affairs (DGIS), which includes an annual € 2 million grant for research on the MDGs. | • Many projects under the programmatic cooperation with DGIS have started, attracting many new researchers to the Institute. Administrative procedures and facilities must be updated or upgraded to accommodate the influx of these researchers.<br>• Full membership of the SENSE research School is being pursued; a self-evaluation of the research is in progress. | see above | The quality and relevance of IHE's research are key indicators for achieving a sustainable program. The membership of the SENSE Research school – which was achieved in the reporting period - will further stimulate high-quality scientific output, whereas the cooperation with Southern partners should ensure relevance and credibility. |
| Capacity-building increased through numerous long- and short-term international cooperation programmes to strengthen endogenous capacities of local water-related organizations. | • UNESCO-IHE implemented a number of important capacity building initiatives. Examples are support provided to water programmes of universities in Ghana, Rwanda, Indonesia, Vietnam, etc. and an extensive training program for the water supply and sanitation sector in Iran.<br>• Recently started projects include support to universities in Ethiopia and Trinidad & Tobago, as well as a capacity building program for the water sector in Mongolia. | The funding base of IHE should be further diversified so as to depend less on Dutch funds. | see above | There is substantial demand for the capacity building services of UNESCO-IHE. These activities are typically project-based and acquisition is done though tendering.<br><br>For quality management purposes, an evaluation system for projects was introduced early 2008. |
| Partnerships reinforced to share and develop knowledge and information, and to conduct joint activities in education, research and capacity-building. | • Partnership development funds have been secured for the coming 5 years through the programmatic cooperation with the Dutch Ministry of Foreign Affairs (DGIS). A novelty is that UNESCO-IHE launched a facility to sponsor research initiatives of its partner institutions. The first projects were approved in the first half of 2009.<br>• The Institute is very active in / supportive to regional networks in Indonesia, the Nile Basin, the Asia-Pacific region and Southern Africa.<br>• In the context of the integration in the UNESCO-system, it is worth reporting that the Institute has ties with various UNESCO Category 2 Centres: RCUWM | • The institute is successful in its partnerships where it concerns joint research and capacity building activities. Sustainable cooperation in education with a facility to exchange credit points is still a challenge and requires an adequate (accreditation-proof) quality assurance system. This will have to be taken up in the coming year(s). | see above | The future of UNESCO-IHE is one of a partnership-organisation which develops and delivers joint education and research with partners around the globe. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | (Iran), ICHARM (Japan), ICH-IWRM (Brazil/Paraguay), CWLPS (UK), HidroEx (Brazil).<br>• A workplan to intensify the cooperation with IHP was developed and approved by the IHP Bureau and Council. | | | |

## Para. 02207 - Abdus Salam International Centre for Theoretical Physics (ICTP)

| Regular budget: Activities (rounded to $ thousand) | |
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| Planned: $1 015 | Actual: $ 1 015 |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| Advanced research training of scientists, especially women and young scientists, and university teaching staff in physics and mathematics enhanced. | • During the reporting period ICTP organized roughly 90 training activities on subjects ranging from elementary particle physics to cosmology, condensed matter physics to material science, mathematics to computational physics, geophysics to climatology, biophysics to medical physics, laser physics, isotopes and radiation applications to non-conventional energy sources. Of the order of 6,000 visitors have participated in these activities. The average participation rate of female scientists is about 30%.<br>• Fifty students from developing countries have been studying within the Sandwich Educational Training (STEP) programme.<br>• A total of 50 students from developing countries are studying within the ICTP Diploma Programme in the areas of Condensed Matter Physics, High Energy Physics, Earth System Physics, Mathematics and Basic Physics.<br>• In 2008, ICTP staff published 288 scientific papers, 75 were in press and 71 submitted (1 Science, 2 Nature, 2 Proceedings of the National Academy of Sciences of the USA, 22 Physical Review Letters, 1 Physics Today). | • Through feedback received from participants in its activities, ICTP is open to suggestions for improving the scope of its programmes.<br>• For example, in March 2008, ICTP held the second of a new series of Workshops on Entrepreneurship for Physicists and Engineers from Developing Countries designed for scientists in developing countries who wish to learn about intellectual property issues and entrepreneurial skills, and about how scientific knowledge can be used for economic development.<br>• PHYSWARE: A Collaborative Workshop on Low-cost Equipment and Appropriate Technologies that Promote Undergraduate Level, Hands-on Physics Education throughout the Developing World was held at ICTP in February 2009. Physware was a direct outcome of recommendations from the education task force of the 2005 World Conference on Physics and Sustainable Development, and is to be the first in a series of similar workshops to be held regionally. It brought together a talented group of physics educators from 26 countries in Asia, Latin America and Africa who now form a core education group for advancing Physics Education. The course served to establish a primary network of outstanding physics teachers who can | Getting exposure to such advanced courses for participants to these programmes would be at a much greater cost if they were organised in their own countries. It would also be extremely difficult to get the right sort of expertise without connections to ICTP. | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | | extend the knowledge of hands-on technologies locally.<br>• In a response to a specific request from the Libyan Government, ICTP assisted in the organisation of the 3rd National Conference on Basic Sciences, held at Al-Jabal Al-Gharbi University, Libya in April 2009. A number of ICTP staff members attended the conference and gave a series of lectures.<br>• Upon a specific request of ICTP's Scientific Council, ICTP organised a meeting in May 2009 to discuss its programmes in Africa. The meeting was attended by several distinguished African scientists as well as heads of scientific institutions in Trieste with particular interest in African science.<br>• With funding from the Italian Ministry of Research, ICTP has developed a "2009 Programme for Africa" which aims at sustaining ICTP's expertise in particular areas such as ITU, forecast of natural disasters and nanotechnologies through a range of specific projects specifically designed for the African continent.<br>• By following the careers of participants, ICTP is able to modify its programmes. | | |
| South-South cooperation and activities in Africa strengthened. | • Through the UNESCO/Italy Funds-in trust cooperation, ICTP has been given responsibility for the following projects: Building environmental networks and the monitoring of the environment in Africa; Practical training and research in Basic and Applied sciences including education, energy, environment and health education for Africa; and Research infrastructure for Africa.<br>• Ten students from sub-Saharan Africa are studying in the ICTP Diploma programme in Basic Physics.<br>• Twelve students from sub-Saharan Africa have been studying within the Mori Fellowship Programme. The Mori fellowships are funded through UNESCO Japan Funds-in-Trust.<br>• ICTP is continuing to collaborate with the National Mathematical Centre in Abuja, Nigeria, with the Institute | | | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | of Theoretical Physics, Beijing, China, with CNpQ, Brazil, the University of Havana, Cuba, the National Centre for Physics, Islamabad, Pakistan, the Abdus Salam School of Mathematical Sciences, Lahore, Pakistan.<br><br>• ICTP has signed a cooperation agreement with the Horia Hulubei Foundation in Bucharest for the creation of a Romanian scientific centre of excellence.<br><br>• ICTP has also signed a cooperation agreement with the Ministry of National and Higher Education, Executive Training and Scientific Research of the Kingdom of Morocco to help in the creation of a Centre for Physics and Mathematics.<br><br>• An agreement has been signed with the African University of Science and Technology (AUST), Nigeria.<br><br>• ICTP is also collaborating with the newly created International Centre for Theoretical Sciences in Bangalore, India.<br><br>• An agreement has been signed with the Ministry of Higher Education and Scientific Research, Iraq, whereby ICTP will assist Iraq scientists in their plans to build a centre for physics and mathematics in Baghdad.<br><br>• ICTP continues to enter into collaborative agreements with developing country institutions to work together on special programmes to help them.<br><br>• ICTP has joint progammes with several countries in the South including Brazil, China, Cuba, India which invite a number of scientists from other developing countries. | | 50% of the expenses are covered by Brazil, China and India. | |
| Synergies with other organizational units contributing to Major Programme II enhanced. | ICTP has continued its collaboration with other divisions of the Natural Sciences Sector in the areas of ocean variability, climate variability and impacts of climate change on human societies and natural ecosystems, ecological and environmental economics, geohazards, tsunami research focused on the seismic origin of tsunamis. | | | |

## Para. 02014 - Addressing the needs of Africa

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| UNESCO Action Plan developed and implemented in response to the African Union action platform for science and technology. | • Twenty Member States have made formal requests through their governments to UNESCO to assist them carry out national science policy reviews or formulation during the period 2008-2009. Policy advice for capacity building provided to the following countries: Benin, Burundi, Central African Republic, Gabon, Gambia, Malawi, Madagascar, Mauritania, Swaziland Sudan Zambia and Zimbabwe. After some years of inaction, UNESCO is resuming its policy formulation in both the Ivory Coast and the Democratic Republic of Congo on the basis of the status reports elaborated in 2006. | • Policies are based on consultations with main stakeholder and thus are easy to implement. Efforts were made to ensure a participatory process at all stages of policy formulation. | Whenever possible, we encouraged national execution and the use of local consultants to reduce cost. | Very high political commitment; most requests came either from Heads of State or Ministers. |
| Science and technology policies and planning capacities of African Member States strengthened. | • More than 100 policy makers trained on S&T policy formulation, including on the use of S&T indicators. More than 50 parliamentarians introduced to the issues of STI policy legislation. Decision adopted to create a network of Science Parliamentary committees. Training conducted both in the continent as well as at the International Centre for South-South Cooperation in Kuala Lumpur.<br>• Elaboration of an African S&T indicators facility supported: the Sector in cooperation with Institute for Statistics, supported capacity building through regional workshops. | • There is a need to keep Parliamentarians engaged in the issues of S&T, if a lasting support of STI is to be secured. | These meeting were conducted with the support of the host countries (Congo and Kenya); some meeting were held in connection with other training on STI (Mombassa). | The establishment of the African Network of Science Parliamentary committee will ensure the continuity of this process. |
| Knowledge transfer and sustainable human and institutional capacity-building improved in order to develop a national culture of maintenance. | • To help promote a culture of maintenance, the engineering sciences programme is developing a UNESCO handbook on asset management in engineering. | | | |
| Knowledge base and capacities for local, national and regional water management strengthened. | • Concept note drafted and shared with ICHARM for regional project: “Enhancing the resilience of Sub-Sahara African countries against hydro-climate-disasters”. Preparation of methodologies and guidelines for floods mapping in West Africa sub-region to start with AGRHYMET. An experimental drought monitor on Africa was developed to provide near real-time monitoring of land surface hydrological conditions based on modelling, supported by observations.<br>• Results of remote sensing capacity building projects in TIGER compiled, reviewed and edited for publication, serving as a showcase of how satellite information can help in water management in Africa. | • In view of funds limitations, forging new partnerships and developing existing ones appear critical.<br>• Through the partnership established with the European Space Agency (ESA), African institutions had direct access to ESA material and experience to improve their water resources management. | UNESCO only provided seed money for activities. Linkages with local partners reduce costs and enhance effectiveness.<br>Provision of global data online proved cost effective. | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | • Research network of hydrogeologists of volcanic areas in three countries in East Africa strengthened.<br><br>• Development of case studies, best practices and recommendations, and enhancement of South-South and North-South-South networking and cooperation via international and regional events, including: the 2nd Africa Regional Meeting of the IHP National Committees (South Africa); the 3rd International Conference on Managing Shared Aquifer resources in Africa (Libya); the International Conference on Groundwater and Climate Change (Uganda); the UNESCO Regional Workshop on Water Education in Africa (Sudan); geophysics and field work in the Kenya Rift Valley; groundwater management (Benin); water-related programmes at the Kenya Water Institute; Water and Climate Risk Management: Managing Hydroclimatic Risk in the Water Sector (Ethiopia); and Water and Sanitation (Ghana). | | | |
| Knowledge base and capacities in formulating national energy policies and conducting pilot projects strengthened. | • To strengthen capacity building and the sharing of scientific knowledge and best practices in the use and application of alternative and renewable energy sources and their adaptation to local needs in Africa, UNESCO is furthering the implementation of the African Chapter of the Global Renewable Energy Education and Training (GREET) Programme. In this framework, regional and national expert meetings were organised in Togo and Guinea to share experiences and best practices on the use and application of solar energy systems in Africa, benefiting 55 participants. Similarly, preparatory work has been carried out for the first session of the African annual summer school on renewable energy in Mali.<br><br>• The development of national renewable energy policies and the strengthening of the related capacities of public services were promoted through the organization of national workshops in Nigeria and Niger which benefited more than 200 participants. These workshops, to be duplicated, aim at increasing the number of countries in Africa producing quality renewable energy strategies and promoting related best practices in their national development plans and evidence-based energy policy-making.<br><br>• A pilot project on the use of renewable energy sources for development was implemented in Zanzibar and the solar electrification of two rural schools in Benin, | • An appropriate response to the enormous needs for enhancing local capacities in Africa to manage, use and maintain renewable energy systems will require the mobilization of additional resources.<br><br>• In Africa, access to scientific and applied knowledge is needed for the use and application of renewable energy sources as a tool for local development.<br><br>• The implemented workshops, seminars and expert meetings need to be replicated to increase the number of countries in Africa producing quality renewable energy strategies and promoting related best practices in their national development plans and evidence-based policy-making. | Activities are implemented in partnership with other international institutions and benefit from external funding. UNESCO's contribution often serves as a catalyst to initiatives with a multiplier effect and which respond to Member States' needs.<br><br>In addition to funding support, the implemented activities often produce quality, reusable outputs which include training materials, normative drafting practices and institutional agreements.<br><br>Multiple non-financial contributions have been made to various initiatives and the cooperation with CEN-SAD has resulted in a broader search for external funding opportunities. | The concrete outputs of implemented activities such as learning/teaching materials, lectures, case studies, needs and resources assessment, priorities identified and strategies defined, etc. will likely remain as long-term tools for enhancing national capacities, therefore ensuring the sustainability of the results achieved.<br><br>The achieved development of local competencies will contribute towards ensuring the sustainability of renewable energy programmes and initiatives at national and regional levels.<br><br>Sustainability has been further ensured through the consolidation of cooperation between UNESCO and CEN-SAD thereby promoting the development of long-term energy policies in Sahel-Saharan States. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | including the introduction of a modern internet connection, has been initiated in Benin. Seminars to sensitise end-users in the proper use and maintenance of the installed systems have been organised and initiated to ensure the sustainability of the projects.<br>• Concurrently, further technical support has been provided to the Community of Sahel-Saharan States (CEN-SAD). | | | |
| Initiatives in the fight against desertification encouraged and supported. | • The new UNESCO Teaching Resource Kit for Dryland Countries has been published in 4 languages (Arabic, English, French, Spanish) and has been distributed to the coordinators of UNESCO Associated Schools, in particular in Africa. Thanks to funding provided by the Flemish Government of Belgium, the kit is intended for secondary school teacher and their pupils affected by desertification.<br>• Funded by extra-budgetary resources, the second phase of the "Sustainable Management of Marginal Drylands" (SUMAMAD) Project (2009-2013) now includes also Burkina Faso with the Mare aux Hippopotames Biosphere Reserve. SUMAMAD fosters research on combating desertification and management of dryland resources using an inter-regional approach involving experts from Africa, Arab States, Asia, Latin America and Europe. | • Fluctuations in US Dollar/Euro exchange rates for the 2 extra-budgetary resources necessitated the scaling down of some project activities. | In essence, both desertification projects are cost effective thanks to the committed inputs of all project partners. | Through environmental education (in the case of the Teaching Resource Kit for Dryland Countries) and the sharing of scientific information on drylands management using a South-North-South approach (in the case of SUMAMAD), measures to combat desertification are as widely as possibly spread and will yield long-term results. |
| Policy advice delivered to establish national and regional research systems, especially through support to identified centres of excellence. | • Through the Nairobi Office, support provided to strengthen centres of excellence, scientific networks (such as ANSTI) and organizations in Africa (such as ICSU-Africa) towards the implementation of the AU/NEPAD CPA.<br>• Assistance was provided to promote the Biotechnology Research and Training Centre (BTRC) in Libya as a centre excellence for biotechnology research and training in the region through regional meetings and workshops.<br>• UNESCO was actively involved in organization of the "African Congress on Biotechnology" (Tripoli, Libya – June 2008) to promote links and networking in biotechnology in Africa. The major outcome was issuance of the Tripoli Declaration which set out a number of recommendations for follow-up action to address capacity-building needs of the region and was universally endorsed by all participants. | • The need for support to increase research capacities far exceeds the resources available. Providing strategic support to Universities and research centres may help leverage UNESCO's contributions. | UNESCO funds were leveraged considerably by the contributions of other partners, including donors. | |

## Intersectoral Platforms

### Para. 08006 - Science education

| Regular budget: Activities (rounded to $ thousand) | |
|---|---|
| Planned: $ | Actual: $ |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| Needs, priorities and challenges and good practices in science, technology, engineering and mathematics (STEM) education identified in selected Member States through a comprehensive review of existing data and research on science education. | • Some information on status of science and mathematics education in UNESCO Member States gathered from review of literature and major reports. The global survey instrument is in preparation. Contacts made with JICA project on Strengthening of Science and Mathematics Education in sub-Saharan Africa and the World Bank Institute on its Capacity Development Programme on Science and Mathematics Skills for Innovation. (SC/BES/CBE)<br>• Des rapports de la situation de l éducation scientifique ont été élaboré dans différents pays et régions. Quatre rapports ont été élaborés : Québec, Canada ; Amérique du Sud ; Angleterre et Israël. (ED/BAS/STV)<br>• Need for an Earth Science Education Initiative (ESEI) for Africa highlighted. A project website is under development. (SC/EES/GEO) | • The need for ESEI is unanimously agreed, but the best method to accomplish the goals is less clear. | Services of young scientist engaged as research assistant on consultancy basis. Consultations with field offices being pursued.<br>Interest in supporting ESEI voiced by private industry which is awaiting more details on the approach. | |
| National STEM policies and programmes improved. | • Les conclussions d' une réunion d'experts réalisée a UNESCO sur les problématiques et les défis de l'éducation scientifique et l'éducation mathématique dans l'éducation de base et les recommandations seront la base de l'élaboration de deux documents de politiques éducatives un pour l'éducation scientifique et l'autre pour l'éducation mathématique (Policy paper) Elaboration d'un document pour les enseignants des sciences pour présenter l'analyse de situations de classe de sciences dans différents contextes. (ED/BAS/STV)<br>• Regional Expert Meeting on Enhancing Science Education in the Arab region analyzed needs. ALECSO and UNESCO jointly working on a Policy Paper on Improving Quality of Science Education in the region. (Cairo/ED)<br>• After extensive needs assessment study of science education in schools (primary to secondary level) in Bhutan conducted in 2007/2008, curriculum framework for science and mathematics being developed looking into issues and challenges of an integrated curriculum, | • As UNESCO is not a resident agency in Bhutan, the country's terrain required a large assessment team. This is a new initiative for the Ministry, relying on curriculum from India | Joint cooperation with ALECSO lead to cost sharing, strengthening cooperation and knowledge sharing.<br>Initial work funded wholly by BES/NDL, the curriculum framework development is jointly funded by BES/NDL, BES/SC and ED/NDL | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | purposes of practical work in science education and issues of localisation. (NDL) | dating to 1970. | | |
| Capacity and knowledge base of policy-makers, curriculum planners, teacher trainers, and teachers for quality STEM education improved. | • The Microscience experiments methodology introduced in Iraq; Palestinian Authority; Russian Federation; Mauritius; Bahrain; Tunisia (participants from Burkina Faso, Ivory Coast, Ethiopia, The Gambia, Tanzania, Uganda, Madagascar); in Kyrgyzstan and in Malaysia. Cooperative activities with ED. (SC/BES/BS) | • Microscience Experiments Project improves advocacy and strengthens capacity for practical science experimentation | Technical and financial support of partners and UNESCO important components of project; extrabudgetary funds needed to meet many country requests | |
| | • More than 2,000 students exposed to environmental education with exhibition "The Earth in our hands" (Djibouti, Ethiopia). Raised awareness by celebrating World Science Day (Ethiopia). (Addis Ababa Office) | • Combining intersectoral efforts gave opportunity to be more effective in utilizing budget | Co-financing of the exhibition (CI, ED, and SC) resulted in high value added for each one. | |
| | • Partnership with Nature Publishing Group pursued on *Nature Education*, a free-of-charge online facility of quality science learning resources. (SC/BES/CBE) | | UNESCO to spread information and identify partners in science education. | |
| | • Experiencing Mathematics travelling exhibition organized in Philippines (2008) and Senegal (2009). (SC/BES/CBE) | | Cost-sharing with partners, local organizers and UNESCO | |
| | • Itinerant science exhibition organised by (French) IRD in northern Cameroon and N'Djamena (Tchad). (Yaounde Office) | | Modest co-funding extended impact of initiative to poorest regions | |
| | • Space education workshops for high school teachers, students held in Tanzania and Ecuador (2008) in Ecuador (18 schools) and Peru (22 schools, 2009). Pilot training course for high school teachers in astronomy in Ecuador and Peru. (SC/EES/GEO) | Dialogue with teachers, curriculum planners and Ministry of Education vital to effective actions. Mobility of students, teachers; time constraints. | Cost-sharing arrangement with local organizers or local/national authorities. Voluntary participation of experts from space agencies and institutes. | |
| | • Continuing training programme for high school physics teachers in Morocco assisted. (SC/BES/CBE) | | | |
| | • Greater clarity on distance learning approach for the teaching of S&T achieved through completion of a feasibility study under the project "Comprehensive Approach to S&T Literacy in Asia". (Jakarta Office) | • There are few examples of science and engineering distance education at tertiary level in Southeast Asia, but they provide some guidance on learning strategies, support structures, and lessons learned. | Project is funded by JFIT | |
| | • Support for participation of experts at the International Conference for Science and Mathematics Education in Manila, Philippines; and of Timor Leste education official at Joint RECSAM-ICASE Regional Seminar, The Way Forward for Science and Technology Education: Implications for Policy Makers in Penang, Malaysia. (Jakarta Office) | • Limited financial resources posed constraints to number of experts to be supported, risking that critical mass for sustainable follow-up in the country may not be reached | Cost-sharing mechanism whereby host countries cover local costs and UNESCO covers airfare only | A more systematic science educators exchange program is needed for sustainability, instead of the current practice of ad hoc support on a case-by-case basis. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | • Le « Foro internacional educacion cientifica, innovacion pedagogica y didactica de las ciencias » a été organisé a Quito, Ecuador en mai 2009, avec le bureau UNESCO Quito et le Ministère d Education de l'Ecuador afin de promouvoir une éducation scientifique de qualité dans l'éducation de base. (ED/BAS/STV)<br>• Egyptian and Yemeni participants supported to Eleventh Annual Science and Math Educators Conference (SMEC), Beirut, to promote the development of mathematics and science educators in region. (Cairo/ED)<br>• The ERAIFT school, located at the University of Kinshasa in the Democratic Republic of the Congo, trained 64 African graduates from 12 countries so far in sustainable resource management in tropical forests, using biosphere reserves as demonstration sites. (SC/EES/ECO) | | Many sponsors are involved in this activity | The conference is an annual event organized by the American University in Beirut and supported by UNESCO along with other agencies and donors. |
| National and regional capacities for advanced training and university education in basic sciences strengthened. | • Active learning methodology introduced in Optics and Photonics in workshops for trainers from Kenya, Lesotho, Zambia, Cameroon, Chad, Congo Brazzaville, Gabon, Senegal, Bolivia, Colombia, Guatemala, Mexico, Peru and Venezuela (SC/BES/CBE)<br>• Support given to Asian Physics Education Network (ASPEN) to facilitate participation of Brunei, Cambodia, Malaysia, Nepal and the Philippines at active learning workshop on physics and engineering in Sarawak, Malaysia, 2008. (Jakarta Office)<br>• A total of 7 national/regional training activities in Latin America for school teachers (Argentina, Paraguay, Brazil, Colombia) for the Year of Astronomy; 3 regional graduate schools in astrobiology, evolution and physics, held in Montevideo and Santo Domingo for Year of Astronomy and bi-centennial of Charles Darwin. Total average participation of about 200 graduate students from different countries + 200 school teachers and general public). Astronomy popularization at Barranquilla three-day "Space Adventure" (Aventura Espacial). 6 conferences delivered to audience with average general attendance of 24,000 people from 10 to 17 years old + 2,000 school teachers. (Montevideo Office) | • Links between university faculty, teachers and science policy-makers are strongly encouraged.<br>• Budget constraints limited UNESCO assistance, which limited expectations of impact<br>• Opportunity to focus on science teaching. Mobilization of resources from international cooperation agencies and academic partners. Ensured UNESCO visibility in the field of astronomy and space sciences. | Cost-sharing with partners and local organizers.<br>Co-financing committed by implementing institution (Swinburne University of Technology)<br>UNESCO support to selected national initiatives of high population impact.<br>Participation at the design of the scientific contents while all the activity was supported by the Fundacion Genius (Colombia) | Links with science policy-makers and forming participants' regional networks may facilitate continuing activities.<br>The Iberoamerican Graduate School on Astrobiology to be organized next time by non-profit organization in Colombia with support of NASA, TWAS, etc. An international team of space scientists of LAC origin created (Exploradores Espaciales sin Fronteras) and preparing events with sponsorship of US foundations and others. |
| STEM curricula integrated into | • Thirty-six media training institutions in 30 countries | • Most developing countries, particularly LDCs, | UNESCO provides support through | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| teacher education as well as science journalism into journalism education. | adapted UNESCO's *Model Curricula for Journalism Education* (English, Spanish, Russian and Chinese) with content on science reporting. Four regional training events supported for media professionals on reporting biodiversity and extinction, water, pollution and resource depletion and climate change. For the upcoming MBCC conference (September 2009), AV science-related materials being prepared in cooperation with partners. A regional training of trainers workshop on science and environmental journalism organized November 2008, for media professionals from Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan and Tajikistan. UNESCO supported World Science Journalists Conference, London, June - July 2009. Nearly 600 science journalists participated. UNESCO supported Science Journalism course focusing on climate change for 12 African potential centers of excellence in journalism education, 29 June. (CI/COM)<br><br>• Five TTISSA countries have priorities on science and mathematics teacher education. TTISSA assistance provided to Congo (Brazzaville) for microscience kits and for projects in Mozambique and Angola. Workshops introduced Microscience project in Zambia, DRCongo, Thailand, Bangladesh, the Maldives, Malaysia, and Indonesia. (ED/HED/TED) | desperately need basic science information/data. Partnerships and networks should be developed and strengthened. | collaborative partnerships and through support to professional training centres at national or regional levels<br><br>Purchase of microscience kits for Congo Brazzaville used extrabudgetary funds from Spanish donors. | |
| Ethical values related to the development, implementation and application of science and technology incorporated into teaching and learning. | • The Global Ethics Observatory (GEObs) Database on Ethics Resources launched in October 2008 to reinforce ethics teaching, by making resources available online. Study materials can be accessed and downloaded to help in new teaching programmes, or to strengthen those existing. Regional expert meetings to identify and analyse ethics teaching programmes took place in Morocco (June 2007) and Ivory Coast (December 2008). Over 40 teaching programmes have been described; and being validated for input into GEObs database 4. Through the Ethics Education Programme, the UNESCO Bioethics Core Curriculum, based on principles of the Declaration, officially launched in October 2008. The Core Curriculum was introduced in teaching in the Philippines, also in Saudi Arabia. Potential test sites (universities) being identified in 5 regions, and testing of curriculum will begin Autumn 2009. Feedback has been positive, with some requests for quick implementation. Core curriculum may be ready for global use (after testing and review) in 2011. The Ethics Teacher Training Course was | • The speed and low cost in which this database was set up and populated is due to best practices from the setting up of previous GEObs databases.<br><br>• Introducing bioethics teaching also depends on the availability of qualified and interested teachers; combination with the Ethics Teacher Training Course programme will be necessary.<br><br>• Assessment will be conducted at the end of 2009, once appropriate implementation experience has been gained. | The cost and time of setting up this database has been very low, and further resources were focused on increasing its content, making it a lot more cost-effective than initially projected.<br><br>Study materials for the core curriculum are being included in the GEObs Database on Resources in Ethics, providing a synergistic strategy for both projects and reducing overall costs of implementation.<br><br>With the exception of limited costs for expert meetings and regional staff travel in West Africa, the activity is low cost. Networking effectiveness is enhanced by exploiting synergies with existing | Drawing from best practices of previous GEObs databases, the sixth database has been designed for long term sustainability by reducing time/cost of maintenance and management; allowing flexibility without software modifications in future; a quick and easy translation access module.<br><br>The core curriculum provides a basis for introducing bioethics teaching, especially the principles of the Declaration, in areas where such teaching is unavailable. The core is publicly available for implementation by individual teachers. Study materials are also publicly |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | organized in November 2008 in Belarus, in collaboration with Belarus National Commission and UNESCO Moscow Office. In environmental ethics, with similar focus, two regional initiatives launched: in Russia, a Summer School in July 2008 to facilitate training of specialist teachers, networking of experts and development of teaching materials; in West Africa, a systematic survey of environmental ethics teaching in region, leading to an overview expert meeting in 2008, and in 2009, work towards a network and development of curricula and teaching materials. (SHS/EST) | | non-UNESCO networks and activities. | available online through the GEObs Database on Resources in Ethics.<br><br>The networks and activities derived from the programme are designed to be sustainable, transferable and scalable. It should be possible to maintain them indefinitely with limited (or zero) financial input from UNESCO, except for staff time for follow-up and evaluation. |
| High-quality materials developed for science, mathematics and technology education. | • Active learning in Optics and Photonics Training Manual (English) 2nd ed. and preliminary French edition published. Spanish and Arabic unofficial editions are being developed. (SC/BES/CBE)<br><br>• New teaching and learning materials on microscience practical experiments were developed in Penang (Malaysia) and in Bangkok (Thailand).(SC/BES/BS)<br><br>• Document on "Improving Science Education in the Arab States: Lessons Learnt from Science Education Practices in Four Developed Countries" being printed in both Arabic and English. 500 hundred copies each language (Cairo/ED)<br><br>• "Girls into science" training manual translated and printed in French and Portuguese. "Science education policy making - eleven emerging issues" policy brief now published; *UNESCO Source Book for Science Teaching* to be finalized by BPI. (ED/BAS/STV)<br><br>• "Teaching Resource Kit for Dryland Countries: a creative approach to environmental education" published in French and English. Spanish and Arabic versions published in 2008. The kits to be distributed through the UNESCO Associated School Project Network. (SC/EES/ECO)<br><br>• A teaching kit on great apes has been developed by partnership between UNESCO, French Museum of Natural History and the Coopération française within the Great Apes Survival Project (GRASP). Training for teachers was undertaken in Uganda in 2007 and in Gabon in 2008. (SC/EES/ECO)<br><br>• Media as partners in education for sustainable | • For correctness and reliability, translation was done by scientists and workshop facilitators.<br><br>• Preparation of the Arabic language version of the Teaching Resource Kit will depend on the availability of additional funding. | Non-professional translators familiar with content do good work at fair price. Printed at cost by ICTP. | Materials in national languages increase teachers' and students' ownership of materials and enhance effectiveness.<br><br>The teaching materials provided are expected to have a long-term impact on environmental understanding and education. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | development: A Training and Resource Kit containing training modules on reporting biodiversity and extinction, water, pollution and resource depletion and climate change was developed and distributed in English, French and Russian. (CI/COM) | | | |
| Understanding of and interest in scientific and technological issues, studies and careers increased among students, especially girls. | • Forum for Women Engineers and Girl Scientists in Africa (Forum-WEGSA) created and Officially launched with Office bearers and Chapter Chairs for Eastern and Western African countries. (Nairobi Office)<br>• The waste management seminar held in Qatar University had over 2,000 students in attendance, a number of which joined the green living student group; the majority of those were girls. (Doha Office)<br>• The “International Conference on Girls and Women in science and technology in Africa” est en train d’être préparé avec UNESCO Bamako Cluster Office. Cette réunion aura lieu juillet à Bamako, Mali, suivi d’un workshop “capacity building on teaching of science, mathematics, engineering and technology Education” a Ségou, Mali, juillet 2009. (ED/BAS/STV) | • UNESCO has no option but to give clear terms of reference to the women's networks for the activities that they must undertake to ensure enhancement of science education especially among girls in Africa.<br>• Most of the existing networks are weak financially with few dedicated professionals to do serious work. Involvement of men in the women's networks is crucial.<br>• The iniative behind the seminar aims at raising awareness of waste management, however there are significant cultural barriers towards this becoming an acceptable career which need to be better dealt with if the initiative can affect a more rapid change. | Networks provide a collective responsibility by all the members and therefore reduce the cost of an activity such as a workshop by using internally available expertise at minimal cost.<br>Through the use of partnerships, the seminar was able to synergise a significant portion of the costs and widen the audience. | Although the creation of the Forum is an initiative of UNESCO Regional Bureau for Science and Technology in Africa, the Forum will sustain itself through collection of membership fees (individual, institutional and corporate) and development of project proposals to seek funding. |

## Para. 08009 -Contribution to the implementation of the Mauritius Strategy for the Sustainable Development of Small Island Developing States (SIDS)

| Regular budget: Activities (rounded to $ thousand) | |
|---|---|
| Planned: $ | Actual: $ |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| Interlinked environmental and sociocultural change in SIDS documented and policy frameworks, modalities and tools for sustainable living identified, shared and applied within and across SIDS regions. | • The site which reports on UNESCO-wide activities and events in SIDS (http://www.unesco.org/en/sids) updated and further developed. In a cooperative and complementary manner, new dedicated pages related to activities in SIDS have been created by colleagues in the intangible cultural heritage (http://www.unesco.org/culture/ich/index-test.php?lg=EN&pg=00193 ) and Communication and Information (http://portal.unesco.org/ci/en/ev.php-URL_ID=20752&URL_DO=DO_TOPIC&URL_SECTION=201.html). | • Continuous checking of key sources required to ensure that up to date information on Mauritius follow-up is uploaded – a time consuming task. All sectors contribute inputs. | The website is a valuable information source that is highly cost-effective for Member States to consult. | Webpages dedicated to SIDS have been created by CLT and CI. The aim is to have all sectors creating and updating their own pages reflecting their activities in SIDS. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | (SC/PSD/SCS)<br>• A high level intersectoral UNESCO mission was carried out to the Republic of Mauritius in September 2008. Organised in the framework of the initiative 'Mauritius Ile Durable", its aim was to identify areas of cooperation to advance sustainable development policies and practice. The outcome of the mission was an Aide-memoire that was signed by the Director-General and the Prime Minister on the 14 October 2008 at UNESCO Headquarters. (SC/PSD/SCS). | • Numerous hurdles were overcome in organising this mission and the MOU that required close collaboration across sectors. | | The MOU provides a solid basis for furthering UNESCO action on sustainable development in SIDS. |
| | • The global Sandwatch Project on beach monitoring and sustainable management of coastal environments was further expanded:<br>• New issues of the quarterly e-newsletter The Sandwatcher widely distributed and well received; website (www.sandwatch.org) updated (new section on climate change added); Sandwatch network strengthened with existing partners in 43 countries listed at http://www.sandwatch.ca/status.htm; November 2008, 40 youth and teachers from 10 Caribbean countries took part in a workshop "Youth and Climate Change: Cool Youth Leading the Way" held in Barbados – to create awareness about climate change in their home countries; Sandwatch Climate Change Video Contest for which a dedicated YouTube channel organised (20 entries received), to provide Caribbean Sandwatch groups with the skills (video, journalistic, dramatic, and web-based) to effectively communicate information about climate change to the general public; Sandwatch manual revised with inclusion of a Chapter on climate change, revised and tested by Sandwatch groups from 5 Caribbean countries during a 4-day Sandwatch training workshop in the Bahamas (22-25 June 2009). (SC/PSD/SCS, ED/ASPnet, ESD, in HQ and FO) | • For Sandwatch, networking is a daily activity requiring personalised interaction that represents a major task.<br>• A one-on-one work with 30+ individuals was necessary to explain the details of the competition and how to access YouTube channel. | Sandwatch benefits from volunteer network of schools: students, teachers and principals; youth groups; NGO and community-based organizations.<br>Participants raised their own air fare and in-country costs were borne by the host country. | Sandwatch has become an active network of students, teachers and communities in all SIDS regions, with a momentum of its own, aided by the manual that is available in English, French, Spanish and soon Portuguese. |
| | • Organising a 17-day course on Fish Disease Diagnosis at UNESCO MIRCEN in India targeting research staff from the Marine Research Centre in Maldives. In addition, the training will produce a field guide and laboratory manual on management of fish disease in Maldives. (NDL) | • MRC Maldives is limited in terms of human resources capacity as well as equipment base in the field of marine animal health | Utilization of UNESCO MIRCENs and support from WHO Maldives | MRC being the national institution with a responsibility to undertake marine research |
| Sustainable development issues integrated into educational programmes in SIDS ensuring awareness and a better understanding of the issues at stake. | • Expert Group Meeting on Quality Assurance of Higher Education for Small States and Weak HE system held February 2008, based on case studies, such as Maldives, Seychelles, and the University of West Indies (UWI). The Expert Group made recommendations on strategies that would help improving and harmonizing QA policies, and inspired further work, building on the existing guidelines, to develop Principles of QA in HE for Small States. (ED/HED/RIQ).<br>• Synergies promoted between the Commonwealth of Learning and UNESCO's work with higher education institutions in Small States, | | Taking advantage of Open Educational Resources (OER), VUSSC shares training events and collaborates on the creation of eLearning courses that all can use. | Establish a network on QA in small states with partners (VUSSC, INQAAHE, CARICOM, UCSIS, etc.) |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | including SIDS, in particular the University Consortium of Small Island States (ED/HED/RIQ)<br><br>• Intersectoral approach to ESD developed in the Pacific with strong links to strengthening curriculum relevance in SIDS, increasing cultural content, local/indigenous knowledge and use of Pacific languages and understanding of key environmental issues such as climate change. The approach was endorsed by Pacific Education Ministers in May 2009. Mapping of national ESD activities is underway in Vanuatu, Solomon Islands, Fiji, Niue, RMI and Kiribati (Tonga completed in 2007) and research on curriculum relevance is underway in Fiji, Niue, RMI and Tonga. First materials for the revised "Our Pacific Heritage" ESD resource kit are under development. The first units for production include Kuk Early Agricultural Site WHA (PNG), King Roi Mata's Domain WHA (Vanuatu), Lakalaka (Tonga), Groundwater (with some focus on Niue), Deed of Cession MOW project (Fiji), Pacific Values, Gender Equality and Youth. Trialling of the *Canoe is the People* and associated Learners' Resource pack has commenced in the Cook Islands and New Zealand. (API)<br><br>• *Teachers' Guide for Education for Sustainable Development in the Caribbean* was published in English and Spanish. Manuscripts were prepared by local experts in consultation with teachers, articulating ESD in action. The publication was disseminated widely to all Member and Associate Member States in the Cluster and was made available electronically. (KNG)<br><br>• In the framework of supporting literacy and non-formal education for sustainable development, CONFINTEA VI report prepared by the Maldives and their attendance assured to the regional preparatory conference. Contributed to the national advocacy events organized to celebrate the International Literacy Day. (NDL)<br><br>• New content developed and finalized for the Pacific MAB Discovery kit, and trials of the kit were held with schoolteachers in Samoa. The kit was promoted and distributed. (API) | • Working with countries to engage in the process and integrate new curricula and curriculum materials into educational programs, including building the skills of teachers<br><br>• Non-resident status in the Maldives and scarce resources for support to government has hampered UNESCO's role.<br><br>• Ensuring that updated content is continuously kept relevant across the Pacific. | The Pacific Kit has been produced at very low cost as a joint SC and ED undertaking. | This ESD program has relevance in all PICTs and has been identified as a priority in the national education plans. The approach taken will be one of working closely with countries to ensure uptake and implementation as part of the program, rather than a follow up left to governments to implement |
| Local and indigenous knowledge recognized and reinforced in SIDS education and environmental management, including as a response to climate change. | • Cultural inventories initiated in Vanuatu, Tonga, Fiji and Papua New Guinea. In Fiji, implementation of the Living Human Treasures extrabudgetary project was continued. (API)<br><br>• Since its launching in June 2008, 15 internet postings in English, French and Spanish were emailed to more than 50,000 SIDS and indigenous contacts as part of the 'On the Frontlines of Climate Change: An Internet Forum for Indigenous Peoples, Small Islands and Vulnerable Communities' which provides an online space for small islanders, indigenous peoples and vulnerable communities to | • Challenges include the building of a new cultural data base, and the establishment of an information clearing house function at national level<br><br>• Running a trilingual Forum with regular 3- weekly postings has proven highly demanding on the section's limited human resources. | The cost of cultural mapping has been shared between UNESCO and national budgets<br><br>Greater outreach and global visibility were ensured through UN partnerships. | The forum generates much interest, and funding by the Danish Government ensures its continuation throughout 2009. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | exchange grass-roots experiences and knowledge related to climate change impacts and adaptation. These postings (on issues such as Early Impacts, Adaptation & REDD) generated numerous responses and exchanges among communities in SIDS (Caribbean, Indian Ocean, Pacific) and other parts of the world (Africa, Asia, Europe, Latin America). (SC/PSD/SII)<br>• A set of 7 educational posters, available in English, French and Bislama and addressing critical policy issues for indigenous knowledge, was launched by the Minister of Education and the National Commission of Vanuatu. The launch contributed to a week long workshop on how to bring traditional knowledge into the education system (Port Vila, December 2008). (JAK)<br>• On the ground piloting of the pedagogical Learning Resource Pack for the interactive CD-ROM "The Canoe is the People: Indigenous Navigation in the Pacific", was initiated in select schools in the Cook Islands and Marshall Islands. The aim is to have teachers and curriculum developers test and finalise the Resource Pack that will reinforce indigenous knowledge and language content in Pacific school curricula as a contribution to the DESD. (SC/PSD/SII, API) | • While Vanuatu government policy supports the strengthening of indigenous knowledge in school curricula, available resources are limited and teachers are ill-prepared.<br>• The step-wise introduction of new curriculum materials, in particular indigenous knowledge materials, requires a great investment of time and wide consultation to ensure success. | The posters are proving to be a cost-effective manner to spread the message of the importance of indigenous knowledge to schools across the country. | The poster set provides a template replicable in indigenous languages (eg. Bislama) and serves as a basis for indigenous knowledge guidelines.<br>Once the Resource Pack is fine-tuned for Pacific use, it will then be widely disseminated for uptake in education curricula across Pacific SIDS |
| Knowledge base for assessing water resources, especially in SIDS, enhanced. | Capacities of water resources managers from Mauritius and Seychelles developed for integrated water resources management through a training workshop focusing on water catchment and quality management. The training materials which was developed for this purpose is in English and French for easy use. (DAR) | Small islands often have seasonal problems with water availability and need specialized training for the management of run-off storage. Capacities need to be boosted as many staff do not have the qualifications or experience to manage complex systems. | | It was sustainable most especially because of the smaller numbers that require training. |
| Integrated heritage policies developed for SIDS: representation of heritage from SIDS on the World Heritage List improved, safeguarding measures for intangible cultural heritage developed, and capacities for sustainable management of tangible and intangible heritage enhanced while strengthening international cooperation. | • Cook Islands ratified the 1972 Convention in January 2009. Kiribati, Marshall Islands, Palau and FSM nominated in January 2009. Maldives submitted the tentative list (Feb.2008), and two properties are added on Bahrain's Tentative list (May 2008). Requests from WH Fund for Vanuatu, Seychelles, Dom. Rep, and Fiji.<br>• Review of the WH Pacific 2009 Programme was made and reported to the 33rd Session of World Heritage Committee. The Australian Funds-in-Trust to support the World Heritage activities established in 2008, with a particular priority to projects in the Pacific region. (CLT/WHC)<br>• Youth PATH projects initiated in 12 Caribbean countries. Over 150 young people tained in heritage tourism, entrepreneurship, product development and life skills training. In 2008, YouthPATH Dominica, Grenada, St. Kitts and Nevis, St. Lucia and Barbados accessed funds from GEF, USAID and IDB to support poverty alleviation. (KNG) | | | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | • Current focus on ratification of cultural conventions in the Pacific states. Workshops held with Governments in Fiji and PNG. Workshops held with Governments in Fiji, PNG and Kiribati in 2008. WH listing for PNG, Vanuatu and New Caledonia in July 2008. Further work needed to development management capacity for Pacific World Heritage sites. (API, CLT/WHC)<br><br>• Presentation of the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage to the Ministry of Education and Culture of Timor-Leste. Timor Leste museums supported through (ii) the list of museums established; (ii) The UNESCO/ICOM Museum Studies Training Package 'Running a Museum' and a series of Cultural Heritage Protection Handbook translated into Indonesian language and published for wider dissemination; (iii) Technical assistance and advice provided to the Government of Timor-Leste for the organization of an exhibition on Timorese artefacts to be held at the Museum and Art Gallery of the Northern Territory in Darwin, Australia in November 2008. (JAK)<br><br>• Ten elements of Intangible Cultural Heritage, dances, music, songs, sung speeches, drawings, drumming styles, cultural spaces, manufacturing safeguarded with support of the FO. (Tonga, Vanuatu, Jamaica, Cuba, Dominican Republic, Comoros, Cabo Verde, Haiti, Fiji, Solomon Islands, Papua New Guinea, Vanuatu. New ratification of the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage in Barbados (October 2008), Grenada (January 2009) and Papua New Guinea (September 2008). Governmental and non-gov't experts trained in the safeguarding of heritage at 4 national consultation meetings in Png, Fiji, Tonga and Vanuatu. Information on safeguarding and on the ratification of the 2003 Convention has been exchanged among governmental representatives from all 17 Pacific Member States during 2 subregional meetings (Fiji, 2007 and Tonga, 2008). The capacities of SIDS of the Pacific in safeguarding living heritage are being reinforced by the evaluation of the Festival of Pacific Arts. (CLT/ITH) | • Follow up needs to be provided with pacific countries to complete the ratification and nomination processes<br><br>• Capacity-building and support to SIDS for intangible cultural heritage safeguarding policies.<br><br>• Increasing capacity-building for participation in intergovernmental mechanisms. | The cost effectiveness was very high because with limited means, there was an extensive exchange of information, know-how with the support of FO. | A further series of supporting activities in the Pacific have been planned for the remainder of 2008-2009.<br><br>Three new ratifications of the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage |
| Information literacy and knowledge of sustainable development challenges and practices enhanced. | • Participatory mechanisms and community networks in SIDS strengthened with 5 community media projects from 4 SIDS countries (East Timor, Palau, Trinidad and Tobago, and Vanuatu) supported by IPDC for a total sum of $ 119,800 in the present biennium (2008-09). (CI/COM) | • Media in SIDS countries are challenged with lack of advertising market and hence the sustainability is an issue of concern.<br><br>• Self sustaining low cost community media requires enabling policies from the State. | IPDC can be described as a catalyst with the possibility of making significant change using relatively small amounts of money especially for SIDS. | All project proposals approved by the IPDC must include clear evidence of their sustainability.<br><br>The Programme does not stand alone, but provides continuity and sustains processes of development. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | • Scientific understanding of climate processes enhanced by a total of 40 journalists in the Pacific trained to report on climate change during the 2008 Annual Pacific Climate Change Roundtable and at the 2nd Pacific Media & Climate Change Workshop in Tonga in February 2009. (CI/COM) | | It has been possible to involve important stakeholders such as professional organisations and association and universities from the developed countries | |
| | • Information literacy and knowledge of sustainable development challenges and practices enhanced by Information and media literacy curricula developed and adapted for undergraduate and postgraduate degree programmes, and formulation of Information For All in Maldives. (CI/COM) | | | Developed the capacities of media training institutions. |
| | • Comprehensive set of recommendations based on media development indicators provided to Maldives after carrying out a gap assessment on media development. (CI/COM) | | Programme on Information literacy in Maldives also supported by UNDP | |
| | • Fifteen journalists in post-conflict Timor Leste were trained on peace journalism. (JAK) | • Most journalist participants in Timor Leste did not know about peace journalism, and they realised that they may have contributed to the escalation of conflicts through provocative reporting.<br>• The journalists need further advice and supervision to ensure that their news items put peace building as a main priority. | | Increased amount of news items produced in Timor Leste with the use of peace journalism approach. |
| | • Fostering the development of free and pluralistic media within CCA/UNDAF in Bhutan, Maldives and Sri Lanka; (NDL) | | Fostering the development of free and pluralistic media within CCA / UNDAF in Bhutan, Maldives and Sri Lanka is high: placed within “One UN context” | UNESCO does not have the means to financially contribute to national programmes but has become a resource Organisation especially in the area of Governance. |
| Participatory mechanisms and community networks strengthened, with particular emphasis on youth participation. | • The Youth Visioning for Island Living initiative promoting capacity building and involvement of youth in sustainable development in SIDS, saw the completion of 9 field projects by March 2008, in addition to the 26 projects that were implemented in 2006-2007. A call for proposals focused on youth led projects in raising awareness and education on HIV and AIDS prevention was widely distributed in November 2008 to SIDS countries. In response, more than 90 proposals from the Caribbean, Pacific, Indian Ocean and Africa were received. These have been reviewed and short-listed. After the selection process, support is given to twelve projects (Cuba, Dominican Republic, Fiji (already completed), Grenada, Haiti, Madagascar, Mauritius, Nauru, Samoa, Tonga and Zanzibar), to be implemented by November 2009. (SC/PSD/SII, API, DAR, KNG, HAV, DAK) | • Some islands have very limited access to Internet. Alternative ways were to be found to reach youth in these islands (e.g.: contact intermediate people). | Youth Visioning has used its networks to widely disseminate information. | A number of the project leaders managed to secure local support (financial and in-kind) allowing continuation or repetition of activities beyond UNESCO support. |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | • Pacific regional youth stakeholders consortium has been established including youth organisations, regional (CROP) organisations and UN agencies. Collaborative approaches are in place for developing improved national youth policies, strengthening Pacific youth organisations and projects focused on vulnerable youth.<br>• The UN has also set up a Youth Advisory Panel to provide input to UNDAF and UN agency activities. (API) | • The number of partners/competing interests of the youth consortium is difficult to manage, particularly as all are spread across the pacific and have few opportunities to meet together | Duplication in delivery of activities avoided and strengthening of technical support base should lead to improvements in cost effectiveness | Mechanisms are being put into place to formalise the PacYouth Consortium, including resources, communication activities, to help cementing partnerships, including an MOU between UNESCO and some key partners. |

## Para. 08016 - UNESCO Action to address climate change

| **Regular budget: Activities** (rounded to $ thousand) | |
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| **Planned: $** | **Actual: $** |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| Enhanced scientific understanding of climate processes, drivers, and impacts for improved climate projections, with research and models scaled down to provide regional and subregional projections of climate change impacts. | • The UN Secretary-General entrusted WMO and UNESCO to act as conveners for the preparation of workplans for UN activities in the cross-cutting area of science, assessment, monitoring and early warning. UNESCO and WMO convened meetings with interested UN partners. This cooperation will contribute to and be highlighted at World Climate Conference–3 in Geneva in September 2009, the main expected outcome of which is a Global Framework for Climate Services. This emerging Framework is of high strategic interest to UNESCO and will further strengthen our cooperation with UN partners active on climate issues. UNESCO has also participated actively in the overall UN climate change cooperation efforts lead by the CEB and its HLCP working group on climate change, such as in the preparation of the publication “Acting on Climate Change: The UN System Delivering as One” presented to UNFCCC COP 14. (overall)<br>• The WMO-IOC-ICSU World Climate Research Programme held a Modelling Summit in May 2008 which responded to a strong need for regional climate modelling, and identified serious limitations in | • Enhanced UN cooperation in climate change is a priority area for inter agency cooperation. It requires, however, that sufficient staffing and financial resources are available to allow the organization to effectively participate in the good number of events and processes being organized for this purpose. | The cost-effectiveness of enhanced UN cooperation will likely prove to be substantial in the future as UNESCO catalytic funding can be multiplied through UN partnerships. | The CEB process is firmly |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | simulating regional features due to scientific and computational limitations. It recommended the establishment of a world climate research facility. (IOC)<br>• UNESCO, Ministry of Water Resources, and National Climate Change Group with NDRC of China jointly implemented a Spanish-MDG funded project on China Climate. This project will be one of the major inputs to the Asian regional adaptive plan for Climate Change impact. (Beijing)<br>• IHP organized workshop "Adapting to the impacts of Global Changes on river basins and aquifer systems"; provided technical contribution "Adaptation to climate change: waiting for things to happen or trying to be prepared?" at 5th World Water Forum in Istanbul; and organized Workshop for Training in Water and Climate Risk Management: Managing Hydroclimatic Risk in the Water Sector in Addis Ababa.<br>• G-WADI is promoting access to remotely sensed global data products. These include near real-time rainfall distributions from University of California, Irvine's PERSIANN system, made available through G-WADI to global users. (SC/HYD)<br>• WMO-IOC-ICSU World Climate Research Project (WCRP): The CLIVAR decadal hydrographic surveys planned were approximately 85% complete in early 2008. (IOC)<br>• Support to African Minister's of Environment on climate change and coastal issues in Nairobi, May 2009 related to the collaboration with the African Union Commission and AMCEN in the lead-up to UNFCCC COP-15 in December 2009. (ICTP)<br>• IGCP continues to support paleoclimate research with a climate focus. (SC/EES/GEO)<br>• Thirty-five scientists from Djibouti, Ethiopia and Sudan trained on issues of hydroclimatic risk. (Addis Ababa) | • As a part of the first joint UN project in China, lessons learnt through this project could inform other joint UN projects where UNESCO takes part.<br>• Cooperation with institutes like IRI is beneficial as they can provide cutting edge training to areas that need it most. | In-kind support mobilizes participation of international and national experts.<br>Fluent cooperation between HYD/HQ and SC/ADI allowed for optimization of the funds available. | The training will be used by the majority of the participants in their everyday work. |
| Increased Member State commitment to building and sustaining the global ocean observing systems for climates, including monitoring networks, coordination mechanisms, data | • The sustained ocean observation system continues to provide essential data for improved scientific understanding and the generation of predictions and products concerning the role of the ocean in global climate change and associated societal impacts. The IOC submitted two action pledges to the UNFCCC, for | | | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| systems and the creation of data products and information. | sea level monitoring and prediction through GOOS and for a project on Adaptation to Climate Change: responding to coastline change in its human dimensions in West Africa through Integrated Coastal Area Management. (IOC)<br>• Support to academia-government working group created on coastal erosion in the South Atlantic (Argentina, Brazil, Uruguay) through implementation of Regional Workshop “Coastal Erosion: Tools for its study and management” (Montevideo, Uruguay October 2008). Support to International Workshop on Coastal Management Indicators development towards the creation of a Sub-Regional ICAM Research Centre (Punta del Este, Uruguay, April 2009). Agreement on the objectives for a joint project on Climate Change Adaptation and Integrated Coastal Management. (Montevideo)<br>• GOOS: Coordinated the 100% deployment of the Argo and drifting buoy arrays. Immediate gaps in satellite coverage have been addressed. Reported to the UNFCCC in June 2009 that the implementation of the open ocean module of GOOS is plateauing at 61%. Extended secretariat support provided to governing bodies and technical expert groups under GOOS and the WMO-IOC Joint Technical Commission on Oceanography and Marine Meteorology (JCOMM). (IOC)<br>• GLOSS: Established an IOC Sea Level Station Monitoring web-service with contributions from more than 70 institutions in real-time (314 stations involved compared to 25 stations in December 2007). (IOC)<br>• IODE: IODE network reaches 77 IODE National Coordinators for Data Management and 34 IODE National Coordinators. Between January 2008 and May 2009, 8 training courses in ocean data and information management were organized involving 118 participants (IOC) | | UNESCO technical assistance balanced by national partner financial support (Ministry of Environment). | |
| Strengthening climate monitoring activities at UNESCO sites (biosphere reserves, World Heritage sites and geoparks). | • Ten mountain biosphere reserves (China, Germany, India, Peru, Russian Federation, Spain, Switzerland, USA) collaborate on studies on global climate change impacts using the Global Change in Mountain Regions (GLOCHAMORE) Research Strategy. (SC/EES)<br>• The second phase of the Sustainable Management of Marginal Drylands (SUMAMAD) project was approved | • With the lengthy introduction of the "Additional Programme" scheme for extra-budgetary projects, the mobilization of funding has not yet yielded the desired expectations.<br>• The transition of phase 1 to phase 2 of the SUMAMAD project was effected in a | For global change studies in mountain biosphere reserves, it will be indispensable to mobilize extra-budgetary resources.<br>The forging of a partnership agreement between UNESCO and | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | for funding by the Flemish Government of Belgium in March 2009 to conduct studies in arid lands management involving experts from Belgium, Bolivia, Burkina Faso, China, Egypt, India, Iran, Jordan, Pakistan and Tunisia. (SC/EES) | smooth manner. | UNU-INWEH for the implementation of SUMAMAD will result in an excellent cost/effectiveness ratio. | |
| Increased volume of and access to high-quality climate data and information for Member States, including regular analyses of needs, gaps and barriers. | • Regular analysis of needs and gaps are provided to the governing bodies and sponsors of GOOS as well as UNFCCC.<br>• The IOC participated in a UNFCCC workshop (March 2008) focused on data and observations necessary for impacts, vulnerability, and adaptation to climate change. The outcomes informed the formulation of the second phase of the UNFCCC's work in adaptation to climate change.<br>• GOOS is leading the preparations for the OceanObs'09 conference which will strengthen and enhance the international framework under GCOS and GOOS for sustained world ocean observing and information systems.<br>• IOC Member States in the framework of GOOS and the WCRP maintained development of the open-ocean observing system for climate. Highlights: maintaining Argo profiling float and surface drifter networks at designated numbers, completion of 85% of the repeat hydrographic survey of ocean C, and the successful launch of the Jason-2 satellite, assuring continuity in high-quality sea level measurements from space. (IOC)<br>• Guidelines for the scientifically sound management of groundwater resources in all regions are in preparation and guidelines for the knowledge base and capacities in water resources management in arid and semi-arid zones were strengthened through the G-WADI network. Through Conferences, seminars and training courses, guidelines have been formulated to identify and assess climate change impact on groundwater considering specific regional situations. Workshop on Global Change Impacts and Role of International Sediment Initiative organized. Guidance developed and disseminated for improving monitoring, data collection, processing and storage systems in arid and semi-arid areas. (SC/HYD)<br>• Launching of the GRAPHIC project North Andros case study aiming at assessing the sustainability of groundwater resources in island settings under climatic | • Institutional and Technical local involvement. Case study proposal by Bahamas and ratification by the other | Seed money for the improvement of coastal aquifers within the framework of global change. | Caribbean Island States involvement through IHP National Committees and Focal |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | and human stressors (Nassau, Bahamas, March 2008). (Montevideo)<br><br>• IHP National Committees of Commonwealth of Independent States (CIS) adopted recommendations regarding climate change: to consider the study of climate change and economic impact on hydrological cycle and consequent impact on water resources (also of arid and semi-arid regions) as the regional hydrology top-priority goals. Agreed on needs to improve knowledge base relating the impacts of global change (including climate change) through international conferences, symposia, seminars and meetings in the CIS countries. (Moscow)<br><br>• Coordination of the provision and use of ocean observations data and warning services, coordination for the deployment of Argo buoys provided by NOAA's Atlantic Oceanographic and Meteorological Laboratory in the Atlantic. (Montevideo)<br><br>• UNESCO has been invited to provide expert representation at the Scoping Meeting of the IPCC Fifth Assessment Report (Venice, July 2009) (SC/EES)<br><br>• Initiated development of an international strategy for a decadal survey of large scale circulation and carbon cycle processes of the oceans (2013–2023). The largest global dataset of surface ocean carbon ever assembled was developed to improve studies of ocean uptake of anthropogenic $CO_2$. (IOC) | project member Islands.<br><br>• CIS recent history had negative consequences such as reduction of hydrological networks, reduced quality of observations, abrupt budget cuts for science and international cooperation, near cessation of experimental research and free flow of data, information and publications.<br><br>• Propose possible sub-regional strategies to consolidated shared use of technology | Executors of project/meeting raised significant co-financing to implement it. Thus, UNESCO funds used effectively as seed-money. | Points. |
| International agreement on priorities for implementation of global networks and development of policy-relevant information for observing the impacts of climate variability and change on ocean, freshwater, and terrestrial ecosystems and the biodiversity contained therein. | • The Madrid Declaration on the UNESCO Man and the Biosphere (MAB) Programme recognizes the importance of climate change and includes the target that biosphere reserves should be used as learning sites for research, adaptation, mitigation in relation to climate change.<br><br>• The Twenty-first session of the MAB-Intergovernmental Coordinating Council created a Global Network of Island and Coastal Biosphere Reserves Contributing to Action on Climate Change and Sustainable Development as one of the MAB Programme thematic networks. (SC/EES)<br><br>• Production of policy-relevant information and policy briefs focusing on impacts of climate change in marine and coastal areas through major science meetings including i) the 2nd Ocean in a High $CO_2$ World | | | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | Symposium held in Monaco, October 2008 and ii) the 4th Global Conference on Oceans, Coasts and Islands held in Hanoi, Vietnam (April 2008). Co-organisation of i) the International Symposium on the Effects of Climate Change in the World's Oceans held in Gijón, Spain (May 2008) and; ii) the World Conference on Marine Biodiversity held in Valencia, Spain (November, 2008) resulting in publications, assessments and opportunities to network for the average 350 experts from over 50 countries that attended each of these events. (IOC)<br>• Policy-relevant reports and guidelines published and disseminated on coral reef status, oceanic $CO_2$ measurement, Marine Spatial Planning, GOODS and Harmful Algal Blooms. (IOC) | | | |
| Improved information on the impacts of climate change on World Heritage which will contribute to priority setting for management action. | • A Policy Document on the impacts of Climate Change on World Heritage Properties was published and distributed widely. (CLT/WHC)<br>• *Case Studies on Climate Change and World Heritage* (first published in English in April 2007, 2000 copies reprinted in May 2009). The translation and publication of French and Spanish versions undertaken with the financial assistance of the Flemish and Spanish Funds in Trust. All versions will be available as PDFs for downloading on the WHC website.<br>• Policy document on the impacts of Climate Change on World Heritage Properties (2,000 copies each in English and French published in 2008) Both versions are available as PDFs for downloading on the WHC website.<br>• Patrimonito in Australia: Climate Change and the Great Barrier Reef, episode N° 7 in the Patrimonito's World Heritage Adventures cartoon series (3,000 multilingual CDs produced in May 2009). (CLT/WHC)<br>• Three extrabudgetary project proposals were developed focusing on World Heritage sites. All three proposals have been shortlisted by the donor agencies concerned for further consideration. (CLT/WHC) | | | |
| Improved understanding of climate change impacts and of adaptive capacities with particular emphasis on vulnerable societies, cultures, and ecosystems, including World | • On the Frontlines of Climate Change: An Internet Forum for Indigenous Peoples, Small Islands and Vulnerable Communities' was launched in June 2008 and emailed to more than 50,000 SIDS and indigenous contacts. This Forum and its new website build upon | • The new Forum takes on the challenge of bringing community-level voices into global climate change debates. It also expands the audience to associate small islands, indigenous peoples and other vulnerable | Partnerships established with the Office of the High Commissioner for Human Rights, Secretariats of the Convention on Biological Diversity, and of UN Permanent Forum on | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| Heritage sites, biosphere reserves and geoparks. | and extend the success of Small Islands Voice. It provides an online space for small islanders, indigenous peoples and other vulnerable communities to exchange grass-roots experiences and knowledge related to climate change impacts and adaptation. The Forum runs in English, French and Spanish. (SC/PSD/SII with CI/COM) | communities.* | Indigenous Issues. These help ensure greater outreach and global visibility. | |
| | • An international experts meeting on 'Arctic sustainable development in the face of climate change' was hosted by Prince Albert II in Monaco March 2009. The objective was to comprehensively assess the scientific, social, cultural and educational challenges to be met in order to ensure sustainable development within the region. (SC [PSD, EES and IOC], SHS/EST, CLT [WHC and ITH] and ED [BAS and ESD]) | • Intersectoral work can live up to its promise. | Monaco provided extrabudgetary funding | |
| | • 'Sustainable Development: A Pacific Islands Perspective' prepared by the University of the South Pacific and published in February 2008 contains a section on climate change impacts and adaptation in Pacific island countries. (Apia)* | | | |
| | • A training workshop and an exhibition on "Integrated waste management', organized by the Kwartir Nasional Gerakan Pramuka on the occasion of the ASEAN Jamboree 2008 in Jakarta, Indonesia, in October 2008. The main purpose of the workshop and exhibition was to enhance a better understanding and socialize application and initiative of the 4R principles (Reduce-Reuse-Recycle-Replant) as an initial step to mitigate and adapt to climate change. (Jakarta Office) | • Further capacity-building actions need to be provided and promotion for strengthening collaboration between stakeholders in biodiversity conservation and climate change mitigation and adaptation | The training workshop was cost-effectively implemented through the collaboration with the local, national and SE Asian regional networks. | Dissemination of information on waste management to enhance awareness and participation in natural resources management. |
| | • Programme under development on the "World Network of Biosphere Reserves as an Observatory and Learning Platform for Climate Change Monitoring, Mitigation and Adaptation". Includes 2 components: "UNESCO-MAB's Africa Bio-Carbon (ABC) Initiative" which seeks to develop strategies and models for bio-carbon sequestration projects in Africa; and "The Network of Sites of Excellence for the Sustainable Futures of the Congo Basin". (SC/EES) | | | |
| | • Climate variability and change impacts and adaptation strategies within the Pandjari Biosphere reserve in Benin identified and shared with all stakeholders including decision makers. Implementation ongoing. (Nairobi) | | Implementation of the activity by the MAB national committee is cost effective | |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | • The World Heritage Biodiversity Project in India is being implemented at four WH Sites and includes the component of assessing the impacts of Climate Change on World Heritage sites and developing appropriate management strategy. Training workshop for the Effective Management of Biosphere Reserves for the Indian Biosphere Reserve (BR) managers was organized at Sundarbans Biosphere Reserve, India, November 2008. Experiences and best practices in climate change impacts, biodiversity, etc. were shared during the workshop. (NDL<br>• Within the framework of the EC-funded project WATCH (Water and Global Change) a study on trends in observed low flow and stream flow drought has been carried through the FRIEND research community. HELP convened an international workshop on wetlands which brought together scientists and water managers to discuss the role of wetlands as carbon sinks and to analyze the consequences of climate change on these environments. As a result a "wetland network" has been established. The International Flood Initiative prepared a compendium of major floods around the world focusing on their magnitude, meteorological causes and socio-economic impact. (SC/HYD)<br>• MDGF-1745: Conservation and Sustainable Management of the Natural and Cultural Heritage of the Yasuní Biosphere Reserve (Ecuador) **<br>• MDGF-1751: Local and regional environmental management for the management of natural resources and provision of environmental services (Nicaragua) ** | • Meagre budget allocation is the main constraint. Difficult working terrain | | |
| Increased use of integrated climate change adaptation measures and policies that respond appropriately to environmental, economic, cultural, social, gender, educational, attitudinal and behavioural factors. | • Translating knowledge and observations to West African communities through the GEF-funded project on Adaptation to Climate Change in Coastal Zones launched in November 2008, jointly led by IOC-UNDP and coordinated from Senegal involving 5 neighbouring coastal countries. (IOC)<br>• MDGF-1646: Adaptation to Climate Change to Sustain Jordan's MDG Achievements (Jordan) **<br>• MDGF-1654: the China Climate Change Partnership Framework (China) **<br>• UNESCO Cairo Office participated in the UN League of Arab States sectorial meeting on climate change | UCO together with other UN organization will assist Arab member states through the League | A regional thematic working group (RCM) was established among UN organization in the region to work as | The Arab League is a stable self sustaining institution |

| 34 C/5 Expected Results | Achievement(s) | Challenges/ Lessons Learnt | Cost- Effectiveness | Sustainability |
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| | (Cairo, June 2009) | | One UN | |
| Enhanced education, training, and public awareness of climate change and its impacts, and strategies for adapting to change and mitigating its causes. | • Successful dialogue initiated at Expert Workshop on Mainstreaming Biodiversity into Education (UNESCO March 2008) between UNESCO, as task manager for Chapter 36 of Agenda 21, the Convention on Biological Diversity, the UNFCCC (ref. Article 6 of the UNFCCC), and Ramsar Convention to strengthen and enhance joint Communication, Education and Public Awareness activities. Exchanges of experiences and good practices on climate issues initiated with DESD, UNESCO Associated Schools (ASPnet), and other school networks such CarboSchools Europe, UNESCO Chairs/UNITWIN networks, and in cooperation with other agencies, such as UNEP Ozone Division. *Media as partners in education for sustainable development*, the ESD media training and resource kit, was officially launched at a side-event during 179 EX. The media kit assists media professionals to report on sustainable development issues, and contains a chapter on climate change. (ED/ESD)<br><br>• The global Sandwatch Project on beach monitoring and sustainable management of coastal environments was further expanded in the framework of Education for Sustainable Development and ASPnet, with the website updated and a new section on climate change added. (SC/PSD/SCS with ED/UNP/DESD and ED/BAS/ASP, and KNG, API and DAR Offices)*<br><br>• Evidence of climate variability and change impacts on water resources documented and shared with different stakeholders including decision makers in Benin, Ghana and Cote d'Ivoire, progress report received. (Nairobi)<br><br>• International Conference on Climate Change, Biodiversity and Food Security in South Asian region held in Chandigarh, India November 2008. Creating a Healthy Society with Focus on Climate Change, Environment and Health project involves training workshops to build capacities of master trainers for coping up with the possible impacts of climate change on health and environment. The Technology Mediated Open and Distance Education programme is being implemented in association with CEE and Commonwealth of Learning for developing an online exemplary module on Climate Change for Education for Sustainable Development practitioners. The first | • Inter-agency cooperation is on-going process which takes time<br><br>• Meagre RP budget allocation is the main constraint. | Implementation of the activity with IHP national committee in each country was cost effective. | The ownership of the study by the IHP national committee in the different countries is a good step for sustainability. |

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| | module being developed will focus on issues of climate change and biodiversity. A Climate Change Knowledge Partnership brings together academic research institutions, NGOs, private sector and other stakeholders to contribute to climate change. (NDL)<br><br>• Agreement on the possible establishment of a UNESCO Chair in Climate Change at TERI University, India. TERI University is related to the Energy and Resources Institute, whose Director is the Chair of the IPCCC.<br><br>• The seventh episode of Patrimonito's World Heritage Adventures animated series entitled Climate Change and the Great Barrier Reef produced. The main objective is to further involve young people in reflecting on the issue of climate change and its impact on World Heritage and to raise their awareness of sustainable behaviours. 3,000 DVD copies of this cartoon film episode available. (CLT/WHC, CLT/Heritage Division, ED/ASPnet)<br><br>• Within the framework of the Spanish MDG Funds project on “Climate Change Risk Management in Egypt”, a comprehensive needs-based training activity on Providing Regional Climate Impact Studies is being conducted for more than 15 national experts. The main objective is to build capacities to understand and simulate climate change models and scenarios in addition to run an ensemble model simulations for the Nile basin. The UK Met Office prepared the training material and conducted the training activity. (Cairo) | | The total cost of the training negotiated with the UK-Met Office, while the facilities of the Flood Forecasting Centre of the Ministry of Water Resources and Irrigation were used in conducting the training. | TERI University is a self-sustaining institution. |
| Enhanced education, training and knowledge base for the rational use and applications of renewable energy sources for climate change mitigation. | • Regional consultation carried out in Central Asia to identify collaborative mechanisms among different organizations concerned by renewable energy in the region. Eight lectures on the ECO-Village (energy self-sufficient village) concept were broadcast to 25 universities in South-East Asia. Training seminar for local managers and technicians involved in the decentralised rural electrification using solar energy systems held in Mauritania. Support to the national training workshop organised in Niger on the use and application of renewable energy. Preparatory work carried out to identify priorities and define modalities for the preparation of a national strategy/policy paper for the development of renewable energy in Benin. (SC/BES) | | Most activities are implemented in partnership with other international institutions and through external funding. UNESCO’s contribution often serves as a catalyst to initiatives with multiplier effect. | |

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| | • MDGF-1661: Mainstreaming socio-environmental issues into climate changes strategies in Brazil **<br>• National capacities for the rational and balanced use of alternative sources of energy enhanced in Uruguay and the Caribbean. Support to renewable energy workshops and other activities in the framework of the installation of the Solar Energy board in Uruguay. (More than 20 institutions participating) Support to the elaboration and submission to Congress of the solar energy law in Uruguay. Implementation of two regional workshops on renewable energies in the Caribbean by CARISCIENCE network. (Montevideo)<br>• UNESCO is organizing the Gender and Climate Forum which will be held at World Climate Conference-3 (WCC-3) in September 2009. The Forum, organized in collaboration with FAO, WMO, GCCA (Global Gender and Climate Alliance), UNDP, IUCN and UNEP, will explore the linkages between gender and climate issues in order to inform WCC-3 discussions, and ultimately to lead to the adoption of a gendered approach to the expected results and outcomes of WCC-3. (BSP/GE)<br>• UNESCO collaborated in the production and translation into French 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. (BSP/GE)<br>• UNESCO serves, along with UNDP, as the co-convener of the Interagency Task Force on Gender Equality and Climate Change, whose goal is to enhance the integration of gender equality into the climate change efforts of the UN system, within the respective mandates of involved entities. (BSP/GE)<br>• The Fourth UNESCO Forum on Gender Equality, entitled The Gender Dimensions of Climate Change, was held in June 2008. The Forum focused on the work undertaken by UNESCO and the UN system to address this important issue. (BSP/GE) | • Extend the activity to the Cluster MERCOSUR level<br>• Coordination of stakeholders involved in the process<br>• Establishing South-South synergies (Caribbean-MERCOSUR) | UNESCO financial support and technical assistance balanced by partner support | Sustainability seems assured due to uptake by CARISCIENCE, government, academia, and the private sector. |
| Wider dissemination of knowledge and information on climate change, and to increase awareness of potential mitigation actions and strategies that elicit long-term | • The World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) has prepared a report on the ethical implications of climate change which was approved by the 6th Ordinary Session of (June 2009). The report had previously been discussed | • Need to establish ethics as a core component of climate change response assessment rather than an optional add-on. This can be achieved only by tight articulation of ethical reflection on rights and | High, thanks to mobilization of the independent expert capacities of COMEST members. | Subject to support from Member States, on the basis of the perceived quality and relevance of the ethical work produced, for mainstreaming of ethical |

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| behavioural change, especially through emphasis on environmental ethics, market mechanisms and dissemination of quality information through mass media that targets both women and men. | 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, as well as being widely circulated for public comment. In addition, activities on environmental ethics teaching, including curriculum development, are ongoing in Asia-Pacific, CIS and West Africa. (SHS)<br>• On the basis of the report, the 6th Ordinary Session of COMEST also recommended that UNESCO should develop an ethical framework of principles in relation to climate change. On the basis of this recommendation, the Executive Board will be invited to consider recommending the General Conference to request the Director-General to prepare a study, in cooperation with COMEST, on the advisability of a normative instrument stating ethical principles in relation to climate change. Such a study, if conducted, would offer a focus in 2010-11 for further ethical analysis and development of assessment tools that can take adequate account of extended and poorly understood causal chains across time and space, conflicting bases of responsibility, fundamental uncertainties relating to the knowledge required for effective policies, and the challenge of responsible management of collective risk at the global scale. (SHS)<br>• MDGF-1729: Expanding access to environmental finance - Reversing the decline in forest ecosystem services (Senegal) **<br>• MDGF-1684: Mainstreaming environmental governance: linking local and national action in Bosnia and Herzegovina **<br>• The IP website is being updated to serve as a source of accurate, unbiased climate change information in the areas of UNESCO's mandate. More than reporting on what the IP does, it aims to assist educate Member States and point to useful and reliable external sites. | responsibilities with science and policy issues.<br>Without dedicated staff or time, it is difficult to maintain the site in addition to regular job functions. | No additional cost. | principles into climate change policy design, implementation and evaluation. |

* Activity originating from the Intersectoral Platform Contribution to the implementation of the Mauritius Programme of Action for the Sustainable Development of Small Island Developing States (SIDS), with which the Intersectoral Platform on UNESCO action to address climate change is collaborating.

** UNDP-Spain MDG Achievement Fund concept paper approved under the thematic window of Environment and Climate Change.