JFIT - UNESCO Science Programme on Global Challenges in Asia and the Pacific Region

Programme Objectives and Strategy
2008 - 2013

August, 2008

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1. Introduction

**Sustainable development – a Global Challenge**

Global change is posing enormous challenges for humanity in the 21st Century. The world's population is expected to grow from about 6.2 billion today to over 8 billion by the year 2025. Global energy requirements will continue to increase. Emerging economies in Asia and Latin America are experiencing rapid growth, which is accompanied by rapid increases in resource uses and corresponding environmental problems of air, water, and soil pollution.

The key challenge for the 21st century therefore is ‘Sustainable Development’, which the international community embraced at the 1992 UN Conference on Environment and Development. Sustainable development seeks to reconcile environmental protection and development; it means simply that we should use resources no faster than they can regenerate themselves, and release pollutants to no greater extent than natural resources can assimilate these. The reality of today, however, is that we are far from achieving such balanced global situation. The ecological problems caused by human economic activity are worsening and taking on global dimensions. Climate change, ozone-layer depletion, biodiversity loss, massive water resources destruction and loss of forest cover are just some examples.

Besides these ecological challenges there are also unprecedented challenges ahead in terms of improving the socio-economic conditions of billions of poor people world-wide. It is estimated that:

- more than 1 billion people live in extreme poverty without sufficient food,
- over 1.1 billion people have no access to safe water (655 million in Asia and Pacific - ASPAC; or 62.5%),
- some 2.5 billion people have no appropriate sanitation facilities (1927 million in Asia and Pacific; or 74%),
- more than 5 billion people live near polluted water resources, and
- millions of people, mostly children, die every year from diseases that could be easily cured or prevented.

Since their adoption by all United Nations Member States in 2000, the Millennium declaration and the Millennium Development Goals have become a universal framework for development addressing above problems. The MDGs therefore present a means for developing countries and their development partners to work together in pursuit of a shared future for all. In terms of actual number of people addressed under the MDGs, of all Regions in the World, the MDG challenges are biggest for the ASPAC Region.
The Role of Science and Technology

The role of science and technology in enabling nations to attain sustainable development has been emphasized in international gatherings, for instance, at the World Conference on Science in Budapest in 1999, and in various Ministerial meetings on science and technology. In this respect it should be recognized that Science and Technology also have an important role in helping Nations achieve their specific targets as formulated in the Millennium Development Goals (MDGs). The MDGs, however, will not be achieved by simply a "more of the same" approach. In other words, the MDGs call for creativity and innovation (a key role for Science) and for a boost in capacity via training and education, but also applying innovation there (key role of education). This is reflected in UNESCO’s Medium Term Strategy 2008-2013 (34C/4), which identifies as its second overarching objective "Mobilizing science knowledge and policy for sustainable development." This overarching objective would be attained through a number of strategic programmes, including leveraging scientific knowledge for the benefit of the environment and the management of natural resources, and fostering policies and capacity-building in science, technology and innovation. Although financial and economic markets are becoming more and more interconnected and we like to think in terms of a "global village," our efforts to enshrine environmental protection and development as the common task and responsibility of all countries have just begun to make headway.

"Sustainability has become a 'high table' issue in international affairs, and on many regional, national, and local agendas. Though visions of sustainability vary across regions and circumstances, a broad international agreement has emerged that its goals should be to foster a transition toward development paths that meet human needs while preserving the earth’s life support systems and alleviating hunger and poverty i.e. that integrate the three pillars of environmental, social and economic sustainability. Science and technology are increasingly recognized to be central to both the origins of sustainability challenges, and to the prospects for successfully dealing with them."

The International Council for Science (ICSU)

JFIT – UNESCO Cooperation in Science for Sustainable Development

In recognition of the important role of Science and Technology for sustainable development, the Ministry of Education, Culture, Science and Technology (MEXT) of Japan has provided support via the Japanese Funds-in-Trust (JFIT) to strengthen UNESCO activities in the field of science in Asia and the Pacific Region. Over the past years the funding for this JFIT programme was managed via UNESCO HQ and channeled from there to individual activities in the ASPAC Region. The programme has been successful, and has over the years supported important activities in terms of science capacity building, and in supporting Inter-Governmental Science Programmes, including MAB, IHP, and IOC in the region.

Recently MEXT has introduced some changes that would soon affect this programme. Part of the changes relate to the subject focus (Global Challenges) and to the funding procedures (programme to be administered and coordinated by UNESCO Jakarta
Office. The theme of this joint MEXT-UNESCO programme under the new scheme is: “Scientific Programmes on Global Challenges in Asia and the Pacific Region”. With a view to optimize the benefits and impacts of this programme, and to align it with the UNESCO Medium term strategy, the UNESCO Jakarta Office has developed a medium term Strategic Plan for this new UNESCO-JFIT Programme. This plan describes the Programme Objectives and Strategy for a period of 6 years (2008-2013), and is therefore fully in line with UNESCO’s Medium Term Strategy (34/C4). This document will be revised and updated every two years, in line with the UNESCO Biennial Plans (C5).

2. UNESCO Regional Science Bureau for Asia and the Pacific

The UNESCO Office, Jakarta serves two dimensions: a) as a Cluster Office, representing UNESCO in Brunei Darussalam, Indonesia, Malaysia, the Philippines, and Timor Leste in all UNESCO fields of competence, and b) as a Regional Bureau for Science, covering the Asia and Pacific Region, with programmes in Freshwater, Oceans, Environmental Sciences, Basic and Engineering Sciences, Earth Sciences, Local and Indigenous Knowledge Systems (LINKS), and Small Island Development States (SIDS). The Office has embarked on a strategy, which aims at maximising programme delivery in Cluster countries and in the Region (ASPAC) in terms of effectiveness, impact and visibility. The main elements of this strategy include:

1) The development of coherent and demand driven country based programmes (UCPD), which articulate UNESCO’s role within the country’s Development Plan and within the joint UN Programme (UNDAF). A pioneering UCPD was produced for Indonesia in October 2007. UCPDs for Timor Leste and the Philippines were produced in 2009. For these three countries of the JKT Cluster also ‘UNESCO Education Support Strategy’ (UNESS) documents were produced. The strength of the UCPDs is in the fact that these were developed via joint consultations between the office and the respective Governments, and therefore are fully demand based.

2) The development of strong partnerships in the region. This includes partnerships at National level, with Government, National Commissions, stakeholders, NGOs, donors, and at Regional level, with a.o. SEAMEO, ASEAN, ICSU, AIT, ADB, university networks, and with Category II Centres.

3) Improvement of programme effectiveness, which is crucial considering the limited resources available via the Regular Programme. The aim is to gradually shift the office portfolio from the current large number of smaller and short term activities towards a coherent and consolidated programme with larger initiatives. The four Regional Science flagship programmes are an example of how this could work for the regional science programme. At country level, the UCPDs (and UNDAFs) will guide the development of larger extra-budgetary initiatives. Such larger initiatives provide opportunities for collaboration with partners, including other UN agencies.

The cooperation between MEXT and the UNESCO Office, Jakarta, described in this paper, is positioned in the context of the office’s Regional Science Bureau function, and will be implemented in close collaboration with other UNESCO Field Offices, Category II Centres, Japanese partner institutions, and other institutions and partners in the region.
3. Objectives

**Strategic Objectives**
The Objective of the Japanese Funds-in-Trust for Scientific Programmes on Global Challenges is to support and strengthen UNESCO activities in the field of science in Asia and the Pacific Region in line with UNESCO’s Strategic programme objectives and priorities, by utilizing Japan’s financial and scientific resources.

The overarching Objective defined in UNESCO’s Medium Term Strategy for 2008-2013 for its Major Programme II (Natural Sciences) is to “Mobilize Science Knowledge and Policy for Sustainable Development”. This overarching objective covers three Strategic Programme Objectives:

- To leverage scientific knowledge for the benefit of the environment and the management of natural resources
- To foster policies and capacity-building in science, technology, and innovation
- To contribute to disaster preparedness and mitigation

The following Strategic Programme Objective from Major Programme III (Social and Human Sciences) is also relevant to this JFIT programme:

- To Promote principles, practices and ethical norms relevant for scientific and technological development

**Biennial Priorities**
The Biennial plan (2010 – 2011) of the Natural Sciences Programme defines two Biennial Sectoral Priorities (BSP) and addresses 4 Main Lines of Action (MLA):

**BSP 1**: Policies and capacity-building in science, technology and innovation for sustainable development and poverty eradication.

**BSP 2**: Sustainable management of freshwater, ocean and terrestrial resources, including renewable sources of energy, as well as disaster preparedness and mitigation.

**MLA 1**: Enhancing the leverage of science through an integrated science, technology and innovation (STI) policy

**MLA 2**: Reinforcing capacity-building in the sciences and strengthening science education

**MLA 3**: Promoting the sustainable management and conservation of freshwater, terrestrial resources and biodiversity

**MLA 4**: Strengthening the UNESCO Intergovernmental Oceanographic Commission (IOC) and broadening the scope of its activities for the benefit of all Member States: improving governance and fostering intergovernmental cooperation to manage and protect oceans and coastal zones

Although the main emphasis of this UNESCO – JFIT Science programme for ASPAC is on the Natural Sciences, the programme will also include elements from the Major Programme III, Social and Human Sciences, in order to make better use of their
combined strengths in addressing socio-economic challenges in the region. Major Programme III includes the following MLA, which of direct relevance for programme delivery under this UNESCO-JFIT Programme:

**MLA 4 SHS:** Supporting Member States in developing policies in the ethics of science and technology especially bioethics, and disseminating the existing declarations in the field of bioethics

**Intersectoral Platforms**
In addition to the above MLAs, the programme will also address the following intersectoral Platforms in ASPAC region:

- Science Education (ISP-1: MP I, II and III)
- Education for Sustainable Development (ISP-3: all MPs)
- Fostering ICT-enhanced learning (ISP-5: MP I and V)
- Support to countries in post-conflict and disaster situations (ISP-9: all MPs)
- UNESCO action to address climate change (ISP-11: all MPs)

4. **Programme Strategy**

The strategy of the new UNESCO-JFIT Programme is based on two main elements. Firstly, the programme identifies a limited number of well selected *strategic programme focus* areas, which are in line with the UNESCO Medium Term Strategy, relate to Global Challenges and which are of main relevance to the Asia Pacific Region. The choice of programme focus areas will also be such that it directly contributes to the attainment of internationally agreed development goals, including the Millennium Development Goals (MDGs). Secondly, the strategy identifies a set of optimal *programme delivery mechanisms*, which contribute to maximize programme delivery in terms of effectiveness, impact, and visibility.

**Strategic Programme Focus**
The key Global Challenge for the 21st century is ‘Sustainable Development’. Important sub-components of this, relevant for Asia and Pacific, include amongst others:

- alleviation of poverty, hunger and associated socio-economic divides
- achievement of the MDGs and the subsequent challenge to address the large number of people not yet covered in the 2015 target.
- balance or close cycles of substances (e.g. N, waste management), and cleaner production mechanisms to abate pollution
- stop and reverse the accumulation of greenhouse gas emissions and adjust to the effects of ongoing climate change effects
- develop new energies that are less impacting on the environment
- balance human activities with preservation of water and associated ecosystems
- cope with the increasing number and impacts of natural and human induced disasters, including floods, droughts, tsunami, earthquakes, landslides, storms, volcanic eruptions and desertification.
- Reduce the spread and impact of disease
- Address the increasing urbanization trends and develop livable cities with a substantially reduced city’s footprint on the nearby catchments and ecosystems.
- Ensure the full application of ethical norms and standards in Science and Technology development and implementation
- Enhance human security, especially for vulnerable groups
- Develop institutional and human resource capacity to fully support and sustain a science and technology for sustainable development agenda

The role of science and technology in addressing above challenges is crucial, but in order to optimize the benefits we need to reposition and better plan S&T investments and efforts. The aim would be to link S&T closer to development problems and to bring it closer to people. In other words we need to position S&T to support MDG achievement, and stimulate S&T education and awareness raising by focusing on local MDG challenges such as water, environment, hygiene education and food production in communities.

To address above challenges the UNESCO-JFIT Programme wishes to stimulate and to exploit new scientific developments (incl. ICT, Biotechnology), and contribute to capacity building and training in these areas. The UNESCO-JFIT Programme will not be able to cover all of the issues listed above, as this would result in a dilution of programme efforts. The programme therefore will address selected aspects of the following focal areas:

**Climate Change**
Climate change can no longer be considered as simply an environmental problem, but one that directly affects sustainable development, economic growth, human rights and security in many regions of the world. Under the leadership of the UN, climate change is being put at the top of the international community’s agenda. The recent release of the assessment report by the UNEP-WMO Intergovernmental Panel on Climate Change outlines the strongest case yet for a warming planet influenced largely by human activities. Impacts of climate change are already being felt, often with significant economic consequences, and impacts on water resources, ecosystems, food, coastal zones, small islands, urban areas, human migration and health will grow in time, affecting economic growth and security, particularly in developing countries. Reducing emissions alone will not avoid climate impacts, and climate change will persist for many centuries even after atmospheric greenhouse gas concentrations are stabilized. However, a carefully crafted portfolio of mitigation (including emissions reduction), adaptation, and learning activities can reduce impacts on society. This calls for a science agenda that on the one hand contributes to the understanding of the ocean’s role in climate variability and climate change, development of new (renewable) energies, clean technologies, sustainable ecosystem management, and sustainable cities (mitigation), while on the other hand searching for answers to how to live with extreme events and a changing world due to climate change (adaptation).

**Water, oceans and ecosystems**

This focal area covers two sub-areas as outlined below.

**Water and associated ecosystems**
Studies and monitoring on water and associated ecosystems with a view to understand the processes and mechanisms involved in balancing human activities and preservation of these natural resources under increasing pressures of global change. Special emphasis will be given to hydrology (IHP), biosphere reserves (MAB), and on coastal zones and small islands (CSI), as well as on the conservation of marine biological
diversity. The context of climate change will receive special attention. In that respect the programme might contribute also to the development of a regional multi-partner and multi-disciplinary programme to address issues of sustainable water management ‘in the city of the future’ (referred to as ‘SWITCH-in-Asia’). Besides the programme could contribute to capacity building and networking between biosphere reserves in the Region; this could include studies on best practices for conservation, park management, monitoring of biodiversity loss, and climate change adaptation.

**Sustainability of oceans, coastal zones and its resources**
With the explosive population growth, rapid economic development and significant impact of climate change, the coasts and oceans in Asia and the Pacific are experiencing an unprecedented pressure on its environment and ecosystems. For the human security and sustainable development of the coasts and oceans, the scientific uncertainties, monitoring and forecasting capabilities on ocean processes (including coastal and oceanic natural hazards), and the health of marine ecosystems need to be updated and further developed, aiming to provide more accurate and reliable information for decisions making. Regional cooperation through capacity building in marine scientific knowledge, information management and technology transfer also needs to be further enhanced. In line with the mission of UNESCO and IOC, activities will be focused on observations, data management and research, to produce useful outcomes for stakeholders. This could include the development of regional ocean observing systems, and studies on marine hazards (and its effect on climate change), harmful algal blooms, coastal marine biodiversity and conservation, coral reefs under climate and anthropogenic perturbations, and enhancing capacities to deal with oil spill response and restoration of marine ecosystems.

**Disaster Preparedness**
Natural disasters can not be stopped, but via targeted efforts and by using science and education one can envisage that enormous savings could be achieved in both human lives and material loss. The UNESCO Jakarta Office houses the ‘Jakarta Tsunami Information Centre’, which assumes three roles: Information, training, and a clearing house function. Japan has excellent expertise and institutional capacity in this field, which could be exploited in a regional setting. The International Centre for water Hazards and Risk Management (ICCHARM) is just one of such centres with a Regional mandate in Asia Pacific. Education and Awareness raising for Disaster Preparedness is a strategic area that could benefit from collaboration with the Regional ICSU and with a range of other partners in the region. Cooperation with UNESCO-IOC/WESTPAC on Regional Ocean observing systems could also be developed.

**Biotechnology**
Through capacity building and innovations in biotechnology, substantial contributions can be expected to the achievement of important development challenges as expressed in the MDGs. This can be achieved by applying biotechnology in addressing issues of food security (MDG 1), to reduce child mortality (MDG 4), to combat major diseases including malaria, HIV/AIDS and others (MDG 6), and to provide solutions for environmental sustainability (MDG 7) including the production of biofuels.

**Intersectoral actions**
All of the above areas would require multi-disciplinary approaches, and therefore we believe that the programme would benefit from well defined inter-sectoral actions, such as in science education, research policy and research systems (incl. attention for ethics),
post-conflict and disaster preparedness and risk reduction, and capacity building. The full list of intersectoral platforms that will be addressed via this Programme is presented above (par. 2).

Climate change is listed as one of the inter-sectoral platforms, and is probably the best example of a complex challenge requiring multi-disciplinary, multi-partner, and multi-country approaches.

Many countries in the region are witnessing a declining trend in the university enrollment figures for science and technology related subjects. With the regional and national challenges ahead in terms of sustainable development and in coping with the ever increasing pressures from the syndromes of global change, countries must consider how to build a strong science and technology base, including the human resource capacity to address these challenges. A targeted Science Education programme should aim at children and capture their interest in science and technology, while simultaneously addressing important development related subjects such as the MDGs, climate change, hygiene education, environmental education, and education for disaster preparedness and risk reduction. In this way, useful knowledge on life skills and behavioral change will be disseminated into the communities, while at the same time young people will develop more interest in science and technology. On the medium term this would result in higher enrollment figures for science and technology related studies at universities in the region. At the same time, this approach provides an immediate and effective contribution to the UN Decade on Education for Sustainable Development (DESD), coordinated by UNESCO.

UNESCO, through its programmes in the Social and Human Sciences, seeks to contribute to the international debate on issues relating to the ethics of science and technology, and promote the launching of national policies, laws, regulatory mechanisms and actions to address such issues. Addressing issues of ethics in science and engineering and in teacher education programs will be an invaluable contribution to the development of socially conscious and responsible scientific communities in the Asia and Pacific Region.

The use of ICT in research and in education at all levels needs to be promoted as a way to increase access to quality (educational, training and research) information. E-learning interventions will be considered in the implementation of the programme.

Programme delivery mechanisms

The UNESCO-JFIT programme aims to maximize the effectiveness, impact and visibility of programme delivery by adopting a number of approaches, including:

- aligning activities directly with the UNESCO C4 and C5 plans
- South-South-North collaboration and establishment of strong partnerships
- Programme effectiveness (coordinator, aiming at co-financing modalities, aim at development of larger projects/programmes)
- improving the presentation and visibility of activities and results to donors, member states, and the larger public.

UNESCO’s C4 and C5

UNESCO’s Medium Term Strategy for 2008-2013 (C4) and the Biennial Programme for 2010-2011 (C5) form the basis for this UNESCO-JFIT Science Programme. The UNESCO-JFIT Strategy builds fully on the C4, and covers the same period of 6 years, with revisions scheduled at the start of every new C5 period (January 2010 and January 2012).
**Partnerships and South-South-North collaboration**

The quality of programme delivery under the UNESCO-JFIT programme will be ensured via the development of quality partnerships. The delivery of the UNESCO-JFIT programme will consider the establishment of effective regional partnerships, bridging between strong Japanese institutions and other partners in the wider region. These partnerships will be tailored to the needs and focus of the individual activities. UNESCO will actively contribute to the establishment of such strong partnerships, and will for instance link activities to the water related Category II Regional Centres, operating under the auspices of UNESCO and other areas of Sciences. The Directors of Cat II Regional Water related Centres recently met and agreed to engage in collaborative programmes.

Of particular interest is the ICHARM in Japan, which focuses on water related disasters. In the field of water, cooperation is also envisaged with the Asia Pacific Water Forum and the Japanese Water Forum. Also of interest are the newly established Cat II Regional Centre for Biotechnology in New Delhi, India, the new Cat II Centre on South-South cooperation on Science and Technology for Sustainable Development in Malaysia, and the proposed Regional Centre on Life-long Learning for Sustainable Development in Asia and Pacific, hosted by the Philippines. The involvement of IOC/WESTPAC will be key to successful intersectoral and multidisciplinary programme delivery, addressing issues as disaster preparedness, water, and climate change. Other strategic partners in the region include selected Universities, the Asian Institute of Technology in Bangkok (AIT), the SEAMEO regional Centres, ASEAN, ADB, ICSU and other UN agencies. The workplan of the newly established Regional ICSU office in Kuala Lumpur, shows a good match with priorities defined in this JFIT-UNESCO programme. Disaster preparedness, renewable energies and environmental sustainability are subjects of great interest to both ICSU and UNESCO. The proposed housing of the Regional ICSU office in the new premises of the Cat II South-South Centre in Kuala Lumpur in the Science and Technology Park Malaysia complex, provides good conditions for intensification of collaboration. Projects developed under the JFIT-UNESCO Science programme will also encourage staff exchanges between these partner institutions, as an effective means of capacity building and knowledge exchange.

The cooperation with Japanese universities and institutions will be given particular attention, as the programme aims to mobilize their knowledge and expertise for science and technology delivery in the region. In the past implementation of the JFIT-UNESCO Science programme a wide range of partners from Japan have been included in the various projects. Besides these partners, and where additional expertise and technical skills are needed, also new Japanese institutions may be included; when needed, the Science Committee of the Japan National Commission for UNESCO will be contacted for suggestions.

Another strong element in the regional partnership development is presented by the 14 UNESCO Offices in the Asia and Pacific region, which will be useful to tailor the projects and programmes to the specific needs of corresponding sub-regions and countries. An important activity to be considered under the UNESCO-JFIT programme would be to organize a Regional Workshop on the future direction and priorities for Science and Technology in Asia and Pacific. Such workshop could involve representatives of above mentioned partners, and could help to further fine tune and set the strategic direction of the programme.
Programme effectiveness
In order to achieve optimal effectiveness the programme will consider, wherever possible, to engage in co-financing modalities. Such co-financing could come from either the UNESCO Regular Programme funds, and/or from other donors and partners. One approach that could contribute to effectiveness is to engage in pilot projects and feasibility studies, which could lead to the development of larger donor funded initiatives. The full funding from JFIT of individual activities over extended periods of time will be avoided.

The effectiveness of delivery will also heavily depend on the administration and coordination of the programme. To this end the UNESCO Jakarta Office in close collaboration with UNESCO HQ will ensure optimal planning, reporting, coordination and (sub-)contracting of activities under this programme. It is further recommended that a full time Japanese expert, or a National Programme Officer will be appointed in the UNESCO Jakarta Office for the coordination of the UNESCO-JFIT Programme.

Optimise visibility
The success of the UNESCO-JFIT Programme could be further amplified by improving the visibility of results and by sharing the products and lessons learned. To this end the programme will develop a brochure and a website. The website will provide an overview of ongoing and upcoming programme activities, events, partners, donors and results achieved. All publications, reports and products generated under the programme will duly acknowledge the funding sources for each activity.

Programme Implementation
The programme planning and implementation will be based on a 6-year rolling Strategic Plan (to be adjusted after 2 years, in harmony with the C5), annual workplans, and annual activity reports. Although the present strategic plan presents new directions for the UNESCO-JFIT programme, it was agreed that no abrupt changes will be made to ongoing successful initiatives currently funded under this JFIT programme. As from 2009, however, the programme will foresee changes in terms of developing larger (and possibly longer) and preferably inter-sectoral initiatives along the strategy outlined in this paper.

Considering the size of the budget, a regular ‘call for proposals’, is not considered to be cost-effective, and carries an additional risk of dilution of effort. Project proposals will be prepared by UNESCO Office Jakarta, in its function as the Asia and the Pacific Regional bureau for Science and submitted via ERC/CFS to Japan (see guidelines, item 4). In the preparation of proposals UNESCO Office, Jakarta, will proactively seek inputs from UNESCO field offices in the region, UNESCO/IOC-WESTPAC, beneficiary countries and other partners, including Cat II Regional Centres, ICSU, Universities and Research Centres, and Japanese partners. The overall direction and focus of the programme and its projects will be discussed during Annual Review meetings, with participation of representatives from MEXT, UNESCO Jakarta and UNESCO HQ/ERC, and possibly other partners, if deemed necessary.

This paper outlining the Programme Objectives and Strategy is to be considered as a rolling document, which can be reviewed and if necessary adjusted any time upon mutual agreement between the main programme partners, i.e. MEXT and UNESCO Office, Jakarta. As indicated above, a formal review and update will be done every two years, in line with the UNESCO C5 programme planning cycle.