

ANNEX II

Annex to paragraph 9.2.4 of the general summary

WMO STRATEGY ON EDUCATION AND TRAINING IN HYDROLOGY AND WATER RESOURCES

PART 1 – General concepts and principles

1. Introduction

The purpose of this document is to lay down the guiding principles on which the education and training activities of WMO in the field of hydrology and water resources (HWR) should be based in the future (after 2004).

The document has been prepared by the AWG and the Secretariat, taking into account:

- (a) The experience accumulated during several years of conducting business, mainly in what could be defined as a 'reactive way', namely considering requests for support to education and training activities on a case-by-case basis, without defining an overall conceptual framework;
- (b) The fact that, during recent WMO financial periods, the financial resources available for HWR in general (and for education and training activities in HWR in particular) in WMO have remained practically constant, while the demand from Members has increased proportionally to the rise of the 'water issue' to the top of the international political agenda;
- (c) The recognition that there is a need to optimize the available resources, by concentrating WMO's support, be it directly to the organizers of education and training activities or through fellowships, to those courses which address areas identified by the WMO hydrological community as requiring priority attention, in which WMO has the possibility of influencing the development of curricula, which represent an adequate geographical balance, and which are proven to be cost-effective;
- (d) The need for a greater involvement of CHy in the design, implementation, monitoring and update of the strategy;
- (e) The fact that, within the WMO Secretariat, the Education and Training Department is the key department for the coordination of education and training activities and that the assignment of fellowships is under the responsibility of the Fellowship Committee;
- (f) The relative success of the concept of Regional Meteorological Training Centres in the WMO community;
- (g) The wish expressed by the AWG to move to a more integrated, focused and proactive approach in education and training in HWR;
- (h) The principles contained in the *Guidelines for the Education and Training of Personnel in Meteorology and Operational Hydrology* (WMO-No. 258), *Volume II — Hydrology*;
- (i) The education and training activities in HWR promoted by other agencies within the United Nations system, in particular UNESCO, and other intergovernmental and non-governmental organizations, and the fact that the 10-year period beginning on 1 January 2005 has been proclaimed the United Nations Decade of Education for Sustainable Development (UNGA/RES/57/254).

On the basis of the above, the following mission, vision, main objectives, identification of target groups, and mechanisms to establish priority areas and implementation means of the HWRP activities relating to education and training in hydrology were defined.

2. Mission

To support Members in assessing their education and training needs in HWR and play a catalytic role in satisfying those needs, by providing both financial and technical assistance.

3. Vision

NHSs contributing effectively to integrated water resources management in their countries, by generating, organizing and disseminating adequate information on the state of water resources.

4. Objectives

The objectives are as follows:

- (a) To assist Members in assessing their own education and training needs in HWR;
- (b) To provide adequate education and training to NHS staff;
- (c) To assist Members in developing/updating national curricula in HWR;
- (d) To optimize the use of available resources and mobilize extrabudgetary resources.

5. Identification of target groups

The primary target group is that of technical staff of the Hydrological and Hydrometeorological Services of WMO Members, including technicians, professionals and managers. The secondary group is that of academic and government agencies involved in hydrology and water resources. While it is fashionable to give local communities, and civil society in general a high level of priority, it has to be recognized that they will generally be outside the scope of this strategy, given the specialized nature of WMO. Particular attention will be given to the needs of NMHSs from developing countries, as they are likely to benefit the most from WMO's assistance.

6. Prioritization of subjects

Education and training activities supported by WMO should in principle be demand driven. The requirements will be determined on the basis of inputs from Members, RA WGHs, CHy and its subsidiary bodies, and surveys undertaken by the WMO Secretariat. The results will be analysed and prioritized by CHy at its regular sessions and presented to the following Executive Council for its endorsement. Prioritization will thus be valid for a four-year period. Permanent Representatives with WMO, their hydrological advisers, members of CHy and training centres which have maintained relationships with WMO will be informed of the priority areas selected for each period.

This means that support given to course organizers as well as the approval of fellowships will be focused on those areas determined as indicated above. There would still be room to support requests on a case-to-case basis, but this should be limited.

Types of education and training activities

In order to maximize the extent of the HWRP activities relating to education and training in hydrology, emphasis will be put on activities of a short duration, with low costs and great potential impact with regard to the number of beneficiaries, without compromising on quality. Given their proven value, activities such as training the trainers and roving seminars will be pursued principally, with regional courses being used only when it is proven to be the most practical solution. Certificates will be issued which recognize the results, the level of the course and hours of attendance at lectures.

Conferences/seminars/workshops on specific issues which are not covered by existing training centres will be organized, preferably through co-sponsorship arrangements.

Particular attention will be paid to distance learning techniques and the application of the latest information technologies available, such as Internet-based presentation software and knowledge management systems, in view of the evident advantages of their successful application. To this end, existing, pioneering experiences already supported by WMO will be evaluated in order to decide if, when and where they are the preferred alternative.

When there is widespread interest in a particular technical topic, the drawing-up of new manuals and guidelines, and the updating of existing ones, will be considered, following the examples of those issued in the past, such as those on stream gauging, PMP, and water quality monitoring.

Another important field of action will be encouraging Members to use the *Guidelines for the Education and Training of Personnel in Meteorology and Operational Hydrology (WMO-No. 258) Volume II — Hydrology*, since these *Guidelines* will contribute to the development of national curricula and syllabuses under an international framework, both at the professional and technician level.

Although public awareness and community training activities are recognized as being very important, they are not considered in this Strategy since it is more convenient to separate these areas from those dedicated to the education and training of NMHS staff.

Means of supporting the activities

The support provided by WMO to education and training activities in HWR can take one of the following forms:

Education and Training Programme

- (a) *Support to training events under HWRP*: In view of the available resources, only a handful of international courses will receive support under this modality. Important criteria to determine whether a course qualifies for direct support are: (i) WMO should have the possibility of influencing the development of curricula; (ii) adequate geographical balance, even if only at the regional level, should be ensured; and (iii) cost-effectiveness.
- (b) *Fellowships*: These have to be requested through the Permanent Representative of the candidate's country with WMO. Preference should be given to courses on priority subject areas.

Hydrology and Water Resources Programme

- (a) *Enabling support (partial)*: Under this modality, course organizers request support from WMO in a range of ways, from the simple use of WMO's logo to a limited (normally less than US\$5 000) financial contribution. Decisions, to be made on a case-by-case basis, should be based on the priority of the subject areas treated, the tradition of cooperation between the organizers and WMO, the reputation of the organizing institution, the number and geographical representation of international participants, and the number of participants from developing countries.
- (b) *Support as part of regular activities of the HWRP*: Various components of the regular HWRP of WMO, such as WHYCOS, HOMS and WCP-Water, regularly organize training activities on subjects related to their work. These training activities are funded by the regular budget assigned to each programme, but will in future be organized according to the guiding principles contained in this Strategy. In the first two cases above, from a budgetary aspect, the financial resources are under the Education and Training Programme (ETRP). The difference between the two is that, while the support to training events under HWRP is earmarked as such, the support to fellowships is part of the total budget of WMO for fellowships. As an indication, in the decade 1990-1999, approximately 11 per cent of all WMO fellowships were awarded in the field of HWR. The third modality is usually financed through a budget assigned to the HWRP, and the requests normally exceed by far the resources available.

7. Promoting partnerships

In addition to the above, particular emphasis will be placed on developing partnerships with academic institutions active in the areas of interest to WMO in HWR, for instance, promoting exchanges of professoriate staff, co-sponsorship by institutions of the developed world of specific international courses organized by developing countries' institutions, and technical assistance in the preparation of syllabuses and course programmes.

Particular attention will be given to cooperation with UNESCO in general and with the UNESCOIHE Institute for Water Education in particular, in order to take advantage of its high academic level and excellent facilities, and of the fact that it is under the umbrella of WMO's traditional partner of in education and training activities in HWR.

8. Mechanism of implementation

Given that ETRP has the leading role in coordinating education and training activities in the areas of interest to WMO, and that this Programme has well-established mechanisms and procedures, it would seem to be convenient to design and work through similar mechanisms and procedures. It is therefore recommended that the twelfth session of the Commission for Hydrology adopt a recommendation that the Executive Council approve the concept of Regional Training Centres, with criteria based on those approved for RMTCs, and designation procedures similar to those customary for RMTCs. (see Recommendation 3 (CHy-XII).

Evaluation procedures for all courses in HWR supported by WMO will continue, using the customary mechanisms designed for this purpose by the ETRP, and implementing additional ones, if needed.

While Part 1 of this Strategy contains general principles and will barely be reviewed in the future, Part 2 will concentrate on the next intersessional period, detailing the international courses and priority areas to be supported, and will be reviewed by each session of CHy. In view of the fact that the fourteenth financial period of WMO (2004-2007) has already begun, that the programme and budget for direct support to courses have already been approved by Fourteenth Congress, and that the process of identification of requirements has not yet been formally initiated, it is proposed that the twelfth session of the Commission for Hydrology adopt the outline for Part 2 and delegate to the AWG the preparation of the definitive Part 2 that will, in this case, cover the 2006-2007 biennium.

WMO STRATEGY ON EDUCATION AND TRAINING IN HYDROLOGY AND WATER RESOURCES**PART 2 – Priorities for the 2005-2008 period****Outline*****Background material***

1. List of priority areas by WMO Region, as identified by the Working Groups on Hydrology of the regional associations.
2. List of priority areas identified by CHy and its subsidiary bodies.
3. List of priority areas identified by ad hoc studies and questionnaires.

Summary of prioritized demands

4. Final list of priority areas, resulting from the analysis by CHy of the background material, with an indication of relative priority, using three-tier categorization (high, medium, low).

Available offer

5. For each of the priority areas in 4 above, identify existing education and training activities, indicating whether they have been sponsored or co-sponsored by WMO in the past.

Proposals to fill the main gaps

6. At least for each of the high priority areas, but preferably for all those without a corresponding education and training offer, prepare a two-page proposal indicating:
 - (a) Justification of the activity proposed;
 - (b) Intended audience;
 - (c) Programme of studies;
 - (d) Proposed geographical location, if any;
 - (e) Estimation of organizing costs.

These proposals could be prepared by experts designated by the Commission for this purpose, by the Secretariat, or by consultants. They should be prepared in such a format as to be marketable to financing institutions.

Performance-measuring mechanism

7. Based on the objectives detailed in Part 1, some quantitative goals and performance indicators for the relevant four-year period will be established and monitored.