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Submitted by: Mr T. Sutherland, Co-chairman of Committee B

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HYDROLOGY AND WATER RESOURCES PROGRAMME (HWRP)

Report to Plenary on item 3.5

REFERENCES:

Cg-XV/Doc. 3.5 and B/WP. 3.5

APPENDICES:

A. Draft text for inclusion in the general summary on item 3.5
B. Draft Resolution 3.5/1 (Cg-XV) – Hydrology and Water Resources Programme
C. Draft Resolution 3.5/2 (Cg-XV) – Strategy for the Enhancement of Cooperation between National Meteorological and Hydrological Services for Improved Flood Forecasting
D. Draft Resolution 3.5/3 (Cg-XV) – Support to the African Initiatives on Water

ACTION PROPOSED:

It is recommended that the draft text in Appendix A be included in the general summary of the work of the session and the draft resolutions in Appendices A, B, C and D be adopted.

DRAFT TEXT FOR INCLUSION IN THE GENERAL SUMMARY OF Cg-XV

3.5 HYDROLOGY AND WATER RESOURCES PROGRAMME (HWRP) *(agenda item 3.5)*

3.5.0 Hydrology and Water Resources Programme; the report of the president of the Commission for Hydrology *(agenda item 3.5.0)*

3.5.0.1 Congress reviewed the Hydrology and Water Resources Programme (HWRP) on the basis of the report presented jointly by the president of the Commission for Hydrology (CHy) and the Secretary-General, which recorded, amongst other things, the action taken by CHy and the Secretariat in response to Resolutions 17 (Cg-XIV) — Hydrology and Water Resources Programme (*see reference 1)*, 19 (Cg-XII) — Strategy and Action Plan for monitoring and assessing water resources in Africa, 20 (Cg-XII) — World Hydrological Observing System (WHYCOS), and 21 (Cg-XII) — Global Runoff Data Centre (GRDC) (*see reference 6)*.

Activities of the Commission for Hydrology

3.5.0.2 Congress noted that, in an effort to optimize resources, CHy-XII had established only one Working Group, the Advisory Working Group (AWG), composed of nine members with five of them responsible for leading the activities of the Open Panels of CHy Experts (OPACHEs). Recognizing that an assessment of the advantages and disadvantages of this new structure will only be undertaken by CHy-XIII, scheduled for the second half of 2008, Congress noted that the president of CHy believes that the new structure placed increased importance on the selection of members of the AWG and their capabilities and availability to lead and undertake the work of the Commission. Congress also noted that the use of Open Panel groups, while enabling greater involvement of a wide range of experts, placed an additional communication and management load on both the AWG members and the Secretariat. While the continuing issue of members of CHy having the capacity and time to contribute to the work of the Commission remains, the level of contribution appears to have increased over recent intersessional periods.

3.5.0.3 The Congress expressed its satisfaction for the work that was being carried out by CHy in relation to the assessment of the performance of flow measurement instruments and techniques, especially involving new technological equipment, as this would be of great assistance to Members modernizing their hydrological networks. Congress was pleased to learn about the offer of Brazil to host and support an International Conference on Hydrometry in 2008 in the city of Manaus, and noted the interest of the International Association of Hydrological Sciences (IAHS) in participating in its organization.

3.5.0.4 Congress learned with interest of the efforts made in the update and compilation of relevant guidance material, such as the *Guide to Hydrological Practices*, the *Technical Regulations Vol III – Hydrology*, the *Manuals on Stream Gauging, Flood Forecasting and Warning, Water Resources Assessment, Design Flood Estimation* and on *Low-flow Estimation and Prediction*. It encouraged the president of CHy to ensure that the Commission, with the assistance of the Secretariat, finalize these various Manuals for adoption by CHy-XIII in 2008. Congress noted the request of some Members to have hydrological guidance material available in other languages and requested the Commission for Hydrology to investigate possible options.

3.5.0.5 Congress noted the publication of the *Technical Regulations Vol III - Hydrology* in English and considered it an important document in the framework of the WMO's Quality Management Framework and recommended that the new version should be translated into all the WMO official languages at the same time to promote the use of a coherent set of technical regulations in particular in transboundary basins.

3.5.0.6 Congress noted that the Weather, Climate, Water subtitle had placed additional responsibility on the hydrological community within WMO, but at the same time had provided a challenging opportunity. It recognized that since many of the Millennium Development Goals (MDGs) are closely related to the effective management of water resources in countries, the water sector constitutes one of the major clients of WMO to fulfil its vision to contribute towards achieving the MDGs. It therefore urged Members to ensure that while nominating members to the CHy, wider representation from all the water management sectors should be ensured. The Congress also advised the Permanent Representatives that they should appoint Hydrological Advisors who could coordinate with the various institutions involved in water sector in their countries.

3.5.0.7 Congress recognized that, given the complexity of the water sector, the Working Groups for Hydrology, established by all the Regional Associations, form one of the strong mechanisms to project the specific needs of the Regions. It noted that, over the years the reduced financial resources they are usually assigned have hampered the functioning of these Working Groups to a great extent. In some of the Regions these Groups are not even able to have a full meeting involving all the countries during an intersessional period. It recognized the need to strengthen this mechanism and allocate reasonable resources for the activities of these Working Groups.

3.5.0.8 In this respect, Congress was pleased to note that CHy had taken concrete steps to streamline the regional needs expressed through these WGs into the HWRP by, for example, inviting the Chairs of the WGsH to form part of the core team that would develop, along with the AWG, the proposed activities and programme for the next financial period. It also supported attempts by the AWG to more closely align the activities of these Groups with the Commission.

3.5.0.9 Congress noted with some concern that although the requests for VCP support for projects on HWR had increased in the last intersessional period, only two such projects had actually been undertaken. It encouraged Members to provide greater support to HWR projects, specially those aimed at increasing national capacities.

3.5.0.10 In response to the president of CHy's call for guidance on the general direction and future priority themes of HWRP to be considered at the next session of the Commission in 2008, the Congress expressed its satisfaction at the direction given by CHy to the HWRP. However, Congress proposed that the Commission should continue promoting a strategic process on the future developments in the field of hydrology, in view of new and emerging technologies in particular, including the need for education and training of hydrological presonnel. It endorsed the decision that the future work plan of CHy/HWRP would be fully aligned with the WMO Strategic Plan.

3.5.0.11 Congress emphasized the continuing importance of meteorological and hydrological services working closer together. In this regard, it recommended that African Ministers responsible for water be invited to the planned meeting of African Ministers responsible for meteorological services.

3.5.1 Programme on Basic Systems in Hydrology *(agenda item 3.5.1)*

3.5.1.1 Congress noted that CHy had been actively involved in the Inter-Commissions Task Team (ICTT) on the WMO's Quality Management Framework (QMF) and that its AWG was working on a concept document to be discussed by CHy-XIII. It agreed with the approach adopted in principle by CHy that considered that the QMF should concentrate in the activities of the NHSs and therefore in addition to the improvement of the administrative and managerial aspects included in a quality management system, emphasis should also be given to the development of standards and recommended practices.

3.5.1.2 Congress noted that the revised version of the Hydrological Information Referral Service (INFOHYDRO) is now being compiled and appreciated that the compiled information is available on the WMO Website. It urged the Secretariat and CHy to expedite completion of the update and called upon Members to provide the required information.

3.5.1.3 Congress noted that during the last intersessional period a comprehensive report on the World Hydrological Cycle Observing System (WHYCOS) and the status of HYCOS components had been submitted to EC-LVII, which found it satisfactory. It also noted that the WHYCOS guidelines on the development, implementation and governance had been prepared and that a special web page for the WHYCOS had been developed and launched.

3.5.1.4 Congress noted that the demand-driven approach manifested in the active involvement of regional partners such as the Niger Basin Authority (NBA), the Volta Basin Authority, the Mekong River Commission (MRC), the South Pacific Applied Geoscience Commission (SOPAC), and a greater interaction with different technical and financial partners have borne fruit in getting financial resources to the countries of approximately 15 million Euros for Niger-HYCOS, Volta-HYCOS, SADC-HYCOS, Mekong-HYCOS and Pacific-HYCOS components, which are now under implementation. Through the implementation of these HYCOS components 42 Members (among them 20 LDCs) will have their capacities in hydrological observations and information generation enhanced.

3.5.1.5 Congress appreciated the efforts made by the Secretariat in raising extrabudgetary resources for the implementation of various HYCOS components. It also noted the progress in the development of Carib-HYCOS, Aral-HYCOS and requested the Secretariat to make the necessary financial arrangements, in collaboration with the project partners, for their urgent implementation. It noted the efforts made in raising funds for the implementation of IGAD and other HYCOS components. Congress also noted the interest expressed by Members in development of Nile-HYCOS, South-East Asia (SEA-HYCOS) and Amazon-HYCOS. Congress requested Member States and regional institutions to collaborate with the Secretariat to secure funds required for the implementation of HYCOS projects.

3.5.1.6 Congress placed on record its appreciation to the Government of France (through the Agence Française de Développement (AFD)), Government of The Netherlands, the United States Agency for International Development (USAID), European Union (EU), and African Water Facility (AWF) for financial support to the various HYCOS components. It also appreciated the active involvement of technical and other partners such as the Institut de Recherche pour le Développement of France (IRD), the Niger Basin Authority (NBA), the International Institute for Water and Environmental Engineering (Groupe EIER-ETSHER), the Department of Water Affairs and Forestry of South Africa (DWAF), the International Institute for Joint Information, Science and Earth Observation of the Netherlands (ITC) and EUMETSAT in implementation of these components.

3.5.1.7 Congress requested the Secretariat to renew its efforts to secure funding for other HYCOS components and also urged the Members to work closely with the regional institutions to present new regional/ basin HYCOS components before the financial partners. Congress decided to keep Resolution 20 (Cg-XII) in force.

3.5.2 Programme on Forecasting and Applications in Hydrology *(agenda item 3.5.2)*

3.5.2.1 Congress noted that the activities undertaken in the Flood Forecasting Initiative have the potential to go a long way in fulfilling the objectives of WMO by improving the protection of life and property and by enhancing close cooperation between the NHS and NMS in countries. It noted that the eight regional workshops organized under it had gathered together meteorologists and hydrologists working in the countries to discuss and address flood forecasting issues jointly. It took note of the Strategy and Action Plan prepared by the Synthesis Conference and adopted

Resolution 3.5/2 (Cg-XV) — Strategy and Action Plan for the Enhancement of Cooperation between National Meteorological and Hydrological Services for Improved Flood Forecasting.

3.5.2.2 Congress welcomed the joint proposal by CHy and the Commission for Basic Systems (CBS) for the implementation of a Flash Flood Guidance System with global coverage as an excellent example of the demonstration projects envisaged under the above Strategy and Action Plan. Congress appreciated the collaboration with the U.S. National Weather Service, the Hydrologic Research Center and the U.S. Agency for International Development/Office of Foreign Disaster Assistance in this project, building upon the successful experiences of the Central America Flash Flood Guidance System (CAFFG).

3.5.2.3 Congress also appreciated the financial support provided by the Government of Spain for organizing two regional workshops and supporting the activities of the Ibero-American network for the monitoring and forecasting of hydrometeorological phenomena (PROHIMET). In this respect, Congress was informed on the advance of the two PROHIMET demonstration projects supported by Spain and WMO in Colombia and Uruguay. The latter, which has its focus on improving a flooding early warning system for the city of Durazno, had assumed special relevance, because a major flooding event had occurred during the session of Congress. The meeting recognized the importance of this type of cooperation and the need that it be maintained and extended to other regions. It also appreciated the financial support provided by NOAA and the Government of Canada in organizing the International Workshop on Flash Flood Forecasting.

3.5.2.4 Congress appreciated the activities under the Associated Programme on Flood Management (APFM) which had helped achieve the objective of disaster risk reduction and provided technical support to countries in flood management policy formulation. It welcomed the establishment of the Help Desk services as a tool for providing support on flood management policy issues in collaboration with other partners. Congress appreciated the financial support provided by the Governments of Japan and the Netherlands for the implementation of the programme.

3.5.2.5 Congress noted that through the Flood Forecasting Initiative, the APFM and other regular activities, WMO is providing excellent input to the International Flood Initiative developed jointly with UNESCO, UNU, ISDR, IAHS, IAHR and other interested organizations.

3.5.2.6 Congress was pleased to note that WCP-Water activities are helping to bridge the gap between the climate prediction community and the water managers. Congress also noted that the activities of WCP-Water had been more closely aligned to those of CHy and that one of the CHy AWG members had been assigned to liaise with WCP-Water and its activities. It urged the Secretariat, CHy and the Commission for Climatology (CCl) to ensure cooperation with relevant programmes and organizations addressing in particular impacts of climate variability and change on water resources and hydrological extremes including droughts.

3.5.2.7 Congress noted the close collaboration between the Integrated Global Water Cycle Observation (IGWCO) theme of the Integrated Global Observing Strategy (IGOS) and the Global Terrestrial Network – Hydrology (GTN-H), which are contributing to the Group on Earth Observations (GEO) activities in the Water Task. It also noted the development of the International Groundwater Resources Assessment Centre (IGRAC), the continued activities of GRDC, and appreciated the continued support of the Governments of the Netherlands and Germany. It decided to keep Resolution 21 (Cg-XII) – Global Runoff Data Centre in force.

3.5.2.8 Congress welcomed the establishment of the International Data Centre on the Hydrology of Lakes and Reservoirs (HYDROLARE) hosted by ROSHYDROMET and noted the establishment of the International Steering Committee which was scheduled to meet in June 2007.

3.5.3 Programme on Sustainable Development of Water Resources *(agenda item 3.5.3)*

3.5.3.1 Congress noted that, in the framework of the simplification of the structure of the HWRP in the next financial period, CHy had proposed to suppress this programme and redistribute its activities to other sub-programmes of HWRP.

3.5.4 Programme on Capacity Building in Hydrology and Water Resources *(agenda item 3.5.4)*

3.5.4.1 Congress was pleased to note the active implementation of the WMO Strategy on Education and Training in HWR, in particular the efforts made at responding to the actual demands of the NHSs, and encouraged CHy to continue looking for innovative methods to ensure the optimization of the resources available for these activities. In particular, it recommended pursuing the exploration of possibilities offered by computer-aided distance learning, roving seminars and the "train the trainers" approach.

3.5.4.2 Congress appreciated the offers made by Egypt, Indonesia and Poland to establish WMO Regional Training Centres with a special emphasis in hydrology and water resources in their countries. These Centres would cater for short training courses and higher education needs of, respectively, countries of RA I, RA V and RA VI, although they were prepared to consider also supporting other Regions. Congress welcomed the offer from Poland to co-finance participation of students from developing countries in their courses.

3.5.4.3 Congress also appreciated the general approach that, without forgetting the core business of NHSs (courses on maintenance of automatic stations, rating curves, hydrometry and topography), tried to encompass more general topics (management techniques described in the Guidelines on the Role, Operation and Management of NHSs, courses on Integrated Flood Management (IFM), Integrated Water Resources Management (IWRM) and Water Affairs) to respond to the new responsibilities assigned to NMHSs in recent times by their Governments.

3.5.4.4 Congress encouraged CHy and the Secretariat to continue with this approach and requested Members to offer all their support to this fundamental sub-programme. More specific recommendations are contained in Resolution 3.5/1 (Cg-XV).

3.5.5 Programme on Water-related Issues *(agenda item 3.5.5)*

3.5.5.1 Congress noted the close cooperation WMO had established through the HWRP with UN-Water and various other international governmental and non-governmental agencies and encouraged the Secretary-General to develop it further and urged improved coordination between WMO HWRP and UNESCO International Hydrology Programme (IHP). It requested the president of CHy to seek improved working mechanisms and include an assessment of the level of coordination in his annual report to EC.

3.5.5.2 In order to consolidate the significant results achieved during the last intersessional period in support of New Partnership for Development (NEPAD) and African Ministerial Council on Water (AMCOW), Congress decided to replace Resolution 19 (Cg-XII) by Resolution 3.5/3 (Cg-XV) - Support to the African Initiatives on Water.

DRAFT RESOLUTION

Res. 3.5/1 (Cg-XV) — HYDROLOGY AND WATER RESOURCES PROGRAMME

THE CONGRESS

Noting:

(1) Resolution 17 (Cg-XIV) — Hydrology and Water Resources Programme,

(2) Resolution 20 (Cg-XII) — World Hydrological Cycle Observing System (WHYCOS),

(3) Resolution 21 (Cg-XII) — Global Runoff Data Centre (GRDC),

(4) Resolution 25 (Cg-XIII) — Exchange of Hydrological Data and Products,

(5) Resolution 4 (EC-LVII) — Report of the twelfth session of the Commission for Hydrology,

(6) The report of the president of the Commission for Hydrology to Cg-XV,

(7) The statement of the Ministerial Declaration of the Fourth World Water Forum that recognizes "the importance of domestic and international policies that foster and assist building capacities and cooperation at all levels to mitigate water-related disasters including prevention, preparedness, risk assessment, community awareness, resilience and response",

Noting further:

(1) That the United Nations General Assembly has proclaimed the period 2005-2015 as International Decade for Action "Water for Life" starting 22 March 2005,

(2) That the increasing scarcity, quality problems and misuse of freshwater pose a serious threat to sustainable development,

(3) That the recent increase in the frequency of water-related disasters causing an increase in number of deaths and property damage, is threatening the sustainability of development,

(4) That an effective water resources assessment is an essential prerequisite for any serious effort at preparing integrated water resources management and water efficiency plans,

(5) That, despite the availability of effective technology, many countries are still unable to assess and manage their freshwater resources in a sustainable manner and provide protection from water-related disasters, as well as respond to climate change related impacts on water resources,

(6) That the challenges of global change, including climate variability and change, demand a response from hydrologists and those responsible for water resources management,

(7) That the need for collaboration between the hydrological, meteorological and climatological communities in this regard, identified by previous Congresses, remains a high priority,

(8) That it is increasingly evident that in order to face the challenges posed by most water-related issues, an interdisciplinary approach and a participative process involving local communities is the only viable solution,

Considering:

(1) That provision of information by National Hydrological Services on the state of water resources, the response of the hydrologic systems to the actions taken and the monitoring of their impacts, are essential to the sustainable development and management of water resources of their countries,

(2) That such Services are also essential to activities aimed at mitigating the effects of floods, droughts, desertification and tropical cyclones, while, at the same time, these phenomena pose special problems for the collection, analysis and use of hydrological data,

(3) That in many countries National Hydrological Services are under-resourced and ill-prepared to assume the wider responsibilities assigned to them by their Governments in recent years, and that no effort should be spared in building their capacities in this regard,

(4) That new technologies have developed in hydrology and water resources in recent times, making it necessary for both a drastic updating of education and training programmes in these fields, and for the preparation of adequate new guidance material to assist countries in their adoption,

(5) That WMO seeks to assist Members, particularly by enabling National Hydrological Services, to meet their obligations derived by the above considerations,

(6) That the Hydrology and Water Resources Programme (HWRP) provides the framework for all scientific and technical aspects of WMO's activities in the field of hydrology and water resources,

Decides:

(1) That the substance of the HWRP be as indicated in WMO Strategic Plan;

(2) That WMO should continue its efforts, with the support of financial partners and agencies, to develop and implement WHYCOS as a component of the HWRP;

(3) To endorse the WMO Strategy on Education and Training adopted by CHy-XII and endorsed by EC-LVII, and to encourage the Commission to take the necessary steps to ensure its effective implementation;

(4) That WMO should continue its advocacy for a widespread adoption of an Integrated Flood Management approach at the basin, national and international levels;

(5) That WMO should continue playing an active role in UN-Water, the interagency coordination mechanism of the UN system;

(6) That WMO should seek to improve further the coordination of the HWRP with UNESCO's IHP and seek collaboration with other UN agencies such as FAO and UNDP in areas of common interest;

(7) That WMO should continue its efforts towards further enhancement of cooperation between the Hydrology and Water Resources Programme and other WMO Programmes;

Invites Members:

(1) To broaden links with the larger water community at national level by encouraging other agencies involved in the water sector within their countries to participate in the activities of HWRP;

(2) To take all possible measures to continue full support to the implementation of the four component programmes of the HWRP;

(3) To arrange for their Hydrological, Hydrometeorological and Meteorological Services to continue to cooperate in the implementation of national and international plans for the assessment and management of their water resources, to participate in the implementation of WHYCOS and to support the implementation of recommended actions of the Strategy and Action Plan for the Improved Collaboration of NMSs and NHSs in Flood Forecasting;

(4) To take advantage of new technologies in hydrology and water resources in order to improve measurements and water resources assessment in general;

(5) To arrange for their Hydrological and Hydrometeorological Services and their academic institutions to contribute to the implementation of the WMO Strategy on Education and Training in Hydrology and Water Resources;

(6) To support the establishment of WMO Regional Training Centres dealing with hydrology and water resources in their Regions;

(7) To support the implementation of demonstration projects promoted by WMO in areas such as Integrated Flood Management, improvement of cooperation between NMSs and NHSs for improved flood forecasting, analysis of impacts of climate variability and change on water resources;

(8) To institute or continue the cooperation between Hydrological, Hydrometeorological and Meteorological Services and other water-related institutions on regional and sub-regional level within shared river basins;

(9) To participate in and contribute to technical cooperation activities in hydrology and water resources;

(10) To contribute to the Hydrology Trust Fund and VCP fund to support the implementation of capacity building activities in hydrology and water resources;

Requests the president of CHy:

(1) To ensure that the Commission takes the lead in satisfying the technical needs of Members in the area of hydrology and water resources, in particular by continuing its policy of preparing guidance material in various aspects of hydrology and water resources management through the collaborative efforts of its experts;

(2) To ensure that the Commission provides a strategic on-going approach to its activities in hydrology and water resources in order to develop a common and shared vision of the future and to adapt actions to this evolving context;

(3) To continue the valuable efforts of the Commission in enhancing the role of WMO in the field of hydrology and water resources and ensure that the Commission provides the technical expertise needed;

(4) To arrange for contributions from CHy to other WMO Programmes, in areas such as the development of Integrated Global Observation System, Quality Management Framework and WMO Information System as appropriate, while at the same time presenting the requirements of the hydrological community to those Programmes;

Requests the Executive Council to conduct, with the assistance of CHy, a regular review of the progress in the implementation of the Hydrology and Water Resources Programme and to take appropriate action as may be required;

Requests the Executive Council and the Secretary-General, as appropriate and within the available budgetary resources:

(1) To arrange for the implementation of the HWRP in view of the increasing need for its enhanced participation in the resolution of the world water issues;

(2) To take all the necessary action to assist CHy and all bodies concerned in implementing the HWRP, in accordance with Decides (1);

(3) To continue to provide assistance in support of training events for Members in the fields of hydrology and water resources, particularly those in developing countries and countries with economies in transition;

(4) To continue to provide support to regional activities of the Hydrology and Water Resources Programme;

(5) To continue to cooperate with other governmental and non-governmental organizations in the field of hydrology and water resources.

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Note: This resolution replaces Resolution 17 (Cg-XIV), which is no longer in force.

DRAFT RESOLUTION

Res. 3.5/2 (Cg-XV) – STRATEGY FOR THE ENHANCEMENT OF COOPERATION BETWEEN NATIONAL METEOROLOGICAL AND HYDROLOGICAL SERVICES FOR IMPROVED FLOOD FORECASTING

THE CONGRESS

Noting:

(1) The Final Report of the Synthesis Conference of the WMO Flood Forecasting Initiative (FFI),

(2) The Executive Summary of the Strategy and Action Plan (see Annex) for the Enhancement of Cooperation between NHSs and NMSs for Improved Flood Forecasting, prepared and adopted by the Synthesis Conference of the WMO FFI,

Noting further:

(1) The wide participation of experts from NMSs and NHSs working in weather and hydrological forecasting in the eight regional workshops organized in the framework of the WMO Flood Forecasting Initiative, as well as the high level of expertise demonstrated by participants in the FFI Synthesis Conference,

(2) The increased frequency of major flood-related disasters in recent years and the general international agreement about the effectiveness in shifting the emphasis from a policy of response to a policy of prevention,

Considering:

(1) That improvements in collaboration between the meteorological and hydrological communities would result in improved flood forecasting practices in the most advanced as well as developing countries, and countries with economies in transition,

(2) That despite the widespread agreement that such collaboration is needed, successful examples are the exception rather than the rule in some regions,

Decides to endorse the Strategy and Action Plan for the Enhancement of Cooperation between NMHSs for Improved Flood Forecasting;

Requests the Secretary-General, as appropriate and within the available budgetary resources:

(1) To take all necessary actions to support the implementation of the Strategy;

(2) To promote the review of various activities of relevant WMO Programmes whose contribution is essential and whose sphere of activities could have an influence on the improvement of flood forecasting practices for the implementation of the Strategy;

(3) To support the implementation of demonstration projects such as the Flash Flood Guidance System with global coverage;

(4) To establish a suitable coordination mechanism to develop a detailed plan of activities and address the issues of hydrology and meteorology covering, but not limited to, flash-

flood forecasting and warning, including participants from CHy, CBS, WWW, DPM and HWRP.

(5) To invite other relevant UN organizations and international agencies to participate in the implementation of the Strategy;

Requests the president of CHy in coordination with presidents of other Technical Commissions, where needed:

(1) To ensure that the Commission provides the technical expertise needed in supporting the development of new and improved flood (including flash floods) forecasting products;

(2) To ensure that the necessary coordination with other Technical Commissions be established as required to keep the strategy in review and further development and implementation of the implementation plan;

Invites Members:

(1) To take all institutional, legal and financial measures to create the necessary enabling environment for the implementation of the Strategy at the basin, national and regional level;

(2) To ensure that the NMSs and the NHSs work in close collaboration and provide the required technical support to their disaster management authorities;

(3) To contribute to the Voluntary Cooperation Programme and the Hydrology Trust Fund in support of the implementation of the Strategy.

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Annex: 1

Annex to draft Resolution 3.5/2 (Cg-XV)

FLOOD FORECASTING INITIATIVE

Cooperation between National Meteorological and National Hydrological Services for Improved Flood Forecasting

Strategy and Action Plan

Executive Summary

General

1. Flood forecasting provides a valuable tool in reducing flood impacts, thereby contributing to national sustainable development. Advances in data collection, continual model development, calibration and verification, etc., contribute to improving the accuracy of forecasts. Recent enhancements in meteorological forecasting have made it possible to extend the lead-time for flood forecasting. A timely and reliable forecast helps greatly in disaster risk management responses. However, this requires a set of multi-disciplinary (meteorology, hydrology and emergency management) collaborative efforts.

2. At present many NMSs and NHSs do not have adequate means or the necessary know-how to provide extended forecasting services in flood critical situations and to communicate effectively with disaster management authorities. A strategic/coordinated approach is therefore needed for NMSs and NHSs to work closely together, making use of the state-of-the-art forecasting technologies, to improve hydrological forecasting products and provide better services.

Scope

3. Recognizing the need to improve the capacity of NMSs in detecting flood-critical situations and to improve the capacity of NHSs in using meteorological forecasting information, the WMO Flood Forecasting Initiative was launched in April 2003. The major activities within the scope of this Initiative included an overall analysis of the strengths and weaknesses of current flood forecasting systems in the Member countries through a series of regional workshops (eight) *o*rganized for different Regions which were attended by hydrologists and meteorologists engaged in forecasting from 85 countries along with a number of regional and river basin organizations, technical institutions and experts.

4. As collaborative efforts between NMSs and NHSs will not only improve flood forecasting services in the countries but also other domains such as water resources assessment and use of climate prediction products in water management, the workshops provided a unique opportunity for meteorologists and hydrologists to exchange experiences and views on these issues, which came up strongly during some of the workshops. Similarly, lack of financial resources for the NHSs and NMSs also emerged as one of the major concerns in certain workshops, particularly involving countries from Region I.

Strategy and Action Plan

5. In order to fulfil the objectives of the Initiative, a *Synthesis Conference* was organized by WMO in November 2006 with the aim to analyse the key challenge areas that would need to be addressed as identified during the regional workshops. The conference resulted in the establishment of an agreed Strategy and Action Plan to improve national and regional capacities for flood forecasting. The Strategy and Action Plan (SAP) concentrates on the areas of collaboration between

the NMSs and NHSs in the field of flood forecasting and other issues brought out in the workshops as mentioned in paragraph 4 above.

6. The SAP, once considered and endorsed by Cg-XV, would serve as a guide to the Technical Commissions and WMO Secretariat in all activities related to improving flood forecasting capabilities worldwide. In developing the Action Plan the diversity of conditions of levels of development, capabilities and status of NMHSs, the various possible user requirements and the possibilities of using advanced technologies were kept under consideration.

7. The SAP identifies the following areas of activities that need to be addressed to improve the overall chain of hydrological forecasting:

(i) Strengthening of observing and information systems;
(ii) Promoting data exchange at national and international river basin levels;
(iii) Improvement of meteorological forecasting practices and products;
(iv) Improvement of hydrological forecasting practices and products;
(v) Strengthening of institutional coordination, cooperation and integration between NMSs and NHSs;
(vi) Strengthening of cooperation and coordination of countries in issues related to flood forecasting and warning;
(vii) Promoting training and capacity building in NMHSs;
(viii) Formulating technical documentation and guidelines related to flood forecasting and warning;
(ix) Supporting disaster management;
(x) Addressing climate variability and change in the light of extreme events; and
(xi) Demonstrating the value of meteorological and hydrological data, information and products (including forecasts).

Activities under (iii) to (viii) would form the core of the Flood Forecasting Initiative, while the rest would be mainly addressed under, and in cooperation with, other programmes.

8. The SAP promotes the preparation of national implementation plans. These would logically vary and have to be adapted in accordance with current national/regional flood forecasting capabilities, specific requirements and priorities of the corresponding NMHSs. Access to information, reliability of forecasts and public trust are critical issues to be addressed when developing a modern flood forecasting system.

9. The SAP suggests the implementation of demonstration projects at various levels (country-specific, sub-regional and regional projects). These would identify the technical and administrative difficulties in and showcase the value of an increased cooperation between NMSs and NHSs in flood forecasting. It is expected that the demonstration projects, at national level, would assist NMHSs in coping with their changing role in disaster risk reduction by means of a comprehensive suite of activities for the upgrading, modernization and strengthening of their flood forecasting and warning systems.

10. At the regional level, the SAP advocates the establishment of a framework under which partnerships and development assistance could be provided and coordinated amongst the Members and the various contributing agencies while taking advantage of existing regional and international arrangements. Countries in a given region or river basin would be invited to collaborate on projects/ activities to be undertaken to strengthen collaboration between NMSs and NHSs for improved flood forecasting and warning.

11. The SAP also addresses requirements of well-established flood forecasting and warning systems for their further improvement through the development and use of new technology.

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DRAFT RESOLUTION

Res. 3.5/3 (Cg-XV) — SUPPORT TO THE AFRICAN INITIATIVES ON WATER

THE CONGRESS

Noting:

(1) The challenges identified in the African Water Vision 2025,

(2) The critical water situation in Africa as recognized in the African Water Development Report,

(3) The problems facing the water sector in the region due to the low level of implementation of the principles of integrated water resources management,

(4) The rapidly increasing demand to improve the hydrological and water resources data and information for the development and management of water projects in Africa,

Considering:

(1) That the New Partnership for Development (NEPAD) Short Term Action Plan (STAP) has identified the development of IWRM policies, mitigation of floods and droughts, and management of trans-boundary water resources as priority areas,

(2) That the African Ministerial Council on Water (AMCOW) established in April 2002 through the "Abuja Ministerial Declaration on Water: a Key to Sustainable Development in Africa" has developed a strategy,

(3) The findings and recommendations of the Pan-African Implementation and Partnership Conference on Water, 8-12 December 2003, Addis Ababa, Ethiopia,

Decides that WMO, in collaboration with other United Nations agencies, as well as national, sub-regional and regional organizations involved in the water sector, should take a prominent role to:

(1) Mobilize the political and financial support for the implementation of the NEPAD action plan and AMCOW strategy;

(2) Actively promote and support the NEPAD STAP and AMCOW strategy to contribute to the achievements of the Millennium Development Goals (MDGs) and the realization of the African Water Vision;

Urges National Hydrological Services and regional and sub-regional agencies to incorporate the NEPAD STAP and AMCOW strategy into their water related development plans and management programmes and support their implementation;

Requests the president of the Regional Association for Africa:

(1) To ensure that the Working Group on Hydrology of RA I would support and function in close collaboration with the AMCOW sub-regional committees, relevant economic and political groupings and international river basin authorities in developing plans for water resources management;

(2) To incorporate support to the NEPAD STAP and AMCOW strategy into the activities of the RA I;

(3) To support, through the RA I Working Group on Hydrology, the implementation of the NEPAD and AMCOW Strategy and Action Plan for Integrated Water Resources Management (IWRM) in Africa;

Requests the Secretary-General:

(1) To provide all the necessary support for the RA I WGH to work with NEPAD and AMCOW in the implementation of their Action Plan and activities mentioned under Decides;

(2) To invite other agencies involved in the field of water resources and external support agencies, particularly the World Bank, UNDP, the African Development Bank, the European Union, and other multilateral and bilateral funding agencies, to incorporate the support to the NEPAD STAP and AMCOW strategy into their programmes in the Region;

Requests the Executive Council and the Secretary-General, as appropriate and within the available budgetary resources, to take all necessary actions to assist Regional Association I to work closely with NEPAD and AMCOW in implementing their activities.

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