**Notes of the**

**JOINT MEETING of the**

**International Hydrographic Organization (IHO)**

**International Maritime Organization (IMO)**

**Intergovernmental Oceanographic Commission of UNESCO (IOC)**

**World Meteorological Organization (WMO)**

**International Association of Marine Aids to Navigation and   
Lighthouse Authorities (IALA)**

**International Atomic Energy Agency (IAEA)**

**Fédération Internationale des Géomètres (FIG)**

**on**

**CAPACITY BUILDING MATTERS**

**IALA Headquarters, St Germain en Laye, 27-28 October 2011**



**Executive summary of the**

**Joint meeting of IHO-IMO-IOC-WMO-IALA-FIG on Capacity-Building matters**

# Objective

In pursuance of the objective of utilizing joint resources within the UN family under the **“Delivery as One”** initiative, the fifth meeting of the Officers responsible for capacity-building matters within the IHO, IMO, IOC, WMO IALA and FIG met at IALA's Headquarters in St Germain en Laye from 27 to 28 October 2011. A total of eleven representatives attended the meeting, including representatives from the International Hydrographic Organisation (IHO), the International Maritime Organisation (IMO), the World Meteorological Organisation (WMO), The Intergovernmental Oceanographic Commission of UNESCO (IOC), the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and the Fédération Internationale des Géomètres (FIG). This was the first time that FIG had participated. The International Atomic Energy Agency (IAEA) was unable to attend on this occasion.

# Introduction by Chairman

Mr. Gary Prosser welcomed the meeting participants. Following on from the previous four meetings (IHO Monaco in 2007, IOC Paris in 2008, IMO London 2009 and WMO in 2010) it was expected that this fifth meeting would provide another valuable opportunity to exchange information on the work done in the area of capacity-building, including achievements, lessons learned and further actions required. A warm welcome was extended to those colleagues who were attending the meeting for the first time.

The Chairmen invited each representative from the five organizations to introduce themselves.

A list of participants is at Annex A.

# Adoption of the Provisional Agenda

The Chairman informed the meeting participants that the objectives of the meeting were to review the progress that has been made on the agenda items since the fourth meeting and to look at ways of improving joint co-operation amongst the seven organizations, with regard to improvement of communications and sustainable relations on capacity-building.

The provisional agenda was unanimously adopted as follows:

1. Opening of the meeting.
2. Adoption of the agenda.
3. Review of Minutes and Actions agreed at last meeting.
   1. IHO
   2. IMO
   3. IOC
   4. WMO
   5. IALA
   6. FIG
4. Latest Institutional Education and Training Program developments.
5. Standardisation procedures put in place to improve effectiveness in the provision of Capacity Building.
6. Experiences in dealing with funding agencies.
7. Status of joint co-operation projects.
8. 2012 Capacity-Building Work Programme. Exchange of information and analysis.
9. The way ahead; concerted priorities.
10. Closure of the meeting.

# Latest Institutional Education and Training Program developments

With the exception of IMO, the representatives of the organisations present used presentations to update the meeting on their recent activities. The presentations form part of the output of the meeting.

The points raised by IMO were:

* IMO seminars/workshops: the objective is to facilitate the understanding and implementation of IMO conventions and regulations.
* 2010: Eight-two seminars and workshops, 2,360 participants, expenditure of US$14.7m.
* Matrix framework of the Integrated Technical Cooperation Programme: regional priorities matched with IMO's thematic priorities.
* Areas of focus: Africa, SIDS, LDCs and MDGs.
* Three main categories of training:
  + Short term upgrading seminars/workshops (3 to 5 days);
  + Fellowships to in-depth training courses (4 to 6 weeks), e.g. International Maritime Safety Security Environment Academy (IMSSEA), Genoa, and Institute of Professional Education and Research (IPER), Le Havre.
  + Global training institutes, World Maritime University, Malmö, (MSc 14 months), International Maritime Law Institute, Malta (LL.M 10 months).

It was noted that, in developing countries, Capacity Building has the ability to provide a technology jump. UNESCO offered to provide assistance with the technical aspects of maritime boundaries, baselines and the extended continental shelf. IHO reported that it is working on measures to assess the benefit of capacity building but it was noted that one cannot enforce compliance with statements made by the recipient.

There was a discussion on the merits, or otherwise, of distributing information freely, as various recovery models are in use in the organisations represented. This led to an exchange of information about how Capacity Building is funded in the different organisations and the average length of training courses offered.

The long-term impact on hydrographic surveying resulting from an earthquake was pointed out and WMO confirmed that it now had inundation models, provided that the relevant bathymetry is available.

A paper provided by the WMO is at Annex C and the forward of a paper provided by FIG about the economic benefits of hydrographic surveying is at Annex D. The complete paper is part of the output from the meeting. Notes covering IAEA comments are at Annex E.

There were several comments about the benefits from participating in the meeting, with its free exchange of views and experience and the discussions about the different models used for operations and funding.

# Standardisation procedures put in place to improve effectiveness in the provision of Capacity Building

IHO and IOC supported their input with a presentation.

Standardisation procedures in place are at various levels of implementation. IALA’s experience that being too rigid in pursuing certification / accreditation can lead to failure to renew and it has now learned to move forward ‘a step at a time’. The use of grandfathering clauses has proved helpful in encouraging those in place to accept procedures and then the encouragement of younger staff.

WMO reported developing a web based tool, probably in conjunction with the IOC, to document its training and capacity building. It is also said that it will be specifying capacity building goals in its projects and that it is looking forward towards a future cost recovery model

There was a discussion about the part to be played by risk management, in trying to move away from disaster response to disaster preparedness.

It was said that the benefit from training is easier to assess than for capacity building, with a suggestion that it might be another 3-5 years before an assessment can be made.

Where maritime services are being provided, the use of AIS is now enabling the identification of users and this should aid cost recovery.

Instances were quoted of the tightening up of the application process for students, with the IOC saying that it is moving towards blended learning. Examples of application procedures are available from <http://classroom.oceanteacher.org/> and <http://www.wmo.int/pages/index_en.html>.

# Experience in dealing with funding agencies

IALA stated that it was starting from a position of zero finance but that it had received encouraging responses from potential sponsors. A part-time member of staff will shortly be provided by a member nation and considerable support ‘in kind’ is already given by many of IALA’s members.

IOC said that it seeks sponsorship for its management training programme and for its other courses is funded for the next two years. However, it was anticipated that future applications to its sponsors will need to be innovative.

It was clear from the discussion that there is a varied approach to how courses are paid for.

A discussion about the funding of trainers showed the different approaches employed and brought out the difficulty of ensuring that a trainer had all the right attributes required for a specific task. It also sparked a lively debate about their remuneration. Again various models were used, from the use of volunteers to strict fixed rates to regional arrangements to assessment on a ‘case by case’ basis. There was comment that paying too much can be counter-productive and can cause conflict with private training providers.

The norm appeared to be that sponsors have their own objectives, including regional requirements, which may not fit an organisation’s capacity building plan. However, there are sponsors who will donate funds without specifying, in detail, how the funding should be used. With two exceptions, the funding of training from an organisation’s budget is not allowed. It was stated that some organisations find that they can roll over unspent funds to the following year.

IMO reported that sponsors are increasingly demanding a logical framework in the application for their donations.

# Status of joint co-operation projects

IALA began with a presentation that indicated two successful missions, on behalf of IMO, and visit to IHO, to discuss co-operation, resulting in involvement in South Africa and potential involvement in Costa Rica. Mention was made of a combined IMO / IALA initiative to invite 10 senior African administrators to the 2010 IALA Conference. This prompted IHO to say that it had decided against spending CB funding on sending people to conferences. This caused a brief debate about the pros and cons of funding attendance at conferences.

FIG indicated that it worked at two levels. The first with such organisations as the UN-HABITAT and Food and Agricultural Organization of the UN (FAO) as well as the World Bank. It also produces documentation for high level decision makers, to promote awareness. Other CB opportunities as joint meetings and events, including industrial events. The work of its Standards Board is increasing. FIG already has ad hoc co-operation with the IHO and is seeking formalise arrangements.

IOC – IODE are co-operating with numerous organisations which are listed in the supporting presentation. It’s experience is that donors do not like to sponsor 100% of a project but prefer to ‘top up’ the required funding.

The IHO is conducting joint projects with national members and regional organisations. It has a joint training programme with IMO and is conducting a number of projects around the coast of Africa. It has funding for projects for 2012 and into 2013 and will be seeking to improve the feedback about the results. The point was made that courses need to advertised well in advance if maximum value s to be achieved, something that the meeting unanimously endorsed. It was stated that IHB is always ready to assist course organisers in the selection of training staff.

IOC indicated that it’s Ocean Summer School provides information on planned courses, via the Ocean Teacher website and IHO said that it made most of its arrangements via the regional hydrographic commissions.

FIG’s remarks about timing clashes of events lead to much discussion, from which it emerged that:

* Late notice of events can be frustrating;
* Use of a common calendar would be very helpful;

It was suggested that Google calendar could be used and that such a facility has the potential to reduce costs and promote attendance.

With IMO’s pre-eminent position and with 43 meetings weeks each year, this led to discussion of its yearly programme being issued late in the preceding year. It was agreed that external pressure from the national members is the way to effect change. However, it was felt that a start could be made with the technical co-operation programme. It was noted that IHO’s CB programme is freely available via the IHO website.

WMO reported continuing strong links with the IOC and said that all its activities are available from the JCOMM webpage. Work is continuing with the IMO and IHO on the tsunami warning network; COMSAR have recently adopted network messages. Potential joint projects have been identified involving IMO / IOC and the met. ocean warning network is approaching fruition and WMO will be seeking comment from the users. WMO is co-operating with IALA in its work on the global sharing of maritime data.

IMO remarked that much of the co-operative work with the organisations represented had already been covered by the previous speakers. It is anticipated that future collaboration may address Climate Change; in this respect, some project resources have been identified from the IMO Technical Cooperation Fund, for the 2010-2013 biennium. However, the programme activities are still at the development stage.

WMO said that it is working towards establishing climate change services and is seeking harmonisation with various initiatives, which would lead to a framework of services aimed at helping the user.

# 2012 Capacity-Building Work Programme. Exchange of information and analysis

IALA began with a presentation of its programme for 2012 and ended with a question about access to the data resulting from IMO audits, which would be a rich resource for CB; currently it is treated as confidential by IMO. The reason for this was explained but it was suggested that there is nothing to stop an organisation making a direct approach to an administration when planning a mission / CB project. It was agreed that a joint submission by IHO and IALA to IMO’s Technical Co-operating Committee (TCC) would be helpful. IHO offered to co-ordinate the drafting of such a submission, indicating that assistance is available, which could be discussed during the forthcoming IMO Assembly (21 – 25 November 2011).

Action item

IHO is requested to draft a joint IHO / IALA submission to IMO TCC, for discussion during the IMO Assembly (A27).

FIG requested that a general information paper, outlining the purpose of the meeting, be submitted to the TCC, which next meets on 12 - 14 June 2012 at IMO. IHO agreed to draft such a paper and circulate it to organisations represented at the meeting; IMO agreed to then put it into the correct IMO format.

Action item

IHO is requested to draft an information paper about the purpose of the *IHO-IMO-IOC-WMO-IALA-IAEA-FIG capacity building meeting and circulate it for comment.*

*When finalised, IMO is requested to put the information paper into the correct format for submission to TCC.*

The WMO has plans for activities in 21012 but they have not yet been endorsed. However, it is anticipated that WMO / IHO / IOC will develop a joint webpage to promote courses.

IHO provided a document, which is at Annex F. A programme and the necessary resources have been identified and a budget developed. It was noted that use of the regional hydrographic commissions permitted simultaneous activities and that some regional hydrographic commissions are involved in more than one activity.

In order to gain experience, IALA was invited to join an IHO project.

When asked if there are areas in the IHO programme, where other organisation might co-operate, it was replied that this is something currently under consideration.

IMO then itemised some its more significant activities before turning to the subject of eLearning, development of which is at an early stage at IMO. This sparked a lively discussion, in which many of those present indicated that they too were considering eLearning. IOC, with probably the greatest experience, said that it was moving towards eLearning but that it could not standalone and that for most courses a blend of eLearning and ‘face to face’ instruction was needed (blended instruction). eLearning, linked with prior reading / study and a quiz, was recognised as a useful assessment tool to see how well students are prepared for a course. It was noted that eLearning can be a solution in some cases but one has to be selective when choosing a production company to ensure that it understands the subject matter. Although IMO offers no accreditation, it was accepted that eLearning could form the basis of an examinable subject, with the Competent Authority awarding the relevant certificates.

IHO said that it was evaluating eLearning. IOC then said that, drawing on its pool of courses, 20 courses were approaching completion. Member states are being surveyed and a decision is anticipated in December. Further courses, mainly in the field of information management, are being considered but Ocean Teacher will have a budget for only 6 courses next year.

FIG stated that its next event would be a working week in Rome and that papers are still being accepted. Different kinds of events are being planned in various locations and expect to attract between 400 to 4000 people. The FIG / IHO Standards’ Board will continue working, being kept busy by the number of standards that need to be kept up to date. FIG offered co-operative participation in its Working Groups and that anyone interested should contact [gordon.johnston@exxonmobil.com](mailto:Gordon.johnston@exxonmobil.com). It was then reported that FIG and IHO are considering running a joint event.

# The way ahead; concerted priorities

Priority items were seen as:

* establishing a list of contact points in different countries;
* assessing success;
* evaluating eLearning;
* developing CB management and governance;
* web management;
* developing long-term (sustainable) CB;
* automatic follow up some years after a mission;
* sharing a common calendar.

There was discussion about the desirability of identifying a topic of common interest and a region of common interest and then planning a joint training course in 2012. However, it was eventually agreed that this would be premature.

A list of Actions from the meeting is at Annex B.

# Closure of the meeting

There was unanimous agreement that the informality of the meeting promoted free discussion of issues surrounding capacity building, allowing exchanges of views, plans and experience.

It was proposed that the next meeting be hosted by IOC, in Ostend, on 29 – 30 October 2012.

Gary Prosser then thanked everyone for attending and their participation in all the discussions and bid everyone a safe journey home.

# List of Annexes

ANNEX A List of Participants 8

ANNEX B Follow up actions to the Fifth joint capacity building meeting 11

ANNEX C WMO Paper 1

ANNEX D Foreword to FIG Report on the Economic Benefits of Hydrography 8

ANNEX E Notes from IAEA / IHB meeting 9

ANNEX F Draft 2012 IHO CB Work Programme 10

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1. Follow up actions to the Fifth joint capacity building meeting
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4. When finalised, IMO is requested to put the information paper into the correct format for submission to TCC. 5
5. WMO Paper

**IMO - IOC - IHO – WMO-IALA MEETING ON CAPACITY-BUILDING**

**IALA Headquarters, Saint Germain en Laye**

**27 – 28 October 2011**

**Support for Technology Transfer and Capacity Development**

*(Submitted by the WMO Secretariat)*

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| --- |
| Summary and Purpose of Document This document provides a summary of the past and ongoing activities under regarding technology sharing and capacity development. It also provides a short review of the status of JCOMM Capacity Building Principles, for the Committee’s consideration and action if needed.  The Document also contains a brief review of the WMO Education and Training Programme (ETRP), in view of setting future directions and scope of collaborative activities with to assist national agencies through the development and maintenance of training materials and competency standards in marine meteorology and oceanography. |

**ACTION PROPOSED**

The Committee is invited to:

1. Review and revise, if necessary, the current version of JCOMM Capacity Building Principles (Appendix A);
2. Consider the recommendations for future direction and priority activities for capacity development and technology transfer, and share with the partners organizations;

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**Appendices**: A. JCOMM Capacity Building Principles (as adopted at JCOMM-III)

B. On-going and Planned JCOMM Capacity Building Activities (until JCOMM-IV)

**DISCUSSION**

**JCOMM Capacity Building Principles**

1. Taking into consideration the existing capacity building strategies of WMO and IOC, it was agreed that a supplementary capacity building strategy for JCOMM was not required. Instead, the JCOMM Capacity-Building (CB) Principles were adopted at JCOMM-III (2009), as *Appendix A*, to better represent the requirements and describe the implementation mechanism and activities to be undertaken by JCOMM. As requested by the Commission, the Committee is requested to review and revise, if necessary, these Principles with a view to submitting it to JCOMM-IV.
2. Both WMO and IOC set the CB and technology transfer as high priority. JCOMM’s related activities, as was stated in the CB Principles, have been focusing on programme support and implementation/delivery through the Programme Areas (PAs). While maintaining the general direction and principles, it is suggested that JCOMM should make enhanced efforts for the following issues during the next intersessional period:

* Preparation and management of technical guidance material, in conjunction with the regular review and update of the Guides and Manuals. The Committee is invited to consider; 1) listing the relevant WMO-IOC publications and JCOMM technical documents that may be applied for trainings, 2) reviewing their status, and 3) setup a plan for necessary updates to be made during the next intersessional period;
* Development of a tool to document/consolidate/visualize overall CB activities of the Commission, particularly those initiated and directly supported by the Members / Member States. On a related note, the Committee needs to consider how to pursue the pending action (from its 8th session on developing an online tool) and set a new timeline;
* Enhanced support for the time-bound projects with clear objectives and plans for delivery, which serves for Members’ / Member States’ capacity development and technology transfer. It may include the extension of the Coastal Inundation Forecasting Demonstration Project (CIFDP), as well as (a) possible pilot project(s) for the Quality Management of marine meteorological / oceanographic services;
* Strengthened liaison and contacts with the wider WMO-IOC capacity development programmes, through an active member of the Management Committee, with the support of the Co-President and the Secretariat, particularly for the application of developed marine meteorological and oceanographic training material and for the development of training programmes (see paragraphs 5 and 6).

1. Members / Member States, at JCOMM-III (2009), also requested the Activity Leader on Capacity-Building to work with the PA coordinators and the Secretariats to revise the JCOMM CB strategy that builds on existing capacity-building work in both WMO and UNESCO/IOC, to implement a range of JCOMM-focused capacity-building activities. The Committee is invited to advise on this matter, and furthermore, on the role and responsibility of the CB Activity Leader in consideration of the new focus of CB activities for the next intersessional period, as suggested under Item 2.

**Ongoing and Planned JCOMM Capacity Building Activities**

1. As stated in the JCOMM CB Principles, the three JCOMM PAs has been planning and implementing CB activities in support of the programme implementation. Based on the format used for the activities under the Services and Forecasting Systems Programme Area (SFSPA), a summary of the ongoing and planned JCOMM CB activities are presented in *Appendix B*. The Committee is invited to review the list and advise on the pending activities for their completion.

**WMO Education and Training Programme (ETRP),**

1. At the sixteenth session the WMO Congress regarding the Education and Training Programme (ETRP), Members revised the definition of meteorologist and meteorological technician and approved the development of Standards outlining the learning outcomes and characteristics of courses that would enable people to meet the definitions. A key outcome of the discussion was the explicit acknowledgement that it was up to each WMO Member to make their own decision on the formal education standards of meteorologists and meteorological technicians and what tasks personnel in each of these classifications undertook, provided that it could be shown that the personnel addressed any minimum qualification and competency (knowledge, skills and behaviours) requirements required in that field. These changes need to be seen in the context of the decision by the WMO Executive Council in 2010 that it was up to each Technical Commission to set the generic competencies of personnel undertaking tasks in the domain covered by that Technical Commission. Thus it is up to JCOMM to specify the competency and qualification requirements for personnel working in the domain covered by JCOMM. The WMO Executive Council called upon its Panel of Experts in Education and Training to assist the Technical Commissions as required.
2. At JCOMM-III, the Commission noted the importance of developing high quality Distance Learning material in different languages, particularly such efforts by the Cooperative Programme for Operational Meteorology, Education and Training (COMET, <http://www.meted.ucar.edu/>). COMET Modules cover many fields of interest to the marine meteorological and oceanographic communities, covering atmospheric and oceanic processes as well as remote sensing of marine and oceanographic elements. The Committee was requested to explore developing an expanded partnership with COMET, building on the past efforts to translate some COMET modules into Spanish. The Committee will be informed of the education and training modules on marine meteorology and oceanography in the COMET, and will discuss on the possible cooperation during the next intersessional period.

Outcomes of the past JCOMM Management Committee meeting

Noting that capacity building is a high priority for both WMO and IOC, the Committee recalled that the Commission’s activity in this area has been focusing on programme support and implementation/delivery through the Programme Areas (PAs). The Committee agreed that this general direction and principles should be kept for the next intersessional perio**d**, and that the Commission should in addition make enhanced efforts through the following type of activities:

* Preparation and management of technical guidance material, in conjunction with the regular review and update of the Guides and Manuals (see also Agenda Item 3.3);
* Development of a web-based tool to document/consolidate/visualize overall Capacity Building activities of the Commission, particularly those initiated and directly supported by the Members / Member States. As the first draft outline, the Committee reviewed and revised a consolidated list of JCOMM CB activities as reproduced in *Annex VIII*, in view of regularly updating the contents;
* Enhanced support for the time-bound projects with clear objectives and plans for delivery, which serves for Members’ / Member States’ capacity development and technology transfer (see also Agenda Item 4.3);
* Strengthened liaison and contacts with the wider WMO-IOC capacity development programmes, through an active member of the Management Committee and with the support of the Co-President and the Secretariat, particularly for the application of developed marine meteorological and oceanographic training material and for the development of training programmes.

The Committee noted that the requirements for qualification and competency, as well as the specific requirements/need for training should be firstly defined through consultation with the national forecasters and related operators as “users”. It therefore requested that the Activity Leader on Capacity Building initiate a survey for such purposes, in close collaboration with the WMO/ETRP and IOC/IODE for developing the survey and distribution/feedback collection. The collaboration should be extended to the follow-up actions, such as developing and update of training material. Recalling the related discussion on QMF, the Committee requested the Activity Leader for Capacity Building to work closely with the Activity Leader on QMF/QMS in order to integrate with and utilize the already developed tools such as the COMET module.

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Appendices: 2

**JCOMM CAPACITY-BUILDING PRINCIPLES**

(as adopted at JCOMM-III)

**1. INTRODUCTION**

1.1 The purpose of this document is to lay down the guiding principles on which JCOMM capacity-building activities in marine meteorology and oceanography should be based. The document has been prepared taking into account previous documents and initiatives on capacity development undertaken by JCOMM. A member of the JCOMM Management Committee will be charged with coordinating capacity-building activities.

**2. CAPACITY-BUILDING PRINCIPLES**

***WMO and UNESCO/IOC Capacity-Building Programmes***

2.1 JCOMM is jointly sponsored by WMO and UNESCO/IOC and therefore its capacity-building activities must operate within, and draw upon, the overall principles of its governing bodies. WMO and UNESCO/IOC should also assist with the development of partnerships with potential donor agencies and with links with other UN and other relevant regional and global organizations. The activities also must be compatible and work with similar efforts in other WMO and UNESCO/IOC Programmes. In addition, JCOMM should seek partnerships to pursue mutual objectives in the development of capability. Finally, capacity-building requirements of the WMO Regional Associations and GOOS Regional Alliances (GRAs) must be considered.

2.2 It is generally agreed that a separate capacity-building programme for JCOMM was not required, taking into consideration the existing capacity-building strategies of WMO and UNESCO/IOC.

***Rationale for JCOMM Capacity Principles***

2.3 JCOMM should support capacity development elements that are not fully included in other ocean or atmosphere programmes, and draw attention specifically to other capacity-building programmes of WMO or UNESCO/IOC. Examples include specialized observations and resulting products, e.g., those of some satellite missions, the Argo profiling float programme, or the Data Buoy Cooperation Programme, and other applications.

2.4 The three JCOMM Programme Areas each should include capacity-building activities for a more integrated, focused and proactive approach.

***The JCOMM Capacity-Building Principles***

Note that there is no priority implied by the order of these principles:

(i) The primary objective of JCOMM capacity-building is to enhance the implementation of the overall JCOMM Programme through enhancing capacity in all Members/Member States to contribute to and benefit from the programme;

(ii) The Activity Leader on Capacity-Building should work with the PA coordinators and the Secretariats to revise the JCOMM capacity-building strategy that builds on existing capacity-building work in both WMO and UNESCO/IOC, to implement a range of JCOMM focused capacity-building activities;

(iii) Specific JCOMM-focused capacity-building activities should be implemented by the respective Programme Areas and included in their respective workplans;

(iv) JCOMM capacity-building activities should aim to fill-in gaps and avoid overlapping at national, regional and international levels. It is highly desirable that national partners from both JCOMM themes (i.e., oceanography and marine meteorology) be involved so the complementary and “symbiotic” benefits of JCOMM are clearly demonstrated;

(v) JOMMM capacity-building will include continuous professional development;

(vi) JCOMM capacity-building will aim, where possible, for a “train the trainer” approach to help ensure continuity by countering staff turnover/brain drain problems and to promote the wide spread of knowledge and practices;

(vii) At the regional level, JCOMM capacity-building will develop programmes and projects that follow WMO and UNESCO/IOC strategies (e.g. the ODIN strategy, developed by IODE of UNESCO/IOC; the SWFDP, developed by WMO/CBS; the PANGEA concept, developed by the JCOMM OPA);

(viii) At the regional level, JCOMM capacity-building will develop, preferably, medium to long term programmes and projects that will result in national structural and embedded capacity that can be sustained by national funding sources;

(ix) Creating awareness in the minds of the public and policy makers is essential for raising national and international support;

(x) JCOMM capacity-building activities will include assessment of feedback regarding the satisfaction and requirements of users of JCOMM observations, products and services;

(xi) One member of the JCOMM Management Committee will be responsible for liaison with the three Programme Areas regarding capacity-building activities;

(xii) JCOMM capacity-building activities should endeavour to utilize existing methods, courses, tools and other capacity-building aids, particularly those of the WMO and UNESCO/IOC.

**3. TYPES OF EDUCATION AND TRAINING ACTIVITIES AND IMPLEMENTATION**

***Methods and Tools***

3.1 Capacity-building activities will be implemented using a wide variety of methods, tools and resources that are currently available within WMO (including its 23 Regional Training Centres (RTCs)) and the IODE of UNESCO/IOC, or which will need to be developed by JCOMM and its parent bodies.

***Training Courses***

3.2 A traditional mechanism for transfer of capacity is the training course. This will also be the case for JCOMM’s capacity-building activities. Each JCOMM capacity-building activity (programme or project) should include a training component. The project document should contain a clear statement on what expertise needs to be built. Based upon this information training activities will be planned.

***Training Tools***

3.3 The JCOMM Management Committee, at its fifth session (Geneva, October 2006) identified

OceanTeacher (http://www.oceanteacher.org), a training tool that was developed by the IODE of UNESCO/IOC, as one of the suitable tools for the management of JCOMM-related knowledge and training materials. Other tools also were identified and should be explored. WMO/ETR Met e-learning modules (http://www.met-elearning.org) have been used for the management of educational and training materials on meteorology, including for marine meteorology. Other virtual training centres and e-learning tools, such as the Cooperative Programme for Operational Meteorology, Education and Training (COMET, http://www.meted.ucar.edu/) and the Eumetcal – EUMeTrain (http://www.eumetcal.org/), make available Modules covering many fields of interest to the marine meteorological and oceanographic communities, including atmospheric and oceanic processes as well as remote-sensing of marine and oceanographic elements.

3.4 It is important to maintain the highest possible standards for the quality of materials entered into OceanTeacher and Met e-learning, and interoperability between these tools should be ensured. It will also be desirable to establish and agree upon standard curricula for all topics. This can be achieved through close coordination between the resource persons and between the resource persons and the Chief Editors. It may be necessary to identify multiple Chief Editors, e.g. one per Programme Area.

3.5 E-learning modules use dynamic content management technology. As such, materials can be entered by resource persons from their usual place of work. In principle, the number of resource persons who can enter materials is unlimited.

3.6 Bilko is a complete data analysis system developed primarily for learning and teaching remote sensing image analysis skills, providing a powerful application capable of handling ocean model data. Current lessons teach the application of remote sensing to oceanography and coastal management, but Bilko routines may be applied to the analysis of any image in an appropriate format, and include a wide range of standard image processing functions. Supported by UNESCO, Bilko is available to users absolutely free including a wide variety of satellite and ocean model outputs with associated self-study lessons that are ideally suited for 'off the shelf' training courses in oceanography (see <http://www.bilko.org/>).

3.7 In many cases material in the Digital Library and Training Curriculum materials make extensive use of hyperlinks to other content both within and outside OceanTeacher and WMO Digital Library. An important quality control task for the Secretariats is therefore, to regularly check whether links are still valid. It is noted that the use of these e-learning modules is free and open to all. Access to the Digital Library is open and does not require registration. Access to the training Curriculum also is free, but registration is required for full functionality.

***Workshops***

3.8 Workshops are useful tools to promote the sharing of expertise and experience at the national, regional and global levels.

***Travel and Study Grants***

3.9 Travel and Study Grants allow national experts to benefit from the expertise acquired in other institutions. They also are effective in promoting long-term informal professional relations between experts. As an example, the WMO Fellowship Programme enables fellowship holders to derive from their training the knowledge and professional competence, which will increase their ability to make essential contribution to enhancing the capabilities of the National Meteorological and Hydrological Services (NMHS) and enable them to participate more actively in the economic and social development of their countries. The fellowships granted by WMO are for studies or training in meteorology, including marine meteorology and hydrology, at universities or training institutes with appropriate facilities. Fellowships are awarded only at the request of the candidate's government and the candidates must be endorsed by the Permanent Representative of the candidate's country with WMO (more information is available at http://www.wmo.int/pages/prog/etr/fellowship\_en.html).

***Communication and Outreach Tools***

3.10 As a way of documenting and monitoring JCOMM capacity-building activities, the use of the UNESCO/IOC-IODE Alumni database to record all JCOMM capacity-building events and alumni is recommended. This will assist in tracking JCOMM training course participants and in assessing the long-term impact of the training provided.

**Ongoing and Planned JCOMM Capacity Building Activities**

(until JCOMM-IV, to be completed)

| **Workplan /  expected outcome, deliverables** | **How (Key Activities/Actions)** | **Timelines** | **Lead** | **Cooperate with** | **Status / Outcome** |
| --- | --- | --- | --- | --- | --- |
| **Services and Forecasting Systems Programme Area (SFSPA) \***see <http://www.jcomm.info/SFSPA> --> workplan | | | | | |
| Technology transfer/training on ocean forecasting systems | * GODAE Summer School | * Jan'10,  Perth, Australia | ETOOFS |  |  |
| Capacity building on coastal hazard forecasting | * 2nd North Indian Ocean Storm Surge workshop | * Feb'11,  Delhi, India | ETWS, UNESCO/IOC | WMO/VCP  IOC/IODE | Following the recommendations and workplans agreed at the 1st workshop (July 2009), the North Indian Ocean modelling team has worked to improve the predictability of their operational storm surge prediction model (IIT-D model). The progress was reviewed at the second workshop, and the regional requirements were reviewed /updated to improve coastal monitoring, warning and service compatibilities, with participation of ETWS, RMIC (Indian Met. Dept.), and national operators in the Region. The upgraded model will be shared by all NIO countries to be applied at the national services, upon request. |
| Marine forecasting training | * Training workshop in Dakar, Senegal * Training workshop in Lagos, Nigeria | * July'10, * August ‘10 | SFSPA (WMO), U.S. Navy, NOAA | WMO/VCP |  |
| Sea Ice Analysis Training:  - COMET Modules  - Manuals and workshops | * Publish 1st COMET module * Develop 2nd COMET module * 3rd Ice analysis workshop * Review English version of Manual for ice experts | * Sep'10 * Dec'11 * Jun'11 (workshop) | ETSI, AARI | ETSI  IICWG |  |
| Application of Satellite obs. | * Training workshop in Oostende, Belgium * Training workshop in Brazil (2010/2011) | * Dec'09 | SFSPA, EUMETSAT, NOAA, IODE |  |  |
| Training on wave forecasting | * Training workshop on use of Wave Watch III model in operations | * Jan'10, Hyderabad, India | Hendrik Tolman, NCEP | ETWS |  |
| Training on storm surge forecasting | * 6th JCOMM/TCP Storm Surge Workshop * 7th JCOMM/TCP Storm Surge Workshop | * Feb’11, Dominican Republic * Sep’11, Macao | WMO, ETWS | TCP | This series of training workshop has continued during the intersessional period, in collaboration with the Tropical Cyclone Programme (TCP). The curriculum is focused on the hand-on training of the community models for storm surge forecasting, and open source for the coastal hazard mapping. 6th workshop was organized with target countries of the Caribbean region, and 7th workshop is being organizing for the member countries in the Asia-Pacific region. |
| **Observations Programme Area (OPA)** | | | | | |
| Build ocean observing/modelling capacities in West Indian Ocean countries, particularly for operation of drifters and mooring, and analysis through Regional Ocean Modelling | * 1st DBCP CB workshop in West Indian Ocean * 2nd DBCP CB workshop in West Indian Ocean | * Apr’10, South Africa * May’11, Mauritius | DBCP | ASCLME, USA, Mauritius, South Africa | Two workshops were successfully conducted with abnormally high level of interest of West Indian Ocean countries. Over 60 buoy operators and ocean modelling experts from 12 countries participated in the 1st workshop. The 2nd workshop recommended that drifting weather buoys be supplied to African countries as a pilot project (of which the results will be presented at the 3rd workshop). |
| Facilitate adherence of observational data, metadata, and processed observational products to higher level standards for instruments and methods of observation | * RMIC Workshop for RA IV (Americas) * RMIC workshop for RA II (Asia, also including some Pacific countries) | * Apr’10,  USA * Jul’11, China | WMO, USA, China | IOC | These meetings were organized to prove concept of WMO-IOC Regional Marine Instrument Centres (RMICs) following the Recommendation 1(JCOMM-III) and provide training opportunities. They successfully satisfied the demand of developing countries for more training on instrument practices and standards, quality assurance, marine observing programme management and operational aspects, and data exchange. Discussions was initiated to organize such a workshop in Morocco before JCOMM-IV. (see <http://www.jcomm.info/rmic1>) |
| Convey important recent developments (e.g. regarding WMO publication No. 47, enhanced PMO communications), promoting global standards of service for the VOS Scheme, as well as building synergies between the different ocean observing system components relying on ship logistics | * 4th International workshop of Port Meteorological Officers | * Dec’10, USA | SOT | WMO, USA | 67 participants from 24 countries attended the workshop, assisted by a panel of 17 trainers. The workshop has been very active and productive resulting in good understanding of international requirements from the participants. The workshop made 17 PMO related recommendations, 1 advisory to PMOs, and 13 recommendations in terms of ship support to global ocean observation |
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1. Foreword to FIG Report on the Economic Benefits of Hydrography

Hydrography involves the surveying and mapping of rivers, lakes and oceans which gives us information about what the seafloor and movement of water above that seafloor looks like. Hydrographic information is typically published in the form of nautical charts and sailing directions both in hardcopy and digital form. These nautical publications are critical for providing mariners with the information they need to navigate ships safely and efficiently. Used in conjunction with meteorological information, nautical publications provide a basis for decisions on where and when a ship can be taken. High resolution hydrographic information in the form of seabed imagery provides a basis for engineering decisions on matters such as where to locate a sub-sea pipeline or communications cable.

Much like towns and cities which have grown because of their close proximity to railroads, superhighways and airports, access to navigable waters has provided the earliest cornerstone for discovery and economic development the world over. But what makes waters navigable? Fundamentally it is knowledge of water depth, hazards, tides and currents that enables navigation. Hydrographic information is of course the basis for this knowledge however it may be communicated. What makes waters navigable also makes waters safe and thus ensures the preservation of Safety Of Life at sea (SOLAS), the “sea room” to run out a storm or to find an alternate ice free course to steer are all supported by sound hydrographic information.

Bringing goods to and from market by sea and access to fisheries, sources of energy and other natural resources at sea depends on sound hydrographic information. When “just-in-time” service is not so critical, the economic efficiencies and reduced carbon footprint associated with marine transportation can outweigh all other modes of transportation. Frontier exploration and development, harvesting and extraction, transportation, national sovereignty and defence, all constructs supporting economic development are enabled by hydrographic information. Access to and an understanding of land, including submerged lands, is essential to claiming, developing and realizing economic sustainability. Surveyors have always played a role in supporting land tenure and development and thus provide an essential connection between surveys, mapping (charting) and the economy.

The International Federation of Surveyors (FIG), through the efforts of the Commission 4 workgroup 4.4 on Capacity Building and the Economic Benefits of Hydrography, has sought to bring awareness and promote the role of hydrography as an essential investment in economic development. This publication provides a snapshot of the workgroup’s efforts from various conferences and symposia to stimulate thought and exchange ideas in this regard. I would like to thank our working group chair, Mr. Gordon Johnston, the authors who have contributed to this working group through various FIG Working Weeks and Regional Meetings and those authors whose work has been selected for this publication.

Andrew Leyzack, C.L.S.

Chair of FIG Commission 4, 2007–2010

The report (file pub57\_full.pdf) is part of the output from the meeting.

1. Notes from IAEA / IHB meeting

IHB reported on the meeting held at the IAEA Environmental Labs in Monaco, to discuss the participation of IAEA in the joint capacity building meeting. The discussion was done around the topics that seems to be common ground:

1. Possibilities of assessment from the IHO technical visits
2. Identification of (bathymetric) surveys needs for the IAEA work in developing countries
3. Cooperation on IAEA’s existing projects for Africa and the Caribbean
4. Use of GEBCO products for oceanographic modeling
5. Joint participation on external funded projects (donor agencies) as a possibility.
6. Draft 2012 IHO CB Work Programme

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| --- | --- | --- |
| **Element 3.4 Capacity Building Assessment** | Responsible | Budget € |
| Technical and Advisory Visits. (General support to be provided by IHB general budget) |  |  |
| Technical Assessment & Advice Visit – Guyana and Dominican Republic | MACHC | 8,400 |
| Technical advisory & Assessment Visit – Bangladesh and Sri Lanka | NIOHC | 9,000 |
| Technical advisory & Assessment Visit – Mauritius and Seychelles | NIOHC | 9,000 |
| Technical visit to maritime authorities - Bahrain & Qatar | RSAHC | 6,000 |
| Technical visit to governmental authorities - Kuwait | RSAHC | 5,000 |
| Technical Assessment & Advice Visit – Vanuatu | SWPHC | 5,600 |
| Technical visit to the Solomon Islands to facilitate National Hydrographic Requirements | SWPHC(Note1) | 20,000 |
| Technical visit to Cook Islands to facilitate National Hydrographic Requirements | SWPHC(Note2) | 17,000 |
|  | **Sub Total** | **80,000** |

|  |  |  |
| --- | --- | --- |
| **Element 3.5 Capacity Building Assessment** | Responsible | Budget € |
| Technical Workshops, Seminars, Short Courses. |  |  |
| Database design and management EAHC Members | EAHC (Note3) | 16,000 |
| Technical aspects of maritime boundaries, baselines and the extended continental shelf EAHC Members | EAHC | 14,700 |
| Tides and water level for hydrographic survey EAHC Members | EAHC | 15,000 |
| Seabed classification EAHC Members | EAHC | 15,000 |
| Cartography Type 1 (training on basic nautical cartography – paper chart production) Bahamas, Barbados, Belize, British Virgin Islands, Cuba, Guatemala, México, Panama, St Kitts & Nevis, Trinidad & Tobago, Venezuela | MACHC(Note4) | 30,630 |
| Development of a Regional Marine Spatial Data Infrastructure (MSDI) Workshop  NIOHC Members. | NIOHC | 25,000 |
| Technical aspects of maritime boundaries, baselines and the extended continental shelf Bahrain, IR, Iran, Kuwait, KSA, Oman, Pakistan, Qatar & UAE + Iraq | RSAHC | 14,400 |
| Seminar: significance of hydrographic services and their contribution to sustainable development, social and economic perspective Chile, Colombia, Ecuador, Peru | SEPHC | 5,200 |
| Workshop on Standardization of parameters and methodologies for the production of inundation charts (support to Tsunami preparedness). | SEPHC | 13,000 |
| Processing and Administration of Spatial Databases. Argentina, Brazil, Uruguay  Obs.: Other four Latin American countries could be invited. | SWAtHC | 17,000 |
| Ports and Shallow Water Bathymetry Technical Workshop. Solomon Islands, Tuvalu, Cook Islands, Fiji, Samoa, Tonga, Kiribati, PNG, Tokelau, New Caledonia, Niue, Vanuatu, French Polynesia and SOPAC | SWPHC | 33,000 |
| Hydrographic Administration Training Placements with Regional HO. Papua New Guinea, Solomon Islands, Timor Leste, Vanuatu | SWPHC | 8,480 |
| Regional Cat C Course including MSI and Hydrographic surveying. All SWPHC Nations. | SWPHC(Note 5) | 39,880 |
| PNG National Hydrographic Capability Development. | SWPHC | 3,50 |
| Module 2 of the recognized UK Category B Programme – Hydrographic Data Processing Fiji, Papua New Guinea, New Zealand and Solomon Islands. | SWPHC(Note 6) | 41,51 |
| 2-weeks Regional Training Course on Basic ENC and ENC Production. Central America and Caribbean. MACHC. First semester 2012 | IMO Funding IHO in Kind | IMO. Under consideration |
| 2-weeks Regional Training Course on Hydrographic Survey and Introduction to Chart production. South West Pacific and North Indian Ocean. SWPHC and NIOHC (partial). First semester 2012 | IMO Funding IHO in Kind | IMO. Under consideration. |
| 2-weeks Regional Training Course on Hydrographic Survey and Introduction to Chart production. Africa. EAtHC, SAIHC and NIOHC (partial). Second semester 2012 | IMO Funding IHO in Kind | MO. Under consideration. |
| 4th Course on Hydrographic Data Processing and Marine Cartography | Nippon Found. , Japan CB Proj. | Nil to CBFund |
|  | **Sub Total** | **302,308** |
|  | **TOTAL** | **382,308** |

**RESOURCES:**

Availability expected 31 December 2011 = 198 K€

Allocated from 2012 IHO Regular Budget = 55 K€

Expected contribution from RoK 2nd Half 2012 = 63 K€

CBFUND Total availability for 2012 (expected) = 316 K€

Draft CBWP 2012 as proposed by RHCs = 383 K€

Expected Difference to support 2013 CBWP = -67 K€

If all proposed activities were accepted the CBFund will be facing a deficit of 67K euros and if by any reason the expected contribution arrives late or is postponed, the CBFund could be exposed to a deficit of 130K euros.

The recommendation is to reduce the activities by deleting and/or postponing some activities.

**NOTES : Proposed Activities to be postponed to be considered in future CBWP are:**

**1) SWPHC Technical visit to the Solomon Islands to facilitate National Hydrographic Requirements.**

Two people are considered to pay this visit, for a period of 10 days? (12 nights subsistence is required), but also 10K euros are requested to fund a “suitable hydrographic surveyor for the duration of work”?? It is expected that two experts in situ for 10 days should be able to provide the required advise. It is proposed to keep the activity but reduced from 20K to 10K euros.

**2) SWPHC Technical visit to Cook Islands to facilitate National Hydrographic Requirements.**

A resent technical visit took place in February 2011 and this activity has the 8 out of 8 priority for the SWPHC and therefore it is proposed to postpone it.

**3) EAHC Database design and management EAHC Members.**

Same activity has been proposed and included in the CBWP for 2011, but not yet executed. It is proposed to consider a repetition of such project only after having evaluated and assessed its result. Therefore it is propose to postpone this activity and consider it for 2013, if still required.

**4) MACHC Cartography Type 1 (training on basic nautical cartography – paper chart production).**

IMO is strongly considering to fund a 2-weeks Regional Training Course on Basic ENC and ENC Production for Central

America and Caribbean, during the first semester 2012. It is recommended to merge these two activities. IHB must ensure IMO course includes all subjects expected; target audience is considered; Mexico is considered as the venue and instructors are provided by IHO ( UKHO Training Team). It is proposed not to assign resources to this activity by the CBFund.

**5) Regional Cat C Course including MSI and Hydrographic surveying. All SWPHC Nations.**

IMO is strongly considering to fund a 2-weeks Regional training Course on Hydrographic Survey and Introduction to Chart production. South West Pacific and North Indian Ocean. SWPHC and NIOHC (partial). First semester 2012. It is proposed to add three days MSI to the IMO initiative and to delete this activity from the program.

**6) SWPHC Module 2 of the recognized UK Category B Programme – Hydrographic Data Processing.**

It is understood the merit of organizing this 5 weeks course as a continuation of the early training provided. Nevertheless as both calls for Module 1 in years 2010 (Singapore) and later in 2011(UK) was made wide-open, an eventual call for Module 2 should follow the same procedure. It is felt that the CBFund cannot be seen as compromised with students that attended previous courses. It is the IHB position that only after having funded at least three times Module 1, we could move to call for Module 2 and if needed to call for Module 3 after a certain period. Students that have benefited from attending Module 1 shall find alternative ways of funding to proceed with the other Modules until a call for Module 2 is made. It has to be kept in mind as well that the Nippon Foundation, through the Japan CB Project is offering a valuable alternative to take the three modules , one after the other, fully funded. This year a third group of 6 students will participate of these 15 weeks training, and the IHB has been informed that at least this project will run for two more years ( 2012 and 2013) and the idea is to extended further.

In conclusion, it is recommended to postpone this initiative and to go for a third delivery of Module 1 in 2012 in case un-spent resources during 2011 so allow. The IHB could be requested to implement this position when the conditions are favorable.

**The proposals 1) to 6) above if accepted, will reduce the cost in 155 K euros and therefore the CBWP for 2012 will have a cost of around 227K euros.**