Taking action through pilot projects: “learning through doing”

by M.C. Wong* and Hilda Lam*

Introduction

The Public Weather Service Programme (PWSP) of WMO was established in 1994 with a view to “strengthening the capabilities of WMO Members to meet the needs of the community through provision of comprehensive weather services, with particular emphasis on public safety and welfare, and to foster a better understanding by the public of the capabilities of National Meteorological and Hydrological Services (NMHSs) and how best to use their services”. Public weather services (PWS) provide a window through which the NMHS communicates weather warnings and forecasts to the public.

In recent years, rapid urbanization, economic globalization, environmental degradation, natural hazards and the threats from climate change have posed great challenges to Members and their public weather services. Unfortunately, some NMHSs, especially those of developing countries, including the Least Developed Countries (LDCs), are catching up on such fast development trends and are emerging as ineffective service agents, poorly equipped with the capabilities and skills required for successful modern-day PWS. This highlights the widening polarity of capacities between the developed and less developed NMHSs; hence the need for urgent action on the part of the Public Weather Services Programme.

This article reviews the achievements of the PWSP in the last decade; highlights some of the recent developments impacting it; examines shortfalls in current PWSP capacity-building strategies; and explores the way forward to enhance the PWS capabilities of Members.

Achievements of the Public Weather Services Programme

Public weather services are one of the Open Programme Area Groups (OPAGs) under the overall responsibility of the WMO Commission for Basic Systems. The work of PWSP is coordinated through an Implementation Coordination Team (ICT) and its expert teams. In 1999, two Expert Teams, namely on Media Issues; and Product Development, Verification and Service Evaluation, were formed to bring out the areas of focus. In 2002, the latter was restructured as Product Development and Service Assessment and a third Expert Team on Warnings and Forecasts Exchange, Understanding and Use was added. The third team was subsequently restructured as the Expert Team on Public Weather Services in Support of Disaster Prevention and Mitigation.

The scope of the expert teams’ work has now expanded from media to communication, including public education and awareness; from product development and assessment to application of new communication technology for product delivery, probabilistic forecasts and workstation development for product and service improvement; and from exchange and utility of warnings into early warning systems, nowcasting and disaster risk reduction functions.

Over the years, the Implementation Coordination Team, through its expert teams, put together a mass of knowledge in different aspects of public weather services and produced guidelines. A list of the guidelines published is given in the box on page 251.

These guidelines are published and distributed to NMHSs for their reference and use. They are also made readily available on the WMO Website. From time to time, workshops and seminars are arranged on topical issues, to spread the latest knowledge and technological know-how and share experience.

A significant milestone in the PWSP was the development and operation
of two international Web-based projects, namely, the World Weather Information Service (WWIS) and Severe Weather Information Centre (SWIC) (see Figure 1).

The WWIS (http://worldweather.wmo.int/) is operated by China (Chinese version), France (French version), Hong Kong, China (English version), Macao, China, and Portugal (Portuguese version), Oman (Arabic version) and Spain (Spanish version) for providing official weather forecasts, as well as climatological information from Members to the public and media round the world. On 1 July 2008, 118 WMO Members were supplying weather forecasts to WWIS covering 1 270 cities. Furthermore, 161 Members were providing climatological information for 1 272 cities to WWIS. There were 68 940 480 page visits in all six WWIS language versions in the first six months of 2008.

The SWIC (http://severe.worldweather.wmo.int/), operated by Hong Kong, China, provides official warnings from Members to the public and media worldwide. There were 6 950 725 page visits to the SWIC Website in the first six months of 2008. Besides providing a source of weather and warning information to meet the needs of the global community, these two Websites also serve to promote the image of NMHSs, especially, those of developing Members.

The WMO Madrid Conference and Madrid Action Plan

The WMO International Conference on Secure and Sustainable Living: Social and Economic Benefits of Weather, Climate and Water Services took place in Madrid, Spain, 19-22 March 2007. The purpose of the Conference was to contribute to secure and sustainable living for all the peoples of the world by evaluating and demonstrating, and thence ultimately enhancing, the social and economic benefits of weather, climate and water services.

The Conference endorsed the Madrid Action Plan with the overall objective of achieving, within five years, a major enhancement of the value to society of weather, climate and water information and services in response to the critical challenges represented by rapid urbanization, economic globalization, environmental degradation, natural hazards and the threats from climate change.

The main recommendation was that NMHSs would need to enhance their efforts to make potential users—including their governments—aware of the range of products and services, including potential new products and services, and their expected benefits for users. This should lead to a dialogue with users so that they can specify their requirements and service-level agreements can be concluded to maximize the benefits provided by the meteorological and hydrological community.

As part of the process leading up to the Madrid Conference, a series of seven regional and subregional preparatory workshops was organized by WMO over the period November 2005 to February 2007 in (by chronological order) the Philippines, Mali, Brazil,
Kenya, United Republic of Tanzania, Kuwait and Croatia. The principal goal of the preparatory workshops was to provide a forum for promoting an interdisciplinary assessment of socio-economic benefits of meteorological and hydrological services involving service providers and different users.

The workshops identified common regional issues and national specific differences and noted the following areas of concern:

- Inadequate understanding of user needs and requirements for meteorological and hydrological information and services by NMHSs;
- Lack of awareness of users of the available and potential weather, climate and water services in developing countries, in particular the LDCs;
- The difficulty of integrating weather, climate and water services into national development strategies and priorities, including those related to the United Nations Millennium Development Goals;
- Lack of capacities and specialized competencies in NMHSs of developing countries to deliver timely and relevant services in order to better meet the needs of users; and
- Inadequate communication between NMHSs and users.

These recommendations are of direct relevance to the PWSP.

Shortfalls in existing PWSP capacity-building strategies

Conventional training methods, such as workshops, conferences and symposia, have been the key capacity-building activities of the PWSP to address some of the institutional, organizational and individual skill needs of Members in the delivery of their public weather services. Although in recent years there has been a shift to strengthen the impact of training by focusing more on specific organizational outputs and outcomes such as the “train-the-trainer” approach, most training activities are unfortunately still delivered as isolated, one-off events with a focus on training isolated groups or individuals who

PWS guidelines

- Recommended practices, producing success stories and best practices in various areas, including: standard framework for data and products, graphical presentation of products; application of research, biometeorology and air-quality forecasts
- Quality-management procedures and practices
- Performance assessment, application of Internet and other new technology
- Weather broadcast and the use of radio for the delivery of weather information
- Media relations and ensuring the use of official consistent information
- Capacity-building strategies
- Public education and outreach strategies;
- Improving public understanding of, and response to, warnings;
- Cross-border exchange of warnings;
- Integrating severe weather warnings into disaster risk management
may not be in a position or have a holistic view to effect change within an organization. New strategies are required to achieve long-term and sustainable effects in building the capacity of these Members.

Publication of PWS guidelines is an effective means for the transfer of knowledge and sharing of experience among Members. Although much work has been done by the Implementation Coordination Team in publishing PWS guidelines, there is no real measure of the extent to which they have been used, and the knowledge contained within them applied, by NMHSs.

Furthermore, some NMHSs do not benefit as much as they should from the published guidelines in bringing about significant improvement in their public weather services. This may be attributed to great inertia of the existing structure and practices which resist changes. There may be a need for some fundamental changes in respect of some Members before they can progress on the PWS front. Nevertheless, there is increasing awareness that some of the processes are social in nature, which must be learned by practice and consciously acquired over time by those engaged in it.

These shortfalls of existing capacity-building strategies in the PWSP clearly highlight the need for a new approach that goes beyond the conventional.

A new approach: “learning through doing”

An eminent psychologist, Carl Roger (as cited in Kraft, 1978), asserted: “The only learning which significantly influences behaviour is self-discovered, self-appropriated learning”. Learning cannot be imposed. It can only be acquired through participation. Hence, the name of the non-conventional approach: “learning through doing”.

In “learning through doing”, the participant will learn through a combination of action and reflection. The approach is participation-oriented and outcome-focused, with development of partnership and ownership as an important component. This approach consists of a series of learning cycles, each comprising phases of planning, action, feedback and reflection. A cycle starts with an issue, which becomes the learning motivation. The next step is to analyse the situation and make assumptions based on the prevailing situation. Based on these assumptions, a plan with input from all stakeholders would be prepared, to be followed by action, accordingly. The outcome of the actions will be reviewed and lessons learned identified. This then forms the basis for verification and/or further refinement of the assumptions, leading to the next learning cycle. The “learning through doing” approach is illustrated schematically in Figure 2.

The main characteristics of this approach are:
- Learning through participation;
- Reflection on action aiming to check the validity of the basic assumptions, thus leading to knowledge which can be applied and tested in future learning cycles;
- Collaboration and participation of various stakeholders;
- Existence of an external change agent that would enable the creation of a learning environment for the participants and facilitate resourcefulness; and
- Capacity-building of various stakeholders is an important component of the approach in order to achieve long-term and sustainable effects.

The elements conducive to successful outcomes of this approach are:
- Recognition of the inherent capacity, capabilities and knowledge within the participating organizations and the strengthening or enhancing of this, rather than building new capacity;
- The development of trust, based on honest, transparent and accountable relationships;
- A long-term commitment to the process of engagement, participation and shared learning, where mistakes are considered...
openly, reflected upon and built upon;

- Tangible benefits for the participating organizations;
- The development of commitment and a supportive enabling environment at all levels;
- Skills, knowledge and adequate capacity at the organization level, supported by sound leadership and mentoring processes to build and enhance capacity where it has been identified as limited or weak; and
- Ownership.

In contrast to conventional learning, the “teacher” as a change agent supports the evolution by assessing, intervening, observing and evaluating the process. Its role is not to “educate” participants, rather it is to facilitate their development by bringing people together to learn from each other by sharing experiences to face common problems and develop solutions together. One of the best sources of relevant change agents are peers who are experienced in actually leading major efforts themselves. Ongoing actions, feedback and reflection provide opportunities for continuous problem-solving and learning for participants.

It is only when participants buy in the training and incorporate the insight gained into their knowledge base that the learning effect can be long-lasting and sustainable. A major course of action critical to the success of the “learning through doing” approach is thus the creation of ownership. Participants must assume the responsibility for developing their own capacities and, therefore, ownership of the change. Nevertheless, it is only when participants believe that an activity is in their best interest and provides tangible benefits within acceptable costs that they will consider ownership.

Using the approach of “learning through doing”, it is possible to design an effective PWS capacity-building programme which focuses on continuous, adaptive and interactive learning to enable participants to appreciate and manage their changing circumstances and to enhance their abilities to identify and meet development challenges in a sustainable manner.

### New thrust of the PWSP: WMO pilot project “learning through doing”

In order to ensure that, in so far as possible, those on the front line of delivering services in NMHSs could benefit from the advice and guidance in PWS which have been collected and published, the Implementation Coordination Team considers that the PWS Open Programme Area Group should embark on a coordinated training and mentoring programme which would focus on “learning through doing”. The objective of the programme would be to assist developing Members, through learning by doing and maximizing their existing capabilities, to make potential end-users aware of the range of both available and potential new products and services and the likely benefits.

The idea is that the PWS OPAG would select a small group of neighbouring countries and arrange for mentoring agents to work with the staff of the relevant NMHSs in assisting them to improve their communication with users in a defined range of sectors and to develop and deliver an improved range of products and services which would enhance the socio-economic benefits provided through NMHSs to Members. It is proposed that the programme would start off with pilot projects, each with a duration of two to three years, involving a small number of Members to test out the concept before the methodology is widely applied. In the process, the programme would draw on the expertise available through the ICT expert teams, as well as that provided through the Secretariat.

A pilot project would comprise three stages, namely planning, implementation and review.

![Figure 3 — Learning through doing pilot project stage I: planning](image-url)
Stage I: planning

The ICT, assisted by the Secretariat, would first identify suitable Members with a common need (e.g., enhancement of an early warning system for tropical cyclones) to participate in the pilot project. In order to be a candidate, its NMHS should have an operational forecast office and produce a basic suite of products and services. It should have a demonstrable level of commitment in terms of infrastructure and support from management. The target user sector, e.g. agriculture, health, emergency response, would also need to be identified early on, ensuring that client partners can be found. Findings from relevant studies in the past may be useful at this stage.

The ICT would identify suitable experts as mentoring agents at various stages required in the pilot project. The working language of the pilot project would be agreed by both mentors and recipient Members. Ideally, the cooperation of the relevant Regional Specialized Meteorological Centre or a regional coordination centre would be sought to assist with access to products that may be essential for the project. To benefit from the economy of scale and for establishing regional networks, two to three Members of the same Region would participate in the pilot project, so that expertise and experience may be shared.

The Secretariat, in consultation with participating Members, would finalize a project proposal, including definition of project scope, duration, milestones and deliverables, for seeking project funds, if necessary, a formal agreement would be signed by participating Members and the WMO Secretariat (and funding agencies, if any) before implementation. The project proposal and funding agreement, if applicable, would constitute the key deliverables for this stage.

Stage II: implementation

At this stage, mentoring agents selected by the ICT should act as resource agents and facilitate staff of the participating Members in accomplishing the goal of the pilot project. An initial market survey among the selected Members to benchmark the NMHS brand would be conducted to determine if the selected sectors are aware of, and use, the products and services of the NMHS. The methodology for the socio-economic assessment of target sectors would then be established and the baseline impact of the existing set of meteorological products and services clarified.

The NMHS would engage the target sector in dialogue in a systematic manner to reveal the gaps between user requirements and the NMHS’s current capability which are addressable, taking into account the macro-environment faced by the NMHS and by making use of the knowledge database accumulated so far in the public weather service community. The results would be translated into a business plan for the participating NMHSs in dealing with the target sectors, with improvements in PWS through new or enhanced products; use of new technology in service delivery; more effective communication skills and means; and more public education and outreach.

The business plan would be put into motion and the outcome monitored. A systematic way to monitor the outcome would be set up. A workshop would be organized to share experiences and knowledge with the NMHSs in the same region. The initial market survey report, criteria and methodology for the assessment of economic benefits of the target sectors, the business plan and outcome monitoring plan, as well as the organization of the experience-sharing workshop, would be the key deliverables of the implementation stage.

Stage III: review

After the execution of the business plan, a post-project survey to assess the impact of the improved
public weather services would be conducted. Enhanced capacity of the NMHS, improved products and more efficient service delivery are useful indicators. The overall evaluation should use as a basis the benchmark brand of the NMHS and the baseline social and economic impact established earlier. Suitable Implementation Coordination Team experts may also be called in at this stage to facilitate the overall evaluation and reflection by participating Members. The post-project survey and overall evaluation reports would be the key deliverables of this stage.

A cost-effective way to actualize the idea of “learning through doing” would be by injecting some PWS aspects, through cooperation with various OPAGs, into other existing WMO programmes or projects. One potential candidate is the Severe Weather Forecasting Demonstration Project for south-eastern Africa, which has room for enrichment by adding a public weather service element involving media and disaster management and a nowcasting element. It is proposed that the PWSP should develop opportunities in this direction and identify potential projects which have room for enrichment by adding various public weather service elements.

It is hoped that, with the help of the pilot project, participating Members would start up their learning cycles facilitated by “mentoring agents” through their own live action in a familiar environment. As a result, the emerging solutions for dealing with target issues would be more relevant and hence more effective. During the process, the impact of expert knowledge in the field through improved public weather services could be evaluated in a systematic manner. The process of issue identification, action, feedback and reflection would continue into new learning cycles after the pilot project, enhancing the capabilities of participating Members to meet development challenges in the future.

References

Final Report of the Meeting of the CBS OPAG/PWS Implementation Coordination Team, Muscat, Oman, 4-9 June 2007.


