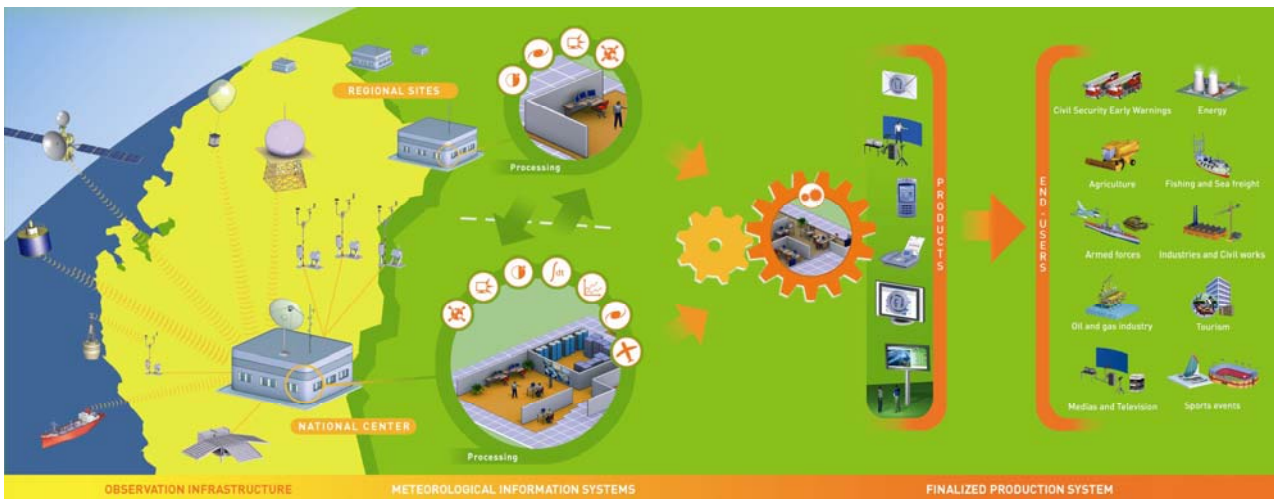


Capacity Development for Investment and Policy Decision-Makers

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Abstract

Setting up a full capability of service delivery is a real challenge for National Hydrological & Meteorological & Services (NHMSs). Meeting this challenge means technical skills / systems but mainly requires non technical actions such as educating users, NHMS management, policy makers, and donors whenever. Switch to user-oriented strategy is generally needed and will impact on NHMS organization, systems and workflow. It's a long process which must involve all levels in NHMS as well as users themselves or their representatives. Switch to service delivery capability is more and more welcome by donors who may accept to fund modernization projects which are explicitly aiming at maximizing socio economic benefits.



How the development of service delivery capability (right) drives the overall NHMS' modernization process and workflow

1 Introduction

Setting up a full capability of service delivery is a real challenge for National Hydrological & Meteorological & Services (NHMSs). Meeting this challenge means technical skills / systems but mainly requires non technical actions such as educating users, NHMS management, policy makers, and donors whenever.

Service delivery to all users categories is hereby called PWS and therefore encompasses much more services than services to media and general public only. It is also assumed that delivery of warnings is explicit part of service delivery.

Meteo France International (MFI) is the dedicated entity in charge of transferring know-how, knowledge and technology from Meteo-France. MFI implements comprehensive modernization projects worldwide. PWS has become a key component of such projects.

This paper is split into three parts

1. first presentation of overall PWS context, typical NHMS workflow, and assessment of NHMS and decision makers' readiness for PWS.

2. description of kind of education needed for users, NMS Management, stakeholders, policy makers, donors
3. mention of what a third party can bring to help in the process.

This paper also reflects MFI's experience in leading modernization projects including setting up PWS component in several countries worldwide.

2 What are we talking about?

Setting up a successful PWS capability assumes a robust and fitted organization within NHMS, and also depends on the local/global context.

2.1 A favourable context

General context shows positive and negative features. On the one hand, one can acknowledge a significant and growing understanding of socio-economic impact of weather and benefit of meteorological information; there also is, from MFI experience in more than 60 countries, a general trend and eagerness at NHMS and local policy makers level for developing service capability.

On the other hand, other factors are less favourable, among which the poor readiness / awareness of many NHMSs, which may be due to several

reasons: the user-oriented approach, which is very much common in most sectors of economy, is not there yet, NHMSs have a poor knowledge of who their users are / may be, what are / may be their needs / expectations, the status of NHMSs is generally not fitted to cost recovery and strong development of PWS. Last, despite increasing amount of technology available from the market, many NHMSs have not upgraded (or built) their Information System and are simply not aware of any comprehensive system technically able to help them perform services to the users. In short, PWS is generally not yet enough tackled as a whole in NHMSs' development strategy.

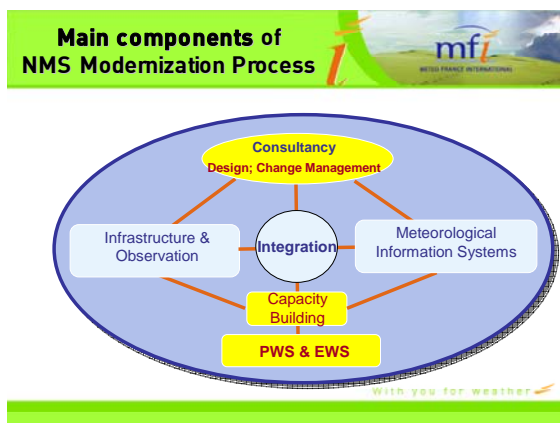


Fig.1. Architecture of NHMS's modernization plan

The above lay-out shows that PWS/EWS can be built after NHMSs has secured a robust Observation system, Information System, performed relevant level of integration to make all investment in equipment cost-effective and provide all sources of data to PWS/EWS component. It also shows that beyond system integration, initial design, consultancy, and capacity building are key factors in the success of PWS/EWS approach. Last, one have to say that Public Weather Services (PWS), and most probably Early Warning Systems (EWS) are a matter of sovereignty in many countries, which underlines the need for setting up an effective organizational and technical capability in this field.

We can mention two main international references in this respect:

One is the GCOS – ClimDev Africa initiative (Action Plan for Africa, Apr.2006) which ultimately aims at taking Climate Change into account in countries' governance.

Another significant one is the Madrid07 Action Plan (WMO, Mar.2007). Such document includes a dozen of main actions as agreed upon at the end of this major event. It is striking to observe that those actions (rephrased and summarized hereafter) can be split into:

Technical actions (system enhancement) such as:

- Action 5: strengthen observation systems, models and PWS systems

- Action 9: increase capability of multimedia dissemination

Non Technical actions (methodology and capacity building) such as :

- Action 2: identify user requirements and improve/increase production to end-users

- Action 3: start capacity building endeavours for users and service providers

- Action 4: increase recognition of NMSs contribution by government & stakeholders

- Action 6: improve dialogue between users and providers through tools and methods

- Action 8: increase partnership between users and providers, evaluate performance

- Action 10: develop methods for quantifying benefits per sector, especially for developing countries, present results to government & donors in the goal of modernizing NMSs' infrastructure and service capability

Implementing Madrid07 Action Plan means tackling above listed actions through concrete projects at NHMS level.

2.2 Technical vs Non-Technical factors

From previous section, it is clear that setting up a full service delivery capability relies on critical Technical and Non-Technical Factors. From our experience in the recent past, we can make the following statement:

- Regarding Technical factors:

- Supply of a compact and integrated production system should be able to help design tailored products (*bottom left part of PWS layout hereafter*), to elaborate (*central part*) from the whole set of raw and expertised data (*top left part*), disseminate (*central right*) a high number of tailor-made products and warning to a wide spectrum of users (*right part*) through different means of telecommunication (fax, voice, internet, ...) depending on local telecommunication facilities;

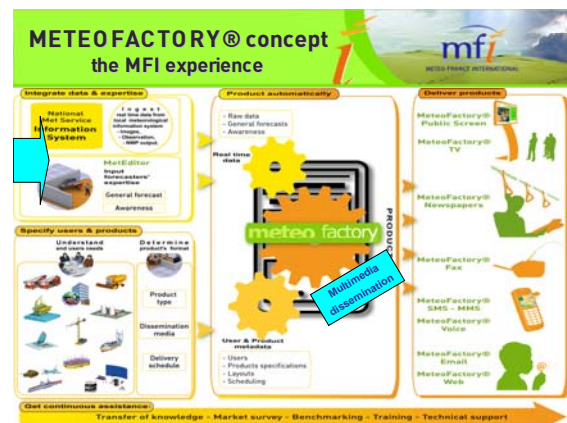


Fig.2. Typical PWS/EWS concept

- Capability of said production system should not be limited to media (TV, newspaper) and general public but should address all sectors of activity / economy;
- Same Production system should technically address Early Warnings the same way as regular production, or at least include EWS as an explicit and integrated part of the overall system.
- For above reason, forecasters' expertise should be explicit part of input data to PWS/EWS production system

- Regarding Non-Technical Factors:

- Transfer of knowledge, know-how, experience, should be sought from more advanced NHMSs when/where relevant;
 - Identification of relevant user categories, users, and user requirements should be performed;
 - Market studies may also be performed;
 - Forecasting vs PWS/EWS organization should be updated and thought as a whole, either in a centralized or in a distributed/regionalized mode;
 - NHMS's strategy should be updated / changed through a user-oriented approach
- The above non-technical aspects are underestimated most of the time.

Somewhere in between Technical and Non-Technical aspects is the design and implementation of a fitted nationwide Info System. Such Information system may be centralized or distributed depending on country size and NHMS's strategy. However, PWS often requires some proximity to the users. Setting up a relevant and comprehensive Information System generally takes time and may be a prerequisite (at least for critical components) to setting up of PWS/EWS capability.)

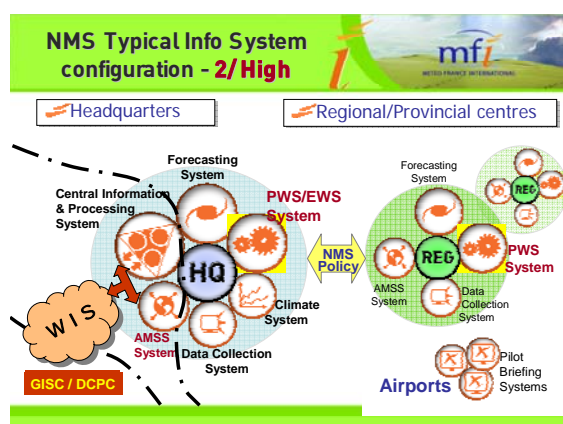


Fig.3. Integration of PWS/EWS in a distributed Information System (High scenario, distributed)

3 Whom PWS education shall address?

From the above, service delivery capability means a lot of efforts (and therefore time) to educate users,

NHMS staff and also management, policy makers , and donors when involved/sought in the process.

3.1 Users

Users need to be met, and educated, on different basis: General Public, Macroeconomic scale (economic sector), Microeconomic sector (user level).

- General Public:

This topic is generally addressed through services to medias, and training of media specialists. The main goal is to have a wide majority of people able to get and understand warnings from NHMS, and (re)act according to recommendations. Setting up simple procedures as the proven French "Vigilance" procedure help a quick and effective education of users, and ultimately saving lives and properties and prevent major losses.

- Microeconomic scale:

At this level, it is important to remember about the value of forecasts: as commonly said now, "forecast has no value unless it influences decision making".

Having said that, it is therefore important to

- Identify users: training is then more with NHMS than with users themselves at this stage;
- Introduce NHMS's capabilities (forecast skill, EWS, PWS, applied meteorology): in this case training is shared between users of course, and also NHMS when needed;
- Understand users' decision-making process (cost-loss matrix) through relation to weather (events, thresholds), and also to NMS forecasts (and expected skill): this should be made by NHMS's staff or consultant generally;
- Help users specify their needs and related PWS products (content, delivery time and media, frequency): again, this should be made by NHMS's staff or consultant generally.

The above training/education actions should be performed over a reasonable period of time and involve users, NHMS's personnel, and consultant(s) if/when needed. Such actions may be performed through interviews, survey of user categories, meetings/seminars at HQ ou Regional level.

- Macroeconomic scale:

Education at this stage should include several components:

- Perform studies in the field of Economic valuation of meteorological information per region / economic sector. Studies performed in this field show that they are a good opportunity for exchanging between NHMS and user representatives, and therefore train/educate current/potential users in main sectors of economy. Study itself may be led either by NHMS itself or by Consultant; despite abundant literature about case

studies, there is a strong need for proven, simple and reliable methodologies for large scale assessment. Such studies generally contribute to better knowledge and awareness at NHMS, economic sector, policy makers, and donors level (see next sections).

- How to reach most users effectively, how to manage successful warning dissemination?

- How to build successful partnerships?

Above mentioned educational actions/studies mainly address representatives of user categories or economic sectors. They can come in the form of interviews, seminars, expert panel meetings, involving NHMS representatives at suitable level.

3.2 NHMS staff

In many countries NHMS staff does need sustained training and support to be able to

- Talk to existing / potential users properly about NHMS capacity

- Design appropriate service / product for particular user(s)

- Operate PWS/EWS system on a daily basis and guarantee production quality and timeliness.

Obviously training is expected in both technical and non technical fields.

WMO training courses on PWS aim at filling the gap, but should be complemented by more intensive training and support on the long run when appropriate.

3.3 NHMS Management

In our view, NHMS management should mainly be involved in strategic aspects and also in the choice of the PWS/EWS system

- Towards user-oriented strategy

The need for NHMS's management is mainly to get support in :

Assessment of current situation (there are proven methods available such as context evaluation, SWOT/PEST analysis...);

Preparation of a strategic Action Plan including:

- Critical analysis/design of Information and Observation Systems to support service delivery;

- Design of PWS/EWS system, start of systematic Forecast/Production verification,

- Strengthening of Applied Meteorology (taking into account users' value chain),

- Setting up of priority partnerships in Civil Security (for warnings) and through relevant organization (e.g. Public-Private-University partnerships) for applied meteorology and related services.

- Update NHMS organizational chart (including PWS entity, Marketing when/where relevant), assess optimum status for NHMS new strategy (separate entity?)

Ultimately, assistance to NHMS's Management should lead to updated Strategic Plan taking into account the user-oriented approach. WMO Strategic Plan is of course a relevant basis in this respect.

Last, assistance to implementation and to Change management may also be sought by NHMS top management.

All above training, assistance, consultancy, support may be brought by Consultant(s) and in some cases by WMO experts.

Such services must preferably be provided through a continuous process, parallel to PWS project implementation.

- Building the technical solution for PWS

In many cases, as seen in §2.1, the context is favourable, and the NHMS's willingness to proceed is there. It may not be sufficient. "*What shall we start from? What shall we start with?*" are commonly asked questions, for reasons related mainly to lack of reliable Information System on the one hand, lack of consolidated vision about PWS/EWS and user-oriented organization in the other hand.

Assistance to Management and PWS department may be relevant for:

- Identification of technical solutions to meet users' requirements;

- General training (managers, new PWS and/or Marketing teams)

- Defining and implementing new work positions (assistant forecasters, Marketing, ...) in (updated) NMS organization chart

Such assistance may naturally come in parallel of PWS project implementation.

3.4 Policy Makers

Policy Makers and Government bodies in general are natural targets for education on PWS/EWS.

Main topics may be :

- Education on Workflow (see figure on first page) from observed data to user) to educate Investment makers (umbrella, donors) on cost effectiveness and benefit from investments. Of course 1 \$ or 1 € investment on Observation systems will be more easily approved if it leads to integration, contributes to PWS, and finally to country benefit.

- Concept and assessment of socio economic benefit at country level (macro scale as explained in §3.1), and expected impact of modernized NHMS in country economy or welfare. This may help making decisions on major investment in NHMS modernization.

- Administrative status of NMS vs cost recovery: How to change NMS to independent body?

- EWS and Disaster Management

Ministries, Planning Organizations may welcome such education / assistance, which should be

provided by NHMS top Management assisted by Consultant whenever necessary.

Files, reports, interviews, even films may be relevant in this respect.

3.5 Educate/Convince donors

In the context as described in §2.1, donors are more and more looking at meteorology, and may positively contemplate funding modernization plans for NHMSs. Educating donors is therefore of paramount interest for NHMSs. Main topics are again:

- Meteorology of course! Unlike NHMS umbrella, donors are not (yet) specialized in this field and need to get basic knowledge of meteorology, and mainly typical workflow
- Socio economic benefit of meteorology (as already mentioned in §3.1-4), for better investing in NHMS infrastructure when needed.
- Disaster Management and relation to Meteorology
- Climate Change and relation to States governance (e.g. ClimDev Africa and Millenium Objectives)
- Typical modernization projects

Main donors (World Bank, multilateral funds, AfDB, ...) may welcome such information.

Training / consultancy may be provided by Consultant, advanced NHMSs, local NHMS as well. Such education may come in the form of seminar (e.g. Madrid07), country initiatives, preliminary studies, direct contacts, draft projects.

4 What a third party can bring?

As seen above, setting up a full PWS/EWS capability may often mean modernizing part or whole of NHMS's infrastructure and organization.

In some cases, NHMSs may welcome assistance of a third party in the process, as they may not be familiar to strategic, organizational, technical, impacts of such projects.

A third party may bring services in following fields:

- Act as in-between between NHMS, government, and users, while relying on WMO guidelines
- Help increase confidence between NHMS and users, NHMS and policy makers, or with NHMS management, or with donors.
- Accompany NHMS in the (complex) overall process from design to operational implementation

MFI (Meteo France International) has references in assistance and successful implementation of EWS/PWS in the past years:

- Kenya (EWS/PWS 2007-2008)
- Qatar (EWS/PWS and specific assistance to Asian Games 2006)

- Indonesia (EWS 2005, PWS 2006, regional PWS 2007)

- Libya (TV 2007, EWS/PWS 2007-2008)

5 Summary

Building capability in service delivery is a wide technical issue which includes upgraded centralized or distributed Information System in all cases, and sometimes strengthening of observation networks. However, setting up a full PWS/EWS capacity may also be the main non-technical issue in NHMS modernization process.

PWS component should address all levels (users, NHMS management, policy makers, donors); it has become a strategic issue which requires Top Management involvement as it can impact on the whole NHMS human and system organization.

Service Capability development is a major challenge in itself and is now driving the whole NHMSs modernization process in many countries. Education, Assistance, Support, Capacity Building, are strongly relevant in this respect for investment and policy makers, but also for NHMS Management.

Implementing PWS capability is a comprehensive project in itself with technical and mainly non-technical issues; such a project should be quite related to other parts of NMSs activities and systems such as Observation and Information Systems; it is not an immediate process!

Switching to user-oriented strategy requires awareness of NMS Management, Policy makers, donors (whenever); it also require a global vision and strategy update that can be shared with third party assistance/ consultancy.

Setting up a full service delivery capability means parallel projects: technical implementation, strategic update, parallel support to organization and relation to users. Such efforts will ultimately benefit to safety of goods and people, economic sectors and the whole country.

NHMSs have to successfully manage this move in order to fulfil their mission.

<http://www.mfi.fr>