WORLD METEOROLOGICAL ORGANIZATION
PUBLIC WEATHER SERVICES PROGRAMME

Guidance on Developing Service Delivery Mechanisms in NMHSs

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1. Introduction

Effective service delivery is a fundamental requirement for NMHSs if they are to meet national needs. There are many different interpretations of the concept of service delivery as it relates to the provision of weather-, climate- and water-related services. To this end, WMO has developed a "Strategy for Service Delivery" to guide NMHSs in the provision of weather, climate and water-related services that take into account user needs. This "Guidance on Developing Service Delivery Mechanisms in NMHSs" incorporates many of the elements of the "WMO Strategy for Service Delivery".

2. Purpose of this Guide

While there is no prescriptive way to provide services, this "Guidance on Developing Service Delivery Mechanisms in NMHSs" is a step-by-step guide on how an NMHS may develop and implement a mechanism that would enable it to better deliver services to users. Effective services, however have the certain attributes in common as outlined below.

3. Attributes of effective services

Effective services should be:

- Available: at time and space scales that the user needs;
- Dependable: delivered regularly and on time;
- Usable: presented in user specific formats so that the client can fully understand;
- Useful: to respond appropriately to user needs;
- Credible: for the user to confidently apply to decision-making;
- Authentic: entitled to be accepted by stakeholders in the given decision contexts;
- Responsive and flexible: to the evolving user needs,
- Sustainable: affordable and consistent over time, and,
- Expandable: to be applicable to different kinds of services.

4. Step 1: Focus on the user

(a) Identify the users

The purpose of preparing and delivering services to users is to enable them to make better decisions by using weather and climate information. User engagement and feedback is essential in designing and delivering effective services. For the implementation of a successful service delivery mechanism, it is very important to identify specific users that your Service will be serving, and to engage with them appropriately. Generally, users may be divided into five main groups as follows:

- The hazards community - The mission (shared with the NMHS) of these organisations is to ensure safety of life, livelihood and protection of property.

The NMHS should consult and coordinate closely with them, know their specific requirements and give them high priority. The public safety, emergency and civil defence agencies constitute this important group. Their mandate and responsibilities make them major players in planning for and responding to most emergency situations. It is clearly in the interest of NMHSs to ensure that coordination with these important organizations be given a high priority.

- Government authorities – Governments are the most important users of the services and information provided by NMHSs. The most important users are usually the host ministry where the NMHS is situated. It is important to ascertain the requirements of this group and to maintain formal communication with them.

- Weather-sensitive economic sectors – Public Weather Services can be of significant value to weather-sensitive sectors of the economy such as agriculture, forestry, fishing, marine, air and land transport, energy production, construction, sport, tourism and outdoor entertainment. Many NMHSs also provide specialized meteorological, climatological and hydrological services The needs of this user group can be very specific, ranging from long-range forecasts and climate information for planning purposes to short range forecasts and warnings for daily operations.

- Media (print, radio, TV and others) - The media is the most important user and partner of NMHSs products and services. Different media types and outlets have well defined expectations in regards to the final product they require from NMHSs. The final forecast product would need to be tailored to suit the media delivering the product.

- The public – The general public is the largest user group of NMHSs. The most important need of the public concerns warnings of severe weather so as to take prompt action to preserve life and secure property. Their routine needs relate to travel, leisure and general convenience. The requirements of general public are not as precise and well-defined as those for other user sectors and have to be better ascertained through establishing feedback mechanisms including comprehensive, fact-finding surveys.

(b) Determine user needs

Different users have different needs and the only way to determine their exact requirement is through consultation and gathering information. The starting point should be to ask very clearly how the currently available weather information is used in daily decision making by users, how they apply it and what would be the negative impact of lack of such information. The following lists a number of techniques that can be applied to gather such information:

- Surveys, questionnaires, interviews and in-depth case studies to identify a broad overview of the users' needs and expectations. Expertise outside of NMHSs, such as professional survey designers may be required for this type of information gathering;
- Fora and workshops with users' participation in order to learn their requirements and to explain to them of the capabilities of the NMHS;
- Pilot projects in collaboration with users to develop products and services on a longer term to meet the stated requirements;
- Monitoring feedback of user response through press clippings, letters, phone-calls, fax, suggestion boxes or the Internet;
- Interaction with users during Open Days, World Meteorological Day and activities of the NMHS outreach programme;
- Regular meetings with government agencies and emergency managers to ascertain their information needs.

(c) Ensure that users are aware of NMHS services

It is important that users be made aware of the services that an NMHS can deliver as well as understand the limitations of forecast and warning products. Hosting discussion and short training events by NMHSs for different user groups helps to make them aware of how weather and climate products are prepared. Operational forecasters should be involved in such training for fruitful dialogue with users. **Table 1** below shows user groups and suggested approaches to educate or reach out to them.

User Groups	Training Courses	Seminars	Informal	Leaflets / Pamphlets	Media	One-to-One
Politicians / Senior Public Servants			x		x	x
Emergency Managers		x	x			x
Water Managers		x				x
Transport Authorities		x				x
Power Supply Engineers		x				x
Media	x		x			x
Farmers		x		x	x	
Fishermen		x		x	x	
Schools	x			x	x	
General Public				x	x	

***Table 1**: User groups and suggested approaches to educate or reach out to them*

Step 2: Focus on internal organization of your NMHS

(a) Get the NMHS ready to deliver service

Delivery of effective public weather services needs an organisation-wide commitment involving the NMHS leadership, technical systems and those directly involved in service delivery. An enthusiastic and motivated focal point or team of officers trained in different aspects of service delivery such as consultation and communication with user groups and with skills in dissemination and presentation of NMHSs products would be a necessity for effective service delivery. Where possible, a Public Weather Services (PWS) office or unit should be established for this purpose.

(b) Ensure that NMHS staff are aware of the user needs

This step requires that members of staff in charge of service delivery are informed in detail of the requirements of different users and the NMHS processes for preparing and delivering the required services. This may require training, to be conducted within the NMHS so that all staff would follow the same rules and regulations and 'read from the same page' as they serve users.

(c) Develop an effective warning programme

Since preparing and issuing warnings of hazardous weather is one of the most essential activities of NMHSs, it is crucial to develop an effective warning programme. The NMHS staff in charge of forecasting and public weather service provision should be involved in the development of the programme as they are aware of the realities on the ground in terms of strengths and limitations of the NMHS. To be successful, a warning programme strives to ensure that everyone at risk must:

- Receive the warning;
- Understand the information presented;
- Believe the information;

- Personalize the information;
- Make correct decisions; and,
- Respond in a timely manner.

The ideal warning process has to take into account each of the above components to be successful. It takes training and planning as well as strong collaboration with other partner agencies such as the disaster management and media, to implement a warning programme.

Step 3: Improve communication skills of NMHS Staff

Communication is one of the most necessary skills for a forecaster, but it is a skill rarely taught during academic training in Meteorology. Communication, at its most fundamental, involves the transmission of thoughts, emotions and meaning from one person to another. While words (written or spoken) are usually thought of as the primary medium of communication, studies have shown that many other factors (tone of voice, inflection and body language) play a significant role in aiding (or impeding) communication. Effective two-way communication implies listening skills as well as speaking skills. Confidence is an important element in communication, and this cannot be taught directly, but must be developed within each person. Formal communication training courses for forecasters (in whatever medium they are required to operate – telephone, radio, television, etc.) are crucial in developing communication skills, but they should be augmented with mentoring and feedback schemes and with regular refresher training.

Step 4: Engage users

(a) Formalize NMHS working relationship

Formalize the working relationship with the user and agree on the following:

- Detailed description of products and services needed by the users;
- Detailed description of products and services provided by the NMHS;
- Service delivery procedures including product formats and delivery times;
- Responsibilities of the NMHS – ensuring high quality products and timely delivery;
- Responsibilities of the user – providing regular feedback on the quality of the services. (This is important to the NMHSs for use in service improvement);
- Training that may be required for users, including schedules;
- Assigning NMHS and user focal points who would: be easily accessible; capable of responding to concerns that may arise and; oversee the success of the mutual engagement.

(b) Engage and educate the media

Many NMHSs have difficulties in working successfully with media organizations. However, there is a substantial common interest between NMHSs and the media in providing a quality weather service to the public. Therefore, a dialogue needs to be established with media representatives through which NMHS personnel can gain a full understanding of the media concerns while the media representatives can gain an appreciation of the services that the NMHS can deliver. This is best achieved by a combination of formal (seminars, training courses) and informal contacts such as social events, familiarisation visits, etc. In order to kick off media engagement where it has not existed before, training by internationally-respected experts, organised through WMO is recommended. The NMHS may learn the following from the media:

- How to write appropriate press releases for use by the media;
- How to organize proper press conferences, press briefs etc;
- How to perform effectively during radio, television or newspaper interviews etc.

The media may learn the following from the NMHS:

- Understanding and interpreting basic weather terminologies;
- Understanding and interpreting forecasts, advisories and warnings correctly;
- The limitations associated with the accuracy of weather forecasts;
- Communicating forecast uncertainty and confidence etc.

Step 5: Conduct Service Evaluation for Improvement

(a) Verification

This involves assessing the accuracy of forecasts and warnings from a technical point of view. It serves to inform the NMHS about the skills of its forecast procedures and the aspects of forecasting that need improvement. If no verification procedure exists in the NMHS, start with very simple steps to verify one or two elements (e.g., rainfall, temperature) in a few key locations, and use many available WMO resources to have staff trained on more advanced verification methodologies.

(b) Assessing user satisfaction and perception

Service evaluation determines whether services are meeting user requirements and ascertains whether users understand the products and services provided and are making optimum use of them. Some of items to consider include the language used in communicating forecasts (non-technical and simple for non-meteorologists), the timeliness of forecasts, presentation formats, and communication and dissemination methods. Evaluation must include an assessment of what value the users gained from the NMHS products and services and how such services helped them with making informed decisions. The evaluation process should be kept simple with the aim of having some results available when talking to decision-makers and in response to media enquiries. Annexes to this document provide examples of service delivery evaluation surveys.

Step 6: Make a PWS implementation / Improvement Plan

(a) Timelines

A Service Delivery Plan for the NMHS, should include an implementation programme in the form of a table of activities to be carried such as meetings with respective users or user groups, training seminars or workshops, the agreements to be entered into etc. The plan should take into account the realities of the situation on the ground, including budgetary and personnel matters. These considerations are essential in helping to fix realistic timelines for achievement of milestones of the implementation of the plan.

(b) Action persons

A good plan is specific, not just on the actions to be taken, but also on the person to take the action. Contact details of the action persons should be included as appropriate. The action people should include focal points from the user organization(s) engaged in the project.

ANNEX 1

USER ASSESSMENT QUESTIONNAIRE

NMHS ------- (Country)

Q1. From where do you obtain weather information of your country?

1. Radio
2. Television
3. Newspaper
4. Directly from the Meteorological Service
5. Meteorological service Website
6. Other Websites
7. Mobile phones
8. Other sources (please specify)

Q2. Do you consider the warnings of severe weather of your country over the past several months accurate or inaccurate?

1. Very accurate
2. Somewhat accurate
3. Average
4. Somewhat inaccurate
5. Very inaccurate
6. Don't know / no comment(s)

Q3. How easy is it for you to understand the format and the language used in the severe weather warnings?

1. Very easy
2. Easy
3. Neutral
4. Difficult
5. Very difficult
6. Don't know / no comment(s)

Q4. How do compare the current severe weather warnings with those from the first two (2) years?

1. More accurate
2. About the same
3. Less accurate
4. Don't know / no comment(s)

Q5. Are the severe weather warnings useful in helping you decide on appropriate response action (e.g., stay at home, do not take the car out of the house, keep children indoors, etc.)?

1. yes
2. No

Q6. On the whole, how satisfied are you with the severe weather warnings provided by your country?

1. Very satisfied
2. Satisfied
3. Neutral
4. Dissatisfied
5. Very dissatisfied
6. Don't know / no comment(s)