

Meeting Notes with Recommendations



AGENDA

1. Opening and introduction
2. Adoption of agenda
3. Purpose of GWEF, membership, terms of reference, working arrangements
4. Review of Washington and AMS meetings outputs
5. Identify themes for action and timelines for completion
6. Identify interested parties and ways to progress each theme
7. Proposals for future events and desired outcomes
8. Inputs to WMO, WB and HMEI processes and deliberations on PPP and GWE
9. Plans for studies, reviews, projects in all sectors
10. Next steps and confirmation of time, place, attendees of next meeting
11. AOB
12. Closure

1. Opening and introduction

1.1. The meeting was opened at 09.00 on April 9 at meeting room 334 of the Suntec Convention Centre, Singapore. Ms Chin-ling Wong, Director of the Meteorological Service of Singapore welcomed the participants and expressed her hopes that this new form of coordination and consultation between the public, private and academia sectors will be useful and productive.

1.2. The participants unanimously agreed with the proposal for Michael Staudinger, Director of the Central Institute for Meteorology and Geodynamics, Austria (public sector) to chair the meeting.

1.3. The meeting was attended by 25 participants, including 11 GWEF members, invited experts, advisers and representatives of the supporting organizations – the Association of Hydro-Meteorological Equipment Industry (HMEI), the Global Facility for Disaster Reduction and Recovery (GFDRR) and the World Meteorological Organization (WMO). The list of participants is in **Appendix 1**.

2. Adoption of the agenda

2.1 The meeting adopted the agenda and discussed the working arrangements. It was agreed that the meeting will be held under the “Chatham House rule”.

2.2 The participants agreed that a report in the form of summary of discussions should be prepared. The report should contain a list of items/actions agreed by the GWEF with the expectation that participants from the different sectors could use them as input to their respective governing bodies, and decision-making processes and mechanisms.

3. Purpose of GWEF, membership, terms of reference, working arrangements

3.1 The meeting reviewed the proposed draft TORs and working arrangements for the operation of the GWEF. The GWEF members agreed that the concept of a Forum is suitable to help steer the dialogue on the growth and development of the GWE. The following main points have been discussed/raised:

- *Membership* – there were concerns expressed by several participants that they are representing a sector but are not appointed by that sector. The mechanism of nomination of members and their status needs clarification. The representation of the academic sector is particularly difficult due to lack of a common international organization or association at the moment. With the understanding that perfect membership is difficult to achieve, the aim should be to identify and engage leaders from the sectors to participate in the forum. In any case, there should be transparency of the mechanism to nominate/engage members of the GWEF.
- *Status of the GWEF* – it was suggested that the forum should be supported by a MoU between the WMO, WB/GFDRR, and HMEI (eventually open for additional parties in the future). Such an MoU would give the GWEF recognized status and visibility but should not make it “too formal”. Having

a clearer status was considered important in order to ensure appropriate attention and follow up on the outcomes and recommendations of the GWEF by the respective GWE sectors and their organizations/associations, including WMO, but also to communicate and reach out to the wider community.

- *Format of the Forum* – there was an agreement of the members to keep the Forum as a small group (“group of 12”) with minimum formality to avoid creating bureaucratic processes and procedures or establishing a rigid framework. This format could evolve if the Forum members so agreed if, for example, the coordinating organizations WMO, HMEI and GFDRR express their support for the Forum to become a more formal consultative mechanism that would provide important input to their respective decision-making processes and bodies.
- *GWE goal and vision* – It is necessary to better define the vision of the GWE and what it plans to achieve. One element of the vision is the envisaged rapid growth of the GWE (the 10x10 vision, growth of the GWE by a factor of ten over the next decade). While the GWEF members all agreed that this was the right concept to underpin the vision, additional justification/wording/explanation was needed to substantiate the vision narrative and the magnitude of the likely growth. The narrative would include the connection the GWE growth with that of the global GDP.
- *Resources* - The growth of the GWE will depend on the growth of investments. While the public sector is expected to grow, there are few existing signs of large additional investments in the public sector or academia. Development partners/donors play an important role in the support of the public sector (as seen in the results of the [2nd Development Partners conference](#)). Leveraging additional large investments in the private sector is a must to fuel the growth of the GWE. While the private sector already invests in the GWE, new framework/mechanism are needed to incentivize the private sector to make further investments into the public and academic sectors. There are inherited barriers that prevent private investments from flowing, for example, in weather/climate/early warning services.
- *Focus on services* – Concerning future investments, it was agreed that there is already a shift of the focus from “capital-based infrastructure” to a “service-based ecosystem”. This implies a change in the current practice of investments focused primarily on infrastructure to investments in services.
- *Inclusiveness of the GWE* – The discussion should refocus on “how”: how to improve the performance (of the enterprise) in the developing countries and narrow the existing capacity gap? How to establish sustainable “business model”; how to improve the role of the development organizations/donors? How to engage better the private sector and academia in the process, knowing that academic sector is limited or even non-existent in many developing countries? How to promote the needed cultural change and

perception of the public-private-academia partnerships in the developing countries?

3.2 The meeting appreciated the need for secretarial support to the Forum, which would be more demanding in the future. Currently the support was provided by the GFDRR, with resources available until the end of the year, and the WMO. Support from WMO would continue with the expectation that the executive bodies (Executive Council and Congress) would recognize the importance of the GWEF for the WMO process and for the Members States.

3.3 The meeting acknowledged the utility of a small coordination group with representatives from the GFDRR, HMEI and WMO, as well as lead persons from the sectors, to help in organizing events, structure their agendas and facilitate the follow up of agreed tasks/actions.

3.4 Following the discussions on this agenda item, several changes were introduced to the draft GWEF TORs. The revised TORs agreed by the meeting are in **Appendix 2**.

4. Review of Washington and AMS meetings outputs

4.1 The meeting reviewed the key actions that need to be taken identified by the GWE Seminar held in Washington, DC in November 2017, covering the following topics:

- 1) Improving collaboration and building trust within GWE
- 2) WMO process on the GWE
- 3) Working Group on the GWE
- 4) Socio-economic scenarios
- 5) Data access and exchange
- 6) Business models for data services
- 7) Diversity amongst countries

4.2 The meeting noted with satisfaction the timely follow up coordinated by the three organizations (HMEI, GFDRR and WMO) on the third action of establishment of a “working group”, which is the GWEF. It also noted that the agreed GWEF terms of reference address actions 1) and 2).

4.3 It was agreed that the future work of the GWEF should focus on addressing the items 4), 5) and 6) taking into consideration the challenges related to item 7) – diversity amongst the countries.

4.4 Socio-economic scenarios

4.4.1 The meeting discussed the need for socio-economic and cost-benefit studies (SEB) on weather services delivery. The meeting noted the importance of having convincing SEB figures in establishing modernization projects for developing countries, in view of the significant funding opportunities (e.g., WB, GCF, etc).

4.4.2 Some participants advised caution with the SEB studies because they could be biased towards desirable results. It was recommended to make use of existing SEB and similar studies conducted at national level in a number of countries.

4.4.3 Two types of studies would be useful in the future GWE development, namely:

- Studies to support investments and persuade governments (mostly of developing countries). It is necessary to explain and demonstrate to national decision-makers that there will be tangible benefits of investment in enhanced weather service;
- Separate studies are needed on quantifying the benefits of the future growth of the GWE through evidence-based analytical economic methodology.

4.4.4 The meeting supported a holistic approach of future studies, i.e., to be conducted at country level covering all sectors rather than just focused on NMHS. It was also clear that such studies need strong support from academia.

4.5 Data access and exchange

4.5.1 The meeting agreed that the data access and exchange issues are central for the GWE. In the enterprise, there is some confusion when talking about “free data” or “open data” policy. These issues are closely related to the discussion on sustainable business models. For the Forum members, the appropriate notion was “as freely as possible” and not “for no cost”.

4.5.2 Related to the discussion on the definition of capacity of countries, the meeting agreed that ensuring access to high quality data by all countries should be the goal.

4.5.3 In some cases, there is a charge for access to such data, for instance, an annual charge for getting full access to ECFMWF forecasts. Nevertheless, ensuring access to high quality datasets like ECMWF data should be highly recommended in the design of development projects and should be preferred instead of investing in running much inferior (often regional) numerical models locally.

4.5.4 Data sharing nationally and internationally remains a problem for many countries. Innovative initiatives may be considered which would incentivize stakeholders to share more data. One such possibility could be the creation of “data market place” where stakeholders from different sectors could exchange their data in addition to the free exchange under the WMO data policy resolutions.

4.5.5 Some participants expressed concern of the slow progress in this area, for instance, the review of the WMO data policy resolutions (40, 25, 60); it was agreed that a strong signal should be sent to WMO to expedite the data policy review.

4.6 Business models

4.6.1 The meeting agreed that a GWE growth based purely on public sector funding was not realistic. Partnerships between public, academic and private sectors, or any relevant combination of those will have to be developed and promoted. However, there is a great variety among countries regarding the possibility for such partnerships, depending on the legal framework and socioeconomic system.

4.6.2 In some countries, public sector organizations (e.g., NMHS) need guidance in explaining and discussing business models at government level. Talking to governments with a clear view of sustainable capacity building business models would help to retain

the public funding and also release additional investments. It was felt that the private sector stakeholders with their corporate culture could help in providing such guidance on business models.

4.6.3 From a private sector perspective, free data provision does not fit to a sustainable business model. Observations and data come with a cost that need to be recovered. Thus, when talking about business models, we need to distinguish the different business cases.

4.6.4 One of the big issues was how to make the best use of the significant donor funds for raising the capacity of the developing countries in a sustainable manner. The interlinkages and interdependencies between the developing and developed world were clear which makes for two major business cases: the business case of a sustainable global infrastructure to run global services, and the business case of enabling developing countries to develop local capacity and benefit from the global services available.

4.6.5 The discussion about business cases and business models should not diminish the need for retaining and developing the needed human resource with relevant competence and intelligence. In this regard, the role of academia and training is vital.

4.6.6 A particular focus should be put on “educating” the NMHSs of developing countries, where development funds for modernization are potentially available, to also invest in services needed by their citizens and economy, instead of just buying equipment. Therefore a user and service orientation together with integrated and sustainable approach along NMHS value chain should be taken into account for modernization projects. The capital investment model of “buying stuff” has often proven to be non-sustainable. Training in change management should be part of the discussions with developing countries with the help of academic sector.

4.6.7 The Forum noted with interest the information about a national enterprise consultation mechanism (consortium) in Japan facilitated by the Japan Meteorological Agency (JMA). This mechanism encompasses more than 300 public, private and academia organizations, including private service providers and representatives of the user community. It could be considered as a good national practice of a continuous dialogue and engagement between the sectors.

4.6.8 It was proposed to identify 2-3 modernization programmes/projects that could be used as pilots in applying the above views on sustainable business models.

4.7 **Capacity**

4.7.1 The meeting discussed the need for a better definition of “capacity” that would be acceptable for all sectors. The interpretation that all countries should have the same capacity was not acceptable. Forum members’ views converged on a definition in terms of: access to data and services in a sustainable way combined with local intelligence, understanding and relationship with customers. Sustainability requires also the promotion of science and attracting the next generation to the profession to ensure continuity.

4.7.2 From developing countries perspective, building local capacity was important in view of overcoming the fears that the GWE may make the local providers obsolete. There was also a link with the Sendai Framework for DRR which emphasized the need to build local capacity and use indigenous knowledge.

4.7.3 The Forum agreed that a definition of capacity should be further developed.

5. Identify themes for action and timelines for completion

5.1 The meeting identified several tasks for the Forum with concrete actions to be followed by individuals or small teams. The main theme under which these tasks will be pursued is: "*Identify the attributes of, and ways to remove the barriers to, a 21st century weather¹ information service*".

5.2 The list of tasks with the names of the task leaders and teams are in **Appendix 3**.

6. Inputs to WMO, WB and HMEI processes and deliberations on PPP and GWE

6.1 **To the WMO:** the Forum makes a strong recommendation to review the data policy Resolutions 25, 40, 60:

- analyse their impact on data availability and the need for their update in the current enterprise context.
- provide further information on their implementation by Member countries and suggest mechanisms to reinforce the provision of the requisite information.

6.2 **To the GWEF members:**

- to develop further and promote the narrative on the GWE vision of "growth by partnership".
- to deepen the understanding of possible business models enabling a country to provide effective weather and climate services in a sustainable manner.
- to support independent economic/business model studies.

6.3 **To the private sector:** to elaborate the idea of data market place/data exchange approach bearing in mind the current free access and exchange of most essential data, highlighting the potential positive effect on data availability and quality.

5.4 **To the GFDRR and the WMO:** Identify modernization projects as pilots for demonstration of sustainable business models in developing countries.

7. Next steps and confirmation of time, place, attendees of next meeting

¹ For brevity, the theme only refers to "weather"; however, the global weather enterprise encompasses the two disciplines of meteorology (weather and climate), hydrology and related environmental areas, with all core activities – observations, modelling, data-processing and forecasting, delivery of services, and related research.

7.1 Following the agreement of the GWEF members for holding four meetings per year, including at least one face-to-face meeting, the next meeting is proposed to be held via Webex (or similar) on July 9, 2018. Information about the time and the agenda of the meeting will be coordinated in due course.

7.2 The Forum may organize a face-to-face meeting in October 2018 in the margins of the Met Technology World Expo 2018 in Amsterdam. It was informed in this regard that the WMO GWE event is tentatively scheduled for 11 and 12 October partly overlapping with the CIMO Technical Conference.

8. Closure

On behalf of the GWEF and other participants the Chair, Michael Staudinger, expressed deep appreciation to Ms Wong, the Director of the Meteorological Service of Singapore for the excellent organization and hospitality during the meeting. He also thanked all Forum members and other participants for the active participation in a very fruitful discussion. The meeting was closed at 17:45 on 9 April 2018.

APPENDIX 1**LIST OF PARTICIPANTS**

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**Working Practice and Terms of Reference
of the Global Weather Enterprise Forum**

(agreed by GWEF/1, 9 April 2018)

1. Aim of the Global Weather Enterprise Forum

To provide a platform for consultation and to facilitate co-operation, engagement and liaison between the public, private and academic sectors in the global weather enterprise for the benefit of all. It will endeavor to build trust between the sectors, identify a common vision and mission in line with the societal needs for information and services provided by the GWE sectors.

2. Membership

Representatives from each of the public, private and academic sectors of the global weather enterprise will serve as GWEF members;

Note: The intention is to keep the membership small with initial membership of four core members from each of the three sectors.

One co-chairperson will be elected from each sector in the GWEF membership; co-chairs will rotate in chairing the meetings of the GWEF.

Membership would be based on voluntary expressions of interest from representatives of the public, private and academic sectors; final membership will be decided through coordination between the supporting international organizations – WMO, HMEI, WB GFDRR, and relevant body(ies) representing the academia sector.

Members and the co-Chairs of GWEF will ordinarily each serve for a (staggered) 2-year term and expect to be supported for this purpose by their home organization.

3. Working practice

As a body, the GWEF should aim to meet around 4 times per year (with at least one face-to-face meeting). The meetings will be held in accordance with an agreed agenda by the members. Members can submit working papers; summary of discussions and/or minutes of these sessions will be made available through secure WMO FTP server [<http://www.wmo.int/iwe/share/index.php>].

In addition, the GWEF will work offline between sessions on agreed matters that it wishes to pursue. Support to GWEF meetings and online work by representatives from key international organizations such as the WMO, HMEI and the WBG/GFDRR in advisory role is encouraged.

The secretariat support for the GWEF would initially be provided by the WMO and WBG/GFDRR.

The meetings should take advantage of existing larger events that potentially involve public, private and academic sectors including, but not limited to those of learned societies (such as the AMS and EMS) and international conferences (such as InterMET

Asia and Meteorological Technology World Expo). GWEF sessions will be open for additional (non-member) observers on discretion by the members.

3. Outreach (to be developed)

4. Terms of Reference:

The Global Weather Enterprise Forum will:

a) Help to identify and exploit opportunities and to mitigate risks associated with the growth and development of the global weather enterprise (GWE). In doing this the GWEF will build upon existing capacity and capabilities across the weather enterprise to identify the potential for further development.

b) Contribute to establishment of common understanding of the GWE landscape and related roles and responsibilities of its stakeholders. It will work on developing agreed principles of mutually-beneficial partnerships and code of ethics in the GWE context.

c) Keep in focus the need of the developing and least developed countries and make proposals for solutions across three sectors (public, private and academia) to improve their sustainable capacity by providing access to, and participation in and engagement in the GWE.

Note: Capacity of countries is understood as access to high quality data and information, ability of services delivery of data and impact- and user-oriented weather products in a sustainable way using and developing training and expertise to use scientific methods of high quality. "Capacity" will be further defined in the future sessions.

d) Provide input to the WMO Executive Council, HMEI Council, and to relevant Global Practices and groups within the World Bank Group on matters related to the global weather enterprise.

e) Recommend studies and evidential reports on the status and progress of the global weather enterprise.

f) Co-ordinate the publication of position papers and other communication materials regarding the growth and development of the global weather enterprise.

g) Promote a series of dialogue opportunities for the three sectors of the global weather enterprise to meet and discuss developments.

h) Explore ways to engage and involve the community as widely as possible.

Appendix 3

List of tasks agreed by GWEF/1 Meeting, Singapore, 9 April 2018

Main theme: Identify the attributes of, and ways to remove the barriers to, a 21 st century weather information service			
Task 1: Make all relevant information flow more freely by removing barriers and by supporting a culture that is user oriented and includes all PPA sectors.			ALL
Sub-task 1.1	Develop a market place concept for data exchange/sharing	Peter Platzer , Neil, Abe-san and Lenny	Pr
Sub-task 1.2	Review WMO data policy Resolutions 25, 40, 60 and identify mechanisms to update, enlarge and enforce	Michael , John, Celeste, Kimura-san and Dimitar	Pu
Sub-task 1.3	Monitor current exchange in terms of data quality and quantity to identify and inform major deficiencies; suggest correction measures	Peter Ambenje , Dimitar	Pu
Sub-task 1.4	Set, revise and enforce data and information standards	Alessandra , Brian, Alan and Dimitar	Pu, Pr
Task 2: Developing and maintaining workforce for the GWE			Ac
Sub-task 2.1	Expand training (by academia predominantly) and enhance skills and competencies in the whole global weather enterprise value chain.	Dave and Erland	Ac
Task 3: Strengthening application and basic research and speeding the deployment of proven applied science, especially in the areas where it strengthens the GWE			Ac
Sub-task 3.1	Develop ideas	Lenny and Dave	Ac
Task 4: Advance work on sustainable business models			
Sub-task 4.1	Development partners to investigate and promote implementation of business models that focus on data provision and service delivery in a long-term sustainable way	Patrick , Vladimir and Dimitar	Pr, Pu
Sub-task 4.2	Complement the above by proposal/methodology for systemic performance assessment of the service delivery and corrective actions	Kimura-san , Dimitar	Pu

Note: Preliminary reports on each sub-task should be made available by the respective lead person **not later than 29 June 2018** (one week before the scheduled Forum Webex session, 9 July 2018).