

COUNTRY HYDROMET DIAGNOSTICS

Afghanistan 2021 peer review



Peer Reviewer
Turkish State Meteorological Service



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Country Hydromet Diagnostics Report
for
Afghanistan Meteorological Department
(AMD)

Turkish State Meteorological Service

2021

Country Hydromet Diagnostics Report

Afghanistan

The Country Hydromet Diagnostics Report for Afghanistan is prepared by Turkish State Meteorological Service.

The information stated in this report gathered from 4 different sources. WMO OSCAR (Observing Systems Capability Analysis and Review tool) Surface Database, GBON Gap analysis for Afghanistan based on data from January 2020, WMO Community Platform and finally the respond of the Afghanistan Meteorological Department (AMD) to a questionnaire prepared for CHD Road Test. Additionally the Strategic Plan of AMD was also reviewed accordingly. Since there isn't any platform to engage with users in AMD and due to the pandemic situation it wasn't possible to interact with external costumers or end users. So the report manly relies on the information provided by the AMD.

The Country Hydromet Diagnostics Report tried to indicate maturity level of AMD in 10 critical elements of the hydromet value cycle grouped in 4 different categories.

A. ENABLERS

1. GOVERNANCE AND INSTITUTIONAL SETTING

(Formalization of the NMS mandate and its implementation, oversight, and resourcing)

Indicators:

1.1. Act or Policy describing the NMHS legal mandate and its scope. Data Source: WMO Community Platform: (i) Legislative act regulating meteorology (none, law, decree, other); (ii) Title of primary legislative act determining NMS functions; (iii) NMS areas of responsibilities.

AMD is reporting to Afghanistan Civil Aviation Authority (ACAA) and ACAA is reporting to the Office of the President of Afghanistan. AMD's duties and responsibilities are defined in two government documents. These are as below (Documents are in local language and translated by AMD management as below):

Civil Aviation Law of Afghanistan Civil Aviation Authority

Providing aeronautical meteorological services; e.g. observations, forecasts and reports in line with ICAO Annex-3 for Afghanistan.

Presidential Decree: AMD is the national meteorological service of Afghanistan and following are duties and responsibilities

- i. Providing meteorological observations,
- ii. Providing forecasts and early warnings,
- iii. Providing climatological data, archiving data, and other information,
- iv. Communicating weather information to the public,
- v. Providing meteorological needs of Afghanistan for agriculture, transportation and civil aviation to decision makers, user communities, and all related sectors.

Title of primary legislative act determining NMS functions

Afghanistan Civil Aviation Law

Other regulatory framework applicable to NMS functions

Agromet Project

Title of the institution with authority over the service:

Ministry of Transport and Civil Aviation

Title of the National Meteorological or Hydrometeorological Service (NMS)

Afghanistan Meteorological Department

Services provided by NMS

Public Weather Services; Climate Services; Aviation Services; Agrometeorological Services

1.2. Existence of Strategic, Operational and Risk Management plans and their reporting as part of oversight and management. Data Source: WMO Community Platform: (i) Development/ strategic plan in place in NMS; (ii) Main priority areas. To be included: (iii) National Strategic Plan timeline and status (pending approval, exists but update needed, etc.).

AMD has a national strategic plan for improving its services, capacities and capabilities in line with government policies and plans. Unfortunately, the plan could not be funded due to the lack of government funding. Government budget of AMD is only enough for staff salaries and critical operations such as building maintenance (e.g. heating, electricity, internet and gasoline for transportation). AMD is using the strategic plan mostly for communicating their needs and plans to donors and projects. The first strategic plan was prepared in 2017 for 5 years and updated on 2019 by AMD staff.

AMD is also part of the “Afghanistan Drought Risk Management Strategy” which was prepared with support of FAO, WBG and WMO as a response to drought event in 2018. AMD is part of the Early Warning service provider for the meteorological droughts and indices. Afghanistan Drought Risk Management Strategy is available at: <http://www.fao.org/emergencies/resources/documents/resources-detail/en/c/1261317/>

- World Bank Afghanistan Hydromet Roadmap targets government advisors and decision makers with a technical strategic framework for hydromet and early warning services and the resulting socioeconomic benefits. The expectation is for the main service providers to improve their capability and capacity to: (i) produce, manage, translate, and communicate hydromet data and information to stakeholders and end-users; (ii) assist stakeholders and end-users in accessing, interpreting, and utilizing the generated data and information; (iii) help improve the dissemination of and response to warnings for public safety and economic security; and (iv) inform planning and decision making for cost-effective investments in national climate-resilient development. The roadmap is available at: <https://www.gfdr.org/sites/default/files/publication/afghanistan-hydromet-roadmap.pdf>

1.3. Government budget allocation consistently covers the needs of the NMS in terms of its national, regional, and global responsibilities and based among others, on cost-benefit analysis of Service. Data Source: No consistent data currently available. WMO Community Platform: Studies on the social and economic benefits of weather, climate, and water services were undertaken in the last 10 years (Yes/No).

The budget of AMD is nearly 300.000 USD per year. As ACAA is under transition an additional budget of 100.000 USD allocated for AMD to maintain its observation network and ITC equipment for 2021 budget year.

The budget is provided by government and AMD hasn't any non-governmental budget. There is no significant change on the budget trend during the recent 5 years.

Mainly, sources from international and national agencies is used for funding to improve the hydrometeorological infrastructure, etc.

AMD has a strategic plan covering the next 5 years

1.4. Proportion of staff (availability of in-house, seconded, contracted out) with adequate training in relevant scientific, technical, and ICT disciplines. Data Source: Data available from the WMO survey on the Status of Human resources of NMHSs (WMO Education and Training Programme).

AMD has total 100 staff. Almost half of them are working at headquarters and the remaining part are working in regions. More than 60% of the staff are observers, 30% of the staff are engineers. 90% of the staff is male and only 10% is female.

Forecasting office and observation department at headquarters work 24/7 with a total number of 10 staff on shifts.

1.5. Experience and track-record in the implementation of internationally funded hydromet projects and research and development projects in general. Data Source: Dependent on maturity level – level 1 and 2 additional international resources to be focused first on institutional and governance issues; level 3 and 4 on operational issues and level 5 perhaps for functions to assist neighboring countries.

AMD has been supported by WMO Afghanistan EWS project, funded by USAID/BHA and in kind contribution of Turkish State Meteorological Service (TSMS) from 2016-2019. The following are delivered during to AMD with project:

- Enhanced AMD surface meteorological observation network for data collection, storage, and processing (9 station are reporting to GTS)
- Built a Local Area Network/Wide Area Network to enable it to exchange data and information
- Enabled AMD to submit and retrieve data from the WMO Global Telecommunication System (GTS)
- Enabled AMD to provide public weather services over social media and public weather web-site (www.amd.gov.af)

- Trained AMD staff on observation, forecasting (basics, NWP, FFGS), maintenance and calibration, quality management, remote sensing etc. Total of 2700 staff-day on the job training provided for over 60 AMD.
- Delivered capacities and capabilities for utilization of Pakistan-Afghanistan Flash Flood Guidance System
- Established a meteorological satellite data reception and visualization station and delivered nowcasting capability for severe weather and flash flood warnings
- Restructured AMD administration in order improve the efficiency and effectiveness of services
- Enabled AMD to provide basic maintenance services for its observation network and IT systems

More details of the project are available at:

<https://public.wmo.int/en/projects/Afghanistan-EWS>

Moreover, this project has allowed other projects to support Afghanistan such as CREWS Afghanistan project implemented by WBG and WMO.

More information is available at:

<https://www.crews-initiative.org/en/projects/afghanistan-hydromet-early-warning-services-resilience>

Maturity Level:

Level two: Effort ongoing to formalize mandate, introduce improved governance and management processes and address resources challenges

2. EFFECTIVE PARTNERSHIPS TO IMPROVE SERVICE DELIVERY

(Effectiveness of the NMS in bringing together national and international partners therefore improving the service offering.)

Indicators:

2.1. Effective partnerships in place with other government institutions.

AMD is working together with the following:

- a. Ministry of Agriculture, Irrigation and Livestock: AMD is providing meteorological data and information for meteorological drought indices
- b. Afghanistan Disaster Management Authority: AMD is providing information and warnings through email, whatsapp and phone for the provision of the hydrometeorological forecasts and warnings.
- c. Afghanistan Water Affairs Regulation Authority: AMD is providing access to FFGS system for QPE and QPF and providing data and information to Water Resources Department (WRD) on demand
- d. National Statistical Information Agency (NSIA): AMD is providing meteorological data and information on demand as part of the Afghanistan Drought Risk Management Strategy for early warning and early action against the drought and other demands.

e. National Environment Protection Agency (NEPA): AMD is providing data and information on demand for the national climate prediction and adaptation efforts. Also NEPA supporting AMD to access GCF funds for closing its service and capacity gaps to serve Afghanistan's Hydromet and climate service needs.

2.2. Effective partnerships in place at national and international level with private sector, research centres and academia, including joint research and innovation projects

- Agha Khan Foundation for providing access AMD forecast and warnings by rural communities.
- Kabul University for staff capacity building and recruitment.
- FEWSNet for famine early warning efforts.

2.3. Effective partnerships in place with international climate and development finance partners

AMD has prepared a GCF project proposal with UNEP, which is approved by National Environment Protection Agency (NEPA, accredited agency) and submitted to GCF board for approval. The proposal is covering full funding of AMD National Strategic Plan for an 8 years' implementation.

2.4. New or enhanced products, services or dissemination techniques or new uses or applications of existing products or services that culminated from these relationships

AMD Flash Flood Guidance System products for the provision of QPE and QPF to WRD

AMD using METCAP+ (provided by TSMS) programme for visualization of its data, information, forecast and warnings (CAP based) on its webportal and facebook

https://www.facebook.com/Afghanistan-Meteorological-Department-%D8%B1%DB%8C%D8%A7%D8%B3%D8%AA-%D9%87%D9%88%D8%A7%D8%B4%D9%86%D8%A7%D8%B3%DB%8C-%D8%A7%D9%81%D8%BA%D8%A7%D9%86%D8%B3%D8%AA%D8%A7%D9%86-1789178311411061/?ref=page_internal

AMD using ACAA (www. Acaa.gov.af) and facebook for the provision of warnings and information. In total AMD has access over 50.000 internet users.

Maturity Level:

Level three: Moderate effective partnerships but generally regarded as the weaker partner in such relationships, having little say in climate financing initiatives

B. OBSERVATION AND DATA PROCESSING SYSTEM

3. OBSERVATIONAL INFRASTRUCTURE

(The level of compliance of the observational infrastructure and its data quality with prescribed standards.

Indicators:

3.1. Average horizontal resolution in km of both synoptic surface and upper-air observations.

- Over 100 km for active synop stations
- Over 50 km with semi-active synop and aeoronatical observation stations.

43 surface stations registered to OSCAR Database but GBON gap analysis for Afghanistan defined only 12 stations as baseline stations. 9 of these baseline stations are operational and 2 of them are semi operational due to the staff shortages. 1 upper air stations currently operated by NATO forces.

AMD observation network is not competent to respond requirements for observation of physical variables in support of WMO Programmes and Co-sponsored Programmes.

3.2. Additional observations used for nowcasting and specialized purposes. Data Source: OSCAR database

- Aeronautical meteorological observations (METAR and SPECI) are not fully in use by AMD. Even though this data is available nationally, it is processed by NATO Forces at Airports (Kabul, Mezari Sharif, Kandahar, Herat Airports)

- AMD has access to nowcasting products of NOAA:

<https://www.ospo.noaa.gov/Products/atmosphere/ghe/>

- AMD has access to MeteoSat-8 over EUMETCast system

- Sources of these observations are Satellite observations, meteorological synoptic and manual stations

3.3. SOPs in place for the deployment, maintenance, calibrations and quality assurance of the observational network.

- There isn't standard operating procedure (SOP) in place for the deployment, maintenance, calibrations and quality assurance of the observing network.

3.4. Percentage of the surface observations that depend on automatic techniques.

43 surface stations registered to OSCAR Database but GBON gap analysis for Afghanistan defined only 12 stations as baseline stations. 9 of these baseline stations are operational and 2 of them are semi operational due to the staff shortages. 1 upper air stations currently operated by NATO forces.

Maturity Level:

Level two: Basic network, large gaps, mostly manual observations with serious challenges and/or data quality issues

4. DATA AND PRODUCT SHARING AND POLICIES

(The nature of data and product sharing on a national, regional and global level.)

Indicators:

4.1 Percentage GBON compliance - for how many prescribed surface and upper-air stations are observations exchanged internationally. Usage of regional centers WIGOS centers.

Data Source: Proposed GBON regulations^{xiii} and WIGOS Data Quality Monitoring System which provide real-time statistics on data exchange at an hourly resolution.

- 12 surface stations (9 operational and 2 semi operational)

- Surface observations from these 9 stations are reporting to the GISC Offenbach [DE] through the Turkish State Meteorological Service infrastructure.

According to GBON compliance report of Afghanistan (3.02.2021), the below table shows the number of stations that need to be updated and newly established for international reporting.

Observing stations on land LDC, Non-SIDS	Baseline	Reporting	Target	Update	New
Surface	12	0	17	12	5
Surface (conditional)	12	0	65	12	53
Upper-air	1	1	3	0	2

(Baseline indicates the number of stations currently available. The Reporting means the number of stations currently reports observations internationally. Target shows the total number of actively reporting stations required for compliance. Update means number of existing stations to be upgraded and New shows the number of additional stations required.

The Principal GISC is Tehran, and the Secondary GISC is Beijing for Afghanistan but the surface observations are reporting to the GISC Offenbach [DE] through the Turkish State Meteorological Service infrastructure.

There are ongoing efforts to report the Aeronautical meteorological observations of Kabul International Airport to GTS through the Turkish State Meteorological Service infrastructure.

4.2 A formal policy and practice for the freely and open sharing of observational data.

Data Source: Data Policy Survey contains information on cost recovery policies; Res 60 Survey: data available on provision of climate data and products on a commercial basis; type of users; basis for the price established; who retains the revenue; approx. net annual revenue. Note that this info is currently been collected on a onetime basis. Key aspects could be included in WMO Community Platform core dataset if deemed essential.

Data sharing within government agencies (e.g. MAIL, NWARA and ANDMA) are defined by the regulations of National Statistical and Information Agency and Presidential Decree. These efforts are mostly focused on drought indices and early warnings for the moment.

AMD has some efforts ongoing with NGOs (AGA Khan) and international agencies (WFP, FAO, FEWSNet) for data and information sharing. Moreover, a draft data sharing policy at national level exists.

4.3 Main data and products received from external sources in a national, regional and global context, such as model and satellite data. Data Source: Data Policy Survey

- METEOSAT products through EUMETCast Satellite data reception station

- GFS and GTS access, visualization and processing through METCAP+

- FFGS provides: ICON Global NWP data, NOAA's GHE and MWGHE, SAC-SMA, Snow-water equivalent and snow-melt products, flash flood forecasting and advisory products.

Maturity Level:

Level two: A minority of the required GBON compliant data is shared internationally and any existing data sharing policies or practices or infrastructure severely hampers the manner in which two-way data sharing is happening

5. NUMERICAL MODEL AND FORECASTING TOOL APPLICATION

(The role of numerical model output and forecasting aids such as remote sensed products in product generation; whether models are run internally and if the value added compared to global models is determined.)

Indicators:

5.1 Model and remote sensed products form the primary source for products across the different forecasting timescales.

- ICON Global NWP (2 days) through FFGS portal
- GFS NWP (3 days) through METCAP+
- METEOSat-8 products through EUMETCast system
- FFGS data and products (2 days) through encrypted HTML access to Pakistan Meteorology Department FFGS Servers
- Numerical weather forecast (PNT)

5.2 Models run internally, and if so, is data assimilation and verification done and what horizontal resolution applied.

- AMD doesn't run NWP models internally.
- AMD does statistical verification between forecasts and measured data for 11 observing points for temperature, pressure, precipitation and wind values.

5.3 Probabilistic forecasts produced and if these based on ensemble predictions.

Data Source: Not directly relevant but the following is measured by WMO M&E System and could be considered: - # of Members accessing forecast - products developed by GDPFS designated centres (Source: Annual reports from Focal Points of the GDPFS designated centres (World Meteorological Centres and Regional Climate Centres) - # of monthly verification reports provided by Global Producing Centres (GPCs) to the Lead Centres (Source: monthly reports on GDPFS designated centres websites and verified) - # of Members routinely producing decadal forecasts Could potentially be included in WMO Community Platform core data for future data collection.

- AMD doesn't make probabilistic forecasts.

Maturity Level:

Level two: Basic use of external model output and remote sensed products in the form of maps and figures, covering only a limited forecast time range

C. SERVICE AND PRODUCT PRODUCTION AND DISSEMINATION

6. **WARNING AND ADVISORY SERVICES** (NMS role as the authoritative voice for weather-related warnings and its operational relationship with disaster and water management structures.)

Indicators:

6.1 Warning and alert service cover 24/7.

Public warnings for flash floods, precipitation, wind and temperature is available at website and social media. Especially heavy precipitation and flashfloods are informed to government disaster management agency (ANDMA) on set (email, phone, whatsapp). Such information is disseminated to local response teams and international agencies by ANDMA.

6.2 Hydrometeorological hazards, for which forecasting and warning capacity is available and whether feedback and lessons learned are included to improve warnings

Data Source: No data currently available. To be potentially included in WMO Community Platform core dataset and Sendai Framework monitor.

- Flash floods, droughts, heavy precipitation (snow, rain etc.) are the hydrometeorological risks for which a forecasting and warning capacity is available.
- Forecast verification results are used for improving the forecasts.
- FFGS warnings are responded by ANDMA (field reports) and according to these responses forecasters are able to do FFGS sensitivity settings.

6.3 Common alerting procedures in place based on impact-based services and scenarios taking hazard, exposure and vulnerability information into account and with registered alerting authorities

Data Source: No data currently available. To be potentially included in WMO Community Platform core dataset.

Partial. AMD's METCAP+ has the CAP capacities and warnings are provided on CAP criteria based on hydrometeorological thresholds (soil type, basin situation and precipitation amount). But full CAP implementation requires additional works such as vulnerability analysis and definition of social and environmental thresholds still are not available.

Maturity Level:

Level three: Weather-related warnings service with modest public reach and informal engagement with relevant institutions, including disaster management structures.

7. CONTRIBUTION TO CLIMATE SERVICES

(NMS role in and /or contribution to a national climate framework according to the established climate services provision capacity.)

Indicators:

7.1 Where relevant, contribution to climate services according to the established climate services provision capacity. Data Source: Drawing on the Climate Services Checklist

Very limited. AMD is sharing available observation data and historical data (<https://library.noaa.gov/Collections/Digital-Docs/Foreign-Climate-Data/Afganistan-Climate-Data>) with related government agencies (NSIA, MAIL, NEPA).

Maturity Level:

Level one: Less than basic Climate Service Capacity

8. CONTRIBUTION TO HYDROLOGY (NMS role in and contribution to hydrological services according to mandate and country requirements.)

Indicators:

8.1 Where relevant, standard products such as QPE and QPF produced on a routine basis according to the requirements of the hydrological community

AMD has trained National Hydrological Service (NWARA-WRD) on using FFGS QPE and QPF and gave secure access to the observation and FFGS data. Moreover, AMD is sharing data with NHS on demand and co-implementing some international projects together as below:

- CREWS Afghanistan Project (ongoing): <https://www.crews-initiative.org/en/projects/afghanistan-hydromet-early-warning-services-resilience>
- ENEWATF WBG Project (pipeline) (<https://www.worldbank.org/en/news/press-release/2021/02/16/new-grant-to-improve-food-security-lesser-drought-and-covid-19-impacts-for-rural-afghans>). This project aims to build early warning, early action and early financing capacities in Afghanistan for drought. AMD and NHS (WRD) are the technical service providers for Early Warning Component. Project is planned to get approval on second half of 2021. Total of USD 15M is provisioned to improve weather, water and climate services through supporting AMD, WRD, NSIA and MAIL.

-Ongoing efforts between AMD and NWARA (WRD, NHS)

8.2 SOPs in place to formalize the relation between Met Service and Hydrology Agency.

Not at the moment. But Worldbank and WMO are supporting AMD and NWARA for building such SOPs and CONOPS under CREWS Afghanistan project.

8.3 Joint projects/initiatives with hydrological community. Data Source: Detailed data on hydrology is currently being collected through a survey. Needs to include client survey data.

Establishment of Afghanistan Drought Risk Management Strategy: in coordination with national hydrological and agricultural agencies for the early warning of the drought. As a

result of efforts ENETAWF Project is in the pipeline for the approval from WBG, provisioned for 2021-2025.

Central Asia Afghanistan Flood Early Warning System (CAFEWS) Project: planned for 2021-2024 (in the pipeline). Afghanistan meteorology and hydrology services are requested to involve in WBG Central Asia project efforts on supporting national Hydromet services for flood and landslide forecasting, data and information sharing for Amu Darya and Syri Darya river basins.

FFGS is operational in Afghanistan (PARFFGS). Model is using ICON global model provided by Pakistan Meteorological Department(PMD). PMD recently established WRF capacities covering Afghanistan domain. WRF (5Km) will be operational for FFGS by the end of 2021.

Maturity Level:

Level two: Meteorological input in hydrology and water resource management happen on an ad hoc basis and or during times of disaster

9. PRODUCT DISSEMINATION AND OUTREACH

(The effectiveness of the NMS in reaching all public and private sector users and stakeholders.)

Indicators:

*9.1 Channels use for communication and does the NMS operate its own TV studio **Data Source: WMO Community Platform: communication channels used to disseminate products and services (TV, radio, printed media, web app, social media, mobile phone app, other) – to add sms, email.***

AMD is using website and social media for accessing public outreach and mass media channels. Facebook account of AMD is followed by ore than 30.000 users. It is only 0.1% of the Afghanstan population.

AMD has also active communications with ANDMA through email, phone and whatsapp for provision of daily weather forecast and warnings on set.

AMD hasn't its own television studio.

9.2 Education and awareness initiatives in place.

Generally, there are no education and awareness initiatives in place in AMD. AMD is focusing on the education and training its staff to ensure the provision of the basic services. As mentioned above, AMD has trained National Hydrological Service (NWARA-WRD) on using FFGS QPE and QPF and gave secure access to the observation and FFGS data.

9.3 Special measures in place to reach marginalized communities, the youth and the elderly.

There are no special measures to reach marginalized communities in place in AMD.

Maturity Level:

Level two: Traditional communication channels and a basic dedicated website is used to disseminate forecasts and basic information

D. USER AND STAKEHOLDER INTERACTION

10. USE AND NATIONAL VALUE OF PRODUCTS AND SERVICES

(Accommodation of public and private sector users and stakeholders in the service offering and its continuous improvement.)

Indicators:

10.1 Formalized platform to engage with users in order to co-design improved services

Data Source: WMO Community Platform: only in relation to climate products

- There isn't a platform to engage with users in order to co-design improved services.

10.2 Independent user satisfaction surveys conducted and the results. Data Source: No data currently available – needs client survey data

- Historically a social media user analysis made over user comments, back in 2017; comments received from users were reported as satisfactory. Other than this one no records on user satisfaction surveys. AMD responding user comments on social media (facebook) and rarely getting responses of ANDMA for the warnings provided for flash floods and heavy precipitation.

Maturity Level:

Level one: Service development lacks any routine stakeholder feedback practice

Finally, the table below contains the maturity level of Country according to critical ten elements that have been examined in detail above.

Value Cycle Elements										Maturity Level of Country
Enablers		Observation and Data Processing System			Service and Product Production and Dissemination				User & Stakeholder Interaction	
Governance and institutional setting.	Effective partnership to improve service delivery	Observational infrastructure.	Data and product sharing and policies	Numerical model and forecasting tool application.	Warning and advisory services	Contribution to climate services	Contribution to hydrology	Product dissemination and outreach	Use and national value of products and services	
2	3	2	2	2	3	1	2	2	1	

Summary and Recommendations

The following Maturity Levels for each critical element of the Country Hydromet Diagnostics tool have been assessed as follows:

Element	Maturity level
1 Governance and institutional setting	2
2 Effective partnerships to improve service delivery	3
3 Observational infrastructure	2
4 Data an product sharing and policies	2
5 Numerical model and forecasting tool application	2
6 Warning and advisory services	3
7 Contribution to climate services	1
8 Contribution to hydrology	2
9 Product dissemination and outreach	2
10 Use and national value of products and services	1

We deduced about the general structure and situations of Afghanistan Meteorological Department (AMD) from the studies carried out within the scope of these 10 critical elements. We have perceived that AMD is open to improvement, especially in terms of willingness to engage in multinational and multisectoral improvements through the new projects. In summary below, we are pleased to present the strengths that the AMD should maintain and the areas on which development efforts should focus.

Institutional strengthening- The needs for infrastructure and personnel for strengthening works comes to the fore. Improvement in these contexts can be achieved by preparing standard operation plans. Sustainable improvement can be achieved with SOP and quality management plans to be prepared in every subject. Therefore, it is possible to act according to the plans determined by national and international strengthening studies.

Operational, scientific and technical capacity building and staff recruitment – The institution can improve its technical infrastructure with outsourced projects and investments. However, in addition to the technical infrastructure, the institution should follow a national path in order to increase the number and capability of staff. The technical competencies of the existing and newly recruited staff could be increased by the help of available RTCs and WMO ETRP. Visa problem which restricts the participation of AMD staff to international trainings can be solved with online synchronous classes and distance learning platforms such as Moodle. In addition, development can be achieved at all levels by strengthening the existing relations between the academy and the institution. As an additional issue, recruitment and/or assignment can be made for communication activities especially by social media in order to deliver services to the public more effectively.

User engagement and stakeholder management – Steps taken to increase cooperation with different sectors will return to the Institution on a continuous basis. By providing services to different sectors and customers, the institution will be able to gain profits in different lanes and develop itself. In addition, increasing the participation rate in existing international early warning system projects and increasing the use of effective methods in delivering project

outputs to all interested parties, the institution will have the opportunity to develop its own opportunities for its own people, and thus great progress will be made in public health.

Enhance regional collaboration – As far as is known, the institution carries out cooperation studies in the regional and international area. However, the development will become sustainable by increasing regional studies and ensuring more participation. In addition to technical infrastructure and technical issues, it is possible to improve the levels collectively by making use of regional cooperation studies on issues such as quality management system, relations with external stakeholders and service delivery.

In conclusion, the maturity levels that resulted from this peer review show that AMD has the majority of the ten critical elements at a basic level, while some of them are promisingly at intermediate level.

Overall, this NMHS is perceived as an active forward-looking organization that is open to improvement and pursue numerous international projects and regional collaboration. To ensure the sustainability of its activities and services, AMD would benefit greatly from the implementation of Standard Operating Procedures (SOP) with the goal of a quality management system.

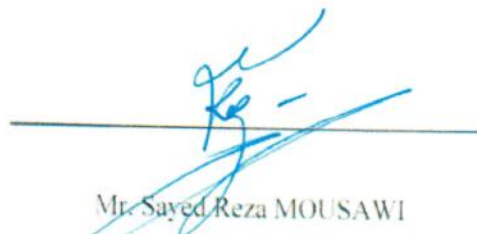
The investments which will be made to infrastructure should be supported by capacity development plans to ensure sustainability of the services.

REVIEWER NHMS

REVIEWED NHMS

The Turkish State Meteorological Service
(TSMS)

Afghanistan Meteorological Department
(AMD)



Mr. Volkan Mutlu COŞKUN
Director-General of Turkish State
Meteorological Service and PR of Turkey with
WMO

Mr. Sayed Reza MOUSAWI
Director of Afghanistan Meteorological
Department and PR of Afghanistan with WMO

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