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**Submissions from entities in the United Nations system, international
organizations and other stakeholders on their efforts in 2022 to
implement the outcomes of the WSIS**

Submission by

World Meteorological Organization

This submission was prepared as an input to the report of the UN Secretary-General on "Progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the regional and international levels" (to the 26th session of the CSTD), in response to the request by the Economic and Social Council, in its resolution 2006/46, to the UN Secretary-General to inform the Commission on Science and Technology for Development on the implementation of the outcomes of the WSIS as part of his annual reporting to the Commission.

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World Meteorological Organization (WMO) Submission to WSIS Report 2022

Part 1: Executive Summary

The United Nations Secretary-General, António Guterres, announced on 23 March 2022 that the United Nations will spearhead new action to ensure every person on Earth is protected by early warning systems within five years. Secretary-General Guterres has designated the World Meteorological Organization (WMO) to lead this effort and to present an action plan to achieve this goal at the 27th Conference of the Parties (COP27) to the United Nations Framework Convention on Climate Change (UNFCCC), later this year in Sharm El-Sheikh, Egypt.

A multi-hazard Early Warning System (EWS) is an integrated system which allows people to know that hazardous weather or climate events (floods, storms, heatwaves) are on their way, and informs people how to act to minimize impacts. Underpinning the EWS will be WMO's global infrastructure composed of the WMO Integrated Global Observing System (WIGOS), the WMO Information System (WIS), and the Global Data Processing and Forecasting System (GDPFS), all of which rely heavily on modern ICT.

ICTs are being harnessed by national meteorological and hydrological services around the world to improve the services they offer to citizens. The demand for accessible and accurate services will continue to grow in the years ahead. To respond effectively to the new human vulnerabilities and socio-economic trends of the 21st century, national meteorological and hydrological services need greater recognition from policymakers and to be further integrated into national development plans. This will help ensure that all countries reduce the risks and maximize the opportunities linked to weather, climate and water, towards implementation of the 2030 Agenda for Sustainable Development and Sendai Framework for Disaster Risk Reduction.

WMO is committed to promoting and supporting the implementation of ICTs for improving the global, regional and national production, exchange and distribution of information, forecasts and warnings on weather, climate, and water. In this way, WMO contributes to the World Summit on the Information Society (WSIS) action line on e-environment and its call "to establish monitoring systems, using ICTs, to forecast and monitor the impact of natural and man-made disasters, particularly in developing countries, LDCs and small economies."

Part 2: Analytical overview

WMO achieves its objectives by facilitating international agreement among National Meteorological and Hydrological Services (NMHSs) around the world. Challenges to the use of ICT collaboration tools for this purpose include great variability in the quality and affordability of ICT infrastructure available to various countries, low uptake of tools that are not a part of the daily working environment of the collaborators, and security constraints that restrict some organizations' access to collaboration web sites.

The WMO Information System (WIS) provides a major upgrade to the way weather services and their partners manage and share weather, climate, water, marine and

related environmental information. WIS exploits the most recent advances in information and communication technologies and reduces the costs of exchanging information. WIS gives users outside the meteorological community free access to an expanded range of information.

Part 3: Innovation and Progress, plans

1. WMO's Commission for Observation, Infrastructure and Information Systems (INFCOM) is responsible for the development and implementation of globally coordinated systems for acquiring, processing, transmitting and disseminating Earth system observations, and related standards; coordination of the production and use of standardized analysis and model forecast fields; and development and implementation of sound data and information management practices for all WMO Programmes and their associated application and services areas. The Executive Council in 2021 decided to embark on a major programme to implement the next generation of WMO's information system – WIS2.0 and identified a list of WIS2.0 demonstration projects, which cover new application programmes areas such as marine meteorological and hydrological data exchange.

WIS 2.0 will be a collaborative system of systems using Web-architecture and open standards to provide simple, timely and seamless sharing of trusted weather, water and climate data and information through services. It will provide a "virtual one-stop-shop" for weather, water and climate information and services by providing an environment in which data can be managed, documented, discoverable, accessible and easy to use. It will also standardize information management, so data can be relied upon.

In September 2021, a WIS 2.0 demonstration projects workshop was held. The workshop noted that the use of open standards, free and open-source software in the projects was significant. The adoption of cloud-native or cloud-ready solutions was a constant theme. The workshop also highlighted the effectiveness of ready-made software and turn-key solutions to simplify the adoption of WIS 2.0 standards and speed up the transition from WIS/GTS to WIS 2.0.

The demonstration projects proved that WIS 2.0 is beneficial for both developed and developing countries because it provides lower barriers for data sharing and simplified access to data and information.

The workshop concluded that a comprehensive WIS 2.0 component for LDCs and SIDS would be instrumental for the implementation phase. This component called "WIS 2.0 in a box" should be ready to be used with minimal configuration and based on cloud technologies to provide the options to be deployed on cloud services or on-premises. The development of software for WIS 2.0 in a box was established as a new demonstration project in late 2021. Substantial progress was achieved on this open source project, and the first version is expected to be released by the end of 2022.

Recognizing that the industry's engagement is critical to foster the successful implementation of WIS 2.0, a workshop to introduce WIS 2.0 to the industry was held in June 2022 to present WIS 2.0 implementation plan and to promote the WIS2 in a box project. The interest from the industry was significant, and there is the expectation that

some private companies will contribute to the WIS2 box software and foster the successful transition to WIS2.

The session of the INFCOM in October 2022 will review the progress made in WIS2 implementation, update its implementation plan, and agree on the strategy on transitioning the current generation of GTS/WIS to WIS2.0.

2. WMO's Observing Systems Capability Analysis and Review tool (OSCAR) is a global repository of surface and space observing system capabilities. It is a web-based tool in which metadata is registered, managed and archived. It records observing system requirements and allows critical reviews of how well actual capabilities address requirements. It allows users to better understand their data. Knowing where, how and why observations are made helps with better planning of network evolution and shows how networks change over time. This tool is a component of the Rolling Requirements Review process and provides information important to the WIGOS Data Quality Monitoring System. [The latest version of its Surface component](#) was released in October 2021.

3. In collaboration with the European Centre for Medium-Range Weather Forecasts (ECMWF), WMO developed a global data quality monitoring system ([WDQMS](#)). The current operational version of WDQMS monitors the availability and quality of observational data based on near-real-time Numerical Weather Prediction (NWP) monitoring information from four global NWP centres. Its webtool links availability and quality of surface-based observational data from those monitoring centres with the metadata and user requirements on global observing systems. 25 October 2022