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**7. WIGOS IN THE WMO PROGRAMMATIC STRUCTURE**

**7.1 WIGOS in the WMO Programmatic Structure in 2020**

(Discussion paper for ICG-WIGOS-7)

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| **Summary and purpose of document**The document provides the discussion paper on WIGOS in the WMO Programmatic Structure in 2020. |

**Action proposed**

The session will be invited to discuss the draft and to provide a recommendation to EC-70.

**WIGOS in the WMO Programmatic Structure in 2020**

(Discussion paper for ICG-WIGOS-7)

**Background**

The World Weather Watch was established in 1963 to coordinate the acquisition and international exchange of observational data necessary for producing meteorological forecasts, as well as collaboration on data processing, exchange of analysis and forecast fields and guidelines for service delivery. Thanks to the success of the WWW and its Global Observing System, and driven by the explosive growth in societal demand for weather, climate and other related environmental information and the resulting expansion of WMO observing activities and programs, WMO decided in the first decade of the 21st century to investigate the possibility of bringing all its observing activities together under a single umbrella, the WMO Integrated Global Observing System, WIGOS.

After exploratory efforts including pilot and demonstration projects, the implementation phase of WIGOS was established by Congress-16 in 2011. During this phase, regulatory material and global and regional implementation plans were developed, a new metadata repository (OSCAR/Surface) was implemented and the concept for a WIGOS Data Quality Monitoring System was developed.

After reviewing the results of the WIGOS Implementation Phase, Congress-17 in 2015 decided to transition WIGOS to a Pre-Operational Phase, during which the global framework developed during the Implementation Phase would gradually translate into regional and national implementation activities and systems. Based on a deeper understanding of the potential of the WIGOS framework, five priority areas were further defined to guide the activities in this period.

The Pre-Operational Phase will finish by the end of 2019, and the expectation is that at that point WIGOS will become an operational system. This does not mean that the system will be finished – it will continue to evolve throughout its lifetime – but it does mean that WMO Members will start to see tangible benefits resulting from it. The purpose of this document is to discuss the implications of this transition for the governance of WIGOS, its role in the WMO planning and budgeting process and the required Secretariat support.

**Current status**

During its Implementation and Pre-Operational phases WIGOS has had the status of a project, which in essence means that it has been resourced and managed with specific deliverables and an expiration date in mind. The development of WIGOS has been coordinated and overseen by an intermediate body, the Inter-Commission Coordination Group on WIGOS (ICG-WIGOS) with representation from the Executive Council, all WMO Technical Commissions and Regional Associations, supplemented by a number of technical experts. ICG-WIGOS is established by and reports to the Executive Council; it is not a WMO Constituent Body and it is not intended to have any permanent status. The main Secretariat support unit, the WIGOS Project Office, also has a temporary status, and it is not anticipated that it will continue to exist beyond 2019.

The decision by Congress-16 in 2011 to launch WIGOS as a project reflected a cautious and deliberate approach to a major new observing system initiative, coupled with a strong desire not to expose long-established flagship WMO systems such as the GOS and the GAW to unnecessary risk. The subsequent decision by Congress-17 to maintain the project status and the governance model for WIGOS unchanged during the Pre-Operational Phase was based on two key lessons learned during the Implementation Phase, namely (i) that the flexibility offered by the project status had outweighed any potential disadvantages, and (ii) that the ICG-WIGOS model had proven to be very effective in engaging the broader WMO community in the development of WIGOS.

In the six years elapsed since Congress-16, WIGOS has matured significantly, and the integration of the GOS, the observing components of GAW and GCW and the WMO hydrological observing systems has made substantial progress. Certain elements of WIGOS are already operational, and additional elements will follow in the next few years. The general view both in ICG-WIGOS and in the Secretariat is that WIGOS is ready to be declared operational from January 2020.

“Operational” in this context does not mean finished or complete. It means that key WIGOS functions and systems will be ready to deliver benefits to the WMO Members, and that they will be based on organizational commitments for ongoing support rather than on exploratory and/or project-funded efforts. Some of the work will be done in the WMO Secretariat, but the bulk of it will take place elsewhere, within individual WMO Members and other partner organizations. Logically, “operational” also means that WIGOS will transition from being a project into a more permanent status. This must be reflected also in the WIGOS governance and in the way the Secretariat organizes its support for WIGOS.

**Issues to be addressed**

The initial project status of WIGOS has given WMO a great amount of flexibility in its implementation, which has been extremely valuable on multiple levels. First, it has allowed the organization to proceed with implementation steps gradually, as resources became available and as collaboration opportunities materialized. Second, it has helped significantly reduce the initial perception held in some parts of the organization of WIGOS as a potential threat to take over existing programs and initiatives.

However, for an operational system, ongoing commitment and a certain level of predictability of resources will be more important than flexibility. While the governance of WIGOS in the period since 2011 has been widely considered to be very effective, ICG-WIGOS was designed as a temporary body. A permanent status of WIGOS should also be reflected in the establishment of a governance structure that is firmly anchored to the WMO constituent bodies.

ICG-WIGOS acts as an additional layer on top of the WMO constituent bodies. By construction, ICG-WIGOS has had representation from all technical commissions and regional representation, but that has not been sufficient to create robust links in all cases. WIGOS is now somewhat asymmetric in being much better represented and much more active in certain regions and in certain application areas than in others. By no means is this entirely due to the governance structure, but stronger and more robust links to all regions and domain areas would clearly be advantageous.

The current status of the WIGOS Project Office within WMO has given the project substantial freedom to seek out collaboration opportunities both with the existing support structures for the WIGOS components and with the various Regional Offices of WMO, without worrying too much about who reports to whom or who has the authority to decide what. On the other hand, the ambitious goals of the project for integration of observation systems with different governance does lead to an abundance of coordination work as well as the occasional duplication of effort.

Another area where the boundaries and interfaces could be improved concerns the relationship between WIGOS and the WMO Information System (WIS). There are numerous interfaces between the two systems, e.g. via the metadata, the use of WIGOS Station IDs, and the fact that monitoring of data flow generally is a compound diagnostic of WIGOS and WIS. However, WIS and WIGOS have evolved largely independently of each other, and renewed effort is needed to improve the coordination between the work programs of OPAG-IOS and OPAG-ISS (or their respective successors), both of which are responsible for efforts that cut across the boundaries between WIS and WIGOS.

**Possible solutions**

One option would be to confer program status to WIGOS, the word program generally being associated with something more permanent than a project. Standard business definitions of what a program is involve “groups of projects managed together for an overall organizational benefit”, “long duration”, “strategic importance”, “focus on an overall outcome rather than on specific outputs”, etc. These are all concepts that would translate well to an operational WIGOS.

However, within WMO the definition of what a program is, what it does and how it is resourced has become diluted over the years. According to the Secretary General, WMO currently has 32 programs, many of them with overlapping mandates and with poorly defined boundaries and interfaces. Furthermore many of them can – and do - with some right claim to be short of resources.

In this situation it seems unlikely that WIGOS or WMO would gain much by simply elevating WIGOS to become program number 33. It would further limit the resources available to the already existing programs, and the proliferation of programs leads to a proliferation of inter-program coordination mechanisms. The cross-cutting nature of WIGOS also makes it difficult place among the other programs. Even something as simple as defining the relationship between WIGOS and the World Weather Watch – perhaps WMO’s most visible and most significant achievement – creates an immediate conundrum. Would WIGOS be “part of the WWW”? If the answer is yes, the climate, hydrology, cryosphere and atmospheric composition parts of WIGOS could rightly claim to be relegated to mere footnotes of WIGOS. If the answer is no, then what is the relationship between WIGOS and the GOS, the latter of which is part of WIGOS, but also most certainly part of the WWW? There is no immediately obvious answer to this question.

A system like WIGOS, that is set up to serve all WMO programs and all their application areas, might be better off by not being a program by itself, nor being directly affiliated with any one particular program. An alternative solution would be to declare WIGOS to be “*Basic WMO Infrastructure*”. There is no clear precedent for this, but at least there is an argument to be made: According to one definition, infrastructure is “the basic physical and organizational structures and facilities (…) needed for the operation of a society or enterprise”. Everything WMO does – all of its programs and all their application areas - is ultimately based on science, and as such observations are fundamental to all them. That is what WIGOS is delivering, as a basic service to all of WMO. Establishing WIGOS as Basic WMO Infrastructure would immediately clarify the relationship between WIGOS and the programs, however many of them WMO decides to maintain: WIGOS serves them all. One could apply exactly the same logic to WIS, and to the Global Data Processing and Forecast System, GDPFS.

Irrespective of whether WIGOS will be seen as a program, a program component or something else, three additional issues need to be briefly discussed: How will WIGOS be governed, how will it be resourced, and how will the Secretariat organize its support for the system.

The specific solution to the WIGOS governance issue will have to await the outcome of the ongoing overall WMO governance reform. However, WIGOS is already now being used as a driver for this. Discussions are still ongoing; however, at this point it appears overwhelmingly likely that the number of technical commissions will be significantly reduced. Both technical commission structures currently under consideration include a “basic infrastructure commission” (actual name TBD) that would include in its Terms of Reference the responsibility for all observing system activities for all WMO domains and application areas. Such a commission would be the natural home for WIGOS.

A second issue being addressed within the governance reform is the link between technical commissions and regions, which today is rather weak. One solution that appears increasingly likely is to impose a unified working structure across all regions, and to require a minimum level of regional representation in the management groups of all technical commissions. In this way key individuals will become core members of both regional working groups and technical commission management groups, thereby creating much more robust linkages without single points of failure.

Concerning the resourcing of WIGOS, some details may have to wait for the governance reform to come to a conclusion. However, with WIGOS now in evolutionary mode, many of the tasks have become clearly defined and as a result planning and budgeting can be put on a more solid footing. It is therefore proposed that the Secretariat scope out the cost of continued development and maintenance cost of the major WIGOS technical systems, support for Regional WIGOS Centres and other regional activities, along with the cost of WIGOS governance including task teams and expert teams, to be used in the budget proposal for the 2020-2023 financial period.

Concerning the structure of the Secretariat support, it should be noted that the WMO General Regulations give the Secretary General very substantial latitude concerning how the work of the Secretariat should be organized. It is expected that once the WMO governance reform has converged on a solution, and this has been approved by Congress, the Secretariat will realign itself with this new structure.

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