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**Performance of the programme of work and budget,
including implementation of the resolutions of the
Environment Assembly**

**Progress in the implementation of data-related activities of the
workplan of the Global Environment Monitoring System/Water
Programme (GEMS/Water) for the period 2015–2017**

Report of the Executive Director

Summary

The present report provides an update on progress made in the implementation of the data-related activities of the workplan of the Global Environment Monitoring System/Water Programme (GEMS/Water) for the period 2015–2017, pursuant to the proceedings of the United Nations Environment Assembly at its second session (UNEP/EA.2/19, annex II, para. 53).

To meet the global water quality challenge and to support national monitoring and reporting on water quality, GEMS/Water, supported by new donors, currently has three main operating centres: a global programme coordination unit at the headquarters of the United Nations Environment Programme in Nairobi, a data centre at the Federal Institute of Hydrology in Koblenz, Germany, and a capacity development centre at University College Cork in Ireland. The broad context of operations is provided by the 2030 Agenda for Sustainable Development, but GEMS/Water also addresses water quality data more broadly. Regional activities are supported by targeted capacity development training and country visits and a regional GEMS/Water hub for Latin America and the Caribbean based at the National Water Agency of Brazil.

During the period 2015–2017, significant progress was made in the implementation of data-related activities. In close partnership with member States, GEMS/Water relies on a global network of national focal points and collaborating focal points for data acquisition, which was expanded to 71 focal points during that period.

The GEMStat database currently contains data from 75 countries and more than 2,900 monitoring stations, covering the period from 1965 to 2016. In addition, the Sustainable Development Goals baseline data drive coordinated by GEMS/Water between April and October 2017 to collect data for indicator 6.3.2, on ambient freshwater quality, led to a total of 34 data

* UNEP/EA.3/1.

submissions (by mid-September) processed by the GEMS/Water Data Centre for submission to the Statistics Division of the Department of Economic and Social Affairs of the United Nations Secretariat and input to the review of Goal 6 by the high-level political forum on sustainable development in mid-2018.

A variety of services for data exploration and visualization have been made available, and capacity development products, such as online courses and workshops, contain modules covering aspects of data handling and management.

I. Introduction

1. The present report provides an update on progress in the implementation of the data-related activities of the workplan of the Global Environment Monitoring System/Water Programme (GEMS/Water) for the period 2015–2017, pursuant to the proceedings of the United Nations Environment Assembly at its second session (UNEP/EA.2/19, annex II, para. 53), in which the importance of availability of reliable water quality data and knowledge products for water resources management was stressed. The instrumental linkages between GEMS/Water and the 2030 Agenda for Sustainable Development, in particular Sustainable Development Goal 6 (Ensure availability and sustainable management of water and sanitation for all), were also highlighted, as were the importance of ownership of GEMS/Water at the regional level and the need to engage and support countries in its implementation, including through capacity-building for quality assurance, with a special focus on transboundary waters.

II. Progress in implementation

2. The GEMS/Water Data Centre has migrated the GEMStat database for ambient freshwater quality monitoring data to a data management system, including data and metadata harmonization in the process and improving data processing and quality control procedures. Direct integration with the global river discharge database of the Global Runoff Data Centre, also hosted by the Federal Institute of Hydrology of Germany, facilitates the generation of discharge-dependent water quality data products, such as load estimations.

3. The online component of the GEMStat system has been redesigned and a metadata catalogue updated and published online. Ongoing activities include the update of existing and development of new web services to enable data discovery, download and visualization of the underlying monitoring data at the site, catchment and country levels using both open and industry standards. The current focus is on the creation of automated reports for water quality parameter statistics at the country and basin levels, which will serve as a basis for the dissemination of other data products, such as water quality indices.

4. The templates for submitting monitoring data and relevant metadata on sampling sites, parameters and analytical methods have been revised. During the reporting period, 12 countries submitted data, increasing the overall number of water quality data values in the database by 103 per cent. The greatest contributions to the growth of the database were made by Brazil, Ireland, New Zealand and Switzerland.

5. During the reporting period, 48 data requests were processed, most of which focused on data from Brazil, China, India and Japan. The most requested parameters include data on oxygen, pH value, temperature, suspended solids and nutrients. The data requests were submitted predominantly by researchers and students, who use the data for academic purposes. Requests are, in principle, processed only for the purposes of non-commercial research and United Nations assessments.

6. In Africa, Latin America and the Caribbean and Asia and the Pacific, priority was given to scoping workshops, to confirm existing and establish new focal points. National focal points were confirmed or newly established in the following countries during the reporting period:¹

Africa: Botswana, Cameroon, Central African Republic, Chad, Congo, Ethiopia, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia,¹ Malawi, Mauritius, Mozambique, Niger, Nigeria, Rwanda, Sierra Leone,¹ South Africa, Sudan, Uganda, United Republic of Tanzania, Zambia, Zimbabwe

¹ Focal point established for the first time between 2015 and 2017.

Asia and the Pacific:² Afghanistan, Australia, Bangladesh, Bhutan,¹ Cambodia, China, Fiji, India, Iran (Islamic Republic of),¹ Japan, Maldives,¹ Mongolia, Myanmar¹, Nepal, New Zealand, Pakistan,¹ Philippines, Republic of Korea, Samoa,¹ Singapore, Sri Lanka, Thailand, Timor-Leste,¹ Viet Nam¹

Europe: Albania,¹ Ireland, Netherlands, Russian Federation, Switzerland, Spain,¹ the former Yugoslav Republic of Macedonia¹

Latin America and the Caribbean: Argentina, Belize,¹ Bolivia (Plurinational State of),¹ Costa Rica,¹ El Salvador, Guatemala, Jamaica,¹ Mexico, Colombia, Panama, Peru, Uruguay

North America: Canada, United States of America

7. GEMS/Water is the central mechanism for developing the methodology for indicator 6.3.2, on ambient water quality, within the “Monitoring water and sanitation in the 2030 Agenda for Sustainable Development” project, coordinated by UN-Water. The methodology for indicator 6.3.2 was revised by GEMS/Water in January 2017 on the basis of feedback from the proof-of-concept phase in 2016, which involved five countries and individual reviewers. GEMS/Water co-developed a joint reporting template for indicators 6.6.1, on freshwater ecosystems, and 6.3.2, which was rolled out to 193 countries in April 2017 and was supported by two online training tutorials and webinar material completed and broadcast in May and June 2017. GEMS/Water coordinates the help desk function for countries seeking clarification on issues relating to baseline data on ambient water quality. The GEMS/Water Data Centre supports baseline reporting through quality control of the reporting data.

8. Augmenting in situ water quality monitoring with remote sensing has been investigated in the “Space-borne observations to nourish GEMS/Water” project, a research project funded by the European Space Agency. In collaboration with GEMS/Water focal points in Finland, Ghana, Guatemala and Japan, water quality remote sensing products for five lakes have been developed and validated.

9. The GEMS/Water Capacity Development Centre in University College Cork has launched a university-accredited online postgraduate diploma in freshwater quality monitoring and assessment, which focuses on all aspects of water quality monitoring and includes modules dedicated to quality assurance in water quality monitoring and to data analysis and presentation.³ The two-year programme began in October 2017, with some 20 registered students from Africa and Latin America and the Caribbean. The next course intake will be in 2019.

III. Recommendations and suggested action

10. Notwithstanding the significant progress that has been made in implementing the data-related activities of GEMS/Water, suggested actions to enhance national and regional water quality monitoring and reporting capacities and improve the availability of water quality data and information for water resource management include:

(a) Improving regional collaboration and transboundary monitoring by establishing additional GEMS/Water regional hubs, supporting existing regional monitoring programmes and facilitating the establishment of new transboundary monitoring programmes at the basin level;

(b) Adopting a common data policy for GEMS/Water that establishes the principles for data acquisition and promotes free sharing of water quality monitoring data and derived information for non-commercial purposes and the facilitation of national reporting obligations, including the Sustainable Development Goals;

(c) Further improving and harmonizing the quality assurance of water quality monitoring at the national, regional and global levels through the application of international standards and performance evaluations of national laboratories.

² In addition to the national focal points, the Mekong River Commission was confirmed as a collaborating focal point in Asia.

³ See www.ucc.ie/en/gemscdc/postgraduatediploma/.