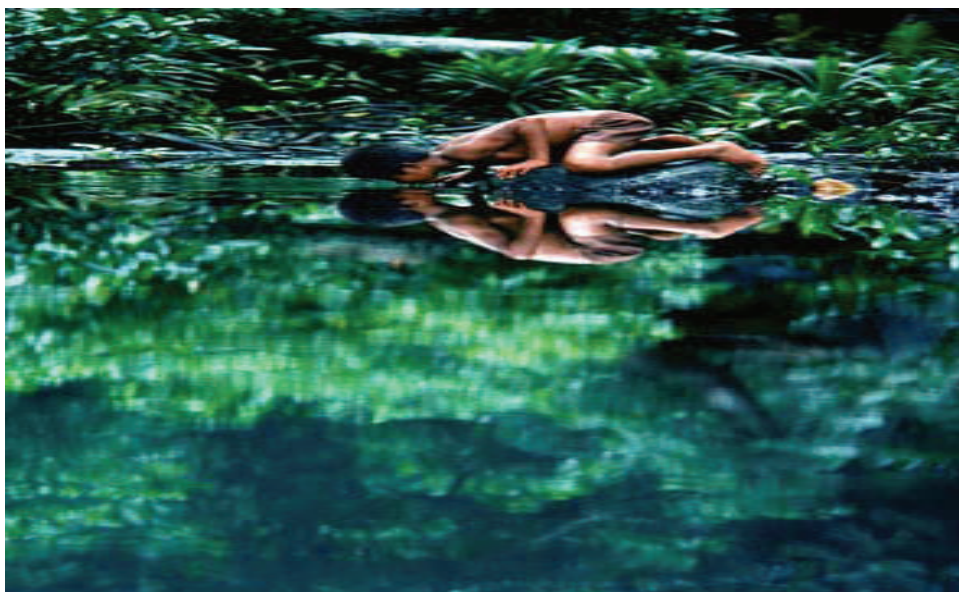


EVALUATION SERVICES FOR

National Water Quality Monitoring Programmes and Laboratories

Clean water is life



As a service to national water quality monitoring agencies, UNEP's GEMS/Water Programme undertakes specialized auditing activities. These include a review and evaluation of the efficiency, technical rigor and scientific credibility of all aspects of water quality monitoring programmes, from design to implementation.

GEMS/Water provides national laboratories with the technical basis to judge their own ability to address their departmental water quality monitoring responsibilities. As well, GEMS/Water can assist laboratories to prepare for accreditation to international standards, including ISO/IEC 17025.

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NATIONAL WATER QUALITY MONITORING PROGRAMMES

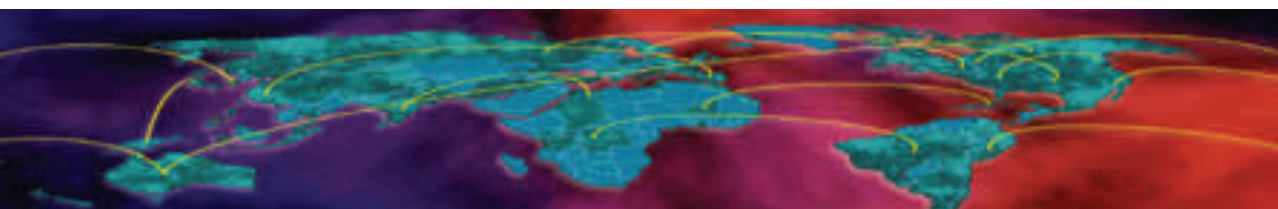
Objective: To undertake detailed reviews and assessments of national water quality monitoring strategies and implementation.

To do this GEMS/Water:

- Assesses the strategic design of the overall programme, as well as specific components and documentation, as needed. This includes reviewing and advising on the appropriateness of sampling frequency, representativeness of sampling sites, and techniques employed in sample acquisition, documentation, sample transport and storage.
- Evaluates the ability of the programme to incorporate relevant watershed characteristics such as reference conditions upstream; upstream versus downstream water quality/quantity and use, hydrometric level variation; rainfall and storm impacts; flow patterns in vicinity of industrial and/or sewage outfalls; and flow and depositional patterns downstream of any potential point-source pollution.
- Examines organizational and human resource capacities to effectively carry out sampling, including field logistics and QA/QC measures in place. Determines needs for procedural and training revisions where necessary, including field operations training; occupational health and safety standards training; and use of consistent methods and approach.
- Reviews the use of automated monitoring or remote devices, and advises on how the data may be used in conjunction with those from conventional laboratory analyses.
- Examines existing and baseline datasets, evaluating with respect to duration, frequency of collection, spatial variation, and inclusion of any reference points.
- Evaluates capacity to provide accurate, meaningful, and timely data and information, including an examination of existing or proposed data analysis and modelling; and their interpretation, validation, and release.

Outputs:

- A Final Report within 30 days of the on-site visit, which addresses the water quality monitoring programme review and recommendations for improving the programme's implementation and strategy.
- Recommendations for potential linkages with national, regional and international organizations and agencies that may be of benefit to the organization for carrying out its mandate.
- Procedures for participating in the UNEP GEMS/Water Programme, along with other significant programme interactions and strategic alliances, particularly at the regional level.
- The documentation review is conducted prior to and during the in-country visit. Depending on the scope of the monitoring programme, the on-site review takes four to five days.



LABORATORY OPERATIONS

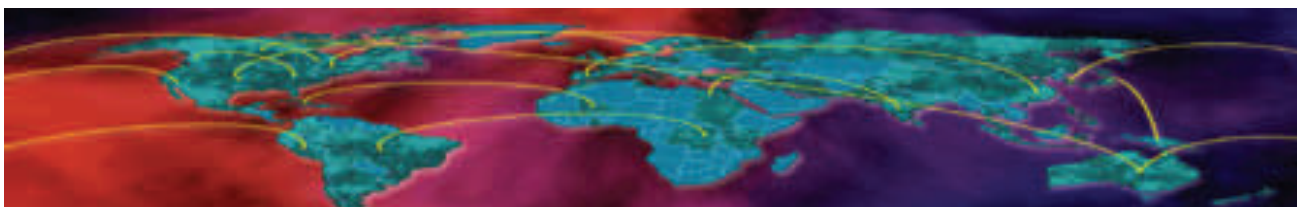
Objective: To undertake detailed reviews and assessments of laboratories, and to assist in preparing for accreditation to international standards such as ISO/IEC 17025.

To do this GEMS/Water:

- Assesses the ability of laboratories to address the responsibilities of water quality monitoring and management, including elements needed to meet obligations and operational mandate.
- Reviews infrastructure, organization, quality system, documentation, and standard operating procedures (SOPs) to carry out successful monitoring programmes. Proposes modifications to infrastructure or organization to increase laboratory efficiency.
- Assesses the analytical capability and efficiency of operations related to the adequacy of equipment and facilities, including laboratory instrumentation, bench equipment, glassware and ancillary supplies, environmental conditions, layout of equipment, workspace and associated logistics.
- Reviews human resources, staff profiles and qualifications, training and sub-contracting practices to confirm the laboratory's ability to successfully implement its mission.
- Reviews laboratory work procedures including sample reception and storage, sample identification and preparation, instrument calibration, analysis, quality control, data recording, data reporting, and sample disposal for efficiency and appropriateness.
- Reviews documentation and implementation of procedures for sub-contracting, purchasing, control of records and documents, and data processing, interpretation and reporting of results.

Outputs:

- The laboratory review is tailored to meet the degree of preparedness for ISO/IEC 17025 accreditation.
- A Site Assessment Report at the end of the on-site visit, which identifies changes needed to meet the requirements of ISO/IEC 17025.
- A Final Report within 30 days of the on-site visit, which addresses the ISO/IEC 17025 requirements and additional recommendations for improving laboratory operations and efficiency.
- The documentation review is conducted before and during the in-country visit. Depending on the size and complexity of laboratory operations and the number of analytical methods, the on-site review takes four to five days.



Expertise

For each review, GEMS/Water creates a team tailored to meet the specific needs of the country's monitoring programme and/or laboratory operations. The team's experience includes: monitoring programme design and implementation; automated sensors and real-time monitoring; field sampling techniques; environmental assessments and data reporting; development of intergovernmental monitoring agreements; analytical chemistry research and methods development, assessment of laboratory quality management systems for compliance with ISO/IEC 17025; development and implementation of international laboratory quality assurance (QA) programmes; design and interpretation of performance evaluation, and proficiency testing studies.

Costs

National water quality monitoring departments are responsible for all costs of the evaluation, including the laboratory assessment, services and outputs, and travel for the team of experts to conduct the on-site review. Evaluation services for monitoring programmes and for laboratory operations are two distinct activities which may be requested separately or together.

Who We Are

Established in 1978, UNEP's Global Environment Monitoring System (GEMS) Water Programme is the primary source for global water quality data. It is a multi-faceted water science centre oriented towards building knowledge on inland water quality issues worldwide. Key activities include monitoring, assessment and capacity building. The twin goals of the programme are to improve water quality monitoring and assessment capacity in participating countries, and to determine the state and trends of regional and global water quality. These goals are implemented through the GEMS/Water database, GEMStat, which houses more than three million water quality data from lakes, rivers and groundwater from more than 100 countries.

GEMS/Water also carries out training and capacity building in water quality monitoring and assessment, laboratory operations, and Quality Assurance/Quality Control (QA/QC), and provides guidance to participating countries in all aspects of monitoring programme design and implementation.



UNEP GEMS/Water Programme headquarters at the
National Water Research Institute, Canada
