Terms of reference (ToR) for the procurement of services below the EU threshold

CONFIDENTIAL

	Project number/ cost centre:
Terms of Reference for Service Providers to Re-Develop the South African Weather Service's Climate Data Management System (MetCap)	**18.2251.9.104.00**

0. List of abbreviations

API -   Application Programming Interface

GTC -   General Terms and Conditions of Contract for Supplying Services and Work

ARS-   Automatic Route Selection

AWS-   Amazon Web Services

BMZ -   Federal Ministry for Economic Cooperation and Development (Germany)

CDMS -   Climate Data Management System

DFFE -   Department of Forestry, Fisheries and the Environment

DTC -   Data and Technology Centre

GIZ -   Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (German Development Agency)

POPIA -   Protection of Personal Information Act

SAWS -   South African Weather Service

ToRs - Terms of Reference

WMO -   World Meteorological Organization

1. Context

The Deutsche Gesellschaft für Zusammenarbeit (GIZ) GmbH is an international development organization commissioned by the German Federal Ministry of Development (BMZ), to provide international cooperation service for sustainable development in a wide variety of areas, including energy, environment, digitalization, employment, and economic development. GIZ works with partners all over the world across different sectors towards building a future worth living for every individual.

The Digital Transformation Centre (DTC) is part of a global initiative of the GIZ that enables local innovation worldwide and promotes digital solutions for sustainable development. The DTC serves as a hub for digital transformation initiatives. It combines innovation, technical know-how, inclusive and collaborative participation, digital knowledge as well as research and entrepreneurial drive. The major goal of establishing DTCs in partner countries is to systematically strengthen the ecosystem and local capacities for digital transformation. There are 9 modules that a DTC can encompass which include Digital Government, Disruptive Technologies, Innovation Promotion, Cyber Security, Digital Skills, Green Digital Transformation, Digital Economy, Digital Health, and Women in Tech.

In South Africa, the DTC focuses on leveraging data and digital technologies for climate action, including mitigation and adaptation, and includes the following areas:

- **Use Case/Demonstration Projects Development:** The DTC explores and supports the development of data-driven projects that address local challenges, with a focus on climate action and sustainable development.

- **Development of Secure and Interoperable Data Infrastructure:** The DTC helps establish a reliable, secure, and interoperable data infrastructure that underpins the design and execution of climate related digital solutions.

- **Capacity Building in Data and Climate Change:** The DTC acts as a trusted partner in enhancing local capacities, providing training and resources at the intersection of data and climate change to support stakeholders in their climate action efforts.

- **Digital Investment Facility:** Provides background on investment environment and conducting analyses for feasibility on investment in data centers and related digital infrastructure. This aims to increase the number of bankable proposals for investment in green and secure data infrastructure.

The DTC South Africa works closely with partners across sectors including public, private, civil society, NGOs and international organizations in the climate and digital sphere.

In line with the activity on establishing secure and interoperable data infrastructure, the DTC is collaborating with the South Africa Weather Service (SAWS).a public entity of the Department of Forestry, Fisheries, and the Environment (DFFE) to expand the functionality of the digital tools aimed at improving weather data collection and visualization.

According to the South African Weather Service Act (No 8 of 2001), SAWS is mandated to ensure, among other objectives, the ongoing collection of meteorological data over South Africa and surrounding oceans for use by current and future generations and acts as the long-term custodian of the reliable national climatological record. The SAWS relies on a nationwide observation network to collect weather and climate-related data to meet these objectives. The

data is collected through manual observations performed by trained observers and through observation instruments or sensors that have been strategically located across the country.

These observational platforms and instrumentation generate different data sets. They differ in terms of resolution, time stamp, and whether they are location-based measurements or moving point measurements. These datasets are stored in multiple locations and accessed via different types of software.

The SAWS has a climate data management system (CDMS). This system is available for acquiring, transferring, storing, and disseminating climate data obtained from automatic weather and rainfall stations, manual weather stations, and upper-air systems.

This CDMS called Metcap was developed in-house and implemented around 2002 based on the infrastructure and data formats of that time, with no major development or upgrades on the system since its implementation. It is a collection of programs that enable various players in the data value chain to do their work. The system was written in C++, and it runs on SQL database.

The weather data comes from the data loggers, the dial module of Metcap is responsible for the retrieval of data into the regional office database. The Metcap generates data files for ARS and AWS which are transferred using Automatic File Distribution to the Linux server and stores them into sqldump folder. The transferred files are Ftp'd to the main server to be stored in temporal storage, the Metcap module does the import dump into the main database at the head office.

In 2012 Climate Service Department conducted a review of the current SAWS CDMS. This review compared the SAWS system with World Meteorological Organization (WMO) recommended guidelines for a CDMS (WMO No.1131). The gap analysis revealed several architectural limitations with the Metcap which have made it difficult to extend Metcap to accommodate and manage additional data sets within SAWS. As a result, no major system developments or upgrades have occurred since its implementation.

Modernizing MetCap into a widely supported programming language is essential to enhance its functionality, ensure sustainability, and enable in-house maintenance and further development. In addition to addressing its current shortcomings, the MetCap redevelopment project aligns with SAWS' strategic objective of providing high-quality, reliable meteorological data to support climate resilience, economic development, and policy formulation. The project also supports regional cooperation, as MetCap is also utilized in neighboring countries such as Namibia, Botswana, and Eswatini.

SAWS has recently completed a business requirements gathering exercise and have documented the processes, system requirements, data flows, and other relevant information. This documentation will serve as a basis for the MetCap rewrite project.

It is against this backdrop that we are looking for a service provider who will validate business requirements, re-design the system based on sound software engineering architectural principles and in a computer language that is more widely used and familiar to the SAWS ICT development team.

2. Tasks to be performed by the contractor

The service provider is expected to conduct a comprehensive system analysis exercise and re-develop the MetCap system. The tasks outlined below are designed to ensure that the project objectives are achieved effectively and sustainably:

2.1 Work Package 1: Comprehensive System Analysis

This task is critical for understanding the limitations of the current MetCap system and identifying user and operational needs. By conducting a detailed system analysis, the contractor will lay the groundwork for an efficient and user-focused redesign. This process ensures that the new system addresses all pain points while aligning with international standards. As part of this analysis, the contractor must conduct a problem severity assessment, classifying challenges into critical, high, medium, and low priority levels. This assessment will help determine which modules and functionalities require urgent attention. The contractor must provide recommendations on addressing the highest-priority challenges first, ensuring the system remains functional and scalable even if all components cannot be tackled immediately.

Activity 1: Conduct a Comprehensive Analysis of the MetCap

- Validate the business requirements already conducted by SAWS

- Conduct a detailed review of the current MetCap system, analyzing the structure and functionality of its 29 modules and their dependencies.

- Assess current data workflows, including acquisition, storage, quality control, and dissemination processes.

- Identify existing system limitations and pain points from technical, operational, and user perspectives, by conducting a problem severity assessment, classifying limitations into critical, high, medium, and low priority levels.

- Engage with SAWS stakeholders, including ICT staff and operational teams, to gather user requirements and expectations.

- Review and assess the sufficiency of the already developed architecture and system design.

Activity 2: Develop a System Analysis Report

- Based on the above activities, develop a Systems Analysis Report which outlines the following:

  o As-IS Assessment

  o Updated System Architecture and Design

  o Updated Data Model

  o Roadmap for the implementation process

Activity 3: Conduct Validation Workshop

- Conduct a validation workshop with key stakeholders to present the key findings, outcomes, and deliverables of the system analysis exercise.
- Update the Systems Analysis Report based on the outcomes of the validation workshop.

2.2   Work Package 2: Detailed Project Planning

Effective project planning is essential to ensure the successful execution of the redevelopment process. A well-structured plan will provide clarity, define milestones, and minimize potential disruptions to SAWS operations.

Activity 1: Develop an Implementation Plan

- Develop a comprehensive project implementation plan, including timelines, milestones, resource allocation, and risk mitigation strategies.

- Design a phased development and deployment strategy to ensure minimal disruption to ongoing operations.

- Create a detailed risk management framework to anticipate and mitigate potential challenges during development.

2.3   Work Package 3: Redevelopment of the MetCap System

Redeveloping the MetCap system forms the core of this project. This task will modernise the system, ensuring it is robust, scalable, and user-friendly while aligning with international standards and SAWS operational requirements.

Activity 1: Redevelop MetCap System

- Rewrite the system using a modern programming language that aligns with SAWS' ICT capabilities and industry standards.

- Modularize development, allowing independent testing and integration of each module.

- Incorporate advanced data ingestion and processing features to accommodate a broader range of datasets, including real-time and historical data.

- Integrate automated quality control mechanisms to enhance data accuracy and reliability.

- Develop user-friendly interfaces for both technical and non-technical users to facilitate system accessibility.

- Develop secure and scalable APIs for data sharing with internal departments and external stakeholders.

- Implement role-based access controls to ensure appropriate data access and user management.

- Incorporate encryption protocols for data storage and transmission to safeguard sensitive information.

2.4 Work Package 4: Testing and Quality Assurance

Testing and quality assurance ensure that the redeveloped system functions meet the business requirements. This phase focuses on validating the system against user needs, operational requirements, and industry standards.

Activity 1: Design Testing Robust Framework

- Design and execute a robust testing framework to validate system functionality, performance, and reliability.

- Conduct iterative testing for individual modules, full-system integration, and end-to-end workflows.

Activity 2: Perform Testing and Document Testing Process

- Perform System integration Testing to ensure that functional components and interfaces of the work according to requirements.

- Perform stress and load testing to ensure the system can handle high data volumes and user activity.

- Document all testing processes, results, and resolutions for transparency and traceability.

- Facilitate User Acceptance Testing and fix any bugs that might arise.

2.5 Work Package 5: Software Operationalization

Software operationalization ensures that the newly developed MetCap system is fully embedded into SAWS's daily operations, functioning optimally and efficiently within its intended environment. Unlike deployment and post-implementation support, which focus on system rollout and initial troubleshooting, this phase ensures that the system is sustainable, adaptable, and aligned with SAWS's long-term operational goals. It emphasizes performance monitoring, optimization, and long-term maintenance planning to ensure the system remains functional and scalable beyond the immediate implementation period.

Activity 1: System Readiness and Integration into SAWS Operations

- Ensure the modernized MetCap system aligns with SAWS's operational workflows, integrating seamlessly with existing infrastructure and data management processes.

- Conduct final system validation with key SAWS stakeholders to confirm full operational functionality and readiness for long-term use.

- Develop standard operating procedures (SOPs) for day-to-day system use, ensuring SAWS teams can efficiently utilize the system in their operations.

Activity 2: Performance Optimization and System Efficiency

- Optimize system workflows to ensure fast, reliable, and efficient data processing and system response times.

- Implement a feedback-driven refinement process, allowing SAWS teams to suggest usability improvements for future iterations.

Activity 3: Long-Term Maintenance and Sustainability Planning

- Develop a software maintenance plan, outlining procedures for regular system updates, security patches, and performance tuning.

- Provide guidance on system scalability, ensuring SAWS can extend functionality or integrate additional datasets in the future.

2.6 Work Package 5: Training and Capacity Building

Training and capacity building are integral to the long-term sustainability of the MetCap system. By equipping SAWS staff with the necessary skills and knowledge, this task ensures effective operation and maintenance of the system post-deployment.

Activity 1: Organize Training Workshop

- Prepare detailed user manuals, technical documentation, and system architecture diagrams.

- Conduct 4 training workshops (two online and two in person) for SAWS staff, focusing on system operation, troubleshooting, and maintenance.

- Develop training materials tailored to different user groups, including ICT staff, meteorologists, and data analysts.

- Establish a knowledge transfer framework to enable SAWS ICT team members to manage and enhance the system independently post-deployment.

2.7 Work Package 6: Deployment and Post-Implementation Support

The deployment and post-implementation support phase ensures the smooth transition to the new system and addresses any issues that arise post-launch.

Activity 1: Deploy the System and Provide Post-Implementation Support

- Implement the modernized MetCap system in a phased manner, ensuring smooth transition from the legacy system.

- Monitor system performance during the deployment phase, addressing any issues promptly.

- Provide post-deployment support, including bug fixes, system optimizations, and technical assistance.

- Conduct a final system evaluation with SAWS stakeholders to gather feedback and identify areas for future improvement.

2.8   Work Package 7: Project Documentation and Reporting

Documentation and reporting provide a comprehensive record of project activities, ensuring transparency and facilitating future system improvements.

Activity 1: Maintain Project Documentation and Reporting

- Maintain detailed records of all project activities, decisions, and outcomes.

- Prepare periodic progress reports summarizing milestones achieved, challenges encountered, and solutions implemented.

- Deliver a comprehensive final report outlining project outcomes, key learnings, and recommendations for future enhancements.

In addition to the reports required by GIZ in accordance with the AVB, the contractor submits the following reports:

- **Inception Report**: At the start of the project, the contractor will be required to participate in an inception meeting with SAWS, GIZ, and other relevant stakeholders. This meeting will serve as a platform to align expectations, review project objectives, clarify deliverables, and discuss the detailed implementation plan. It will also provide an opportunity to address any initial concerns and ensure a shared understanding of the project scope, timeline, and methodologies.

  Following the inception meeting, the contractor must prepare and submit an inception report within an agreed timeframe. This report should outline the refined project approach, methodologies, stakeholder engagement plan, risk assessment, and any necessary adjustments based on discussions from the inception meeting. The report should also provide a final work plan, including key milestones, deliverable timelines, and resource allocation. The inception report will serve as a guiding document for project execution and will require approval from SAWS and GIZ before full-scale implementation begins.

- Monthly reports on the implementation status of the project
- Project close-out report

Certain milestones, as laid out in the table below, are to be achieved during the contract term:

Milestones	Deadline
Inception Phase Activity 1: Attend the inception Meeting Activity 2: Prepare an Inception report and project plan	July 2025

Activity 3: Submit minutes of the meeting	
Comprehensive System and Risk Analysis Activity 1: Conduct a Comprehensive Analysis of the MetCap Activity 2: Develop a System Analysis Report Activity 3: Conduct Validation Workshop	July 2025 to August 2025
Detailed Project Plan Activity 1: Develop an Implementation Plan	August 2025
System Redevelopment (Modules Development) Activity 1: Redevelop MetCap System	September to October 2025
Testing and Quality Assurance Activity 1: Design Testing Robust Framework Activity 2: Perform Testing and Document Testing Process	November 2025
Software Operationalization Activity 1: System Readiness and Integration into SAWS Operations Activity 2: Performance Optimization and System Efficiency Activity 3: Long-Term Maintenance and Sustainability Planning	November to December 2025
Training and Capacity Building Activity 1: Organize Training Workshop	January 2026
Final Deployment and Handover Activity 1: Deploy the System and Provide Post-Implementation Support	February to March 2026

Final Documentation and Post Deployment Support Activity 1: Maintain Project Documentation and Reporting	March to April 2026

Period of assignment: from 1.07.2025 until 30.04.2026.

3. Concept

In the tender, the tenderer is required to show *how* the objectives defined in Chapter 2 (Tasks to be performed) are to be achieved, if applicable under consideration of further method-related requirements (technical-methodological concept). In addition, the tenderer must describe the project management system for service provision.

Note: The numbers in parentheses correspond to the lines of the technical assessment grid.

Technical-methodological concept

Strategy (1.1): The tenderer is required to consider the tasks to be performed with reference to the objectives of the services put out to tender (see Chapter 1 Context) (1.1.1). Following this, the tenderer presents and justifies the explicit strategy with which it intends to provide the services for which it is responsible (see Chapter 2 Tasks to be performed) (1.1.2).

The tenderer is required to present the actors relevant for the services for which it is responsible and describe the **cooperation (1.2)** with them.

The tenderer is required to present and explain its approach to **steering** the measures with the project partners (1.3.1) and its contribution to the **results-based monitoring system** (1.3.2).

The tenderer is required to describe the key **processes** for the services for which it is responsible and create an **operational plan** or schedule (1.4.1) that describes how the services according to Chapter 2 (Tasks to be performed by the contractor) are to be provided. In particular, the tenderer is required to describe the necessary work steps and, if applicable, take account of the milestones and **contributions** of other actors (partner contributions) in accordance with Chapter 2 (Tasks to be performed) (1.4.2).

The tenderer is required to describe its contribution to knowledge management for the partner (1.5.1) and GIZ and to promote scaling-up effects (1.5.2) under **learning and innovation**.

Project management of the contractor (1.6)

The tenderer is required to explain its approach for coordination with the GIZ project. In particular, the project management requirements specified in Chapter 2 (Tasks to be performed by the contractor) must be explained in detail.

The tenderer is required to draw up a **personnel assignment plan** with explanatory notes that lists all the experts proposed in the tender; the plan includes information on assignment dates (duration and expert days) and locations of the individual members of the team complete with the allocation of work steps as set out in the schedule.

The tenderer is required to describe its backstopping concept. The following services are part of the standard backstopping package, which (like ancillary personnel costs) must be factored into the fee schedules of the staff listed in the tender in accordance with Section 3.3.1 of the GIZ AVB:

- Service-delivery control
- Managing adaptations to changing conditions
- Ensuring the flow of information between the tenderer and GIZ
- Assuming personnel responsibility for the contractor's experts
- Process-oriented steering for implementation of the commission
- Securing the administrative conclusion of the project

Further requirements (1.7)

The contractor is required to articulate a clear strategy for achieving the objectives outlined in Chapter 2. This includes presenting an explicit strategy to manage the tasks effectively while aligning them with SAWS' goals. The strategy must detail the collaboration mechanisms with stakeholders and partners and include approaches to steering activities in alignment with results-based monitoring systems.

The contractor will identify key actors relevant to the project, detailing their roles and the mechanisms of cooperation. The technical-methodological concept must outline a detailed operational plan, including a breakdown of key work steps, milestones, and an allocation of responsibilities. This includes:

1. **Strategic Alignment**

   The service provider must present a clear and justified strategy for achieving the project objectives. This involves analyzing the tasks outlined in the ToR and aligning them with SAWS's modernization goals. The strategy should emphasize scalability and sustainability while ensuring compliance with both international standards and South Africa's data protection regulations, such as POPIA. The approach must demonstrate how the contractor will balance technical innovation with the practical needs of SAWS's operations.

2. **System Development Approach**

   The modernization of the MetCap system will follow a modular development approach, which ensures that the system is designed in self-contained components. This allows for iterative testing and integration, reducing risks and improving efficiency. Agile development methodologies, such as Scrum or Kanban, should be employed to enable incremental results and frequent feedback from SAWS stakeholders. The system must be developed using modern, widely-used programming languages ensuring

compatibility with SAWS ICT infrastructure and allowing for long-term maintainability and upgrades.

3. **Stakeholder Engagement and Collaboration**
Engaging with SAWS and other stakeholders will be critical to ensuring the system meets operational needs. The service provider must establish clear communication channels to manage expectations and provide regular updates. Regular consultation sessions will enable the gathering of user requirements, validation of project progress, and prompt resolution of concerns. Collaboration with external partners, where applicable, will help to ensure the system adheres to WMO standards and leverages relevant expertise.

4. **Results-Based Monitoring and Evaluation**

A results-based monitoring framework must be integrated to track progress and measure success. This framework should include specific key performance indicators (KPIs) to evaluate system performance, user adoption, and improvements in data accuracy. Regular progress reports will ensure transparency and allow SAWS to monitor the alignment of project outcomes with organizational goals. The service provider should document all project milestones, and any adjustments made to the implementation strategy.

5. **Operational Planning**

A comprehensive operational plan will be developed, detailing all aspects of the project timeline, milestones, and resource allocation. The plan must include a breakdown of key processes, such as system analysis, development, testing, training, and deployment, and must account for dependencies on SAWS or other actors. This ensures smooth execution and minimizes delays. The service provider must also identify risks and propose mitigation strategies as part of the operational planning process.

6. **Knowledge Management and Capacity Building**

Knowledge management will be a key component of the project to ensure SAWS staff can operate and maintain the system independently after deployment. The service provider must develop detailed user manuals, operational guides, and system documentation. Training sessions should use interactive and hands-on approaches to maximize engagement and skill retention. These efforts will ensure that the system is not only technically robust but also practically manageable by SAWS teams.

7. **Data Security and Compliance**

The contractor must prioritize data security and compliance throughout the project. This includes implementing robust measures such as encryption for data storage and transmission, role-based access controls, and secure data-sharing mechanisms. All processes must align with POPIA and WMO standards to ensure compliance with data protection regulations. The service provider must also develop a data governance framework to guide ongoing data management practices.

8. **Scalability and Innovation**

The MetCap system must be designed to accommodate future growth and evolving technological needs. The service provider should propose an architecture that allows for the integration of new datasets, functionalities, or advanced technologies, such as AI and machine learning. This ensures the system remains adaptable to SAWS's long-term needs and provides a foundation for innovation in climate data management.

9. **Sustainability and Environmental Considerations**

The contractor must incorporate sustainability principles throughout the project. This includes minimizing the environmental impact of project activities, such as travel, by leveraging virtual collaboration tools where possible. The system itself should be designed to be resource-efficient and cost-effective, ensuring operational sustainability over its lifecycle.

10. **Testing and Quality Assurance**

Rigorous testing and quality assurance processes will be conducted to ensure system reliability and functionality. The service provider must perform functional, stress, and load testing, as well as performance benchmarking, to validate the system's capacity to handle real-world demands. Automated testing tools should be employed to enhance efficiency and consistency. All testing activities must be documented, and a feedback loop must be maintained to address any identified issues promptly. The Service provider must also facilitate User Acceptance Testing and obtain sign off.

Additionally, the contractor must demonstrate their contribution to knowledge management for SAWS and scaling-up effects through learning and innovation mechanisms. This includes documenting processes for knowledge sharing and fostering innovation to ensure scalability.

4. Personnel concept

The tenderer is required to provide personnel who are suited to filling the positions described, on the basis of their CVs (see Chapter 7), the range of tasks involved and the required qualifications.

The below specified qualifications represent the requirements to reach the maximum number of points in the technical assessment.

Technical Team Lead

Tasks of the Team Lead

- Steer the project and manage the collaboration with GIZ, SAWS and all other involved stakeholders. Lead the engagements with the project steering committee.

- Facilitate stakeholder engagement through regular meetings and updates to align project objectives, gather feedback, and ensure the system meets both operational and strategic needs.

- Develop a detailed project implementation plan, including timelines, milestones, resource allocation, and a risk management strategy to address potential challenges during system redevelopment.

- Ensure that the project is implemented within agreed timelines, scope, budget and acceptable level of quality.

- Develop and present monthly project progress reports.

Qualifications of the Team Lead

- Education/Training (2.1.1): Postgraduate degree (Master's or equivalent) in Information and Communication Technology (ICT), Computer Science, Software Engineering, or a closely related field.
- Language (2.1.2): C2-level proficiency in English with excellent verbal and written communication skills for reporting, documentation, and stakeholder engagement.

- General Professional Experience (2.1.3): 7 years of professional experience in the ICT sector, specifically in software development, system modernization, and large-scale digital transformation projects.

- Specific Professional Experience (2.1.4): 5 years of experience in leading multidisciplinary projects, including system analysis, design, development, and implementation, with a strong focus on user-centric solutions and data-intensive systems.

- Leadership/Management Experience (2.1.5): 5 years of experience in a leadership or management role as a project team leader or senior ICT manager in a company, overseeing system modernization initiatives.

- Regional Experience (2.1.6): 2 years of experience in ICT-related projects in the Southern African region, of which 1 year has been in South Africa, preferably within meteorological, environmental, or climate data-related sectors.

- Development Cooperation (DC) Experience (2.1.7): 1 year of experience in development cooperation projects, preferably involving system modernization, capacity-building, and digital transformation efforts.

- Other (2.1.8): 5 years of experience in handling multidisciplinary projects that include system analysis, design, development, and implementation, with a focus on user-centric solutions

System Architect (Expert 1)

Tasks of Expert 1

- Conduct a comprehensive review of the existing MetCap system to analyze its architecture, functionality, and limitations, and prepare a report detailing gaps and recommendations aligned with SAWS needs and guidelines for climate data management systems.

- Engage with SAWS stakeholders to gather requirements, define system objectives, and identify operational needs, ensuring the new system is user-focused and meets organizational goals.

- Design the system with scalability and innovation in mind, incorporating opportunities for future enhancements, such as integrating advanced analytics or AI features, and enabling compatibility with evolving technologies and datasets.

- Develop a Systems Analysis Report on which the development of the system will be based.

- Conduct rigorous testing of system modules and overall performance, including stress and load testing, to validate functionality, reliability, and scalability; document test results and apply resolutions to identified issues.

- Develop and deliver tailored training sessions for SAWS staff, providing comprehensive user manuals and technical documentation to ensure long-term system operation, maintenance, and troubleshooting capabilities.

- Maintain detailed documentation of system architecture, workflows, and configurations, and provide regular progress reports summarizing activities, challenges, and achievements throughout the project lifecycle.

Qualifications and Experience of Expert 1

- Education/Training (2.2.1): Graduate degree in Information and Communication Technology (ICT), Computer Science, Software Engineering, or a closely related field.
- Language (2.2.2): C2-level proficiency in English with excellent verbal and written communication skills for reporting, documentation, and stakeholder engagement.

- General Professional Experience (2.2.3): 5 years of professional experience in ICT software development projects.

- Specific Professional Experience (2.2.4): 2 years of experience in analyzing complex projects that include system analysis, design, development, and implementation, with a strong focus on user-centric solutions. Experience in designing and implementing secure data-sharing frameworks, including encryption, access control, and compliance with data protection standards.

- Leadership/Management Experience (2.2.5): 2 years of experience in a senior ICT specialist, overseeing system modernization initiatives.

- Regional Experience (2.2.6): 1 year of experience in ICT-related projects in the Southern African region.

- Development Cooperation (DC) Experience (2.2.7): 1 years of experience in development cooperation projects, preferably involving system modernization, capacity-building, and digital transformation efforts.

- Other (2.2.8): 2 years of experience in developing testing documentation, executing software integration testing, and facilitating user acceptance testing. Expertise in delivering system-related training or capacity-building initiatives tailored to diverse groups, including technical and non-technical personnel.

Software Developer (Expert 2)

Tasks of Expert 2

- Contribute to the system analysis phase of the project from a technical perspective.

- Rewrite the MetCap system using a modern programming language, ensuring compatibility with SAWS ICT infrastructure and incorporating a modular design to enable incremental testing and integration.

- Enhance the system to accommodate diverse datasets, including real-time, historical, and high-resolution climate data, while integrating automated data validation and quality assurance mechanisms to improve data accuracy and reliability.

- Provide post-implementation support.

Qualifications and Experience of Expert 2

- Education/Training (2.3.1): Degree or equivalent in Information and Communication Technology (ICT), Computer Science, Software Engineering, or a closely related field.

- Language (2.3.2): C2-level proficiency in English with excellent verbal and written communication skills for reporting, documentation, and stakeholder engagement.

- General Professional Experience (2.3.3): 5 years of professional experience in ICT, with a focus on software development and system modernization.

- Specific Professional Experience (2.3.4): 4 years of demonstrated expertise in developing and modernizing data management systems, preferably in sectors related to meteorology, climate, or environmental sciences, with proficiency in modern programming languages such as Python or Java.

- Leadership/Management Experience (2.3.5): 2 year experience in managing software development lifecycle processes.

- Regional Experience (2.3.6): 1 year of experience in ICT-related projects in the Southern African region, with 2 years in South Africa, preferably within meteorological, environmental, or climate data-related sectors.

- Development Cooperation (DC) Experience (2.3.7): 1 year of experience in development cooperation projects, particularly those involving system modernization, digital transformation, or capacity-building initiatives.

- Other (2.3.8): 3 years of experience in secure software development, database management, and cloud computing. Strong analytical and problem-solving skills, with the ability to design scalable and efficient system architectures. Expertise in delivering system-related training and capacity-building for both technical and non-technical personnel.

The below specified qualifications represent the requirements to reach the maximum number of points in the technical assessment.

The personnel concept outlines the qualifications, tasks, and structure proposed by the tenderer to execute the project.

Soft skills of team members

In addition to their specialist qualifications, the following qualifications are required of team members:

- Team skills
- Initiative
- Communication skills
- Socio-cultural skills
- Efficient, partner- and client-focused working methods

- Interdisciplinary thinking

For the technical assessment, an average of the qualifications of all specified members of the expert pool is calculated. Please send a CV for each pool member (see below Chapter 7 Requirements on the format of the bid) for the assessment.

5. Costing requirements

Assignment of personnel and travel expenses

Per diem allowances are reimbursed as a lump sum up to the maximum amounts permissible under tax law for each country as set out in the country table in the circular from the German Federal Ministry of Finance on travel expense remuneration (downloadable from the German Federal Ministry of Finance – tax treatment of travel expenses and allowances for international business travel as of 1 January 20242025 (GERMAN ONLY)).

Accommodation allowances are reimbursed as detailed in the specification of inputs below.

With special justification, additional Accommodation costs up to a reasonable amount can be reimbursed against evidence.

All business travel must be agreed in advance by the officer responsible for the project

Sustainability aspects for travel

GIZ has undertaken an obligation to reduce greenhouse gas emissions (CO_2 emissions) caused by travel. When preparing your tender, please incorporate options for reducing emissions, such as selecting the lowest emission booking class (economy) and using means of transport, airlines and flight routes with a higher CO_2 efficiency. For short distances, travel by train (second class) or e-mobility should be the preferred option.

CO_2 emissions caused by air travel must be offset. GIZ specifies a budget for this, through which the carbon offsets can be settled against evidence.

There are many different providers in the market for emissions certificates, and they have different climate impact ambitions. The Development and Climate Alliance (German only) has published a list of standards (German only). GIZ recommends using the standards specified there.

Specification of inputs

Fee days	Number of experts	Number of days per expert	Total	Comments
Technical Team Lead	1	25	25	
System Architect	1	45	45	
Software Developer	1	60	60	

Travel expenses	Quantity	Number per expert	Total	Comments
Per-diem allowance in country of assignment	15	3	45	Total of 15 travel days envisaged assuming the service provider isn't based close to the SAWS office
Overnight allowance in country of assignment	**15**	3	45	

Transport	Quantity	Number per expert	Total	Comments
International flights				Travel to the place of service delivery
Domestic flights	8	3	24	Flights within the country of assignment during service delivery
CO$_2$ compensation for air travel				A fixed budget of EUR is earmarked for settling carbon offsets against evidence.
Travel expenses (train, car) • Car • Train	500	4.76		Up to 500 KM for millage at 4.76 rate on private or rented vehicle
Other travel expenses	N/A	N/A	N/A	e.g. visa costs
Fixed travel budget	N/A	N/A	N/A	

Other costs	Number	Price	Total	Comments
Flexible remuneration	1	106 422	106,422	A budget of ZAR 106422 is foreseen for flexible remuneration. Please incorporate this budget into the price schedule.

				Use of the flexible remuneration item requires prior written approval from GIZ.
Workshop related costs *(excluding venue, venue setup, technical support for in person or virtual sessions and catering costs – see below)*	10			Up to 10 workshops foreseen during the assignment.

Workshops, events and trainings

The project will include workshops and training sessions to ensure SAWS staff are fully equipped to manage and maintain the modernized MetCap system effectively. These sessions will cover key topics such as system functionality, troubleshooting, data management workflows, and best practices for compliance with POPIA and WMO standards. The in-person training is expected to involve approximately 10-15 participants, primarily SAWS ICT personnel and operational staff, and will be conducted over two sessions during the implementation phase.

Workshops and training sessions will primarily be held at SAWS headquarters or other SAWS-provided venues. GIZ will cover catering costs for these events.

Additionally, the contractors will organize two similar online training sessions involving all Met Techs and Climate Service staff across the country.

The service provider is required to organize these events, including planning the agenda, preparing and delivering training materials, and providing technical support during the sessions. Training materials should be comprehensive, user-friendly, and tailored to the needs of the participants. These materials must include user manuals, operational guides, and detailed system documentation.

The financial proposal must account for the preparation and delivery of training materials, as well as the facilitation of workshops, events, and training sessions. These activities must align with the project timeline and objectives as detailed in Chapter 2. The service provider is also expected to ensure that the training sessions are interactive and effective, with opportunities for active engagement and knowledge transfer.

6. **Inputs of GIZ or other actors**

- **Working Station:** A workstation would be provided by SAWS within the SAWS premises.

- **Workshop Logistics:** GIZ will manage logistical arrangements for workshops, including catering, venue setup (if not conducted at SAWS premises), and necessary technical support for in-person or virtual sessions.

- **Subject Matter Experts:** SAWS will make available subject matter experts to throughout the execution of the project. This will provide the service provider with sufficient understanding of the requirements throughout the project.

- **ICT Resources:** SAWS will make available ICT personnel to work with the service provider throughout the duration of the project to ensure continuity once the service provider completes the project.

7. Requirements on the format of the tender

The structure of the tender must correspond to the structure of the ToR. In particular, the detailed structure of the concept (Chapter 3) should be organised in accordance with the positively weighted criteria in the assessment grid (not with zero). The tender must be legible (font size 11 or larger) and clearly formulated. It must be drawn up in English (language).

The complete tender must not exceed 10 pages (excluding CVs). If one of the maximum page lengths is exceeded, the content appearing after the cut-off point will not be included in the assessment. External content (e.g. links to websites) will also not be considered.

The CVs of the personnel proposed in accordance with Chapter 4 of the ToRs must be submitted using the format specified in the terms and conditions for application. The CVs shall not exceed 4 pages each. They must clearly show the position and job the proposed person held in the reference project and for how long. The CVs can also be submitted in English(language).

Please calculate your financial tender based exactly on the parameters specified in Chapter 5 Quantitative requirements. The contractor is not contractually entitled to use up the days, trips, workshops or budgets in full. The number of days, trips and workshops and the budgets will be contractually agreed as maximum limits. The specifications for pricing are defined in the price schedule.

8. Additional Requirements

- Please submit your proposal (technical and price proposal) in separate files/folder to ZA_Quotation@giz.de no later than **23rd of June 2025** all documents must be in PDF.
- Submission to any other email address may invalidate your bid.
- Please do not mention any price for this measure on your cover letter/Technical proposal.
- Please submit your tax clearance certificate with the bidding documents.
- Please submit your price proposal in **ZAR.**
- Our General Terms of Conditions (attached) shall not be changed/amended should you be the winner of this tender. These General Terms and Conditions will form part of the contract should you be awarded this contract. By submitting your proposal, we will conclude that you have read and accepted these terms and conditions.

- Participating more than once in same tender is not allowed and it will lead to your proposal as well as that of the company where you appear more than once being disqualified. The responsibility rests with the companies to ensure that their partners/experts are not bidding/participating more than once in same tender.
- Bidders are not allowed to communicate directly with any other person regarding this bid other than the procurement official/s. Failure to comply with this requirement may lead to your bid being disqualified.
- Bidders must strictly avoid conflicts with other assignments or their own interests. Bidders found to have a conflict of interest shall be disqualified. Without limitation on the generality of the above, Bidders, and any of their affiliates, shall be considered to have a conflict of interest with one or more parties in this EOI and tender process, if they:

  a) are or have been associated in the past, with a firm or any of its affiliates which have been engaged by GIZ or the Interim Supply Chain Management Council to provide services for the preparation of the design, specifications, Terms of Reference, cost analysis/estimation, and other documents to be used for the procurement of the services in this selection process;

  b) were involved in the preparation and/or design of the programme/project related to the services requested under this EOI and tender;

  c) are serving or have been serving in the past three months in the structures of the Interim Supply Chain Management; or

  d) are found to be in conflict for any other reason, as may be established by, or at the discretion of GIZ.

Scientific data

In the event of any uncertainty in the interpretation of a potential conflict of interest, Bidders must disclose to GIZ, and seek GIZ's confirmation on whether or not such a conflict exists.

- Similarly, the Bidders must disclose in their proposal their knowledge of the following:

  a) if the owners, part-owners, officers, directors, controlling shareholders, of the bidding entity or key personnel are family members of GIZ staff involved in the procurement functions and/or the Interim SCM Council or any Implementing partner receiving services under this EOI or tender; and
  b) all other circumstances that could potentially lead to actual or perceived conflict of interest, collusion or unfair competition practices.
- **Failure to disclose such an information may result in the rejection of the proposal or proposals affected by the non-disclosure.**

Bids sent via Dropbox and WeTransfer will not be accepted.