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

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

CONFIDENTIAL

Strengthening Evidence-based Air Quality Management in Central Asian Cities	**Project number/ cost centre: G-012576-001** **Tender number 10053607**

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0. List of abbreviations

AG	Commissioning party
AQ	Air Quality
AN	Contractor
AVB	General Terms and Conditions of Contract for supplying services and work
EMP	Environmental Master Plan
FK	Expert
FKT	Expert days
KZFK	Short-term expert
PM	Particulate Matter
ToRs	Terms of reference

1. Context

The GIZ regional project “Sustainable and Climate-Sensitive Urban Development in Central Asia – Green Cities” supports selected secondary cities in Uzbekistan, Kyrgyzstan and Tajikistan in integrating climate, environmental and biodiversity considerations into urban planning and decision-making. The project works with the six partner cities Fergana and Kokand in Uzbekistan, Osh and Manas in Kyrgyzstan, and Khujand and Isfara in Tajikistan.

Air pollution has been identified as an important environmental and public-policy challenge in cities across the region. While monitoring infrastructure and environmental data exist to varying degrees, municipal authorities often lack integrated tools and methodologies to translate available data into concrete planning, policy and investment decisions. At the same time, future investments in monitoring infrastructure should be based on a sound assessment of actual monitoring needs, existing assets, population exposure, emission sources and local conditions.

The assignment therefore combines a regional strategic component for all six partner cities with an operational demonstration in one priority district or neighbourhood. The first component will define fit-for-purpose air quality monitoring needs and investment roadmaps for all six cities. The second component will demonstrate an operational data-driven air quality decision-support approach that combines monitoring data, atmospheric modelling and forecasting. The demonstration shall serve as a learning case for replication and scaling across the Green Cities network.

2. Tasks to be performed by the contractor

The overall objective of the assignment is to strengthen evidence-based air quality management and related urban planning capacities in the six Green Cities partner cities. The contractor is responsible for delivering the following work packages and results.

The contractor is responsible for providing the following work:

Work Package 1 – Air Quality Monitoring Network Master Plans for six cities

The contractor shall assess the existing air quality monitoring situation and future monitoring requirements in Fergana, Kokand, Osh, Manas, Khujand and Isfara. The assessment shall be based on a review of available information, datasets and relevant stakeholder consultations and shall take into account, where appropriate and feasible, the following aspects:

• existing monitoring infrastructure, available datasets and institutional responsibilities;

• population distribution, including sensitive locations and vulnerable groups;

• transport patterns and relevant economic and industrial activities;

• likely emission sources;

• topography and meteorological conditions;

• existing urban, environmental and climate plans and strategies; and

• opportunities to integrate existing monitoring infrastructure and data sources.

For each city, the contractor shall define:

• priority pollutants to be monitored, including PM2.5, PM10 and NO2 as well as other locally relevant pollutants;

• an appropriate combination of monitoring technologies, which may include reference stations, indicative stations and low-cost sensors;

• the indicative number and strategic location of monitoring points;

• data integration and quality-assurance requirements;

• indicative investment and operating requirements; and

• a phased deployment and investment roadmap.

The objective of this work package is not the procurement of monitoring equipment, but to enable cities, national institutions and potential financing partners to make evidence-based decisions on future investments in air quality monitoring.

Work Package 2 – Selection and design of the demonstration area

In consultation with GIZ and the relevant partner authorities, the contractor shall confirm one priority district or neighbourhood in one of the six partner cities for the operational demonstration. The tenderer shall propose a transparent selection methodology. Criteria shall include actual or expected air pollution exposure, relevant emission sources, population exposure and vulnerable groups, data availability, relevance for municipal planning, feasibility of mitigation measures, stakeholder willingness to participate and potential for replication. The final selection will be agreed with GIZ and partner institutions based on the assessment and implementation feasibility.

Work Package 3 – Operational Air Quality Decision-Support Demonstrator

For the selected district or neighbourhood, the contractor shall establish and operationalise a digital air quality decision-support solution that integrates available monitoring, meteorological, spatial and other relevant data with atmospheric modelling. To adequately account for the influence of urban morphology, building structures, street-canyon effects, complex topography and meteorological conditions on pollutant dispersion, the atmospheric modelling component shall be based on a particle-based Lagrangian modelling approach or an equivalent high-resolution methodology capable of representing these processes.

The solution shall not be limited to visualisation of monitoring data. It shall support prospective policy and investment decisions and enable responsible authorities to:

• identify spatial pollution hotspots at high spatial resolution;

• identify and quantify major pollution sources using appropriate modelling and source-attribution approaches;

• assess population exposure and provide sufficiently granular information to support neighbourhood- and, where technically feasible, street-level decision-making;

• integrate meteorological information and forecast air quality conditions and pollution episodes up to at least 48 hours in advance;

• identify areas and population groups likely to be particularly affected; and

• model and compare multiple policy and investment scenarios before implementation, including their expected effects on air quality and population exposure.

Potential scenarios may include traffic management, public transport measures, low-emission areas, cleaner heating and energy solutions, industrial emission reduction, prevention of open waste burning, urban greening/public green space and other locally relevant measures. The system shall enable repeated assessment of different scenarios during the implementation period rather than only a one-off modelling exercise.

The contractor shall clearly specify the minimum data requirements for operating the demonstrator. If additional monitoring or data collection is technically necessary, the tender shall describe the proposed approach, equipment requirements and associated costs. Any additional equipment shall be proportionate to the pilot character of the assignment and interoperable with existing systems.

Work Package 4 – Capacity development and participatory Living Lab

Capacity development shall be integrated throughout the assignment. The contractor shall train relevant municipal and national stakeholders in interpreting air quality information, using the decision-support solution, understanding modelling and forecasting outputs, identifying and prioritising mitigation measures, and applying evidence to urban planning and investment decisions.

In cooperation with GIZ and local authorities, the contractor shall also support a participatory Living Lab approach in the demonstration area. This may include consultations and neighbourhood walks with community representatives, identification of locally perceived pollution hotspots and sources, discussion of mitigation options and accessible communication of modelling results. The objective is to demonstrate how scientific data, modelling and local knowledge can jointly inform municipal decision-making.

Work Package 5 – Regional knowledge transfer and scaling

The demonstration shall explicitly serve as a learning case for all six Green Cities partner cities. The contractor shall facilitate at least one regional peer-learning and transfer format involving representatives of all six cities and relevant national institutions. A replication and scale-up roadmap shall identify which elements of the pilot are transferable, minimum technical and institutional requirements, indicative investment needs, integration opportunities in existing urban and environmental planning processes, and possible pathways for follow-up financing.

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

Milestones/partial works	**Deadline/place/person responsible**	**Criteria for acceptance**
Milestone 1: Inception, data inventory and implementation design	**Month 1** / remote and Pilot cities / Contractor's Team Leader and Technical experts	Inception report approved by GIZ; methodology, work plan and responsibilities agreed; available air quality, meteorological, spatial and other relevant data sources for the six cities identified; data

		gaps and technical requirements documented; implementation approach for both components confirmed.
Milestone 2: Air Quality Monitoring Network Master Plans for all six partner cities	**Month 2** / Pilot cities / Contractor's Team Leader & Technical experts	Six city-specific assessments completed and approved by GIZ; priority pollutants, monitoring technologies, number and indicative locations of monitoring points defined; existing infrastructure and data considered; indicative investment needs and phased implementation roadmaps provided.
Milestone 3: Pilot area selection and technical implementation design	**Month 5** / selected pilot city and district/neighbourhood / Contractor's Team Leader	Pilot district/neighbourhood selected in agreement with GIZ and relevant partner institutions based on transparent technical and institutional criteria; required datasets and interfaces confirmed; technical architecture, modelling approach, implementation plan and requirements for operational deployment approved by GIZ.
Milestone 4: Operational Air Quality Decision-Support Demonstrator	**Month 6** / selected pilot district/neighbourhood / Contractor's Team Leader and Technical experts	Decision-support system successfully deployed and demonstrated to GIZ and partner institution; relevant monitoring, meteorological and spatial data integrated; system provides spatial analysis of air pollution, identification of hotspots and major sources, population exposure assessment and short-term air-quality forecasting of up to 48 hours; system is technically operational and accessible to authorised users.
Milestone 5: Policy scenario assessment, Living Lab and capacity development	**Month 9 /** selected pilot city / Contractor's Team Leader and Technical experts	Relevant mitigation scenarios jointly identified with the city and local stakeholders; the demonstrator used to explore and compare the potential implications of selected policy and investment options; results translated into actionable recommendations; participatory Living Lab activities completed; relevant municipal/national staff

		trained in using and interpreting the system and its outputs.
Milestone 6: Regional transfer, replication roadmap and final delivery	**Month 11 /** Central Asia / Contractor's Team Leader	Regional peer-learning activity involving the six partner cities completed; lessons from the pilot documented; replication and scale-up recommendations for the other five cities developed; requirements and indicative investment needs for replication identified; final report and all agreed technical documentation, datasets/user documentation and project outputs submitted and approved by GIZ.

Technical sustainability, data ownership and continued use

The proposed solution shall be interoperable with existing monitoring infrastructure and relevant public data sources. The tenderer shall transparently describe data ownership, access rights, software licensing, hosting arrangements, cybersecurity and data-protection provisions, maintenance requirements and recurring costs. The tender shall distinguish one-off implementation costs from any recurring licensing, hosting, data or maintenance costs.

The contractor shall ensure that the operational solution remains available to the designated partner institution for an agreed period after completion of the assignment and shall describe the conditions for continued use and transferability.

Period of assignment: from 15.12.2026 until 30.06.2028.

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 3.1 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

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.

Team leader

<u>Tasks of the team leader</u>

- Overall responsibility for the advisory packages of the contractor (quality and deadlines)

- Coordinating and ensuring communication with GIZ, partners and others involved in the project
- Personnel management, in particular identifying the need for short-term assignments within the available budget, as well as planning and steering assignments and supporting local and international short-term experts
- Regular reporting in accordance with deadlines

Qualifications of the team leader

- Education/training (2.1.1): university degree PhD in atmospheric science
- Language (2.1.2): C1-level language proficiency in English
- General professional experience (2.1.3): 15 years of professional experience in the air quality sector
- Specific professional experience (2.1.4): 15 years in 3D urban air quality modeling
- Leadership/management experience (2.1.5): 10 years of management/leadership experience as project team leader or manager in a company
- Regional experience (2.1.6): 10 years of experience in projects in Asia (region), of which 2 years in projects in Middle East and Central Asia (MECA) (country)
- Development cooperation (DC) experience (2.1.7): 10 years of experience in DC projects
- Other (2.1.8): 2 years of experience in atmospheric dispersion modelling and air quality forecasting.

Key expert 1

Tasks of key expert 1

- Urban air pollution expertise
- Urban air quality modeling

Qualifications of key expert 1

- Education/training (2.2.1): Master degree in Atmospheric Sciences, Meteorology, Environmental Engineering or a related discipline
- Language (2.2.2): C1 -level language proficiency in English
- General professional experience (2.2.3): 5 years of professional experience in atmospheric sciences, air quality or environmental modelling
- Specific professional experience (2.2.4): 5 years of experience in urban air quality assessment, atmospheric dispersion modelling and air quality management projects
- Leadership/management experience (2.2.5): 2 years of experience coordinating technical teams or leading technical work packages in air quality projects
- Regional experience (2.2.6): 3 years of experience delivering projects for clients outside the European Union
- Development Cooperation (DC) experience (2.2.7): 2 years of experience in projects funded by international development institutions, bilateral cooperation agencies or international financial institutions
- Other (2.2.8): 2 years of experience in high-resolution 3D urban modelling

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

Short-term expert pool 1 with minimum 1, maximum 2 members

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.

Tasks of the short-term expert pool

- Environmental data-science
- Digital twin developper

Qualifications of the short-term expert pool

- Education/training (2.6.1): 1 expert with university qualification (German 'Diplom'/Master) in Environmental Engineering, Atmospheric Sciences, Geoinformatics or a related discipline, 1 expert with university qualification in Data Science, Computer Science, Artificial Intelligence or a related discipline; German 'Diplom'/Master)
- Language (2.6.2): 2 experts with B2-level language proficiency in english
- General professional experience (2.6.3): 1 expert with 5 years of professional experience in the air quality management and environmental modelling sector, 1 expert with 5 years of professional experience in the data science, software development or digital solutions sector
- Specific professional experience (2.6.4): 1 expert with 5 years of professional experience in air quality data management, emission inventories and preparation of model-ready data for atmospheric modelling, 1 expert with 5 years of professional experience in software development and implementation of operational environmental modeling or decision support systems
- Regional experience (2.6.5): 1 expert with 3 years of experience in Asia, including experience in Middle East and Central Asia (region)
- Development cooperation (DC) experience (2.6.6): 2 experts with 2 years of experience in DC

The tenderer must provide a clear overview of all proposed short-term experts and their individual qualifications.

5. Costing requirements

The following basic calculations for the contract for works are a reference value based on the acceptance criteria for each partial work/milestone specified in Chapter 2 (Tasks to be performed by the contractor).

Since the contract to be concluded is a contract for works, we would ask you to offer your services at a lump sum price.

In addition, the assessment of the financial bid is also based on the underlying daily rate. Please also provide the underlying daily rate. A breakdown of days is not required.

Milestones/partial works	**Estimated expert days for orientation**	**Deadline/place/person responsible**
Milestone 1	10	**Month 1** / remote and Pilot cities / Contractor's Team Leader and Technical experts
Milestone 2	55	**Month 2** / Pilot cities / Contractor's Team Leader & Technical experts
Milestone 3	15	**Month 5** / selected pilot city and district/neighbourhood / Contractor's Team Leader
Milestone 4	95	**Month 6** / selected pilot district/neighbourhood / Contractor's Team Leader and Technical experts
Milestone 5	20	**Month 9 /** selected pilot city / Contractor's Team Leader and Technical experts
Milestone 6	15	**Month 11 /** Central Asia / Contractor's Team Leader

Travel expenses	**Quantity**	**Price**	**Total**	**Comments**
Fixed travel budget	1	13.924 EUR	13.924 EUR	A fixed budget of EUR 13.924 is earmarked for settling travel expenses against evidence. You can find further information on the travel expense budget in the 'Price schedule' document. Settlement is possible only until the budget is depleted.
Carbon offsets for flights	1	600 EUR	600 EUR	A fixed budget of EUR 600 is earmarked for settling carbon offsets against evidence.

Workshops, events and trainings

The contractor implements the following workshops/study trips/training courses:

- 1 Training for municipal staff (2-3 from each city – 12-18 participants maximum) – in accordance with Milestone 6

Relevant mitigation scenarios jointly identified with the city and local stakeholders; the demonstrator used to explore and compare the potential implications of selected policy and investment options; results translated into actionable recommendations; participatory Living Lab activities completed; relevant municipal/national staff trained in using and interpreting the system and its outputs.

6. Inputs of GIZ or other actors

GIZ and/or other actors are expected to make the following available:

- Transportation on site with own project vehicle
- Logistics for workshops: Organization of venue, catering and logistics for participants

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.

As the contract to be concluded is a contract for works, please offer a fixed lump sum price that covers all relevant costs (fees, travel expenses etc.). The price bid will be evaluated on the basis of the specified lump sum price. In addition, please also provide the underlying daily rate. A breakdown of days is not required.