

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

CONFIDENTIAL

Development of a Sustainable and Scalable Business Model for Agricultural Cold Storage Systems in Indonesia	Project number/ cost centre: G-011658-001
	Tender number 10058589

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0. List of abbreviations

AG	Commissioning party
AN	Contractor
AVB	General Terms and Conditions of Contract for supplying services and work
CaaS	Cooling as a Service
FK	Expert
FKT	Expert days
KZFK	Short-term expert
ToRs	Terms of reference

1. Context

The GIZ-implemented Energy Programme Indonesia/ASEAN supports the Indonesian Government in advancing a sustainable energy transition through a partner-based approach. The Programme contributes to Indonesia's energy transition objectives, including increasing the share of renewable energy in the power mix, achieving Net Zero Emissions by 2060, and promoting low-carbon technologies as part of the country's broader economic transformation.

Within the framework of this contract, two initiatives under the Energy Programme Indonesia/ASEAN are of particular importance:

The German-Indonesian Energy Cooperation Hub (Energy Hub), which serves as a central platform for strengthening and coordinating bilateral cooperation between Germany and Indonesia in the energy sector. Building on more than 30 years of German-Indonesian energy cooperation, the Energy Hub aims to represent and consolidate bilateral energy cooperation, facilitate dialogue and exchange among government institutions and energy sector stakeholders from both countries, and provide technical expertise on energy-related topics beyond the existing portfolios of the GIZ Energy Programme. The Energy Hub supports the mainstreaming of digital solutions for development across initiatives within the wider Programme.

Furthermore, within the framework of the Energy Programme, the "Solar Cold Chains for a Green Economy in Indonesia" (SOCOOL) project supports the development of technological and market conditions for the long-term reduction of CO₂ emissions in Indonesia's cooling sector. Implemented in cooperation with relevant government and private-sector stakeholders, including the Ministry of Energy and Mineral Resources (MEMR) and the Ministry of Marine Affairs and Fisheries (KKP), SOCOOL promotes the use of renewable energy-based cooling solutions, particularly solar-powered cold chains.

The project contributes to Indonesia's climate and renewable energy targets while supporting socio-economic development in sectors with growing demand for reliable cold-chain infrastructure and the preservation of goods. The Project is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) with an overall duration of five years (01/2023-12/2027) and has the general objective: "Solar cold chains are rolled out in key sectors of the economy as a contribution to climate-friendly green transformation". Its main Outputs are:

1. Government advice and national planning: Instruments for quantitative and qualitative monitoring support the use of solar technologies in cold chains for national planning processes.
2. Alliances and market development: Technology partnerships have developed adapted technical solutions for solar cold chains.
3. Demonstration: Pilot applications with state actors and the private sector have shown technologically and economically viable examples for the dissemination of solar cold chains.

Under SOCOOL, GIZ has initiated technology partnerships with the Government of Indonesia, applied research institutions, technology providers, Indonesian manufacturers, cold chain actors, and universities.

In this case, GIZ working together with ILK Dresden, Integration energy & environment and its partners from IPB University have developed and implemented the Solar PV tri-chamber cold storage facility at the "Agribusiness and Technology Park (ATP)" in Dramaga, Bogor to

demonstrate the viability of decentralized solar-powered cold storage as a sustainable and replicable solution in Indonesia. While technology globally has proven effective in many contexts, experience shows that long-term success depends on the establishment of locally adapted commercial business models that can address demand uncertainty, operational costs, and investment requirements.

The facility is powered by a 17 kWp solar PV system and divided into three chambers: a Vegetable Chamber (+8°C), a Fresh Meat Chamber (+1°C), and a Freezing Chamber (-18°C). All units run on R290 (propane), a natural refrigerant with low global warming potential. The vegetable and fresh meat chambers operate in grid-hybrid mode, drawing on solar power first and switching to the utility grid when needed, while the freezing chamber runs off-grid with battery storage to keep a stable -18°C independent of the grid. A monitoring system tracks system performance in real time.

To ensure the long-term sustainability of the initiative, a comprehensive strategy and implementation framework are required to enable the pilot to grow, be replicated, and eventually be scaled up. Achieving this requires a thorough market assessment, the development of a viable business model and business plan, as well as the integration of digital solutions to optimize implementation, monitoring, and operational performance. In addition, strengthening the capacity of key stakeholders is essential to ensure effective adoption and long-term success. By addressing these aspects, the initiative will encompass not only technological innovation but also business viability, market readiness, and institutional capacity.

Therefore, GIZ requires expert support for the “Development of a Sustainable and Scalable Business Model for Agricultural Cold Storage Systems in Indonesia”. To support this objective, the Contractor shall work closely with GIZ and relevant investors, partners and potential facility operators to assess the demand potential, commercial viability, operational performance, and financing opportunities of the facility. The assignment aims to establish a proven and documented business model that can be replicated by private sector partners and supported by potential investors, while strengthening the capacity of key stakeholders through targeted technical assistance, capacity building, and strategic guidance.

2. Tasks to be performed by the contractor

The contractor shall provide the following work:

1. Integrated Business Model and Replication Framework

The Contractor shall assess the demand potential, commercial viability, and operational requirements of the solar-powered cold storage facility, including the identification of cost structures, revenue streams, and breakeven conditions. The Contractor shall also support capacity building for facility operators to ensure effective implementation and operation of the selected business model. Specific tasks include:

- **Market Opportunity and Viability Framework:** Consolidated assessment of market potential, customer needs, willingness to pay, regulatory conditions, and site suitability, providing the basis for determining commercial viability and, where necessary, selecting an alternative location.
- **Commercial Model and Financial Business Case:** Defined service proposition and commercial arrangements, including pricing and revenue mechanisms, supported by financial projections covering investment and operating costs, utilization scenarios, returns, breakeven, and key sensitivities.

- Operational Readiness Package: Practical tools and guidance to enable the operating team to apply the business model, including customer onboarding, pricing administration, and financial tracking.
- Replication and Scale-up Toolkit: Documented operating approach, templates, lessons learned, and implementation guidance to facilitate the establishment of subsequent facilities with reduced setup requirements and costs.

2. Digital Management System for Cold Storage

The Contractor shall support the implementation of a digital management system for cold storage operations at the pilot site in Bogor to improve operational efficiency, enable real-time monitoring, and generate reliable operational data to support business model validation and future investment readiness. The digital management system should incorporate an open-source solution that is readily accessible through both the App Store and Google Play Store. The system should provide key functionalities including Digital Inventory Management, Remote Temperature Monitoring, Revenue and Occupancy Monitoring, a Performance Dashboard, and Data-driven Decision Support. Specific tasks include:

- Localized System Configuration: Configure and tailor the digital management system to Indonesian operational requirements, including commodity categories, measurement units, currency, workflows, and user interface.
- Institutional Adoption and User Readiness: Facilitate engagement with IPB Bogor, relevant units, and facility operators to establish understanding, acceptance, and ownership of the system, supported by clear orientation and user guidance.
- Deployment and Operational Handover: Deploy the system at the facility and provide structured onboarding, on-site assistance, and troubleshooting during the first six months of operation, followed by formal handover to the operating team.

3. Engagement and Capacity Building Package

The Contractor shall support demand generation, market linkage, and capacity-building activities to increase facility utilization, strengthen stakeholder engagement, and enhance the commercial viability and replication potential of the solar-powered cold storage technology. Specific tasks include:

- Stakeholder Engagement Framework: Establish a stakeholder landscape and engagement mechanism covering relevant local actors, with support from an Indonesia-based partner to maintain continuity and facilitate coordination throughout implementation.
- Capacity Development Programme: Develop and deliver targeted learning interventions covering CaaS and digital cold storage solutions, business operations and governance, financial management, market linkages, and pathways for investment and replication, complemented by follow-up support.
- Market Outreach and Learning Resources: Develop and disseminate tailored communication and learning materials to increase awareness and adoption of the solution among farmers, aggregators, buyers, and other relevant local actors.

4. Financing and Partnership Development Package

The Contractor shall develop financing and investment pathways for decentralized solar-powered cold storage systems in Indonesia by identifying suitable financing mechanisms, engaging relevant investors and financial institutions, and supporting the development of initial investment opportunities to enable replication and scale-up beyond grant-funded projects. Specific tasks include:

- **Financing Landscape and Investor Mapping:** Develop an overview of relevant financing sources and potential capital providers for cold storage deployment, covering green and blended finance, impact investment, DFIs, government programmes, and prospective co-investment partners.
- **Financing and Risk-Sharing Strategy:** Define suitable capital structures and risk-mitigation approaches for the deployment model, including guarantees, results-based mechanisms, and other instruments that can improve affordability while preserving commercial attractiveness for investors.
- **Partnership Development and Financing Readiness:** Identify and engage relevant technology, cooperative, agritech, and other ecosystem partners, facilitate connections with suitable financiers, and support selected opportunities through investor preparation and targeted financing discussions.

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

Milestones/process steps/partial services	Deadline/place/person responsible
Product 1 Integrated Business Model and Replication Framework	31.03.2026
Product 2: Digital management system for cold storage	30.04.2027
Product 3: Stakeholder Engagement and Capacity Building Package	31.07.2027
Product 4: Financing and Partnership Development Package	30.09.2027

Period of assignment: from 01.12.2026 until 31.10.2027

Milestones/partial works	Deadline/place/person responsible	Criteria for acceptance
Product 1: Integrated Business Model and Replication Framework	31.03.2027	Main report of approximately 20-30 pages, submitted in PDF and editable Word format, covering market and demand assessment, commercial and financial model, implementation approach, and replication framework

Product 2: Digital Management System for Cold Storage	30.04.2027	Fully operational software-based system deployed at the IPB Bogor facility, with a 15–20 page User and Operations Guide in PDF and editable Word format, covering system configuration, localization, user setup, operational use, troubleshooting, training, and handover and accompanied by PPT/PDF training materials
Product 3: Stakeholder Engagement and Capacity Building Package	31.07.2027	Main report of approximately 20–30 pages, submitted in PDF and editable Word format, covering stakeholder mapping, engagement approach, capacity-building programme, outreach activities, and follow-up support; accompanied by PPT/PDF training and outreach materials, participant/attendance records, and training outcome documentation
Product 4: Financing and Partnership Development Package	30.09.2027	Main report of approximately 20–30 pages, submitted in PDF and editable Word format, covering financing landscape, financing and risk-sharing options, potential partners, financing opportunities, and partnership facilitation and documentation of relevant matchmaking/engagement outcomes.

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.

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 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**. This shall include:

Knowledge Management (1.5.1)

- Training Concept for IPB University, Bogor
- Training Framework: Explanation of the target participants, training curriculum and duration, and strategies to ensure the long-term sustainability of the training programme.

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 (1.6.1).

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 (1.6.2).

Further requirements (1.7)

Digital proposed idea

- Present and demonstrate the proposed digital solution, including its key features, functionalities, and compliance with the required criteria.
- Present experience of 3 reference projects having deployed the proposed software solution.

Required criteria: The bidder must ensure that the digital solution is accessible through both the Apple App Store and Google Play Store and incorporates key functionalities, including Digital Inventory Management, Remote Temperature Monitoring, Revenue and Occupancy Monitoring, a Performance Dashboard, and Data-driven Decision Support.

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

Tasks of the team leader

- Lead the overall coordination and implementation of project activities and deliverables.
- Serve as the primary focal point for coordination and communication with GIZ, IPB, and other relevant stakeholders.
- Oversee the development of financing options, investment pathways, and partnership opportunities for solar-powered cold storage systems.
- Facilitate stakeholder engagement and support deal origination and investment facilitation activities.
- Monitor project progress, track milestones, and prepare project reports and updates in accordance with project requirements.

Qualifications of the team leader

- Education/training (2.1.1): Master's degree (or equivalent Diploma) in engineering, social studies or economic finance.
- Language (2.1.2): B2 -level language proficiency in English
- General professional experience (2.1.3): 15 years of professional experience in the energy sector and business development.
- Specific professional experience (2.1.4): 7 years in developing business models, financing solutions, and investment strategies for sustainable energy and climate projects.
- Leadership/management experience (2.1.5): 7 years of experience as lead of multidisciplinary project teams.
- Built Regional experience (2.1.6): 1 year of experience in Indonesia.
- Development cooperation (DC) experience (2.1.7): 5 years of experience in DC projects

Expert 1: International Sustainable Energy Finance Specialist

Tasks of expert 1

- Lead the development of the business model and governance structure for the solar-powered cold storage facility.
- Conduct market assessments and analyze commercial opportunities, demand potential, and relevant regulatory frameworks.
- Develop and evaluate revenue models, including Cooling-as-a-Service (CaaS) and other commercially viable approaches.
- Prepare financial and economic analyses to assess the feasibility and scalability of the proposed business model.
- Identify suitable financing mechanisms and investment opportunities to support long-term sustainability and replication.

Qualifications of expert 1

- Education/training (2.2.1): Master's degree in economics, business administration, public policy, international development, environmental sciences.
- Language (2.2.2): B2 -level language proficiency in English
- General professional experience (2.2.3): 5 years of professional experience in sustainable finance and development projects.

- Specific professional experience (2.2.4): 2 years in designing financing mechanisms for energy efficiency in SMEs
- Regional experience (2.2.6): 1 year of experience in projects in Indonesia
- Development Cooperation (DC) experience (2.2.7): 2 years of experience in DC-funded projects.

Expert 2: International Senior Digital Specialist

Tasks of expert 2

- Lead the adaptation of the digital management system to the Indonesian operational context.
- Oversee the deployment and implementation of the digital platform at the pilot cold storage facility.
- Coordinate system testing, validation, and troubleshooting with IPB, facility operators, and relevant stakeholders.
- Conduct operator onboarding, training, and capacity-building activities to ensure effective use of the platform.
- Provide technical support and recommendations to optimize system performance and user adoption throughout the implementation period.

Qualifications of expert 2

- Education/training (2.3.1): Master's degree in information technology, Digital Transformation, Engineering, computer science, data science or Mathematics.
- Language (2.3.2): B2 -level language proficiency in English
- General professional experience (2.3.3): 10 years of professional experience in data science.
- Specific professional experience (2.3.4): 5 years in developing digital solutions for decentralised cooling projects
- Regional experience (2.3.6): 1 year of experience in Indonesia
- Development Cooperation (DC) experience (2.3.7): 5 years of experience in DC-funded projects.

Expert 3: Communication and Gender Specialist

Tasks of expert 3

- Lead stakeholder engagement, outreach, and awareness-raising activities to promote the adoption of solar-powered cold storage solutions.
- Design and deliver capacity-building activities, including workshops, training sessions, and stakeholder consultations.
- Develop knowledge products, communication materials, and outreach tools to support project objectives and stakeholder engagement.
- Facilitate collaboration and knowledge exchange among farmers, cooperatives, buyers, facility operators, and other relevant stakeholders.
- Ensure gender and social inclusion considerations are integrated into project activities, communication materials, and capacity-building approaches.

Qualifications of expert 3

- Education/training (2.4.1): Master's degree in communications, international affairs, social sciences or gender studies
- Language (2.4.2): B2 -level language proficiency in English
- General professional experience (2.4.3): 5 years of professional experience in sustainable development projects.
- Specific professional experience (2.4.4): 3 years in integrating gender considerations into climate and energy projects
- Regional experience (2.4.6): 1 year of experience in projects in Indonesia
- Development Cooperation (DC) experience (2.4.7): 3 years of experience in DC-funded projects

Short-term expert pool 1: National Short-term expert pool with 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

1) Business & Financing

- Engage stakeholders (IPB, farmer groups, local government, ministries)
- Conduct market intelligence and regulatory analysis for agricultural cold storage
- Support design and validation of the business model and governance structure
- Facilitate FGDs and accompany BASE missions
- Map financing institutions and facilitate meetings with potential financiers
- Provide inputs to reporting and knowledge products

2) Operations, Technology & Outreach

- Specify and install sensors and equipment at the IPB facility
- Support app localization and on-site testing
- Train cold room operators and provide first-line technical support
- Organize stakeholder workshops
- Coordinate production of communication materials and knowledge products
- Document pilot results and prepare handover

Qualifications of the short-term expert pool

- Education/training (2.6.1): 1 expert with bachelor's degree in economics, business administration or agribusiness, 1 expert with bachelor's degree in engineering, IT or agricultural technology.
- Language (2.6.2): 2 experts with B2-level language proficiency in English and Bahasa Indonesia
- General professional experience (2.6.3): 1 expert with 7 years of professional experience in the agribusiness or energy sector, 1 expert with 7 years of professional experience in the agricultural technology sector
- Specific professional experience (2.6.4): 1 expert with 3 years of professional experience in business model development and regulatory analysis for cold chain, 1 expert with 3

years of professional experience in IoT/digital tool deployment and user training in agricultural sector.

- Regional experience (2.6.5): 2 experts with 5 years of experience in Indonesia

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

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

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 2026 \(GERMAN ONLY\)](#)).

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 (CO₂ 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 CO₂ efficiency. For short distances, travel by train (second class) or e-mobility should be the preferred option.

CO₂ 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

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
Product 1: Integrated Business Model and Replication Framework	International experts: 50 National experts: 10	31.03.2026
Product 2: Digital management system for cold storage	International experts: 45 National experts: 10	30.04.2027
Product 3: Stakeholder Engagement and Capacity Building Package	International experts: 34 National experts: 10	31.07.2027
Product 4: Financing and Partnership Development Package	International experts: 28 National experts: 10	30.09.2027

Travel expenses	Quantity	Number per expert	Total	Comments
Per-diem allowance in country of assignment	10	4	40	2 trips of 2 intl. experts
Overnight allowance in country of assignment	10	4	40	2 trips of 2 int. experts
Transport	Quantity	Number per expert	Total	Comments
International flights	2	2	4	2 Roundtrips (economy class) of 2 intl. experts
Taxi	4	1	4	Taxi from airport and to airport

CO2 Compensation	4	25,00 EUR	100,00 EUR	ToR-Budget 100,00 EUR
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6. 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

7. Outsourced processing of personal data

No outsourced processing of personal data by the contractor is foreseen under this contract. The contractor will use open-source software for the implementation of the deliverables but will not collect, access, store, or otherwise process personal data on behalf of GIZ.