

ANNEX-II: TERMS OF REFERENCE

Deliverable-Based Consultancy Services for the Monitoring of the Installation of Digital Transformation Technological Infrastructure of Ankara, Konya, Kayseri and Bursa Model Factories

Number of Positions: 2

1 BACKGROUND

UNDP Turkey aims to find practical solutions to Turkey's development challenges and manages projects together with the Turkish Government and other partners to address them. Since 1986 it has implemented over 80 programs across the country. In addition, the UNDP has played a major role in response to crises and disasters in Turkey and the surrounding region. UNDP Turkey has positioned to contribute through three core areas: 1) Inclusive and Democratic Governance (IDG); 2) Inclusive and Sustainable Growth (ISG); and 3) Climate Change and Environment (CCE); and in addition to these core areas, UNDP Turkey is emphasizing the role of Strategic Partnerships that cut across the entire country program as well as regionally and globally.

The ISG Portfolio is geared towards addressing structural economic problems, such as productivity, innovation, the middle-income trap, multi-dimensional poverty, energy security and regional disparities, as well as challenges with social, environmental and economic repercussions, such as urbanization.

"Competitive Production and Productivity", one of the main objectives stated in the 11th National Development Plan is an important topic on the agenda of Turkish Government. Besides, improving productivity levels, particularly in SMEs, is also one of the strategic objectives of Turkey's SME Strategy and Action Plan (2015- 2018). In the same vein, Turkey's Productivity Strategy and Action Plan (2015-2018) pays a special attention to productivity levels of the SMEs in the manufacturing industry. Additionally, 2023 Industry and Technology Strategy approaches digital transformation as one of the main drivers of productivity policy. Therefore, the enterprises should strengthen their infrastructure and core capabilities on lean manufacturing, digitalization (within the context of Industry 4.0), quality management, innovative product development, energy efficiency etc. through some well-developed transformation programs and practice-based trainings in order to improve capabilities of technical staff, engineers and mid-level managers.

One of the effective solutions applied in many developed countries in the last two decades is to build well-designed training centres including a real didactic manufacturing environment (a real product, a real assembly line, real machines, real processes and real operators) and specialized training programs based on a series of hands-on and step-by-step exercises to improve the manufacturing processes within a "transformation" context. A feasibility study was completed for the appropriate model for Turkey in collaboration with Ministry of Industry and Technology in 2016 within the scope of Applied SME Capability Centre (aka Model Factory) Project. Following the completion of the feasibility study, the Model Factories have been adopted as a policy tool and incorporated into Government Investment Plan in 2017.

In 2017 Ankara Chamber of Industry and Ankara I. Organized Industry Zone joined the Applied SME Capability Centre (aka Model Factory) Project both as funding agencies and implementing partners so

that first implementation has been carried out in Ankara. In the meantime, Government adopted these centres as a policy tool and planned several replication actions and funded replication in Bursa. UNDP supported Government endeavors for reaching out additional funding streams along with the national budget to serve this target. UNDP CO mobilized additional funding for the Ministry to replicate this model in Konya and Kayseri through German Development Bank (KfW) funding in 2018. Second component of this Financing Agreement between KfW and UNDP covers activities to support/enlarge activities in Ankara Model Factory, replicate model factories in Kayseri and Konya and support job creation in Ankara, Konya and Kayseri. Finally, with the additional funding allocated from the Public Investment Program to the project budget for the digitalization component of Ankara, Bursa, Kayseri and Konya Model Factories, the project has been extended until 31 August 2023.

Establishment and improvement of production lines (for training purpose) of Ankara, Bursa, Kayseri and Konya Model Factories and the project activities focusing on lean production is completed. As mentioned above, with the additional funding from the Government, digitalization of production lines in Ankara, Bursa, Kayseri, Konya is prioritized by UNDP. Ankara Model Factory was established in 2018 after the installation of all machines and equipment, deployment of the core team and completion of Training of Trainers regarding the lean production. After its operationalization in 2018, Ankara Model Factory provided training and consultancy services in lean production for more than 200 companies until now. Through completion of the similar processes, the establishment of Bursa Model Factory was completed in 2019 and Konya and Kayseri Model Factories in 2020. All the model factories have been operational for the time being, offering experiential lean trainings and Learn & Transform Programs. The model factories in these four provinces will extend their service lines for SMEs with the additional digitalization scenarios in 2022. Operationalization of the digital transformation component of Ankara, Bursa, Kayseri and Konya Model Factories are crucial for the both the success of the project and the development agenda of Turkey. Within this scope, a contractual process was started by UNDP for the installation of technological infrastructure in Ankara, Bursa, Konya and Kayseri Model Factories within scope of Digital Transformation Component. In order to ensure the successful implementation of Contract until the end of the Project and monitor the installation of the mentioned technological infrastructure in four Model Factories, two (2) individual consultants will be mobilized. The Senior Digital Transformation Consultant will lead and coordinate Digital Transformation Consultants and the Acceptance Committee for the coordination, monitoring, controlling and testing of the deliverables that will be provided by the Contractor of Digital Transformation of Ankara, Bursa, Kayseri and Konya Model Factories.

2 OBJECTIVE AND SCOPE

The main aim of the assignment is to ensure overall coordination and monitoring of the installation of technological infrastructure for the operationalization of Digital Transformation Component of Ankara, Bursa, Kayseri and Konya Model Factories. The Consultants are expected to support UNDP Senior Digital Transformation Consultant and the Acceptance Committee for the coordination, monitoring, controlling and testing of the deliverables that will be provided by the Contractor of Digital Transformation of Ankara, Bursa, Kayseri and Konya Model Factories (hereinafter referred as Contractor) within the scope of Digital Transformation Contract of Ankara, Bursa, Kayseri and Konya Model Factories (hereinafter referred as Contractor).

Up to Two (2) Individual Consultants (ICs) will be mobilized with a Deliverable-based Individual Contract within the scope of this ToR in line with the needs of UNDP Turkey CO. The ICs will report to CEG Projects Coordinator. The ICs will work in close cooperation with the Model Factory Project Team, UNDP Senior Digital Transformation Consultant, and aforementioned Model Factories.

3 DUTIES AND RESPONSIBILITIES OF THE INDIVIDUAL CONSULTANTS (ICS)

Within the scope of the assignment, the Consultants are expected to provide consultancy services for the below listed generic activities within the scope of Digital Transformation Component of Ankara, Bursa, Konya and Kayseri Model Factories:

- Supporting UNDP Senior Digital Transformation Consultant on the evaluation and follow up of the Roadmap for the Installation and Integration of Technological Infrastructure and Provision Trainings services created by the Contractor.
- Supporting UNDP Senior Digital Transformation Consultant and the Acceptance Committee on coordination and conduct of goods inspection and receiving of associated hardware provided by the Contractor in accordance with the Technical Specification Stipulated in the Contract.
- Supporting UNDP Senior Digital Transformation Consultant and the Acceptance Committee on monitoring, control, and conducting acceptance tests of installation and integration of the Internet of Things (IoT) Infrastructure, MES Software, ERP Software and delivery of trainings to the Model Factories' staff on the use of the installed technological infrastructure (software and hardware)
- Supporting UNDP Senior Digital Transformation Consultant and the Acceptance Committee on the conduct of acceptance tests of the entire technological infrastructure using the use cases defined in the Contract for each Model Factory.

If required by the UNDP Project Team, the ICs shall provide additional consultancy services on topics related to her/his expertise area for other activities of the Project within the scope of this Terms of Reference.

Reporting: The ICs will report to CEG Projects Coordinator. The ICs will work in close cooperation with the Project team at UNDP.

4 DURATION AND DELIVERABLES

The Assignment is expected to start in August 2022 and be completed on 31 August 2023.

The deliverables and activities expected from each IC are as follows:

Major Activities	#	Deliverables	Estimated Number of Working Days to be invested by IC (indicative)*	Due Date**
Activity 1: Evaluation of Roadmap for the Installation and Integration of Technological Infrastructure and Provision of Trainings services	1	Evaluation Report on the detailed roadmap provided by the Contractor which includes but not limited to requirements/specification report and technological infrastructure design and the scope for training materials and programs.	7 days	September- October 2022

	2	Goods Inspection Report for associated Hardware for Kayseri Model Factory in accordance with the Technical Specification Stipulated in the Contract for each product.	5 days	December 2022
Activity2:CoordinationandConductofGoodsInspectionandReceivingof	3	Goods Inspection Report for associated Hardware for Ankara Model Factory in accordance with the Technical Specification Stipulated in the Contract for each product.	5 days	December 2022
required for Technological Infrastructure	4	Goods Inspection Report for associated Hardware for Konya Model Factory in accordance with the Technical Specification Stipulated in the Contract for each product.	5 days	December 2022
	5	Goods Inspection Report for associated Hardware for Bursa Model Factory in accordance with the Technical Specification Stipulated in the Contract for each product.	5 days	December 2022
	6	Acceptance Tests Report on Installation and Integration of the Internet of Things Infrastructure, MES Software, ERP Software for Kayseri Model Factory	10 days	January 2023
Activity 3: Conducting, Controlling and Monitoring the Acceptance Tests of	7	Acceptance Tests Report on Installation and Integration of the Internet of Things Infrastructure, MES Software, ERP Software for Ankara Model Factory	10 days	January 2023
Installation and Integration of Technical Infrastructure and Provision of Trainings	8	Acceptance Tests Report on Installation and Integration of the Internet of Things Infrastructure, MES Software, ERP Software for Konya Model Factory	10 days	March 2023
	9	Acceptance Tests Report on Installation and Integration of the Internet of Things Infrastructure, MES Software, ERP for Bursa Model Factory	10 days	April 2023

	10	Evaluation Report on the delivery of trainings to the Model Factories' staff on the use of the installed technological infrastructure (software and hardware)	9 days	May 2023
Activity 4: Conducting acceptance test of the entire technological infrastructure through application of the use cases	11	Final Acceptance tests Report of the entire technological infrastructure using the use cases defined in the Contract for each Model Factory.	20 days	June-July 2023

*These number of days for each deliverable are solely provided to give the ICs an idea on the assignment and deliverables to be undertaken. The payments will be made in line with the table given under Section 8, against deliverables regardless of the number of days invested by the ICs.

**Timeline for deliverables is highly dependent on the delivery of outputs within the scope of a separate Contract for Digital Transformation of Model Factories. In this regards, due dates are subject to change based the dates of outputs received over the course implementation of Digital Transformation Contract.

The acceptable minimum standards of the above-mentioned deliverables are as follows:

Deliverables	Acceptable Minimum Service Standards
Deliverable-1: Evaluation Report on the Detailed Roadmap	<u>Shall include following issues (including but</u> <u>not limited to)</u> Evaluation of Requirements/Specification Report Evaluation of Technological Architecture Evaluation of scope for curriculum, training materials, programs and delivery of trainings
Deliverable-2: Goods Inspection Report for associated Hardware of Kayseri Model Factory	Shall include following issues (including but not limited to)
	Goods inspection and acceptance reports issued for each hardware item
Deliverable-3: Goods Inspection Report for associated Hardware of Ankara Model Factory	Shall include following issues (including but not limited to)
	Goods inspection and acceptance reports issued for each hardware item
Deliverable-4: Goods Inspection Report for associated Hardware of Konya Model Factory	Shall include following issues (including but not limited to)
	Goods inspection and acceptance reports issued for each hardware item
Deliverable-5: Goods Inspection Report for associated Hardware of Bursa Model Factory	Shall include following issues (including but not limited to)
	Goods inspection and acceptance reports issued for each hardware item
Deliverable-6: Acceptance Tests Report on Installation and Integration of IoT, MES Software, ERP Software for Kayseri Model Factory	<u>Shall include following issues (including but</u> <u>not limited to)</u>

	 Assessment of IoT installation and integration, IoT network installation, test plan report, minimum number of licenses that will allow the system to function as described and other necessary equipment Assessment of MES Software installation and integration report, test plan reports, minimum number of licenses that will allow users to use the software and terminals to connect simultaneously and other necessary equipment.
	- Assessment of ERP Software installation and integration with MES system, test plan report, minimum number of licenses that will allow users to use the software and terminals to connect simultaneously and other necessary equipment.
Deliverable-7: Acceptance Tests Report on Installation and Integration of IoT, MES	Shall include following issues (including but not limited to)
Software, ERP Software for Ankara Model Factory	- Assessment of IoT installation and integration, IoT network installation, test plan report, minimum number of licenses that will allow the system to function as described and other necessary equipment
	- Assessment of MES Software installation and integration report, test plan reports, minimum number of licenses that will allow users to use the software and terminals to connect simultaneously and other necessary equipment.
	- Assessment of ERP Software installation and integration with MES system, test plan report, minimum number of licenses that will allow users to use the software and terminals to connect simultaneously and other necessary equipment.
Deliverable-8: Acceptance Tests Report on Installation and Integration of IoT, MES	Shall include following issues (including but not limited to)
Software, ERP Software for Konya Model Factory	- Assessment of IoT installation and integration, IoT network installation, test plan report, minimum number of licenses that will allow the system to function as described and other necessary equipment
	- Assessment of MES Software installation and integration report, test plan reports, minimum number of licenses that will allow users to use the software and terminals to connect simultaneously and other necessary equipment.

	- Assessment of ERP Software installation and integration with MES system, test plan report, minimum number of licenses that will allow users to use the software and terminals to connect simultaneously and other necessary equipment.
Deliverable-9: Acceptance Tests Report on Installation and Integration of IoT, MES	<u>Shall include following issues (including but</u> <u>not limited to)</u>
Software, ERP Software for Bursa Model Factory	- Assessment of IoT installation and integration, IoT network installation, test plan report, minimum number of licenses that will allow the system to function as described and other necessary equipment
	- Assessment of MES Software installation and integration report, test plan reports, minimum number of licenses that will allow users to use the software and terminals to connect simultaneously and other necessary equipment.
	- Assessment of ERP Software installation and integration with MES system, test plan report, minimum number of licenses that will allow users to use the software and terminals to connect simultaneously and other necessary equipment.
Deliverable-10: Evaluation Report on the delivery of trainings to the Staff of Model	<u>Shall include following issues (including but</u> <u>not limited to)</u>
Factories on the use of technological infrastructure	- Assessment of the curriculum and the overall training program including the number of trainees for each Model Factory
Deliverable-11: Final Acceptance Tests Report of the entire technological infrastructure using	Shall include following issues (including but not limited to)
the use cases	- Assessment of the overall technological infrastructure using the use cases for each Model Factory

5 INSTITUTIONAL ARRANGEMENTS

UNDP will provide to ICs all relevant background documents. UNDP is not required to provide any physical facility for the work of the ICs. However, depending on the availability of the physical facilities (e.g. working space, computer, printer, telephone lines, internet connection etc.) and at the discretion of the UNDP and relevant stakeholders, such facilities may be provided at the disposal of the ICs. UNDP will facilitate meetings between the ICs and other stakeholders, when needed.

All document and data provided to the ICs are confidential and cannot be used for any other purposes or shared with a third party without any written approval from UNDP.

The ICs will be responsible to the CEG Projects Coordinator for the completion of the tasks and duties assigned. The reports shall be submitted to the CEG Projects Coordinator for final approval. All the reports are subject to approval from the CEG Projects Coordinator to realize the payments to the ICs.

The language for all reports shall be in Turkish. Some of the documents may be in English as per request of the Ministry of Industry and Technology and UNDP. The ICs will be responsible to quality check and edit the translation (Turkish to English / English to Turkish) of the reports if needed.

The ICs shall be solely liable for the accuracy and reliability of the data provided, links to sources of information used.

The title rights, copyrights and all other rights whatsoever their nature in any material produced under the provisions of this ToR will be vested exclusively in UNDP Turkey CO.

6 MINIMUM QUALIFICATION REQUIREMENTS

The following table demonstrates the required qualifications of the candidates to be recruited for this assignment.

	Minimum Requirements	Assets		
General Qualifications	 University Education in Engineering (e.g., computer, industrial, mechanical, mechatronic, electromechanical, product, process, plant), Computer skills (i.e. MS Office applications). 	• Master's Degree in industrial, computer, mechanical, and electronical engineering.		
General Professional Experience	• A minimum of 2 years of working knowledge in the industry 4.0 technologies (e.g., simulation, optimization, data analytics, IoT, MES) and their applications in the manufacturing sector	• Experience in a company covering operational processes of manufacturing industry will be an asset.		
Specific Professional Experience	• Experience on digital transformation technologies (e.g., installing MES, ERP, and/or IoT systems and/or developing production scheduling models and algorithms) in the manufacturing sector is required.	• Experience in conducting (preparation of documents, taking part in implementation etc.) and/or monitoring of digital transformation procurement processes is an asset.		

Notes:

- Internships (paid/unpaid) are not considered professional experience.
- Obligatory military service is not considered professional experience.
- Experience gained prior to completion of undergraduate studies is not considered professional experience.
- Candidate will be asked to provide samples of previous references

UNDP is committed to achieving workforce diversity in terms of gender, race, ethnicity, indigenous identity, disability and culture. Individuals from all genders, minority groups, indigenous groups and persons with disabilities are equally encouraged to apply. All applications will be treated with utmost confidentiality.

7 PLACE OF WORK

Places of work for the assignment are home-based and Ankara, Bursa, Kayseri and Konya. All travel, accommodation and living costs in duty stations shall be covered by the ICs. The ICs are expected to

take this int	o consideration	whilst determ	ining the price	of each de	eliverable a	nd factor th	hese c	osts in
their financi	al offers. Please	see below for	the details of e	stimated vi	isits to the N	Aodel Facto	ories.	

Activity	# of Travel	# of Stay
Activity 1: Deliverable 1	4 travels (one for each Model Factory)	(1 day stay for each Model Factory)
Activity 2: Deliverable 2, 3, 4, 5	4 travels (one for each Model Factory)	(2 day stay for each Model Factory)
Activity 3: Deliverable 6, 7, 8, 9	4 travels (one for each Model Factory)	(5 day stay for each Model Factory)
Activity 3: Deliverable 10	2 travels (one for every 2 Model Factory)	(5 day stay for each travel)
Activity 4: Deliverable 11	4 travels (one for each Model Factory)	(5 day stay for each Model Factory)

If there is any additional unforeseen travel and accommodation is required within the scope of this Terms of Reference, the costs of these missions, at the discretion of UNDP, may either be;

- Arranged and covered by UNDP CO from the respective project budget without making any reimbursements to the IC or,
- Reimbursed to the ICs upon the submission of the receipts/invoices of the expenses by the ICs and approval of the UNDP. The reimbursement of each cost item is subject to the following constraints/conditions provided in the table below.
- Covered by the combination of both options.

The following guidance on travel compensation is provided by UNDP practice.

Cost item	Constraints	Conditions of Reimbursement
Travel (intercity transportation)	full-fare economy class tickets	
Accommodation	Up to 50% of the effective DSA rate of UNDP for the respective location	1- Approval by UNDP of the
Breakfast	Up to 6% of the effective DSA rate of UNDP for the respective location	cost items before the initiation of travel
Lunch	Up to 12% of the effective DSA rate of UNDP for the respective location	2- Submission of the invoices/receipts, etc. by the IC
Dinner	Up to 12% of the effective DSA rate of UNDP for the respective location	with the UNDP's F-10 Form 3- Acceptance and Approval by
Other Expenses (intra city transportations, transfer cost from /to terminals, etc.)	Up to 20% of effective DSA rate of UNDP for the respective location	UNDP of the invoices and F-10 Form.

As per UNDSS rules, the ICs are responsible for completing necessary online security trainings and submitting certificates and travel clearance prior to assignment related travels.

8 PAYMENTS

Payments will be made within 30 days upon acceptance and approval of the corresponding deliverables listed in "Section 4. Duration and Deliverables" by UNDP on the basis of payment terms indicated in the table below and pertaining to Certification of Payment document signed by the ICs and approved by the CEG Projects Coordinator.

Deliverable	Payment Terms
Deliverable- 1	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable.
Deliverable- 2	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable.
Deliverable- 3	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable.
Deliverable- 4	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable.
Deliverable- 5	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable.
Deliverable- 6	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable.
Deliverable- 7	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable.
Deliverable- 8	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable.
Deliverable- 9	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable.
Deliverable- 10	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable.
Deliverable- 11	Upon acceptance and approval of the corresponding deliverable by UNDP, on the basis of the lump-sum price of the deliverable.

If the deliverables are not produced and delivered by the ICs to the satisfaction of UNDP as approved by UNDP CEG Projects Coordinator, no payment will be made even if the ICs have invested time to produce and deliver such deliverables.

The amount paid to the ICs shall be gross and inclusive of all associated costs such as social security, pension and income tax etc.

If the Individual Contractor is a Turkish national residing in Turkey, the payment shall be realized in Turkish Liras (TRY).

Payment amount will be converted from United States Dollar (USD) to Turkish Liras (TRY) by the UN operational rate of exchange valid on the date of UNDP's official written acceptance of deliverables. If the Individual Contractor is not a Turkish national, the payments shall be effected in United States Dollar.

UN Operational Exchange rates can be accessed through https://treasury.un.org/operationalrates/OperationalRates.php

Payment will be made only upon UNDP's acceptance of the deliverables. The terms of payment shall be within thirty (30) days after certification of acceptance of deliverables issued by the proper authority in UNDP with direct supervision of the Contractor.

Tax Obligations: The IC is solely responsible for all taxation or other assessments on any income derived from UNDP. UNDP will not make any withholding from payments for the purposes of income tax. UNDP is exempt from any liabilities regarding taxation and will not reimburse any such taxation to the IC.