Technical Assistance Subproject Report

Project Number: 48453-009
Knowledge and Support Technical Assistance (C-KSTA)
June 2019

People's Republic of China: Promoting and Scaling Up of Large-Scale Carbon Capture and Storage Demonstration

Subproject 2: Feasibility Assessment of a Large-Scale Carbon Capture and Storage Demonstration Project and Development Support to Yanchang Petroleum Group

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 5 June 2019)

Currency unit	–	Yuan (CNY)
CNY1.00	=	$ 0.1448
$1.00	=	CNY 6.908

ABBREVIATIONS

ADB	–	Asian Development Bank
CCS	–	carbon capture and storage
CCUS	–	carbon capture utilization and sequestration
CCSF	–	Carbon Capture and Storage Fund
CO_2	–	carbon dioxide
EOR	–	enhanced oil recovery
FEED	–	front-end engineering and design
HLT	–	high level technology
MEE DCC	–	Ministry of Ecology and Environment, Department of Climate Change
NLJERC-CCUS	–	National and Local Joint Engineering Research Center on Carbon Capture, Utilization, and Sequestration
PMU	–	project management unit
PRC	–	People's Republic of China
SDRC	–	Shaanxi Development and Reform Commission
TA	–	technical assistance
tpa	–	tons per annum
YCCUSP	–	Yanchang Carbon Capture Utilization and Sequestration Project
YPG	–	Yanchang Petroleum Group

NOTE
In this report, "$" refers to US dollars.

Vice-President	Ahmed M. Saeed, Operations 2
Director General	Amy S. P. Leung, East Asia Department (EARD)
Director	Sujata Gupta, East Asia Sustainable Infrastructure Division (EASI)
Team leader	Johannes Vogel, Energy Specialist, EASI
Team members	Xinjian Liu, Senior Project Officer (Energy), PRCM

CONTENTS

KNOWLEDGE AND SUPPORT TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data — **Project Number:** 48453-009

Project Name	Feasibility Assessment of a Large-Scale Carbon Capture and Storage Demonstration Project and Development Support to Yanchang Petroleum Group	**Department/Division**	EARD/EASI
Nature of Activity	Capacity Development	**Executing Agency**	Ministry of Ecology and Environment, Department of Climate Change
Modality	Subproject		
Country	China, People's Republic of		

2. Sector — **Subsector(s)** — **ADB Financing ($ million)**

		Total **0.00**

3. Strategic Agenda — **Subcomponents** — **Climate Change Information**[1]

Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Climate Change impact on the Project	Medium
Environmentally sustainable growth (ESG)	Global and regional transboundary environmental concerns	**Cofinancing**	
		Mitigation ($ million)	4.30

4. Drivers of Change — **Components** — **Gender Equity and Mainstreaming**

Governance and capacity development (GCD)	Institutional development	No gender elements (NGE)	✓
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas Knowledge sharing activities		
Partnerships (PAR)	Official cofinancing Private Sector		
Private sector development (PSD)	Promotion of private sector investment		

5. Poverty and SDG Targeting — **Location Impact**

Geographic Targeting	No	Not Applicable	
Household Targeting	No		
General Intervention on Poverty	Yes		
SDG Targeting	Yes		
SDG Goals	SDG7, SDG9, SDG12, SDG13		

6. Risk Categorization Risk Categorization does not apply

7. Safeguard Categorization Safeguard Policy Statement does not apply

8. Financing

Modality and Sources	Amount ($ million)
ADB	**0.00**
None	0.00
Cofinancing	**4.30**
Carbon Capture and Storage Fund under the Clean Energy Financing Partnership Facility (Full ADB Administration)	4.30
Counterpart	**0.00**
None	0.00
Total	**4.30**

Currency of ADB Financing: USD

[1] The project reduces greenhouse gas emissions. However, it does not fall under the eligibility criteria for climate mitigation finance as defined by the joint multilateral development bank methodology on tracking climate finance, which notes that not all activities that reduce greenhouse gases in the short term are eligible to be counted towards climate mitigation finance. Accordingly, greenfield fossil fuel projects are excluded, and climate mitigation finance is considered zero.

Source: Asian Development Bank

I. THE TECHNICAL ASSISTANCE SUBPROJECT

A. Overall Progress of the Technical Assistance Cluster

1. The knowledge and support technical assistance (TA) cluster, Promoting and Scaling Up Carbon Capture and Storage Demonstration, was approved on 17 October 2017.[1] The overall TA cluster is estimated at $5.5 million financed on a grant basis from the Carbon Capture and Storage Fund (CCSF) under the Clean Energy Financing Partnership Facility and administered by ADB.[2] The TA cluster has the following outputs: (i) enabling environment for carbon capture utilization and sequestration (CCUS) demonstration strengthened, (ii) capacity of CCUS project developers strengthened, and (iii) feasibility assessments for large-scale CCUS projects completed.

2. Subproject 1, which has a total value of $1.2 million was approved on 21 March 2018. The TA focuses on providing capacity development support to the National and Local Joint Engineering Research Center on Carbon Capture, Utilization, and Sequestration (NLERC-CCUS) in Xi'an to improve the enabling environment for large-scale CCUS in the coal-chemical and coal-fired power subsector within the People's Republic of China (PRC). Subproject 2 is estimated to cost $4.3 million. The TA focuses on assessing the feasibility of a large-scale carbon capture and storage demonstration project and on providing development support to Yanchang Petroleum Group (YPG). The implementing agency (YPG) will provide counterpart staff, office accommodation and supplies, administrative assistance, domestic travel and workshops, and other in-kind contributions. The design and monitoring framework of subproject 2 is in Appendix 1.[3]

B. Subproject Outcome

3. The TA will have the following outcome: feasibility assessment for large-scale Yanchang Carbon Capture Utilization and Sequestration Project (YCCUSP) completed.

C. Subproject Outputs, Methods, and Activities

4. **Output 1: Technical support to 0.36 million tons per annum YCCUSP provided.** Output 1 will provide technical support for the implementation of the first phase of YCCUSP.[4] Key activities will comprise the (i) preparation of a front-end engineering and design study (FEED study), (ii) development of an environmental and social impact assessment, (iii) preparation of a safety assessment, (iv) establishment of a technical optimization and risk assessment study on the YCCUSP carbon dioxide (CO_2)-transportation pipeline, (v) preparation of a report on innovative CO_2-enhanced oil recovery (EOR) technologies for enhancing recovery of immiscible oil, (vi) establishment of a project implementation plan, as well as the (vii) development of a report on CO_2 recycling technology. The expertise generated under output 1 will be shared with key-stakeholders at YPG, the government, and research institutions. The subproject output promotes CCUS as key high-level technology and directly contributes to output 2 of the TA cluster.

5. **Output 2: Techno-economic feasibility of the 1 million tons per annum YCCUSP appraised.** Complementing the findings of output 1, output 2 will assess the feasibility of the

[1] Asian Development Bank (ADB). 2017. *Technical Assistance Cluster to the People's Republic of China for Promoting and Scaling Up Carbon Capture and Storage Demonstration.* Manila.
[2] Financing partners: Global Carbon Capture and Storage Institute and the Government of the United Kingdom.
[3] The TA first appeared in the business opportunities section of ADB's website on 22 March 2019.
[4] Phase 1 of YCCUSP corresponds to a storage volume of 0.36 million tons per annum (tpa), while phase 2 provides for an upscale in storage volume to 1 million tpa of CO_2.

second phase of YCCUSP. Key activities will include the establishment of a (i) comprehensive technical, financial, and economic feasibility study; as well as (ii) a risk assessment report on the 1 million tons per annum (tpa) YCCUSP. The subproject output actively promotes the mainstreaming of CCUS as key high-level technology in the field of climate change mitigation and reflects efforts summarized in output 3 of the TA cluster.

6. **Output 3: Capability of YPG in the field of sustainable project development as well as technical assessment of CO_2 flooding and storage developed.** This output provides targeted support to enhance the ability of YPG in the area of sustainable project development and technical assessment of CO_2 flooding and storage. Key activities will include the (i) establishment of a sustainable business model for YCCUSP; (ii) preparation of a public acceptance and community involvement study; (iii) development of accounting and reporting methodologies on carbon reduction of YCCUSP; and (iv) establishment of a measurement, monitoring, verification, and implementation plan.[5] Output 3 will further (i) establish the energy penalty and net storage amount of the 1 million tpa YCCUSP, (ii) develop a mathematical model for immiscible CO_2-EOR and storage in low permeability oil field in Ordos Basin, and (iii) prepare a report analyzing the CO_2 storage potential of the oil field. The subproject output promotes CCUS as key high-level technology and directly supports output 2 of the TA cluster.

7. **Output 4: Competence of YPG for safely implementing and operating YCCUSP strengthened.** Building on the findings of outputs 1 to 3, this output will strengthen the capacity of YPG to safely implement and operate YCCUSP. Key activities include the (i) establishment of a long-term security assessment of CO_2 storage; (ii) development of a prediction, warning, and management system of leakage risk; (iii) elaboration of safety management protocols for project implementation and operation; as well as (iv) conducting trainings for YPG staff on safe project implementation and operation. The findings established under output 3 will be provided in the form of training, consultant, and study tour reports. The subproject output actively promotes the long-term establishment of CCUS as innovative low-carbon technology and raises the Asian Development Bank's (ADB's) strategic engagement in the field of high-level technology projects. The subproject output supports output 2 of the TA cluster.

8. **Output 5: Knowledge sharing products on YCCUSP shared and disseminated.** This output will focus on knowledge transfer and the sharing of accumulated lessons learned. Key activities will include the (i) organization of an international symposium on YCCUSP in the PRC, (ii) dissemination of established knowledge products, and (iii) undertaking of a study tour to Canada and the US to investigate CO_2-EOR as well as existing carbon capture and storage (CCS) projects.[6, 7] Key target groups of output 5 will be representatives from YPG, Ministry of Ecology and Environment (MEE), as well as relevant stakeholders from the government and the scientific community. The subproject output actively promotes the mainstreaming of CCUS as a key-high-level technology in the field of climate change mitigation and reflects efforts summarized in output 2 of the TA cluster.

[5] Monitoring reporting and verification principles may follow the guidelines provided through ISO TC 265 or related ISO standards.

[6] Specific composition of participants to the CCUS symposium will be decided during TA implementation.

[7] The symposium will host international representatives from the field of CCUS. This may include representatives from the PRC, the United States, Canada and Australia.

D. Subproject Cost and Financing

9. The TA subproject 2 is estimated to cost $4.3 million which will be financed on a grant basis by the CCSF under the Clean Energy Financing Partnership Facility, and administered by ADB (footnote 2). The key expenditure items are listed in Appendix 2.

10. Expenditures incurred under the TA fulfill the eligibility criteria as listed under the Implementation Guidelines for the Carbon Capture and Storage Fund.[8]

11. YPG will provide counterpart in-kind support in the form of (i) remuneration and per diem for counterpart staff, including counterpart staff's time, remuneration and travel expenses; (ii) logistical support in arranging workshops and conferences; (iii) access to project sites not involving national security and company confidentiality, such as the coal-to-chemical plant, the transport routes and oil reservoir, as well as sequestration sites; (iv) information and results from previous carbon capture, carbon transportation, CO_2-EOR as well as CO_2 sequestration tests and studies on YCCUSP; (v) facilitation of contact of consultants with project developers and other stakeholders for the implementation of the consultant's tasks; (vi) technical information of coal-chemical plant and oil field (including further investigation if necessary), which don't involve national security or company confidentiality and (vii) other in-kind contributions.

E. Subproject Implementation Arrangements

12. The subproject will be implemented from June 2019 to October 2021. The Sustainable Infrastructure Division (EASI) of the East Asia Department will be responsible for the TA administration from ADB and will (i) engage TA consultants and consulting firms; (ii) review TA consultants' reports; (iii) facilitate the exchange of information and dialogue between the implementing agency, Ministry of Ecology and Environment, Department of Climate Change (MEE DCC), Shaanxi Development and Reform Commission (SDRC), and other agencies; and (iv) facilitate tripartite meetings and TA workshops. ADB will engage a project manager on a part-time basis, who will be responsible for TA administration and management.

13. The MEE DCC will be the executing agency and YPG will be the implementing agency. YPG has established the TA project management unit (PMU) within YPG Research Institute. The PMU is responsible for the overall implementation of the activities and the delivery of outputs of subproject 2, including the day-to-day project management activities. The PMU (i) provides project management, administration, and interagency coordination at the executive level; (ii) supports consultants to produce reports with direct relevance for the approval of YCCUSP, and reviews and comments on consultants' reports; (iii) implements supportive technology researches for the effective implementation of YCCUSP; and (iv) facilitates acquisition of information and stakeholder consultation.

14. **Knowledge dissemination.** Publications will primarily be digital, but also in printed form to maximize readership. The estimated amount of hard copies will be determined during TA implementation. The target audience will be relevant stakeholders at YPG, MEE DCC, as well as diverse CCUS-related government ministries and research institutions.

15. The implementation arrangements are summarized in the table.

---

[8] ADB. 2016. *Clean Energy Financing Partnership Facility Implementation Guidelines for the Carbon Capture and Storage Fund.* Manila.

Subproject Implementation Arrangements

Aspects	Arrangements		
Indicative implementation period	June 2019–October 2021		
Executing agency	Ministry of Ecology and Environment, Department of Climate Change		
Implementing agency	Yanchang Petroleum Group		
Consultants	To be selected and engaged by ADB		
	Firm: QCBS (90:10)	Contract Package 1: Carbon Storage and EOR	$3,100,000.00
	Firm: QCBS (90:10)	Contract Package 2: Carbon Capture	$770,000.00
	Individual consultant selection method	3 person-months estimated (International Consultant)	$68,000.00
	Individual consultant selection method	9 person-months estimated (National Consultants)	$72,000.00
Disbursement	The TA resources will be disbursed following ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).		

ADB = Asian Development Bank; MEE DCC = Ministry of Ecology and Environment, Department of Climate Change; QCBS = quality- and cost-based selection, TA = technical assistance.
Source: Asian Development Bank.

16. **Consulting services.** The TA will engage widely respected experts in the fields of CO_2 capture, CO_2-transport, CO_2-EOR, CO_2 sequestration, finance, economics, as well as social and environmental safeguards. ADB will be responsible for the selection and supervision of consultants engaged under the TA. In this regard, ADB will engage up to two firms under quality- and cost-based selection on an output-based lump-sum contract to deliver the two contract packages listed in the table.[9] ADB will engage the consultants in accordance with ADB Procurement Policy (2017, as amended from time to time) and the associated project administration and TA staff instructions.

17. To facilitate TA management, four individual consultants will be hired using individual consultant selection (ICS) method. This includes one international project manager who will support ADB and one national project manager who will assist MEE DCC during project implementation. Both individuals will be tasked to (i) facilitate TA management; (ii) track and promote the implementation of the TA; (iii) coordinate the work of consulting firm under the TA; (iv) facilitate the exchange of information, dialogue, and discussions between executing agency, implementing agency, consultants, and stakeholders; and (v) assist the day-to-day management of the TA. The international and national project managers will be supported by two national project coordinators, who will (i) monitor TA progress; (ii) provide routine updates on the status and progress of the TA; (iii) compile and maintain comprehensive project documentation, plans, and reports; and (iv) help organize, conduct, and coordinate TA-related trainings, workshops, and study tours.

18. **Cofinancier requirements.** The TA implementation will follow the additional monitoring and reporting requirements specific to the Carbon Capture and Storage Fund under the Clean Energy Financing Partnership Facility (footnote 8).

[9] The two contract packages may be awarded to one or more companies.

SUBPROJECT DESIGN AND MONITORING FRAMEWORK

Impact of the TA is Aligned with
Innovative climate change mitigation technology of CCUS successfully demonstrated for further deployment in the PRC (Energy Technology Revolution Innovation Action Plan [2016–2030])[a]

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome Feasibility assessment for large-scale YCCUSP completed	By 2021: a. Investment decision on YCCUSP taken by YPG (2016 baseline: N/A)	a. Official company statements as announced by YPG	Interest in CCUS technology on management level of project developer may decrease
Outputs 1. Technical support to 0.36 million tpa YCCUSP provided	By 2021: 1a. FEED report for 0.36 million tpa YCCUSP prepared (2019 baseline: N/A)	1a. FEED report	Environmental impact, social impact, and safety assessment might identify significant environmental or social issues that cannot be easily mitigated
	1b. Environmental and social impact report for the 0.36 million tpa project prepared (2019 baseline: N/A)	1b. Environmental and social impact report	
	1c. Safety assessment report for the 0.36 million tpa project prepared (2019 baseline: N/A)	1c. Safety assessment report	
	1d. Risk assessment study on CO_2-transportation pipeline finalized (2019 baseline: N/A)	1d. Feasibility and risk assessment study on YCCUSP pipeline construction and operation	
	1e. Optimization study on technical parameter of 0.36 million tpa CO_2-transportation pipeline (2019 baseline: N/A)	1e. Technical report	
	1f. Innovative CO_2-EOR technologies for enhancing recovery of immiscible oil identified (2019 baseline: N/A)	1f. Consultant report	
	1g. Implementation plan 0.36 million tpa YCCUSP prepared (2019 baseline: N/A)	1g. Consultant report	
2. Techno-economic feasibility of the 1 million tpa YCCUSP appraised	By 2020: 2a. Feasibility study report for 1 million tpa project, including technical, financial, and economic feasibility assessment with implementation plan prepared (2019 baseline: N/A)	2a. Consultant report	
3. Capability of YPG in the field of sustainable	By 2020: 3a. Measurement, monitoring, and verification plan for the YCCUSP and implementation	3a–g. Consultant reports, published knowledge product	

project development as well as technical assessment of CO_2 flooding and storage developed	plan established (2019 baseline: N/A) 3b. Mathematical model for immiscible CO_2-EOR and storage in low permeability oil field in Ordos Basin established (2019 baseline: N/A) 3c. Assessment report on storage potential of the oil field (2019 baseline: N/A) 3d. Energy penalty on capture component of 1 million tpa project estimated (2019 baseline: N/A) 3e. Accounting and reporting methodologies on carbon reduction of the project established (2019 baseline: N/A) 3f. Business model for supporting the project's sustainable development established (2019 baseline: N/A) 3g. Public acceptance and community involvement study of the project prepared (2019 baseline: N/A)		
4. Competence of YPG for safely implementing and operating the YCCUS project strengthened	By 2021: 4a. Safety management protocols for project implementation and operation, including emergency protocols, prepared (2019 baseline: N/A) 4b. At least 3 YPG staff report improved knowledge on learning safety management in the field of carbon capture, storage and transportation (2018 baseline: N/A) 4c. Long-term security assessment of CO_2 storage established (2019 baseline: N/A) 4d. Prediction, warning, and management system of leakage risk of the project established (2019 baseline: N/A)	4a–b. Training reports and study tour reports 4c–d. Consultant reports	

5. Knowledge products on the YCCUSP shared and disseminated	By 2021: 5a. 10 participants in international workshops and symposia have increased understanding of CCUS (2019 baseline: N/A) 5b. 20 copies of knowledge products produced under output 1 to 3 disseminated (2019 baseline: N/A)	5a–b. Workshop and symposia reports	

Key Activities with Milestones

1. Technical support to 0.36 million tpa YCCUSP provided

1.1 Prepare FEED report for CO_2 capture, transport, and injection of 0.36 million tpa YCCUSP (Q4 2020).
1.2 Prepare environmental impact, social impact, and safety assessment report on 0.36 million tpa YCCUSP (Q4 2020).
1.3 Prepare risk assessment study on YCCUSP pipeline construction and operation (Q2 2020).
1.4 Prepare optimization study on technical parameter of 0.36 million tpa CO_2-transportation pipeline (Q2 2020).
1.5 Prepare a report on innovative CO_2-EOR technologies for enhancing recovery of immiscible oil (Q4 2020).
1.6 Prepare an implementation plan for the 0.36 million tpa YCCUSP (Q2 2021).
1.7 Prepare a report on CO_2 recycling technology (Q1 2021).

2. Techno-economic feasibility of the 1 million tpa YCCUSP appraised

2.1 Prepare techno-economic feasibility study for 1 million tpa YCCUSP (Q3 2020).

3. Capability of YPG in the field of sustainable project development as well as technical assessment of CO_2 flooding and storage developed

3.1 Prepare a measurement, monitoring, and verification plan for the project (Q3 2020).
3.2 Prepare a report on mathematical modeling for immiscible CO_2-EOR and storage in low-permeability oil field in Ordos Basin (Q3 2020).
3.3 Prepare an assessment report on storage potential of the oil field (Q3 2020).
3.4 Prepare a report on estimation of energy penalty attributed to CO_2 storage and capture process of the 1 million tpa project (Q3 2020).
3.5 Prepare a report on accounting and reporting methodologies for carbon reduction of the project (Q3 2020).
3.6 Prepare a report on business model for supporting project's sustainable development (Q2 2020).
3.7 Prepare a report on public acceptance of and community involvement in the project (Q3 2020).

4. Competence of YPG for safely implementing and operating the YCCUSP strengthened

4.1 Prepare safety management protocols for YCCUSP implementation and operation, including emergency protocols (Q3 2020).
4.2 Prepare training materials and train at least 50 YPG staff relevant to YCCUSP implementation and operation (Q2 2021).
4.3 Organize study tours to overseas CCUS projects for gaining safety management experience (Q1 2021).
4.4 Prepare a long-term security assessment of CO_2 storage (Q3 2020).
4.5 Prepare a leakage risk prediction, warning, and management system for the project (Q3 2020).

5. Knowledge sharing products of the project shared and disseminated

5.1 Organize and facilitate international symposia and workshops to disseminate and summarize knowledge products of the YCCUSP (Q4 2020).
5.2 Arrange international study tours to disseminate outputs of TA subproject and share experience and knowledge of the YCCUSP (Q1 2021).

Inputs

Carbon Capture and Storage Fund under the Clean Energy Financing Partnership Facility: $4,300,000

Assumptions for Partner Financing

Not Applicable

CCUS = carbon capture utilization and sequestration, CO_2 = carbon dioxide, EOR = enhanced oil recovery, FEED = front-end engineering and design, N/A = not applicable, PRC = People's Republic of China, Q = quarter, TA = technical assistance, tpa = tons per annum, YCCUSP = Yanchang Carbon Capture Utilization and Sequestration Project, YPG = Yanchang Petroleum Group.

[a] National Development and Reform Commission and the National Energy Administration. 2016. *Energy Technology Revolution Innovation Action Plan (2016–2030).* Beijing.

Source: Asian Development Bank

SUBPROJECT COST ESTIMATES AND FINANCING PLAN
($'000)

Item	Amount
A. Carbon Capture and Storage Fund[a] under the Clean Energy Financing Partnership Facility	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	1,550.0
ii. National consultants	2,230.0
b. Out-of-pocket expenditures	
i. International and local travel	100.0
ii. Reports and communications[b]	30.0
iii. Miscellaneous administration and support costs	10.0
2. Printed external publications[c]	5.0
3. Training, seminars, and conferences[d]	160.0
4. Contingencies	215.0
Total[e]	**4,300.0**

Note: The technical assistance (TA) is estimated to cost $4,300,000 and is fully funded by the Carbon Capture and Storage Fund under the Clean Energy Financing Partnership Facility. The government, through the Department of Climate Change of the Ministry of Ecology and Environment (MEE DCC), will provide counterpart support in the form of counterpart staff, office accommodation, office supplies, information and documents relevant for the preparation of the TA, and other in-kind contributions.

[a] Financing partners: Global Carbon Capture and Storage Institute and the Government of the United Kingdom. Administered by the Asian Development Bank (ADB).

[b] Includes costs for the translation and editing of documents and the preparation of knowledge products.

[c] To maximize readership, printed external publications of selected TA deliverables will be produced. Target audience will be from Yanchang Petroleum Group, MEE DCC, as well as diverse carbon capture utilization and sequestration-related government ministries and research institutions. The exact number of hard copies will be determined during TA implementation.

[d] Workshops, seminars, and conferences under this technical assistance will be conducted in ADB member countries. Includes interpretation and translation costs.

[e] Expenditures incurred under this technical assistance fulfill the eligibility criteria of the Carbon Capture and Storage Fund.

Source: Asian Development Bank estimates.

LIST OF LINKED DOCUMENTS
http://www.adb.org/Documents/LinkedDocs/?id=48453-009-TAReport

1. Terms of Reference for Consultants