

PROGRAM MONITORING AND EVALUATION SYSTEM ASSESSMENT

A. Description of the Monitoring and Evaluation System

1. The monitoring and evaluation system assessment covered (i) Zhongyuan Yuzi Investment Holding Group (ZYIG), which is responsible for implementing and monitoring the overall Cleaner Fuel Switch Investment Program (2019–2030); and (ii) Henan Yu-Tian New Energy Co. Ltd. (YTNE), which is the project company responsible for implementing day-to-day program activities, including design, procurement and construction, supervision, operation and maintenance, safety monitoring, and customer management. YTNE's information management activities cover customer information, procurement and construction progress, budgeting and accounting, staffing and operation information, maintenance records and schedules, and safety. The information will be updated daily for monitoring purposes, and serves as the basis for (i) monthly, quarterly, and annual reporting to the boards and the management of ZYIG and YTNE; and (ii) progress and results-based monitoring for the disbursement-linked indicators (DLIs) under the proposed results-based lending (RBL) program.

2. **Management information systems.** YTNE's management information system (MIS) comprises several independent systems that address: (i) customer information, (ii) financial management, (iii) engineering and construction management, (iv) equipment and maintenance, and (v) safety monitoring. The customer information system holds information on individual customers, including their addresses, gas meter numbers, gas consumption records, and types of gas appliances in place (such as cooking stove, space heater, and hot water heater). The program will use a prepaid intelligent card scheme for gas use payment to improve efficiency in billing and payment, and the system also administers the card numbers, payments, and recharge records of individual customers. The financial management system holds information on revenues, budgets and expenditures, payment and settlement of accounts, and human resources, and is used to produce accounting and financial reports for the board and management of both ZYIG and YTNE. The engineering and construction management system administers information on procurement packaging plans, procurement and construction progress, and contract management information to monitor construction activities. The equipment and maintenance system is used to monitor maintenance schedules, maintenance records, and inventory information for stocks of spare parts and timely purchases of operation and maintenance equipment. The safety monitoring system is intended to detect gas leaks and accidents in real time, and is connected with leak alarms at each customer's premises, and the system control and data acquisition devices at gas distribution network system.

3. **Stakeholders involvement and beneficiary feedback.** Stakeholders of the Cleaner Fuel Switch Investment Program include customers and the county and provincial governments. In addition to an awareness campaign to stimulate a switch from using coal to gas, the program also deploys customer service personnel, who are primarily responsible for customer relationships, including handling complaints, inspection of safety issues with respect to the use of gas and associated appliances, minor maintenance, and assistance to customers who need special assistance (e.g., the elderly). The customer service focal point at each village and township will be supervised by a county-level customer service focal point. Reports from customer service focal points are included in the consumer information system database (para. 2). Customer satisfaction surveys provide feedback to improve gas supply services and the performance of the customer service focal points. Because the county governments are primarily responsible for public service delivery and local development planning, the program will (i) coordinate with the county governments in determining the distribution pipeline alignments needed to reach customers, and

(ii) report on construction progress and the implementation status of associated activities. Monthly, quarterly, and annual program performance reports are prepared using data from the MIS, with reports provided to the management of YTNE and ZYIG, and the program coordination group (with representation from the provincial government and implementing agencies) to provide program implementation guidance.

4. **Institutional and reporting arrangements, and capacity.** Program operation will be governed by YTNE's internal regulations with respect to customer management, financial management, procurement and construction, operation and maintenance, and safety. Operations will be monitored in accordance with the performance and target indicators in the annual work plan and budget plan, which are linked to the respective databases in the MIS (para. 2). YTNE's general operations unit is primarily responsible for program monitoring and evaluation. It will prepare a consolidated performance report in coordination with the YTNE units in charge of customer management, financial management, procurement and construction, operation and maintenance, and safety; these units will report actual progress and implementation performance through the MIS. The performance reports will serve as the basis for performance monitoring and evaluation. The management of YTNE and ZYIG and the program coordination group will provide guidance and make decisions regarding actions to address program implementation issues, and revisions to the annual work and budget plans, if needed. The YTNE MIS is also in use for the urban gas business of China Tian Lun Natural Gas Holding Limited (CTLG), a minority shareholder of YTNE, which has an ongoing business in supplying and selling gas in 60 cities and 17 provinces in the People's Republic of China. CTLG's monitoring and evaluation operations and institutional and reporting arrangements have been replicated in YTNE. Experienced staff outsourced from CTLG provide operational and monitoring and evaluation support.

5. **Availability and quality of data, and information sharing and disclosure.** The MIS that is in place will accommodate the data needed to track operational and performance progress and achievements with respect to work plan and budget plan indicators. There have been no reports of data input omissions or inaccurate data inputs into the MIS database since the Cleaner Fuel Switch Investment Program began implementation in 2018 because of strong operational support from CTLG (para. 4). The YTNE and ZYIG internal auditor and the independent verification agent act to detect irregular data inputs and request corrective actions by relevant YTNE units. The program action plan (PAP) calls for enhancing the internal audit function by 2019.¹ All YTNE and ZYIG units have access to the information in monthly, quarterly, and annual performance reports, which ensures adequate information sharing. However, YTNE and ZYIG lack an information disclosure policy regarding program performance to date.

6. **Monitoring and evaluation plans.** Because YTNE's MIS is composed of independent systems (para. 2), there is no integrated function to comprehensively control customer management, financial management, procurement and construction, operation and maintenance, and safety. As investment program coverage expands towards 2030, an integrated MIS—for integrated information collection, data storage and management, and data analysis from the various activities under the program—is essential for performance monitoring, resource allocation, and rapid detection of implementation bottlenecks to enable early management decisions to be made, and timely actions taken to maintain smooth program implementation. To develop an integrated MIS, the RBL program will support upgrading the existing MIS into an integrated enterprise resource planning (ERP) system (this is an output-level DLI indicator scheduled to be achieved by the end of 2020). The ERP will constitute a decision-making system that gathers

¹ Program Action Plan (accessible from the list of linked documents in Appendix 2 of the report and recommendation of the President).

information from lower-level systems (customer management, financial and human resource management, engineering and construction, operation and maintenance, and safety monitoring) for rapid performance monitoring and early action.

B. Assessment of the Monitoring and Evaluation System

7. The monitoring and evaluation system is deemed sustainable and adequate for collecting the data needed for the program results framework.² The MIS currently in use is able to generate the necessary information on progress and achievement of intended results, including DLIs. Information associated with the DLIs will be gathered and monitored in the relevant MIS subsystem (Table 1). The information to be routinely gathered will be used for RBL program monitoring and identifying issues during implementation. It will be reported by YTNE's general operation unit to the management of YTNE and ZYIG, and the program coordination group (para. 3), which will address any issues. In addition to the annual verification of achieved results, ZYIG through YTNE will provide quarterly performance reports to ADB that include (i) progress and achievement with respect to (a) DLIs, (b) implementation of legal covenants in the loan and program agreements, and (c) implementation of the PAP; and (ii) issues in program implementation and actions to be taken.

Table 1: Disbursement-Linked Indicators, Monitoring and Evaluation System, and Collecting Information

DLIs	MIS Subsystem	Data to be collected	Monitoring Frequency	Reporting document
Outcomes				
DLI 1: Number of customers connected to gas fuels increased to 1.2 million by 2022	CMS	Number of customers connected, type of customer, location of customer, size of household (residential customers), number of employees (industrial and commercial customers), head of household (sex-disaggregated), baseline fuel used before the switch (firewood, coal, and liquefied petroleum gas), customer satisfaction survey results.	Monthly, quarterly	Semi-annual progress report
DLI 2: Consumption of gas fuels increased to 316.63 Nm ³ by 2023	CMS	Customers' gas consumption, disaggregated consumption per type of customer (industrial, commercial, and residential) and location, and gas appliances in use. Customer satisfaction survey results.	Monthly, quarterly	Semi-annual progress report

² Program Results Framework (accessible from the list of linked documents in Appendix 2 of the report and recommendation of the President).

DLIs	MIS Subsystem	Data to be collected	Monitoring Frequency	Reporting document
DLI 3: CNY915 million of private and public sector finance mobilized to continuously implement the overall program from 2022	FMS	Progress in mobilizing commercial debt financing and equity financing.	Quarterly	Semi-annual progress report
Outputs				
DLI 4: Installed natural gas distribution network pipeline totals 26,880 km by 2021	ECS	Progress in procurement and installation of distribution pipeline, including pipeline location.	Monthly, quarterly	Semi-annual progress report
DLI 5: Number of installed gas stations totals 12 units by 2021	ECS	Progress in procurement and installation of regulatory and storage facilities, facility location.	Monthly, quarterly	Semi-annual progress report
DLI 6: Annual biogas fuel production totals 17 million Nm ³ by 2023	ECS and EMS	Progress in procurement and construction of biogas production plant, biogas production records, produced biogas quality in terms of national gas standard, volume of feedstock procured.	Monthly, quarterly	Semi-annual progress report
DLI 7: At least 50% of participants in 500 cleaner fuel use awareness outreach programs are women	CMS	Number of awareness campaign programs, contents of campaign programs, number of participants including sex, location, customer type disaggregated data, summary of campaign feedback from participants (concerns, complains, and request for fuel switch).	Monthly, quarterly	Semi-annual progress report
DLI 8: Institutional and organizational capacity enhancement: financial and credit risk management guideline adopted by 2019; social and environment safeguard guideline adopted by 2019; integrated ERP system installed by 2020; fundraising plan for overall program implementation adopted by 2021; and number of YTNE staff increased to 300, of which 30% are women by 2022	FMS	Progress on the guidelines and the fundraising plan preparation and approvals; progress on integrated ERP system procurement, installation, training, and operation; number of staff (sex disaggregated).	Quarterly	Semi-annual progress report

CMS = customer management system, DLI = disbursement-linked indicator, ECS = engineering and construction system, EMS = equipment and maintenance system, ERP = enterprise resource planning, FMS= financial management system, km = kilometer, MIS = management information system, m³ = cubic meter, Nm³ = normal cubic meter, QPR = quarterly monitoring report, YTNE = Henan Yu-Tian New Energy Co. Ltd.

Source: Asian Development Bank.

8. Information disclosure and stakeholder feedback. Progress and achievement with respect to the DLIs under the RBL program is to be disclosed quarterly through the ZYIG and

YTNE website, which is accessible to the public. Customers are major program stakeholders, and this will allow customers to monitor program performance. In addition, progress and achievement of target indicators (e.g., for gas connections and consumption, biogas production, and the awareness campaign) in the overall program from 2024 will be continuously disclosed for transparent performance monitoring, and feedback from the customers. Results of the customer satisfaction survey (para. 3 and Table 1) and actions to improve gas delivery services will also be disclosed on the ZYIG and YTNE website. ZYIG and YTNE have no information disclosure policy for the overall program, and adopting an information disclosure policy for this purpose by 2019 is included in the PAP.

9. **Evaluation.** The RBL program will adopt a unique approach that includes (i) private sector involvement, (ii) the use of dry anaerobic fermentation technology for biogas production, and (iii) a gender-focused clean fuel use campaign to encourage the population in semi-urban and rural areas to switch to cleaner fuel. Following successful completion of the RBL program, lessons and experience will be used to inform other provinces facing similar problems in switching to cleaner fuel outside urban centers. To this end, ZYIG and YTNE will conduct, in cooperation with ADB, an impact evaluation study in 2024 to assess time-series changes in energy use behavior among populations, the factors behind these changes, and the impacts upon the beneficiaries of the switch to cleaner fuel.

C. Managing Risks and Improving Capacity

10. **Mitigating risks.** The monitoring and evaluation system is deemed sustainable and adequate for collecting the necessary data, tracking progress and achievement of DLIs, and identifying issues in program implementation. A possible risk of the monitoring and evaluation system is the omission of data and/or entry of inaccurate data in the MIS, but this can be mitigated by strengthening the internal audit function by 2019 (as included in the PAP). Involvement of a credible internal verification agent will assist in detecting irregular data by reviewing results and relevant supporting documents, with site inspections to confirm the accuracy of results reported by ZYIG and YTNE. ZYIG and YTNE lack an information disclosure policy; this is mitigated by their adoption of an information disclosure policy regarding progress and achievement with regards to program indicators, customer satisfaction survey results, and actions to improve service quality (para. 8).

11. **Improving capacity.** In addition to enhancing the internal audit function and adopting an information disclosure policy (specified in the PAP), the RBL program will also support upgrading of the existing MIS into an integrated ERP system, which is an output-level DLI indicator scheduled to be achieved by the end of 2020 (para. 6). The integrated ERP enables more efficient and effective resource allocation, performance monitoring, and decision making, and is expected to greatly enhance program implementation capacity to meet the overall program goals by 2030.