

# 亚洲开发银行贷款

## Loan from Asian Development Bank

### 河南乡村清洁能源发展和大气环境改 善项目

### for Development of Clean Energy and Atmospheric Environment Improvement Program in Henan Rural Area

## 任务大纲

## Task Outline

### 一、项目背景与进展

#### I. Background and Progress

大气污染是环境污染的重要组成部分，散煤燃烧成为我国北方冬季雾霾的重要成因之一，在治理北方冬季雾霾方面，煤改气成为重要手段之一。我国当前 1.6 亿户农村居民家庭中，采取燃煤采暖约 6600 万户，多数集中在北方地区，散煤使用量约 2 亿吨。

Air pollution is an important contributor to environmental pollution. The burning of bulk coal has become one of the important causes of haze in winter in the northern China. The switching from coal burning to gas burning has become one of the important means to control the haze in winter in the northern China. At present, of the 160 million households in rural areas in China, about 66 million households burn coal for heating, and most of such households are in the northern China, and the consumption of bulk coal is about 200 million tons.

作为京津冀周边地区和人口大省、发展中大省，河南省大气污染也很严重。天然气作为优质清洁能源，应用前景广阔，是解决环境问题的有力手段。

《河南省天然气替代煤专项方案（2016-2020年）》（豫发改能源〔2016〕1140号）提出：加快农村地区用能结构调整，坚持因地制宜，鼓励有条件的地区发展生物质天然气，加快推广使用液化天然气、压缩天然气等方式替代厨炊散烧用煤，力争到2020年，新增10万户以上农村居民实现厨炊使用天然气，天然气使用量达到0.2亿立方米。《河南省“十三五”天然气发展规划》提出：深入实施“气化河南”工程，加快国家主干线及配套支线建设，推动天然气管道向下游延伸，“十三五”期间新增管道1500公里，全省天然气管网突破7000公里。

As a populous developing province near the Beijing-Tianjin-Hebei Region, Henan Province also faces serious air pollution. Natural gas, a high-quality clean energy, has broad application prospects and is an effective means to solve environmental problems. The Special Plan for Natural Gas Switching to Coal in Henan Province (2016-2020) (YFGNY [2016] No.1140) proposes to accelerate the adjustment of energy consumption structure in rural areas, adhere to measures suiting local conditions, encourage the development of biomass natural gas in areas where conditions permit, accelerate the popularization of the use of liquefied natural gas and compressed natural gas as substitutes for cooking and bulk coal, and strive to increase the use of natural gas for cooking by more than 100,000 rural households by 2020 with a natural gas consumption of 20 million cubic meters. *The 13th Five-Year Plan for Natural Gas Development in Henan Province* proposes to further implement the "Henan Gasification" project, accelerate the construction of national main lines and supporting branch lines, and promote natural gas pipeline construction in the downstream links. During the period of the 13th Five-Year Plan, new pipelines with a length of 1,500 kilometers are planned to be built so the length of all the natural gas pipelines in the whole province will exceed 7,000 kilometers.

鉴于此，中原豫资投资控股集团有限公司携手天伦燃气组建河南豫天新能源有限公司，在河南省内开展乡村清洁能源发展和大气环境改善项目，该项目计划到 2030 年，在河南完成 420 万户乡镇用户的煤改气工程，天然气消费量达到 12.91 亿立方米以上，新增天然气中低压管道约 94080 公里左右，场站 44 座；可再生能源实现跨越式发展，建设 3 个生物质天然气加工工厂，生物天然气年产量达到 5100 万立方米（其中：自用 562.5 万立方米），有机肥产量年产量 22.5 万吨。

In view of the above, Yu-Tian New Energy Company, a company jointly established by Zhongyuan Yuzi Investment Holding Group Co., Ltd. and Tian Lun Gas plans to carry out the Development of Clean Energy and Atmospheric Environment Improvement Program in Henan Rural Area. Under the Program, a coal-to-gas switching project for 4.2 million households in rural area in Henan will be completed by 2030 with the consumption of natural gas reaching more than 1.291 billion cubic meters, with about 94,080 kilometers of new natural gas medium and low pressure pipelines and 44 stations; renewable energy will witness a great-leap-forward development, with three biomass natural gas processing plants with an annual yield of biomass natural gas of 51 million cubic meters (of which 5.625 million cubic meters are for internal use) and an annual organic fertilizer yield of 225,000 tons.

该项目近期目标时段为 2019 年-2021 年，到 2021 年，向 120 万户乡镇家庭提供新的天然气接入服务，新增 26880 公里的天然气管线，建设气站 12 座。1 个生物质天然气加工工厂建设完成，开始投入生产。累计减少 CO<sub>2</sub> 58.32 万吨。规划期内，通过开展天然气和燃气设备的安全宣传教育，使项目实施区域内具备使用天然气安全意识的女性参与者达到 50% 以上。

The period for short-term targets of the Program is 2019 -2021. **By 2021, 1.2 million households in rural area will be provided with new natural gas, 26,880 kilometers of natural gas pipelines and 12 gas stations will be built. A biomass natural gas processing plant will be completed for production. A total of 583,200 tons of CO<sub>2</sub> will be reduced. During the planning period, more than 50 % of female participants in the Program-covered area will have**

**the safety awareness in the use of natural gas through safety education on natural gas and gas equipment.**

项目主要围绕扩大清洁燃气网络系统、开发出替代清洁燃料、增强清洁燃料使用意识、机构建设和能力增强等方面开展工作，实施 120 万户乡镇清洁能源发展工程和可再生能源开发综合利用工程。通过项目实施，将有利于优化我省能源结构和节能减排，助力打赢污染防治攻坚战、蓝天保卫战，对改善农村人居环境、实施乡村振兴战略和推动经济社会可持续发展具有重要意义。

The Program mainly focuses on expanding the cleaner gas network system, developing alternative cleaner fuels, enhancing the awareness of using cleaner fuels, building institutions, enhancing capabilities, etc. to implement the project of clean energy using by 1.2 million households in rural area and the development and comprehensive utilization of renewable energy. The Program will optimize the energy structure, save energy, and reduce emissions in Henan Province, help win the battle for preventing and controlling pollution and for maintaining the blue sky. It is of great significance to improve the living condition in rural area, implement the strategy of rural vitalization, and promote sustainable economic and social development.

为顺利完成上述规划，中原豫资投资控股集团有限公司拟使用亚洲开发银行贷款 3 亿美元以便完成 2019-2021 年投资计划。目前，该项利用外资计划已经得到河南省政府的同意并已成功通过亚行董事会。

In order to successfully complete the above Program, Zhongyuan Yuzi Investment Holding Group plans to use the loan of USD 300 million from Asian Development Bank for the 2019-2021 investment plan. At present, the plan to utilize foreign investment has been approved by the Henan Provincial Government (HPG) and the ADB Board of Directors.

## 二、成果和产出

### II. Outputs and Outcomes

#### 1、产出：

## 1. Outputs:

**产出 1: 扩大清洁燃气网络系统。**本项目将开发基于县域的分布式清洁燃气系统，包括由 2,400 km 中压输配管道和 24,480 km 低压输配管道组成的 26,880 km 输配管网（DLI 4），以及 12 座加气站（DLI 5），取代老旧的燃煤设施。清洁燃气将通过中压输配管网从调蓄设施中输送，中压管网将与目标乡镇和村庄的调压箱相连。将安装与调压箱相连的低压管网，用于将燃气输送至终端点（用户房屋外部）。为安全使用燃气，将在网络、用户住宅和建筑物中安装燃气泄漏检测器，并由调蓄设施的系统控制和数据采集装置进行集中监控。为解决促进清洁燃气消费中城乡接合部用户经济负担的问题，RBL 项目提供（i）免费管端接头，以及（ii）安装付款服务，以帮助购买燃气灶和取暖器等燃气器具。为提高计费和收款效率，同时避免延迟付款，将推出燃气使用付款的预付费智能卡（IC）计划。

**Output 1: Expanded Cleaner Gas Network System:**The county-based distributed cleaner gas system will be further developed by the Program, including 26,880 km distribution network (DLI 4) consisting of 2,400 km medium-pressure and 24,480 km low-pressure distribution pipelines, and 12 gas stations (DLI 5), which replace old coal-burning facilities. Cleaner gas will be transported from the regulatory and storage facilities through the medium-pressure distribution network, which will be connected to the pressure regulating boxes in the target villages and towns. A low-pressure pipe network connected to the pressure regulating boxes will be built to transmit gas to the terminal point (outside the user's house). In order to ensure safety, gas leak detectors will be installed in the network, user's residence, and buildings, and monitored by system control and data acquisition devices of regulatory and storage facilities in a centralized manner. In order to mitigate economic burden of users in the rural-urban fringe zone when promoting the consumption of cleaner gas, the RBL Program provides (i) free end-pipe connections and (ii) payment for installation to help purchase gas appliances such as gas stoves and heaters. In order to improve the efficiency of billing and collection and to avoid delayed payment, a prepaid smart card (IC) for gas payment will be applied.

**产出 2：开发替代清洁燃料。**本项目将利用干法厌氧发酵工艺开发年产 1700 万 Nm<sup>3</sup> 的试点沼气厂设施，该工艺从农作物废弃物中提取燃料，未来将补充天然气需求（DLI6）。该试点工厂将是中国首个大型干法发酵技术应用厂商，该技术将用于输配管网的清洁燃气供应。为确保沼气生产所需的农作物秸秆原料的数量和质量，县政府成立了原料收集中心，该中心与原料供应项目实施机构签订了长期采购协议。试点工厂还将每年生产 3 万吨有机肥作为干法消化副产物，以取代该省农业生产中广泛使用的化肥。

**Output 2: Development of Alternative Cleaner Fuels:**The Program will develop a pilot biogas plant with an annual output of 17 million Nm<sup>3</sup> by using dry anaerobic fermentation process. The process extracts fuel from crop waste and will be used as an alternative of natural gas (DLI6) in the future. The pilot plant will be the first large-scale plant to employ the dry fermentation technology in China, and the technology will be used for cleaner gas supply in the distribution network. In order to ensure the quantity and quality of raw materials of crop straw for biogas production, the county government has set up a raw material collection center, which has signed a long-term purchase agreement on raw material supply with the implementation agency for the Program. The dry digestion in the pilot plant will also generate 30,000 tons by-product of organic fertilizer each year, which will be used to replace chemical fertilizers widely used in agricultural production in the province.

**产出 3：提高使用清洁燃料的意识。**本项目还将有助于改变终端用户的传统能源使用结构，提高对清洁燃料使用及安全的认识，特别关注性别影响，如改善健康状况，减少家庭能源准备时间（DLI7）。城乡接合部人口持续使用传统能源燃料（如木柴和煤）是河南省过去天然气供应项目中发现的主要瓶颈之一。本项目通过使女性（至少 50%的参与者）更多地参与清洁燃料使用意识宣传项目，包括燃气对烹饪和取暖的益处、燃气器具的使用和燃气的安全使用，支持促进终端用户能源使用行为的改变，以刺激清洁燃气的使用。由于持续开展宣传活动对于敦促清洁燃料的转换以满足 RBL 项目下清洁燃

气用户量和消耗量目标至关重要，因此在整个项目实施过程中将至少开展 500 次宣传活动。

**Output 3: Stronger Awareness of the Use of Cleaner Fuels:** The Program will also contribute to the change the traditional energy use structure of end users and the improvement of the use and safety awareness for cleaner fuels. It specially focuses on gender impacts, such as improving health conditions and reducing time to prepare energy (DLI7). The continuous use of traditional energy fuels (such as firewood and coal) by the people in the urban-rural fringe zone is one of the major bottlenecks for implementing the natural gas supply program in Henan Province in the past. The Program will support the promotion of changes in the energy use behavior of end users to stimulate the use of clean gas by encouraging the participation of women (at least 50% of participants) in awareness promotion of cleaner fuel use, including the benefits of gas for cooking and heating, the use of gas appliances, and the safe use of gas. Since continuous publicity activities are essential to the switching of cleaner fuels to fulfill the objectives of cleaner gas user quantity and consumption in the RBL Program, at least 500 publicity activities will be conducted during the project implementation.

**产出 4：增强体制和组织能力：**RBL 项目（DLI 8）实施后，本项目将为体制和组织能力增强提供支持，实现整体项目可持续实施。|本项目解决总体项目中已确定的机构和组织缺陷：（i）截止 2020 年开发综合企业资源规划和管理系统，该系统由用户服务管理、施工和采购控制、安全监测、人力资源管理 and 财务管理部分组成；（ii）截止 2019 年加强金融和信贷风险监管，以增强公司治理，加强环境和社会保障管理，达到国际保障标准；（iii）截止 2021 年加强筹资规划，打通商业融资渠道；以及（iv）截止 2022 年增加总体项目实施的人员配备，性别平衡目标是将女性工作人员的比例从 2018 年的 15%增加到 30%。

**Output 4: Strengthened System and Organization Capacities:** After the RBL Program (DLI 8) is implemented, the Program will provide support to strengthen the system and organization capacities to achieve sustainable implementation of the overall Program. | The Programs solves the system and

organization defects identified in the overall Program in following ways: (i) by 2020, a comprehensive enterprise resource planning and management system will be developed, which consists of user service management, construction and procurement control, safety monitoring, human resource management, and financial management; (ii) by 2019, the supervision for financial and credit risk has been strengthened to enhance corporate management, environmental and social security management under international security standards; (iii) by 2021, financing planning will be strengthened and commercial financing channels will be built; and (iv) by 2022, the workforce for the implementation of the overall Program will be enlarged and the gender balance target is to increase the proportion of female staff from 15% in 2018 to 30%.

## 2、指标:

### 2. Indicators:

#### DLI8 项指标:

#### DLI8 indicators:

- (1) 到 2022 年, 与清洁燃气相关的客户数量增加到 120 万;  
(1) By 2022, the number of customers using cleaner gas will increase to 1.2 million;
- (2) 到 2023 年, 清洁燃气消耗量增加到 316.63 Nm<sup>3</sup>;  
(2) By 2023, the consumption of cleaner gas will increase to 316.63 Nm<sup>3</sup>;
- (3) 动员 9.15 亿人民币的商业资金用于清洁燃料转换, 以便从 2022 年起持续实施整个项目;  
(3) RMB 915 million of commercial funds will be used for cleaner fuel switching so that the whole Program will be continuously implemented from 2022;
- (4) 到 2021 年, 安装的天然气输配管网总长度达 26,880 km;  
(4) By 2021, the total length of the installed distribution network of natural gas will reach 26,880 km;
- (5) 到 2021 年, 天然气调蓄设施的总安装量达到 12 座;

(5) By 2021, the number of installed regulatory and storage facilities for natural gas will reach 12;

(6) 到 2023 年，每年生物质燃气总产量达到 1700 万 m<sup>3</sup>；

(6) By 2023, the total annual output of biomass gas will reach 17 million m<sup>3</sup>;

(7) 在 500 次性别敏感型清洁能源使用意识宣传项目中，至少 50%的参与者为女性

(7) At least 50% of the participants in the 500 gender-sensitive awareness-raising projects for cleaner fuels are women.

(8) 制度建设与能力提高。

(8) The system construction and capacity are improved.

**PAP 指标:**

**PAP indicator:**

行动一：公司治理

**Action 1: Corporate Governance**

(1) 在公司董事会中引入更多外部董事。

(1) More external directors will be introduced to the company's Board of Directors.

(2) 与董事会下专门委员会一起制定公司风险管理指引及风险管理职能，包括 (i) 审计及风险管理、(ii) 薪酬/提名、(iii) 战略投资及 (iv) 投资决定。

(2) Work with the special committee led by the Board of Directors to formulate company risk management guidelines and risk management functions, including (i) audit and risk management, (ii) remuneration/nomination, (iii) strategic investment, and (iv) investment decisions.

行动二：信息披露

**Action 2: Information Disclosure**

采用信息披露政策，每隔半年通过豫资控股集团和豫天新能源公司网站向公众披露支付关联指标和活动的进展和成就、项目行动计划、经审计的公司和

项目财务报表、子项目保障文件、环境和社会监测报告、整体计划下的采购计划（采购包预估价值超过 100 万美元）。

Employ information disclosure policies. The progress and achievements of disbursement link indicators and activities, the Program Action Plan, audited financial statements of the company and the Program, security documents for subprograms, environmental and social monitoring reports, and the Procurement Plan under the overall plan (the estimated value of the procurement package exceeds USD 1 million) will be disclosed to the public every six months through the websites of ZYIG and Yu-Tian New Energy Company.

### 行动三：财务管理

#### **Action 3: Financial Management**

(1) 引入外汇波动风险准备金，以减轻外币债务。

(1) Use foreign exchange risk reserves to reduce foreign currency debts.

(2) 加强内部控制审计人员配备，采用操作手册。

(2) Enlarge the workforce of auditors for internal control and use operational manuals.

(3) 加强财务和风险管理配置，并采用管理指南。

(3) Enlarge the workforce of financial and risk management and use management guidelines.

(4) 计划并向相关员工提供财务管理培训。

(4) Plan and provide financial management trainings to relevant employees.

### 行动四：采购和反腐败

#### **Action 4: Procurement and Anti-Corruption**

(1) 每 12 个月向豫资控股集团项目管理处提交一份采购计划，根据需要更新采购计划，并在豫天新能源公司网站上公布。进行公开竞价，不引发利益冲突和关联交易。

(1) Submit a procurement plan to the project management office of ZYIG every 12 months, update it accordingly, and publish it on Yu-Tian New Energy Company's website. Issue public bids to avoid conflicts of interest and related-party transactions.

- (2) 采用符合国家标准的招标文件模板。
- (2) Use bid templates conforming to national standards.
- (3) 避免从亚行非成员国采购。
- (3) Avoid procurement from non-ADB member countries.
- (4) 提供合格的采购和合同专家，并持续为采购人员提供足够的内部采购和反腐败培训，以确保项目采购和合同管理的市场开放性和公平性。
- (4) Provide qualified experts of procurement and contract, and continuously offer sufficient training related to internal procurement and anti-corruption to procurement personnel, so as to ensure openness and fairness in the market for project procurement and contract management.
- (5) 进行公开竞价，不引发利益冲突和关联交易。
- (5) Issue public bids to avoid conflicts of interest and related-party transactions.
- (6) 维护和监测亚行可获取的采购和合同信息。
- (6) Maintain and monitor the information concerning procurement and contracts available for ADB.
- (7) 采用并遵守亚行的反腐败政策及廉洁原则和指南（不时修订）。
- (7) Use and comply with ADB's anti-corruption policy and integrity principles and guidelines (as may be amended from time to time).

#### 行动五：保障实施

#### **Action 5: Security Implementation**

- (1) 在项目实施过程中，成立一个由合格人员组成的保障小组，协调处理与环境和社会保障有关的问题。
- (1) During the implementation of the Program, establish a security team consists of qualified personnel to coordinate and handle issues concerning environmental protection and social security.
- (2) 指派负责社会及环境管理的保障工作人员担任相关活动的协调员，编制保障计划文件、监测报告，并维护信息记录系统。
- (2) Designate the security personnel, who are responsible for the social and environmental management, as coordinators of related activities who will prepare

documents related to security plans and monitoring reports and maintain the information recording system.

(3) 计划并实施环境和社会保障管理培训，以保障相关人员和承包商的安全。

(3) Plan and conduct the training for the management of environmental protection and social security to ensure the work safety of relevant personnel and contractors.

(4) 建立和维护本项目的环境和移民监测评估体系：(i) 每半年编制一次环境和社会监测报告。在豫天新能源公司和豫资控股集团网站上公布报告，提交亚行在亚行网站上进行公布；(ii) 参与亚行和项管办认可的外部环境和社会监测员，以验证保障要求；(iii) 使受影响人员能够使用当地语言每半年编写一次社会保障监测报告。

(4) Build and maintain the system for monitoring and evaluation of environment and immigration involved in the Program: (i) prepare environmental and social monitoring reports every six months and publish these reports on the websites of Yu-Tian New Energy Company and ZYIG and submit them to ADB for publication on its website; (ii) engage monitors for the external environment and society approved by ADB and PMO to verify the security requirements; (iii) facilitate affected persons to prepare monitoring reports of social security in local languages every six months.

(5) 采用社会环境保障技术指南，对社会和环境管理活动的必要筛选和分类、规划和实施提供明确指导；对弱势群体进行早期筛选；进行适当的社会和环境风险分析；编制磋商、信息披露、监测和申诉补救机制文件。

(5) Use the technical guidelines for social security and environmental protection to provide definitive guidance on the necessary screening, classification, planning, and implementation of social and environmental management activities; conduct early screening of vulnerable groups; carry out proper social and environmental risk analysis; prepare documents related to consultation, information disclosure, monitoring, and the Grievance Redress Mechanism.

(6) 根据已通过的社会环境保障指南，编制并在豫天新能源公司网站上公开子项目的保障文件，提交亚行在亚行网站上进行披露。

(6) Prepare and publish the security documents of subprojects on the basis of approved guidelines for social security and environmental protection on Yu-Tian New Energy Company's website and submit them to ADB for disclosure on ADB's website.

(7) 进行有意义的公众咨询，并记录在保障报告和环境和社会监测报告中。

(7) Carry out meaningful public consulting and record it in Safeguard Report and environmental and social monitoring report.

(8) 建立社会和环境问题的申诉机制。

(8) Establish a grievance redress mechanism for social and environmental issues.

行动六：性别和发展

### **Action 6: Gender and Development**

(1) 任命一名社会发展和性别问题协调人员，协调项目实施期间与性别和意识运动有关的问题，如性别行动计划（GAP）、意识运动计划（ACP）和监测和报告中的相关活动。

(1) Appoint a coordinator for issues related to social development and gender, who will coordinate issues related to gender and awareness campaigns during the implementation of the Program, such as gender action plan (GAP), awareness campaign plan (ACP), and activities concerning monitoring and reporting.

(2) 将性别行动计划和意识运动计划监测整合到项目监测和评估体系中。

(2) Integrate the monitoring of gender action plan and awareness campaign plan into the Program M&E System.

## **三、实施安排**

### **III. Implementation of Arrangements**

根据亚行要求，中原豫资投资控股集团有限公司为贷款实施单位，河南豫天新能源为项目建设和运营单位。为强化项目贷款的执行和管理，中原豫资投资控股集团有限公司成立亚行项目办，项目办成员包括豫资控股集团相关负责人员及招标采购专家、工程规划专家、社会环境专家、移民专家等外聘。职责如下：

According to ADB's requirements, Zhongyuan Yuzi Investment Holding Group Co., Ltd. (ZYIHG) is the loan application unit and Yu-Tian New Energy (YTNE) is the construction and operation unit of the Program. In order to strengthen the loan implementation and management of the Program, Zhongyuan Yuzi Investment Holding Group Co., Ltd. has established the ADB Program Office, whose members include relevant responsible personnel of ZYIHG and external specialists such as Bidding and Purchasing Specialist, Engineering Planning Specialist, Social Environment Specialist and Immigration Specialist. Their responsibilities are as follows:

1、项目办主任负责协调豫资集团、天伦集团、豫天新能源公司，按照亚行要求，推进各项工作。项目办成员负责配合项目办主任日常工作，负责项目财务工作以及款项申请及支付工作，负责与项目有关单位、机构、亚洲开发银行、项目实施单位和各职能部门间的协调、沟通。

1. The Director of the Program Office is responsible for coordinating Yuzi Group, Tianlun Group and Yu-Tian New Energy Company to advance various tasks according to the requirements of ADB. The members of the Program Office are responsible for cooperating with the daily work of the Director of the Program Office, for the financial work of the Program as well as the application and payment of funds, and for coordination and communication with related units, institutions, Asian Development Bank, implementation units and various functional departments of the Program.

2、招标采购专家负责对项目单位招标、采购工作的监督和审查。

2. The Bidding and Purchasing Specialist is responsible for supervising and reviewing the bidding and purchasing work for the Program.

3、工程规划专家负责工程规划的审查、工程施工的监督和报告、以及协调工程实施过程中的相关事项。

3. The Engineering Planning Specialist is responsible for reviewing the engineering planning, supervising and reporting the engineering construction, and coordinating related matters in the process of engineering implementation.

4、社会环境和移民专家负责项目安全环境社会管理及移民安置报告编制,配合亚洲开发银行对项目安全环境社会影响及移民计划进行评估、分析、监控和检查。

4. The Social Environment Specialist and Immigration Specialist are responsible for preparation of the Report on Safety, Environment, Social Management and Resettlement of the Program, and cooperating with the Asian Development Bank to evaluate, analyze, monitor and inspect the Safety, Environment, Social Impact and Immigration Plan of the Program.

#### 四、咨询服务范围

#### **IV. Scope of Consulting Services**

咨询公司需提供总共 29 人月的（国家级）咨询服务，该公司将：（i）根据验证协议对支付关联指标（DLI）的完成情况进行验证，并编制验证报告；（ii）监测项目行动计划（PAP）的实施情况，并编制 PAP 状态报告；（iii）为完成支付关联指标和充分实施 PAP 提供必要的指导；以及（iv）编制关于支付关联指标进展和完成情况以及 PAP 实施情况的汇总状态报告（用于信息披露）。

The consulting company is required to provide a total of 29 person-months of (national-level) consulting services. The company will: (i) verify the completion of disbursement link indicators (DLI) according to the verification protocol and prepare a verification report; (ii) monitor the implementation of the Program Action Plan (PAP) and prepare PAP status reports; (iii) provide necessary guidance for the completion of DLIs and the adequate implementation of PAP; and (iv) prepare a summary status report (for information disclosure) on the progress and completion of DLIs and implementation of PAP.

#### 五、咨询公司的资质

#### **V. Qualifications of the Consulting Company**

业主方通过采用专家资质选择方法和个人简历式技术建议书的方式选择一家具备国际金融机构认可的国内咨询公司，该公司需具备：（i）是经认证有资格进行业绩审计和（或）计划及项目评估的公司；（ii）拥有至少10年以上业绩审计和（或）计划及项目评估经验；（iii）熟悉国际金融组织贷款的政策及相关项目管理惯例。

The Owner shall, by the methods of specialist qualification selection and personal resume technical proposal, select a consulting company in China, which is recognized by international financial institutions and shall have the following qualifications: (i) It is certified to be qualified for performance audits and (or) plan and evaluation of Program; (ii) It has at least 10 years of experience in performance audits and (or) plan and evaluation of Program; (iii) It is familiar with the loan policies of international financial organizations and relevant program management practices.

感兴趣的公司可以向业主方提供一份投标函（标书），标书中应该详细阐述投标公司的资质和专家资质。业主方根据标书提供的信息评定第一名为中标方，中标方收到中标通知书后需被要求在规定的时限内递交技术建议书和财务建议书。

Companies interested in the Program can provide a bid letter (bidding document) to the Owner. The bidding document shall specify the qualifications of the bidding company and specialists. According to the information provided in the bidding document, the Owner will evaluate and determine that the first in the rank is the winning bidder. After receiving the notification of award, the bid winner will be required to submit the technical proposal and financial proposal within the specified time frame.

## 六、咨询专家人员及投入

### VI. Consulting Specialists and Inputs

为保证亚行项目的各项产出能得到有效实施，中原豫资投资控股集团有限公司将聘请一家总计不少于28人/月的（国家级）咨询公司提供咨询验证

服务。咨询公司将负责（i）根据验证协议对支付关联指标（DLI）的完成情况进行验证，并编制验证报告；（ii）监测项目行动计划（PAP）的实施情况，并编制 PAP 状态报告；（iii）为完成 DLI 和充分实施 PAP 提供必要的指导；以及（iv）编制关于 DLI 进展和完成情况以及 PAP 实施情况的汇总状态报告（用于信息披露）。咨询服务的最低投入如下：

In order to ensure the effective output of the ADB Program, Zhongyuan Yuzi Investment Holding Group Co., Ltd. will hire a (national-level) consulting company with a total manpower of not less than 28 person-months to provide consulting and verification services. The consulting company will (i) verify the completion of disbursement link indicators (DLI) according to the verification protocol and prepare a verification report; (ii) monitor the implementation of the Program Action Plan (PAP) and prepare PAP status reports; (iii) provide necessary guidance for the completion of DLIs and the adequate implementation of PAP; and (iv) prepare a summary status report (for information disclosure) on the progress and completion of DLIs and implementation of PAP. The minimum input for consulting services is as follows:

表 1：咨询专家人员及投入（人/月）

**Table 1: Consulting Specialists and Inputs**

**(Person-Month)**

专家 Specialist	国内专家 Specialists in China
专家组组长/采购和财务管理专家 Leader of the Specialist Panel/Procurement and Financial Management Specialist	6
天然气专家 Natural Gas Specialist	5
沼气专家 Biogas Specialist	3

社会发展专家 Social Development Specialist	5
环境保障专家 Environmental Security Specialist	5
社会保障专家 Social Security Specialist	4
总计 <b>Total</b>	28

## 七、咨询专家资质以及服务

### VII. Consulting Specialist Qualifications and Services

1、天然气专家（国家级/团队领导，5人-月）。该专家应拥有：（i）至少15年以上中国天然气输配业务专业经验；（ii）相关领域的研究生学位；以及（iii）熟练的英语口语和书面表达能力。该专家将负责验证 DLI1（清洁燃气用户数量）、DLI2（清洁燃气消耗量）、DLI4（天然气输配管道长度）以及 DLI5（安装的调蓄设施数量）的结果。该专家还要汇编团队成员的监测和验证报告。专家的职责包括但不限于以下各条：

**1. Natural Gas Specialist (national level/team leader, 5 person-months).** The Specialist shall: (i) have at least 15 years of professional experience in China's natural gas transmission and distribution operation; (ii) have postgraduate degrees in related fields; and (iii) be proficient in spoken and written English. The Specialist will be responsible for verifying the results of DLI1 (number of cleaner gas users), DLI2 (amount of cleaner gas consumed), DLI4 (length of natural gas distribution pipelines) and DLI5 (number of regulatory and storage facilities installed). The Specialist will also compile monitoring and verification reports of the team members. The duties of the Specialist include but are not limited to the followings:

(1) 领导验证小组，编制并提交：（a）验证年度结果的年度报告；（b）关于 PAP 实施情况的年度监测报告；以及（c）支付关联指标进展与达成情况（不

仅包括 DLI1、2、4 和 5，而且还包括整个 PAP 实施情况以及支付关联指标进展与达成情况）。

(1) Lead the validation team to prepare and submit: (a) annual report for verification of the annual results; (b) annual monitoring report on PAP implementation; and (c) progress and achievement of DLIs (not only DLI1, 2, 4 and 5, but also the whole PAP implementation and progress and achievement of DLIs).

(2) 审查鉴证报告（包括 IA 须提交的有关证明文件），并请 IA 提供必要的资料，以供验证和（或）修订鉴证报告（如需）。在现场进行抽查验证。

(2) Review the authentication report (including relevant certification documents which have to be submitted by IA) and request IA to provide necessary materials for verification and (or) revision of the authentication report (if necessary). Conduct spot checks for verification on site.

(3) 在需要的时候为项目的实施提供建议和指导，以实现项目目标，并对结果验证报告格式和信息提供相关建议和指导。

(3) Provide suggestions and guidance for the implementation of the Program when necessary to achieve the Program objectives, as well as provide relevant suggestions and guidance for the format and information of the result verification report.

**2、沼气专家（国家级，3 人月）。该专家应拥有：**（i）至少 8 年以上中国沼气厂设计、建造和（或）运营专业经验；（ii）相关领域的研究生学位；以及（iii）熟练的英语口语和书面表达能力。该专家将负责 DLI 3（沼气生产）。职权范围包括但不限于以下内容：

**2. Biogas Specialist (national level, 3 person-months).** The Specialist shall: (i) have at least 8 years of professional experience in design, construction and (or) operation of biogas plant in China; (ii) have postgraduate degrees in related fields; and (iii) be proficient in spoken and written English. The Specialist will be responsible for DLI 3 (biogas production). The duties of the Specialist include but are not limited to the followings:

(1) 编制并提交：（i）验证年度结果的年度报告；（ii）关于 PAP 实施情况以及关于 DLI 3 的 DLI 进展与完成情况的年度监测报告。

(1) Prepare and submit: (i) annual report for verification of the annual results; (ii) annual monitoring report on PAP implementation and DLI progress and completion of DLI 3.

(2) 审查鉴证报告（包括实施机构须提交的有关证明文件），并请实施机构提供必要的资料，以供验证和（或）修订鉴证报告（如需）。进行现场抽查验证。

(2) Review the authentication report (including relevant certification documents which have to be submitted by the implementation institution) and request IA to provide necessary materials for verification and (or) revision of the authentication report (if necessary). Conduct spot checks for verification on site.

(3) 在需要的时候为项目的实施提供建议和指导，以实现项目目标，并对结果验证报告格式和信息提供相关建议和指导。

(3) Provide suggestions and guidance for the implementation of the Program when necessary to achieve the Program objectives, as well as provide relevant suggestions and guidance for the format and information of the result verification report.

3、社会发展专家（国家级，5 人月）。该专家应拥有：（i）至少 8 年以上中国社会发展专业经验（有性别专业经验者优先）；（ii）相关领域的研究生学位；以及（iii）熟练的英语口语和书面表达能力。专家负责实现 DLI 7（性别敏感意识项目）和 DLI 8（机构建设和能力提升）中的公司性别目标（至少 30% 的员工是女性）。

**3. Social Development Specialist (national level, 5 person-months).** The Specialist shall: (i) have at least 8 years of professional experience in social development of China (The specialist with professional experience in gender is preferred); (ii) have postgraduate degrees in related fields; and (iii) be proficient in spoken and written English. The Specialist is responsible for achieving the company's gender targets (at least 30% of employees are women) in DLI 7

(gender sensitive awareness program) and DLI 8 (institution building and capacity enhancement).

(1) 编制并提交：(i) 验证年度结果的年度报告；(ii) 关于清洁燃料使用宣传活动实施情况以及关于 DLI 7 及 8（仅公司性别目标）的 DLI 进展与完成情况的年度监测报告。

(1) Prepare and submit: (i) annual report for verification of the annual results; (ii) annual monitoring report on the implementation of publicity activities on the use of cleaner fuel and DLI progress and completion on DLI 7 and DLI 8 (only gender targets of the company).

(2) 审查鉴证报告（包括实施机构须提交的有关证明文件），并请实施机构提供必要的资料，以供验证和（或）修订鉴证报告（如需）。进行现场抽查验证。

(2) Review the authentication report (including relevant certification documents which have to be submitted by the implementation institution) and request IA to provide necessary materials for verification and (or) revision of the authentication report (if necessary). Conduct spot checks for verification on site.

(3) 在需要的时候为项目的实施提供建议和指导，以实现项目目标，并对结果验证报告格式和信息提供相关建议和指导。

(3) Provide suggestions and guidance for the implementation of the Program when necessary to achieve the Program objectives, as well as provide relevant suggestions and guidance for the format and information of the result verification report.

4、环境保障专家（国家级，5 人月）。该专家应拥有：(i) 至少 8 年以上中国基础设施项目环境保障专业经验（有国际援建项目经验者优先）；(ii) 相关领域的研究生学位；以及 (iii) 熟练的英语口语和书面表达能力。

**4. Environmental Security Specialist (national level, 5 person-months).** The Specialist shall: (i) have at least 8 years of professional experience in infrastructure programs and environmental security of China (The specialist with experience in international programs for providing assistance in construction is

preferred); (ii) have postgraduate degrees in related fields; and (iii) be proficient in spoken and written English.

(1) 编制并提交关于环境保障相关 PAP 实施情况和环境保障技术准则实施情况的半年度监测报告。

(1) Prepare and submit semi-annual monitoring reports on the implementation of PAP relevant to environmental security and technical standards for environmental security.

(2) 监测环境保障相关 PAP 和环境保障技术准则实施情况。进行现场抽查监测。

(2) Monitor the implementation of PAP related to environmental security and technical standards on environmental security. Conduct spot checks for monitoring on site.

(3) 在需要的时候提供关于环境保障相关 PAP 实施以及环境保障技术准则实施的建议和指导。进行现场抽查监测。

(3) Provide advice and guidance for implementation of PAP related to environmental security and technical standards for environmental security when necessary. Conduct spot checks for monitoring on site.

5、社会保障专家（国家级，4 人月）。该专家应拥有：（i）至少 8 年以上中国基础设施项目社会保障专业经验（有国际援建项目经验者优先）；（ii）相关领域的研究生学位；以及（iii）熟练的英语口语和书面表达能力。

**5. Social Security Specialist (national level, 4 person-months).** The Specialist shall: (i) have at least 8 years of professional experience in infrastructure programs and social security of China (The specialist with experience in international programs for providing assistance in construction is preferred); (ii) have postgraduate degrees in related fields; and (iii) be proficient in spoken and written English.

(1) 编制并提交关于社会保障相关 PAP 实施情况和社会保障技术准则实施情况的半年度监测报告。

(1) Prepare and submit semi-annual monitoring reports on the implementation of PAP relevant to social security and technical standards for social security.

(2) 监测社会保障相关 PAP 和社会保障技术准则实施情况。进行现场抽查监测。

(2) Monitor the implementation of PAP related to social security and technical standards for social security. Conduct spot checks for monitoring on site.

(3) 在需要的时候提供关于社会保障相关 PAP 实施以及社会保障技术准则实施的建议和指导。进行现场抽查监测。

(3) Provide advice and guidance for implementation of PAP related to social security and technical standards for social security when necessary. Conduct spot checks for monitoring on site.

6、公共采购专家（国家级，3 人月）。该专家应拥有：（i）至少 8 年以上中国基础设施项目公共采购专业经验（有国际援建项目经验者优先）；（ii）相关领域的研究生学位；以及（iii）熟练的英语口语和书面表达能力。

**6. Public Procurement Specialist (national level, 3 person-months).** The Specialist shall: (i) have at least 8 years of professional experience in infrastructure programs and public procurement of China (The specialist with experience in international programs for providing assistance in construction is preferred); (ii) have postgraduate degrees in related fields; and (iii) be proficient in spoken and written English.

(1) 编制并提交关于 DLI 4（清洁天然气配气管网）、DLI 5（监管和存储设施）及 DLI 6（沼气生产）相关采购活动以及采购相关 PAP 实施情况的半年度监测报告。

(1) Prepare and submit the semi-annual monitoring reports on procurement activities related to DLI 4 (natural gas distribution network pipeline), DLI 5 (supervision and storage facilities) and DLI 6 (biogas production) and the implementation of procurement-related PAP.

(2) 监测 DLI 4（清洁天然气配气管网）、DLI 5（监管和存储设施）及 DLI 6（沼气生产）相关采购活动以及采购相关 PAP 实施情况。进行现场抽查监测。

(2) Monitor procurement activities related to DLI 4 (natural gas distribution network pipeline), DLI 5 (supervision and storage facilities) and DLI 6 (biogas

production) and the implementation of procurement-related PAP. Conduct spot checks for monitoring on site.

(3) 在需要的时候提供关于采购相关 PAP 实施以及社会保障技术准则实施的建议和指导。进行现场抽查监测。

(3) Provide advice and guidance for implementation of PAP related to procurement and technical standards for social security when necessary. Conduct spot checks for monitoring on site.

7、财务管理专家（国家级，3 人月）。该专家应拥有：（i）至少 8 年以上财务管理和（或）财务顾问服务专业经验；（ii）相关领域的研究生学位；（iii）注册会计师资格或者相关资质；以及（iv）熟练的英语口语和书面表达能力。该专家将负责完成 DLI 3（用于持续整体方案实施的 9.15 亿元人民币商业融资）和 DLI 8（信用风险与财务管理以及筹资计划）。

**7. Financial Management Specialist (national level, 3 person-months).** The Specialist shall: (i) have at least 8 years of professional experience in financial management and (or) financial advisory services; (ii) have postgraduate degrees in related fields; (iii) have the certified public accountant (CPA) qualification or relevant qualifications; and (iii) be proficient in spoken and written English. The Specialist will be responsible for completing DLI 3 (RMB 915 million commercial finance for continuous overall program implementation) and DLI 8 (credit risk, financial management and fund raising plan).

(1) 编制并提交关于公司治理与财务管理相关 PAP 以及关于 DLI 3 和 DLI 8（信用风险与财务管理以及筹资计划）的 DLI 进展与完成情况的年度监测报告。

(1) Prepare and submit the annual monitoring report on PAP related to company governance and financial management as well as DLI progress and completion of DLI 3 and DLI 8 (credit risk, financial management and fund raising plan).

(2) 审查鉴证报告（包括实施机构须提交的有关证明文件），并请实施机构提供必要的资料，以供验证和（或）修订鉴证报告（如需）。进行现场抽查验证。

(2) Review the authentication report (including relevant certification documents which have to be submitted by the implementation institution) and request IA to provide necessary materials for verification and (or) revision of the authentication report (if necessary). Conduct spot checks for verification on site.

(3) 在需要的时候为项目的实施提供建议和指导，以实现项目目标，并对结果验证报告格式和信息提供相关建议和指导。

(3) Provide suggestions and guidance for the implementation of the Program when necessary to achieve the Program objectives, as well as provide relevant suggestions and guidance for the format and information of the result verification report.

## 八、成果和报告

### VIII. Achievements and Reports

咨询专家将向中原豫资控股有限公司项目办和亚行提交下面的报告：

The consulting specialist will submit the following reports to the Program Office of Zhongyuan Yuzi Investment Holding Group Co., Ltd. and ADB:

表 2：报告提交计划

Table 2: Report Submission Plan

报告 Report	描述 Description	提交时间 Submission date
详细的工 作计划 Detailed Work Plan	包括完成全部任务的工作方法、详细的实施时间安排、人员投入时间计划 Including working methods for completing all tasks, detailed implementation schedule and personnel input time plan	2020 年 4 月 25 日前 Prior to April 25, 2020
第 1 期报告 Report of Stage 1	包括：（1）业主方报告期指标完成情况 and 项目行动计划执行情况，及业主方所提供的原始资料（2）咨询方对项目完成指标和项目行动计划实施的核	2020 年 5 月 17 日 May 17, 2020

	<p>查和认证结果(3)相关说明和附件(含年报)。</p> <p>Including: (1) the indicator completion and implementation of the Program Action Plan of the Owner during the reporting period, and the original materials provided by the Owner (2) the verification and certification results of the consulting company on the indicator completion of the Program and implementation of the Program Action Plan (3) relevant instructions and attachments (including the annual report).</p>	
<p>第2期报告 Report of Stage 2</p>	<p>(1) 业主方报告期指标完成情况和项目行动计划执行情况, 及业主方所提供的原始资料 (2) 咨询方对项目完成指标和项目行动计划实施的核查和认证结果 (3) 相关说明和附件(含年报)</p> <p>(1) the indicator completion and implementation of the Program Action Plan of the Owner during the reporting period, and the original materials provided by the Owner (2) the verification and certification results of the consulting company on the indicator completion of the Program and implementation of the Program Action Plan (3) relevant instructions and</p>	<p>2021年1月29日 January 29, 2021</p>

	attachments (including the annual report).	
第3期报告 Report of Stage 3	<p>(1) 业主方报告期指标完成情况和项目行动计划执行情况，及业主方所提供的原始资料 (2) 咨询方对项目完成指标和项目行动计划实施的核查和认证结果 (3) 相关说明和附件(含年报)。</p> <p>(1) the indicator completion and implementation of the Program Action Plan of the Owner during the reporting period, and the original materials provided by the Owner (2) the verification and certification results of the consulting company on the indicator completion of the Program and implementation of the Program Action Plan (3) relevant instructions and attachments (including the annual report).</p>	<p>2022年1月17日</p> <p>January 17, 2022</p>
第4期报告 Report of Stage 4	<p>(1) 业主方报告期指标完成情况和项目行动计划执行情况，及业主方所提供的原始资料 (2) 咨询方对项目完成指标和项目行动计划实施的核查和认证结果 (3) 相关说明和附件(含年报)。</p> <p>(1) the indicator completion and implementation of the Program Action Plan of the Owner during the reporting period, and the original materials provided by the Owner (2) the</p>	<p>2023年2月6日</p> <p>February 6, 2023</p>

	<p>verification and certification results of the consulting company on the indicator completion of the Program and implementation of the Program Action Plan (3) relevant instructions and attachments (including the annual report).</p>	
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## 九、咨询顾问提供的设施

### IX. Facilities Provided by Consulting Advisor

1、所有人员费、国内差旅费、当地交通费、住宿费、报告打印费、办公费、翻译、通讯费，这些费用都要包括在咨询顾问的报价中；

1. All personnel expenses, domestic travel expenses, local transportation expenses, accommodation expenses, report printing expenses, office expenses, translation and communication expenses, which shall be included in the quotation of the consulting advisor;

2、用于咨询顾问日常办公设备所需的计算机，包括相关软硬件和耗材、复印机及耗材、传真机、打印机及耗材。

2. Computers required for Consulting Advisor's daily office equipment, including relevant software and hardware and consumables, photocopiers and its consumables, fax machines, printers and its consumables.

## 十、业主提供的设施

### X. Facilities Provided by the Owners

1、配备有办公家具、空调、国内电话以及网络的办公室；

1. Offices equipped with office furniture, air conditioning, domestic telephone and network;

2、从事任务所需的相关资料和数据；

2. Relevant materials and data required for the tasks;

3、指定一名到两名联络人，负责协调咨询公司顾问同项目办对接工作。

3. The Owner will designate one to two contact persons to be responsible for coordinating the cooperation between the advisor of the consulting company and the Program Office.

中原豫资投资控股集团有限公司

Zhongyuan Yuzi Investment Holding Group Co., Ltd.

亚行项目办

ADB Program Office

2020年3月10日

March 10, 2020

