

# Project Administration Manual

Project Number: 51194-001  
Loan Number: {LXXXX}  
July 2019

People's Republic of China: Shandong Green  
Development Fund Project

## ABBREVIATIONS

ADB	–	Asian Development Bank
CC	–	climate change
CO <sub>2</sub>	–	carbon dioxide
CNY	–	Chinese yuan
ESMS	–	environmental and social management system
FCA	–	framework cooperation agreement
FIL	–	financial intermediation loan
FMA	–	financial management assessment
GHG	–	greenhouse gases
IFI	–	international financing institution
MEV	–	monitoring, evaluation, and verification
MOF	–	Ministry of Finance
NDRC	–	National Development and Reform Commission
PAM	–	project administration manual
PIC	–	private, institutional, and commercial
PRC	–	People's Republic of China
RFA	–	revolving funds account
SDIHG	–	Shandong Development Investment Holdings Group
SFB	–	Shandong Province Finance Bureau
SGDF	–	Shandong Green Development Fund
SMEs	–	small- and medium-sized enterprises
SUF	–	statement of utilization of funds

## DEFINITION OF TERMS<sup>a</sup>

- “Capacity Development Program” means a program funded under ADB loan to support the project implementation through consulting services;
- “Catalytic Fund” means a Fund, established for a term of 20 years or such other term as ADB may agree, into which SDIHG invests the proceeds of the Loan, together with proceeds of other financing it receives from IFIs for the project, and into which other governmental or multilateral investors acceptable to ADB may invest, as ADB may agree from time to time;
- “CO<sub>2</sub> Equivalent Emissions” means the equivalent quantity of greenhouses gases emission expressed in carbon dioxide (CO<sub>2</sub>) equivalent as per the definition of the Intergovernmental Panel on Climate Change;
- “Consulting Services” means consulting services as described in the ADB’s Procurement Regulations and set out in the Procurement Plan included in Annex to this PAM and to be financed out of the proceeds of the Loan;
- “Fund” means a limited partnership established on terms acceptable to ADB for a period acceptable to ADB to invest, either directly or through other funds, into Qualified Enterprises to undertake Qualified Subprojects and, unless ADB agrees otherwise, managed by the FMC;
- “GAP” means the gender action plan for the project approved by ADB and implemented by the Fund Manager;
- “Green Procurement” means the green procurement standards customized from the European Union for greening a subproject’s supply chain such that it shifts from ‘Good Practices’ to ‘Advanced Benefits’.
- “Investment Agreement” means an agreement or set of agreements between a Fund and a Qualified Enterprise, using templates to which ADB has given a written non-objection, for the provision of debt, equity or mezzanine finance to the Qualified Enterprise to be used exclusively to undertake a Qualified Subproject, and setting out all of the Project requirements to be performed or achieved by the Qualified Enterprise in applying the Fund’s investment to the Qualified Subproject;
- “Limited Partnership Agreement” means an agreement among general partners and limited partners establishing a Fund as a limited partnership, reflecting the requirements of the Loan Agreement, the Project Agreement and this PAM, and to which ADB has given a written non-objection in each case;
- “MERV” means monitoring and evaluation reporting and verification. A comprehensive digital platform for enhanced project management information system and MERV was developed during the project preparation to facilitate the various reporting requirements from the IFIs and from the central and provincial governments. The MERV complies with the format of the Annual Performance Report of the Green Climate Fund used by SGDF for reporting;
- “PAM” means this project administration manual for the Project;
- “Procurement Policy” means ADB’s Procurement Policy - Goods, Works, Nonconsulting and Consulting Services (2017, as amended from time to time);
- “Procurement Regulations” means ADB’s Procurement Regulations for ADB Borrowers - Goods, Works, Nonconsulting and Consulting Services (2017, as amended from time to time);
- “Qualified Enterprise” means a company that satisfies all requirements in this Loan Agreement, the Project Agreement and the PAM for an investee company to receive investment from a Fund;

- “Qualified Subproject” means an undertaking that satisfies all requirements in this Loan Agreement, the Project Agreement and the PAM for subprojects to receive investment from a Fund;
- “Safeguard Policy Statement” or “SPS” means the Safeguard Policy Statement of ADB (2009);
- “Shandong Green Development Fund Green Climate Assessment Guidelines” means a screening tool developed during project preparation and customized from the Green Climate Fund Investment Framework to categorize potential subprojects as “Transformational”; “Advanced Benefits” or “Good Practices” following six criteria, as further described in Annex 8 hereto];
- “SOURCE” means digital platform developed by ADB to fast track the delivery of infrastructure subprojects. It is designed to help public sector agencies better prepare, manage and publish their infrastructure projects to attract top tier private sector investors. This cloud-based system allows the FMC to present information on all aspects of development of an infrastructure project in a transparent, consistent and efficient manner, using sector-specific sets of templates in several languages, including Chinese.

<sup>a</sup> Where the Loan Agreement or Project Agreement definition is inconsistent with these definitions, the definitions in the Loan Agreement and Project Agreement will prevail. Refer to the Loan Agreement and Project Agreement for terms used herein and not defined below.

## CONTENTS

<b>I.</b>	<b>PROJECT DESCRIPTION</b>	<b>1</b>
<b>II.</b>	<b>IMPLEMENTATION PLANS</b>	<b>4</b>
	A. Project Readiness Activities	4
	B. Overall Project Implementation Plan	5
<b>III.</b>	<b>PROJECT MANAGEMENT ARRANGEMENTS</b>	<b>6</b>
	A. Project Implementation Organizations: Roles and Responsibilities	6
	B. Shandong Green Development Fund	10
	C. Key Persons Involved in Implementation	12
	D. Project Organization Structure	14
<b>IV.</b>	<b>COSTS AND FINANCING</b>	<b>15</b>
	A. Cost Estimates Preparation and Revisions	15
	B. Key Assumptions	16
	C. Detailed Cost Estimates by Expenditure Category	16
	D. Allocation and Withdrawal of Loan Proceeds	17
	E. Detailed Cost Estimates by Financier	18
	F. Detailed Cost Estimates by Year	19
	G. Commitment and Disbursement S-Curves	19
	H. Fund Flow Diagram	21
<b>V.</b>	<b>FINANCIAL MANAGEMENT</b>	<b>23</b>
	A. Financial Management Assessment	23
	B. Disbursement Arrangements for ADB Funds	24
	C. Accounting	25
	D. Auditing and Public Disclosure	26
<b>VI.</b>	<b>PROCUREMENT AND CONSULTING SERVICES</b>	<b>28</b>
	A. Advance Contracting	28
	B. Procurement of Goods, Works, and Consulting Services	28
	C. Procurement Plan	28
	D. Consultant's Terms of Reference	29
<b>VII.</b>	<b>SAFEGUARDS</b>	<b>30</b>
	A. Environmental and Social Management System	31
	B. Disclosure	31
	C. Grievance Redress Mechanism	31
	D. Prohibited investment activities	32
<b>VIII.</b>	<b>GENDER AND SOCIAL DIMENSIONS</b>	<b>33</b>
<b>IX.</b>	<b>PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION</b>	<b>35</b>
	A. Project Design and Monitoring Framework	35
	B. Monitoring	35
	C. Evaluation	35
<b>X.</b>	<b>ANTICORRUPTION POLICY</b>	<b>36</b>
<b>XI.</b>	<b>ACCOUNTABILITY MECHANISM</b>	<b>36</b>
<b>XII.</b>	<b>RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL</b>	<b>36</b>

<b>ANNEX 1:</b>	<b>SUBPROJECT SELECTION CRITERIA</b>	<b>38</b>
<b>ANNEX 2:</b>	<b>ADB PROHIBITED INVESTMENT ACTIVITIES LIST</b>	<b>41</b>
<b>ANNEX 3:</b>	<b>SAMPLE STATEMENT OF UTILIZATION OF FUNDS</b>	<b>42</b>
<b>ANNEX 4:</b>	<b>PROCUREMENT</b>	<b>43</b>
<b>ANNEX 5:</b>	<b>NATIONAL COMPETITIVE BIDDING</b>	<b>80</b>
<b>ANNEX 6:</b>	<b>TEMPLATE FOR SEMI-ANNUAL PROGRESS REPORT</b>	<b>81</b>
<b>ANNEX 7:</b>	<b>STATUS OF COMPLIANCE WITH MAJOR LOAN AND PROJECT COVENANTS</b>	<b>86</b>
<b>ANNEX 8:</b>	<b>SGDF GREEN CLIMATE ASSESSMENT GUIDELINES</b>	<b>87</b>

### **Project Administration Manual Purpose and Process**

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with the policies and procedures of the government and Asian Development Bank (ADB). The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Shandong Provincial Government, as the executing agency, the Shandong Development and Investment Holdings Group, as the implementing agency and CICC Capital Management Co. Ltd, as the Fund Management Company are wholly responsible for the implementation of the ADB-financed Project, as agreed jointly between the borrower and ADB, and in accordance with the policies and procedures of the government and ADB. ADB staff is responsible for supporting implementation, including compliance by the Shandong Provincial Government, the Shandong Development Investment Holdings Group and CICC Capital Management Co. Ltd of their obligations and responsibilities for Project implementation in accordance with ADB's policies and procedures.

At Loan Negotiations, the borrower and ADB shall agree to the PAM and ensure consistency with the Loan and Project Agreements. Such agreement shall be reflected in the minutes of the Loan Negotiations. In the event of any discrepancy or contradiction between the PAM and the Loan and Project Agreements, the provisions of the Loan and Project Agreements shall prevail. Defined terms used in the PAM have the same meanings as in the Loan Agreement and Project Agreement unless otherwise defined in the PAM.

After ADB's Board approval of the Project's report and recommendations of the President (RRP), changes in implementation arrangements are subject to agreement and approval pursuant to relevant government and ADB's administrative procedures (including the Project Administration Instructions) and upon such approval, they will be subsequently incorporated in the PAM.





## I. PROJECT DESCRIPTION

1. Shandong is ranked the 8th province in terms of provincial gross domestic product (GDP) per capita, and the provincial capital, Jinan, ranks 21 out of 34 People's Republic of China (PRC) capitals in GDP. Shandong is facing multiple climate vulnerabilities that include climate impacted water resources as a lead limiting factor for growth at the core of the water – food – energy nexus. Industrial development is strong and targeted for industrial transformation to support climate change policies of the province. In 2017, Jinan was ranked as the most congested city in the PRC. Shandong was selected as pilot to implement the Shandong Green Development Fund, given its track record of focused efforts on climate issues<sup>1</sup> and because it is challenged by high greenhouse gases (GHG) emissions deriving from its history of rapid industrial development.<sup>1</sup> Regional low-carbon development is an important way to control GHG. All PRC provinces are required to incorporate a carbon intensity reduction goal into their economic and social development plans and annual plans. Shandong is required to reduce its carbon dioxide (CO<sub>2</sub>) emission intensity by 20.5% by 2020, which is the toughest goal set for a province by the government. Shandong is a province with a large population (99.47 million in 2016) and with high contributions to overall national GDP growth. The State Council has approved Shandong to become a pilot for action to shift to a low carbon and resilient growth paradigm. Meeting this paradigm shift and climate change targets requires better access to climate finance for climate related projects going beyond business as usual (BAU).

2. The project will pilot an innovative leveraging mechanism to catalyze private, institutional and commercial (PIC) capital for the development of climate positive infrastructure and business in Shandong Province.<sup>2</sup> The project will support a portfolio of mitigation and adaptation subprojects assessed against both climate and financial eligibility criteria. The project will contribute to the province's transition to low-carbon and climate-resilient development patterns. The Project aims to crowd-in private, institutional, and commercial (PIC) finance for climate positive subprojects assessed against both climate (e.g. GHG reduction plus land, water, and air pollution indicators) and financial (e.g. financial internal rate of return, debt service coverage ratio) eligibility criteria. The Project consists of a mix of public and private sector capital of \$1.5 billion (~€1.35 billion), including catalytic resources of \$300 million (~€265 million) from international financing institutions (IFI), required to reach sufficient critical mass of funding to achieve a significant leverage ratio over 5. The Project finances a portion of the total capital expenditures of selected climate positive subprojects for a capped period to make the subprojects bankable. The Shandong Green Development Fund (SGDF) is a multi-tiered fund structure that includes a 20-year Catalytic Fund, holding seed capital from IFIs, which will invest with PIC investors in a series of shorter-tenor time-separated funds (expected to be named SGDF I, II, III and IV) to make climate positive investments in qualified subprojects directly and through selected municipal and sectoral sub-funds. The level of financing from SGDF and the financing terms and conditions are linked to the climate performance of the subproject assessed against the SGDF Green Climate Assessment Guidelines<sup>3</sup> developed during the project preparation from the Green Climate Fund (GCF) investment framework.

3. SGDF targets higher risk climate positive infrastructure subprojects green and high technology manufacturing businesses and investment in municipal and sectoral sub-funds in

<sup>1</sup> Shandong has established a CNY50 billion New Industry Development Guidance Fund.

[www.mof.gov.cn/xinwenlianbo/shandonggaizhengxinilianbo/201701/t20170118\\_2522081.htm](http://www.mof.gov.cn/xinwenlianbo/shandonggaizhengxinilianbo/201701/t20170118_2522081.htm)

<sup>2</sup> At least 70% of the subprojects (as per fund commitment) financed need to be located in Shandong Province.

<sup>3</sup> *Shandong Green Development Fund Green Climate Assessment Guidelines* (accessible from the list of Supplementary Documents in Appendix 2 of the Report and Recommendation of the President) developed during project preparation: TA9438-PRC *Preparing the Green Finance Catalyzing Facility*.

Shandong Province, PRC. All SGDF investments must be made into Qualified Enterprises and be used to finance Qualified Subprojects, as such terms are defined in the Loan Agreement and Project Agreement for the Project. Eligibility criteria for SGDF investments are primarily set out in Annex to this PAM and include requirements for governance, implementation arrangements, environmental and social management system (ESMS) arrangements and Gender Action Plan (GAP). Invested enterprises and subprojects must also follow monitoring and evaluation reporting and verification (MERV), as described in Section IX of this PAM. The climate positive subprojects' pipeline spans several sub-sectors and focuses on maximizing investment in mitigation (75%), resulting in a conservative estimate of 25 million tons of carbon dioxide equivalent (tCO<sub>2</sub>eq) over the 20 years lifespan of SGDF and adaptation (25%) with 5 million direct beneficiaries (about 5% of the population of Shandong Province) and indirectly another 5 million beneficiaries.

4. **Priority Investments:** SGDF investment priorities are determined by a climate vulnerability assessment,<sup>4</sup> summarized into the Climate Change Assessment,<sup>5</sup> which determines target SGDF portfolio weightings. For mitigation sectors the priorities are to address the main sources of GHG emissions (including but not limited to): (i) energy sector with renewable energy including wind, solar, biomass, geothermal and emerging technology investments; (ii) green (energy efficient) building and heating/cooling systems; and (iii) low carbon transport with supporting investments in new energy vehicles and bus rapid transit green corridors. Based on the provincial modeling of climate vulnerabilities, Shandong's adaptation priorities are (including but not limited to): agricultural and urban water supply infrastructures; city flood resilience or sponge cities through low impact development that includes flood proofing and urban lifeline systems such as water supply, drainage; city greening, coastal protection and solid waste.

5. **Impact.** The impact of the Project is aligned with the Intended Nationally Determined Contribution (INDC):<sup>6</sup> (i) peaking of CO<sub>2</sub> emissions around 2030 or earlier on best efforts achieved.

6. **Outcome.** The outcome is Climate resilience in Shandong Province enhanced.

7. **Outputs.** The outputs of the Project are (i) SGDF established with PIC financing leveraged, (ii) Knowledge and skills of local governments, civil society and private sector to prepare climate positive subprojects enhanced. The Design and Monitoring Framework is included in Appendix 1 of the Report and Recommendations to the President.

8. **Output 1: SGDF established with PIC financing leveraged.** SGDF established with PIC financing leveraged. SGDF is structured as an investment pooling vehicle for climate financing and run by a professional fund management company (FMC). SGDF targets to invest 75% in mitigation (measured through CO<sub>2</sub>eq emission reduction) and 25% in adaptation (measured through improvement of the beneficiaries' resilience). The project leverages PIC funding at market rate and at risk at both the SGDF level as well as at the subproject or sub-fund level with refinancing occurring from year 5 to 15.

9. **Output 2: Knowledge and skills of local governments, civil society and private sector to prepare climate positive subprojects enhanced.** The FMC will manage a capacity

<sup>4</sup> *Mitigation and Adaptation Priorities in Shandong* (accessible from the list of Supplementary Documents in Appendix 2 of the Report and Recommendation of the President) developed during project preparation: TA9438-PRC *Preparing the Green Finance Catalyzing Facility*.

<sup>5</sup> Climate Change Assessment (accessible from the list of linked documents in Appendix 2 of the Report and Recommendation of the President).

<sup>6</sup> Government of PRC. 2015. *Intended Nationally Determined Contribution*. Paris.

development program for project development assistance, policy advisory, capacity building and knowledge management.

## II. IMPLEMENTATION PLANS

### A. Project Readiness Activities

10. Prior to ADB's loan fact-finding mission, Shandong Provincial Government (SPG), the Project executing agency (EA) represented by the Shandong Province Finance Bureau (SFB) and Shandong Development and Investment Holding Group (SDIHG), a wholly state-owned enterprise of SPG, the Project implementing agency (IA) have undertaken the following project readiness activities:

- (i) A Project Preparation Office is established at SDIHG in Jinan since January 2018;
- (ii) Due diligence of sample subprojects is ongoing since March 2018;
- (iii) Subproject selection criteria have been discussed and agreed with the IA during project preparation;
- (iv) Environmental and social management system preparation is carried out since June 2018;
- (v) Fund raising is ongoing since March 2018;
- (vi) SGDF and sub-fund structures have been discussed during several ADB missions; and
- (vii) A professional fund manager, CICC Capital Management Ltd (CCM) was selected in March 2018 and recruited in July 2019 by SDIHG to establish and manage SGDF through a FMC.

11. Table 1 presents the indicative timing of the main project readiness activities that needs to be accomplished in order to achieve loan effectiveness by March 2020. SFB will establish the Foreign Currency Withdrawal account (FWA) denominated in USD (or Euro equivalent at the time of the loan negotiations) at the Account Bank to receive foreign currencies from the IFIs. SDIHG will establish the Chinese Yuan (CNY) Conversion Account (CCA) in CNY to receive the conversion of Foreign Currency to CNY from the IFIs before transferring the loan proceeds to the SGDF's Catalytic Fund as Limited Partner (LP). The FMC will establish and manage SGDF Account, dominated in CNY, to receive loan proceeds from the LPs (SDIHG, PIC investors and General Partners).

**Table 1: Project Readiness Activities**

2019											
Months											
Indicative Activities	4	5	6	7	8	9	10	11	12	Responsible Agency / Government	
Loan fact-finding										ADB, SPG, SDIHG	
Management Review Meeting										ADB	
FCUP approval ADB (May 2019)										MOF, SPG	
Loan Negotiations										ADB, MOF, SPG	
ADB approval											
Loan signing										ADB, MOF, SPG	

ADB = Asian Development Bank, FCUP = Foreign Capitalization Utilization Plan, MOF = Ministry of Finance, SPG = Shandong Provincial Government; SDIHG = Shandong Development and Investment Holding Group.

Source: Asian Development Bank.

## B. Overall Project Implementation Plan

12. The project implementation period is 7 years from January 2020 to December 2026: The ADB loan will be drawn out over a period of 7 years and is expected to close on 31 December 2026. The project implementation plan is shown in Table 2.

**Table 2: Overall Project Implementation Plan**

TASKS / YEAR	2020	2021	2022	2023	2024	2025	2026	2027
<b>1. Shandong Green Development Fund Set-up</b>								
Set-up \$1.5 billion SGDF with \$300 million catalytic funds								
Approve one climate positive subproject								
Implementation Period for Disbursement (IFI)								
Leverage pilot climate positive subprojects by re-investing catalytic loans with PIC								
<b>2. Project Development</b>								
Recruit consultants for the Capacity Development Program								
Develop and screen SGDF pipeline of bankable climate positive subprojects								
Prepare climate positive subprojects								
Implement Green Procurement Guidelines in at least 1 subproject								
Implement Climate and Financial Ratings of subprojects financed by SGDF								
<b>3. Knowledge and Capacity Development</b>								
Train FMC, local governments and qualified enterprises								
Implement with SGDF the SOURCE and MERV digital platform <sup>a</sup>								
Implement at least 3 policy seminars and document outcomes								

ADB = Asian Development Bank, IFI = International financing Institution; MERV = monitoring and evaluation reporting and verification, PIC = private, institutional, and commercial, SGDF = Shandong Green Development Fund.

<sup>a</sup> Refer to Definition of Terms in this PAM.

Source: Asian Development Bank

### III. PROJECT MANAGEMENT ARRANGEMENTS

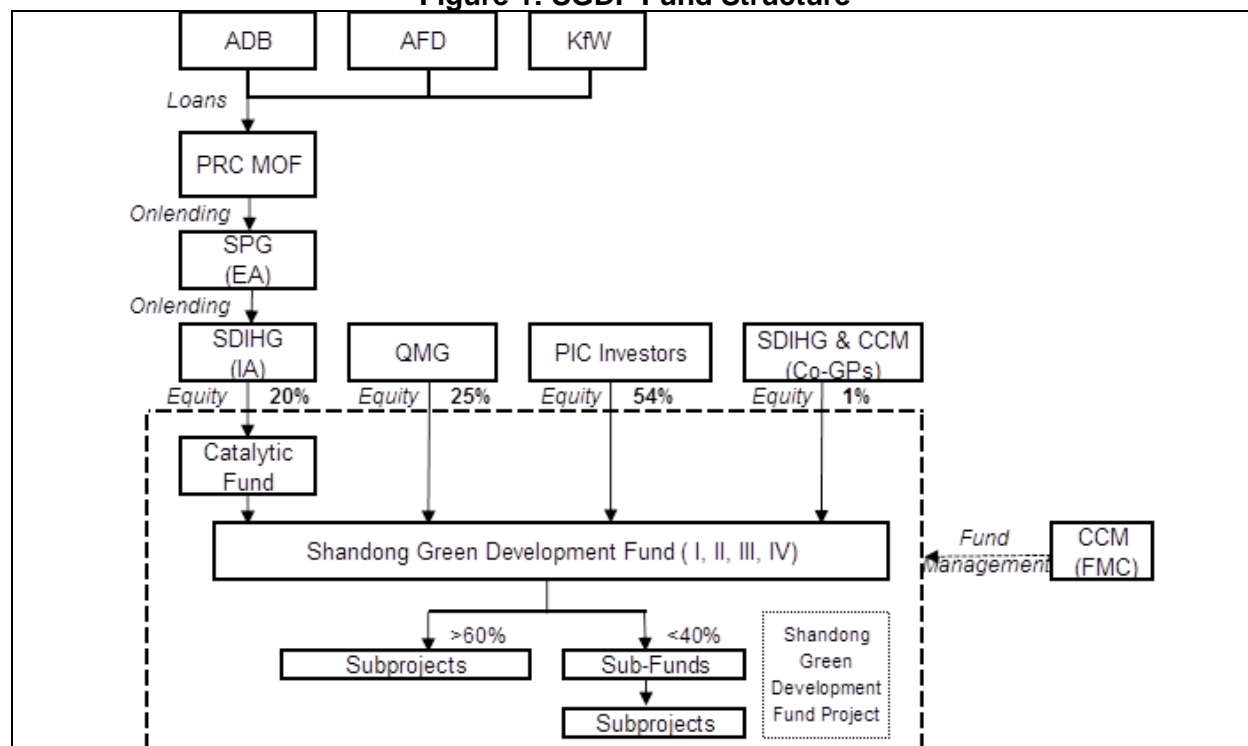
#### A. Project Implementation Organizations: Roles and Responsibilities

##### 1. General

13. SPG is establishing SGDF under an experienced financial intermediary, SDIHG, a State-Owned Enterprise fully owned by SPG supported by CCM. SDIHG operates under the PRC's commercial law and is financially autonomous. SDIHG has experience in ensuring that planned investments meet broader policy requirements, as well as more stringent criteria than common practice. Qingdao municipal government is investing into SGDF as a LP to: (i) strengthen Qingdao as a regional green investment center; and (ii) leverage its contribution with PIC finance to fund climate positive urban subprojects and green businesses in Qingdao. A fund manager incorporated in the PRC, CCM, wholly owned subsidiary of China International Capital Corporation Limited was selected by SDIHG to manage the FMC of SGDF based on the following requirements: (i) top tier asset manager in the PRC; (ii) licensed by the regulator to operate a fund in the PRC; (iii) over 8 years' experience, including opening and closing a fund; and (iv) experience with public and donor funding mechanisms.

14. SFB receives the loan proceeds from the Ministry of Finance, maintains the foreign currency account and transfers the proceeds to SDIHG in local currency for investment as LP into a 20-year Catalytic Fund to manage and recycle the long-term catalytic funding from IFIs, including ADB into a series of shorter-term funds that reflect PIC investors' investment horizons and market practices. Generally, the funds will have an investment period of 4 – 5 years, an exit period of 3 years and a possible 2-year extension period to complete exits from investments in an orderly manner. CCM and SDIHG, using their own funds will invest into the SGDF funds as Co-General Partners. Distributions from the shorter-term funds will be made to the Catalytic Fund; and the Catalytic Fund will reinvest these distributions in new SGDF funds except as distributed to SDIHG to pay its debt service on on-lent IFI debt.

**Figure 1: SGDF Fund Structure**



ADB = Asian Development Bank; AFD = Agence Française de Développement; CCM = CICC Capital Management Co., Ltd.; EA = executing agency; FMC = fund management company; KfW = Kreditanstalt Für Wiederaufbau; IA = implementing agency; MOF = Ministry of Finance; PIC = private, institutional and commercial; PRC = People's Republic of China; SDIHG = Shandong Development and Investment Holding Group; SPG = Shandong Provincial Government

15. The FMC will provide SGDF with the following services among others: finalizing the fund structure based on market testing and establishing SGDF under proper governance arrangement subject to ADB no objection.

16. The staff of the FMC will be gender-balanced with diverse backgrounds and expertise in financial, technical, environment and social development. Staffing is expected to be around 30 experienced full-time staff with academic qualifications and suitable experience to implement and manage SGDF. Additional resources can be drawn from the Capacity Development Program under the ADB loan. The FMC will require expertise to conduct but not limited to the following (i) assessing the risk profile of the subprojects, businesses and sub-funds; (ii) evaluating the technology and business model; (iii) assessing capacity of the subprojects sponsors; (iv) reviewing and assessing subproject applications according to the selection criteria and approval process for subprojects; (v) recommending to SGDF investment committee the subprojects, businesses and sub-funds to be financed with the funding modality; (vi) obtaining ADB's no objection<sup>7</sup> where it is required; (vii) establishing proper risk management mechanism to monitor its green rating, credit risk, interest rate risk and foreign exchange risk etc. in connection with the Project; (viii) monitoring the implementation progress of subprojects, including compliance with the terms and conditions of the subproject implementing contracts, and ESMS; (ix) taking remedial actions in the event of noncompliance with the obligations; (x) preparing the IFIs loan withdrawal applications; (xi) participating in the external audit of subproject accounts by providing IFIs access to project auditors; and (xii) monitoring interest payment, return from early stage

<sup>7</sup> ADB will consolidate no objection with comments from the other IFIs.

investment, and principal repayment and equity investment by the subproject sponsors; and (xiii) bi-annual reporting to ADB.

17. Key staff's CVs and subsequent replacements in the first 7 years of operation are subject to ADB's no objection and include: General Manager; 2 Deputy General Managers; Chief Financial Officer. At least one key staff should be a woman and one key staff should speak English. As part of the environmental and social management system (ESMS) Arrangement, a full time Safeguard Manager (or FMC Safeguard Specialist) and a full time Social Development Specialist will be recruited with additional environmental and social development staff recruited or drawn from the Capacity Development Program, as required.

## 2. Management Roles and Responsibilities

18. The roles and responsibilities of the different entities involved in project implementation and oversight are summarized in Table 3.

**Table 3: Roles and Responsibilities**

<b>Project Implementation Organizations</b>	<b>Management Roles and Responsibilities</b>
Executing Agency (SPG represented by SFB)	<ul style="list-style-type: none"> <li>• Enter into on-lending agreement with MOF;</li> <li>• Enter into Project Agreement with ADB and ensure compliance with its covenants and provisions;</li> <li>• Responsible for coordinating project implementation activities among government agencies.</li> </ul>
Implementing Agency (SDIHG)	<ul style="list-style-type: none"> <li>• Ensure that ESMS is established and implemented by the FMC;</li> <li>• Open a CCA to invest as LP/Co-GP into SGDF's Catalytic Fund for investment and capacity development program;</li> <li>• As LP, enter into an LPA for SGDF I to IV together with public and PIC investors;</li> <li>• As Co-GP, enter into an LPA for SGDF I to IV;</li> <li>• As GP on behalf of the Fund and as Project Implementing Agency, enter into a Fund Management Contract with CCM to act as FMC for all funds in SGDF;</li> <li>• Recommend subprojects to be financed to the Investment Committee, and;</li> <li>• Prepare and submit reporting and annual audited financial statements to ADB, as described into the auditing and reporting sections of the PAM.</li> </ul>
Fund Management Company (CCM)	<ul style="list-style-type: none"> <li>• Act as FMC of all funds in SGDF and assume responsibility for day-to-day Project implementation;</li> <li>• Provide staff resources with competence in technical, safeguard, and financial issues pertaining to the Project implementation;</li> <li>• Open and maintain SGDF local currency account to receive and manage capital contributions from LPs/GPs;</li> <li>• Review and assess subproject applications according to the selection criteria and approval process for Subprojects described in the Loan Agreement and Project Agreement and this PAM;</li> <li>• Manage SGDF Investment Committee;</li> <li>• Sign Investment Agreements with Qualified Enterprises for Qualified Subproject financing;</li> <li>• Assume overall responsibility to prepare and approve subprojects based on the approved ESMS;</li> <li>• Adopt and cause each SGDF fund to adopt and implement the ESMS (and the subsequent amendments to the ESMS) for all the investments funded by SGDF.</li> <li>• Establish a Grievance Redress Mechanism (GRM) at the SGDF level;</li> </ul>



Project Implementation Organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> <li>• Monitor the implementation progress of the SGDF group of funds, including compliance with the terms and conditions of the investment agreements.</li> <li>• Require remedial actions or exercise contractual and legal remedies in the event of noncompliance with the obligations;</li> <li>• Prepare ADB loan withdrawal applications with the necessary supporting documents described in the disbursement section of this PAM;</li> <li>• Participate in the external audit of Project accounts by providing ADB access to Project auditors;</li> <li>• Monitor payments from Qualified Enterprises;</li> <li>• Prepare and submit reports as per the reporting section of the Project Agreement and this PAM; and</li> <li>• Obtain ADB's no objection where required.</li> </ul>
Qualified Enterprises (investees of SGDF funds)	<ul style="list-style-type: none"> <li>• If debt investee, repay loan principal and interest in a timely manner as stated in the relevant agreements;</li> <li>• Implement the subproject in accordance with the Investment Agreement;</li> <li>• Comply with applicable requirements of the ESMS, including providing information and reports required to the FMC;</li> <li>• Establish GRM at subproject level;</li> <li>• Get all necessary approvals from relevant authorities for the Qualified Subproject;</li> <li>• Undertake the procurement of goods and works in compliance with the established procurement private sector or commercial practices<sup>8</sup>; and</li> <li>• Provide MERV information and participate in the completion review of the subproject.</li> </ul>
ADB	<ul style="list-style-type: none"> <li>• Provide guidance and support to EA, IA, FMC and other relevant agencies to ensure compliance with Loan and Project Agreements;</li> <li>• Disburse the loan in accordance with the agreed procedures upon receipt of duly authorized withdrawal applications and necessary supporting documentation;</li> <li>• Review Project progress reports and monitors implementation of ESMS;</li> <li>• Review and endorse applications of the first 3 subprojects and subprojects above the free limit of \$75 million;</li> <li>• Review and liaise with the EA to act on any noncompliance issues;</li> <li>• Conduct regular loan review missions, midterm review mission, and project completion mission; and</li> <li>• Review annual audit reports and follow up on audit recommendations.</li> </ul>

ADB = Asian Development Bank, CCA = CNY conversion account, CCM = CICC Capital Management Co. Ltd; EA = executing agency, ESMS = environmental and social management system, FWA = foreign currency withdrawal account, FCA = framework cooperation agreement, FMC = Fund Management Company, GP = General Partner, GRM = grievance redress mechanism, IA = implementing agency, LP = Limited Partner, LPA = Limited Partnership Agreement, MERV = monitoring and evaluation reporting and verification, MOF = Ministry of Finance, PAM = project administration manual, SDIHG = Shandong Development Investment Holdings Group, SGDF = Shandong Green Development Fund.

Source: Asian Development Bank.

<sup>8</sup> *Procurement Assessment of Private Sector Commercial Practice* (accessible from the list of Supplementary Documents in Appendix 2 of the Report and Recommendation of the President to the Board of Directors) developed during project preparation: TA9438-PRC *Preparing the Green Finance Catalyzing Facility*.

## B. Shandong Green Development Fund

19. SGDF pilots an innovative financing mechanism to catalyze climate finance for a portfolio of climate positive projects to support the proactive policies to decarbonize the economy of Shandong. The climate positive subprojects' pipeline spans several sub-sectors<sup>9</sup> and focuses on maximizing investment in climate change **mitigation (75%), resulting in an estimate of 25 million tons CO<sub>2</sub>** over the lifespan of the projects and **adaptation (25%) with 5 million direct beneficiaries** (about 5% of Shandong Province) and 5 million indirect beneficiaries. The Project provides the following for eligible subprojects

- Funding<sup>10</sup> up to 67% (may vary per sector and project risk profile) of capital expenditure (CAPEX) up to 10 years of selected climate positive subprojects for a capped period to make the subprojects bankable by addressing the upfront subproject risks as well as promoting advanced technologies and an integrated approach to climate change;
- Accessing Capacity Development program, financed by ADB loan and managed by the FMC, for but not limited to design-review-advice of climate positive subproject preparation; climate/green ratings; MERV and policy advisory.

20. All the investments to be made by SGDF will be linked to the climate criteria and performance in line with the SGDF Green Climate Assessment Guidelines.

21. **SGDF Investments:** The financing terms and conditions provided by an SGDF fund to a Qualified Enterprise for a Qualified Subproject are directly related to the climate-related categorization (Transformative; Advanced Benefits or Good Practices) of the subproject. All investments must be approved by the Investment Committee(s) for the SGDF operated by the FMC. Table 4 summarizes the terms and conditions for debt investments. SGDF will not be able to provide equity financing for projects classified "Good Practices" but will provide equity financing for subprojects classified "Advanced Benefits" or "Transformational" for up to 10 years based on market valuation (Table 5). No BAU subprojects can be financed by SGDF.

**Table 4: Indicative Terms and Conditions for Debt Investment into Qualified Enterprises  
(Based on green climate indicators and cross referenced with financial due diligence)**

SGDF Green Climate Assessment	Maximum Catalytic Funding <sup>a</sup>	Maximum Tenor	Indicative Interest Rate <sup>b</sup>
Transformational	67%	10	Discounted
Advanced Benefits	50%	8	In line
Good Practices	25%	5	Premium

<sup>a</sup> Percentage of a project's total debt financing.

<sup>b</sup> Based on People's Bank of China average lending rate.

Source: Asian Development Bank estimate.

<sup>9</sup> Refer to Para 19 Priority Investments.

<sup>10</sup> Unless otherwise agreed by ADB and the other IFIs.

**Table 5: Indicative Terms and Conditions for Equity Investment**  
**(Based on green climate indicators and cross referenced with financial due diligence)**

SGDF Green Climate Assessment	Maximum Catalytic Funding <sup>a</sup>	Exit Strategy
Transformational	50%	< 10 years
Advanced Benefits	30%	< 10 years
Good Practices	0	-

<sup>a</sup> Percentage of a project's total equity financing.

Source: Asian Development Bank estimate.

22. **SGDF's Investment by way of Sub-funds:** Subject to satisfactory due diligence results and no objection from ADB, the senior SGDF funds may invest into municipal and sector sub-funds. The sub-funds must also be structured as limited partnerships and must invest only in Qualified Enterprises to finance Qualified Subprojects. The sub-funds will be managed by the SGDF's FMC with potential co-GPs from the relevant region or sector, subject to integrity due diligence and no objection from ADB to ensure compliance with SGDF investment strategy and the covenants and principles agreed in the Loan and Project Agreements with ADB and the co-financiers.

23. **SGDF Strategy:** Any changes requires ADB written consent. Shandong Province is establishing SGDF to facilitate its transition to a lower-carbon future. SGDF' strategy is to both encourage the development of climate-positive projects and leverage its public funds to address the scale of the challenge. The objective is to tap new funding sources and leverage existing sources of finance into a pipeline of viable CC investments by:

- Ensuring that SGDF addresses priority climate impacts and vulnerabilities in Shandong;
- Incorporating a project preparation mechanism (funded under the Capacity Development Program under ADB loan) to develop a pipeline of transformational, sustainable and replicable subprojects based on high levels of performance against SGDF Green Climate Assessment Guidelines; and
- Incorporating structures for leverage of PIC finance.

24. **SGDF Distribution (investment criteria / waterfall):** Any changes requires ADB written consent. Funds available for distribution, after paying taxes, any debt and other obligations, of the fund and subject to any rights or obligations to reinvest or to reserve cash, will be distributed according to a waterfall: first to all investors until they have received a return of their capital contributions; thereafter the waterfalls will provide for distributions to different partners at different internal rates of return, to be negotiated and reflected in LPAs subject to ADB's written no-objection. Any subsequent change of distribution waterfall in LPAs, if any, will be subject to ADB's written no-objection. Public investors are expected to require a hurdle rate of 2%; SDIHG seeks a hurdle rate of 3%; PIC investors are expected to require a hurdle rate of 8%. Thereafter, remaining funds available for distribution are expected to be split 80% to investors pro rata according to their capital contributions and 20% to the GPs in addition to the financial return requirements, based on: (i) climate performance of the portfolio: over 10% invested in transformational projects & over 60% invested in advanced benefits and transformational projects; and (ii) the overall climate targets of SGDF: From 2025, minimum actual CO<sub>2</sub> emission reduction of 2.5 million tons per annum of all funds.

### C. Key Persons Involved in Implementation

<b>Oversight Body</b>	
<b>Executing Agency</b> Shandong Provincial Government	Mr. Shi Jun Deputy division director Shandong Province Finance Bureau Telephone No.: +86 531 8266 9598 Fax No.: +86 531 8266 9839 Email: <a href="mailto:zwjrsd@163.com">zwjrsd@163.com</a>
<b>Implementing Agency:</b> SDIHG	Mr. Meng Lei Chairman SDIHG Telephone No.: +86 531 8619 7676 Fax No.: +86 531 86197677 Email: <a href="mailto:menglei@sdfztz.com">menglei@sdfztz.com</a>
	Mr. Zhang Bing Director Project Preparation Office SGDF Telephone No.: +86 531 8619 7697 Fax No.: +86 531 8619 7677 Email: <a href="mailto:zhangblx@126.com">zhangblx@126.com</a>
<b>Fund Management</b>	
<b>Company:</b> CICC	Qiyun Yi General Manager Fund Management Company Shandong Green Development Fund Telephone No.: +86 21 5879 6226 Fax No.: +86 10 6535 3058 Email: <a href="mailto:eric.yi@cicc.com.cn">eric.yi@cicc.com.cn</a>
	Yuxi Wang Deputy General Manager Fund Management Company Shandong Green Development Fund Telephone No.: +86 21 5879 6226 Fax No.: +86 10 6535 3058 Email: <a href="mailto:yuxi.wang@cicc.com.cn">yuxi.wang@cicc.com.cn</a>
<b>Asian Development Bank</b>	
Director Public Management, Financial Sector, Regional Cooperation, East Asia Department	Ying Qian Director Asian Development Bank Telephone No. +632 632 6396 Fax No. +632 636-2384 Email: <a href="mailto:yqian@adb.org">yqian@adb.org</a>

Mission Leader

Hubert Jenny  
Principal Infrastructure Finance Specialist  
Asian Development Bank  
Telephone No. +86 10 8573 0909  
Fax No. +86 10 8573 0808  
Email: [hjenny@adb.org](mailto:hjenny@adb.org)

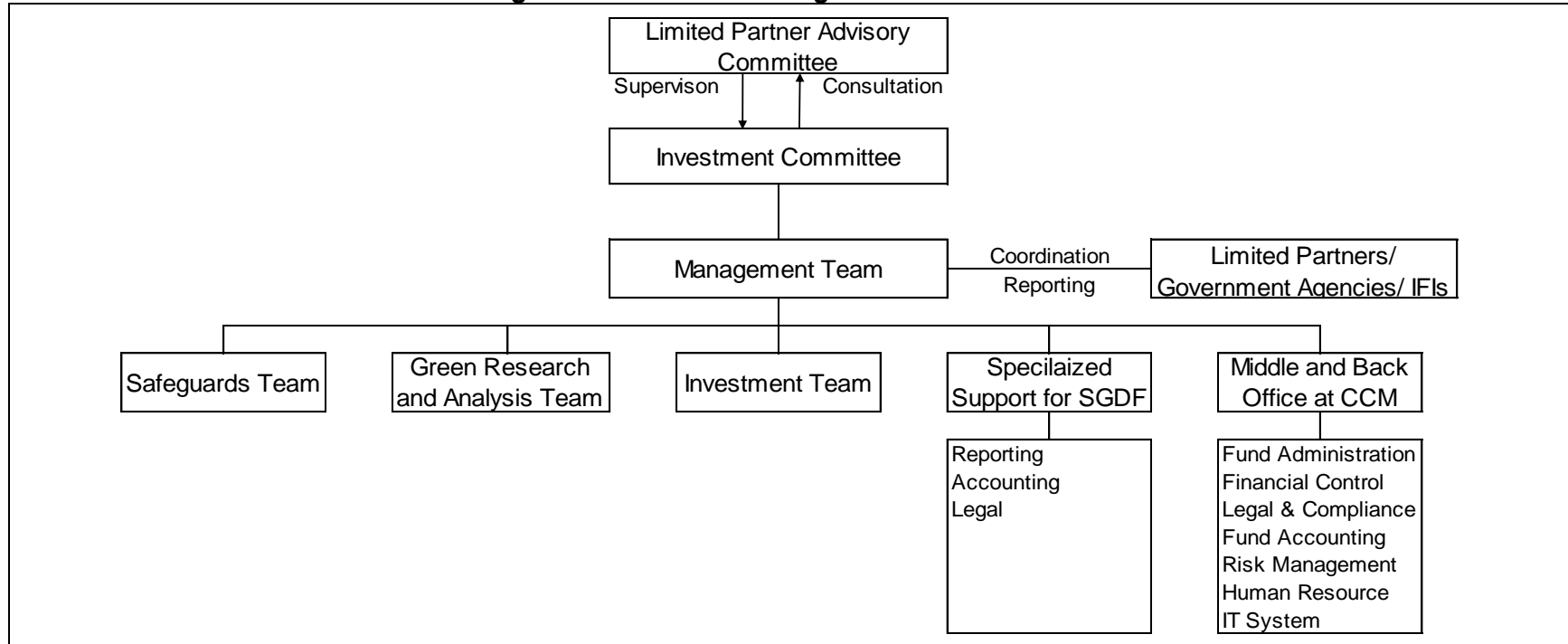
Co-Mission Leader

Yihong Wang  
Senior Investment Officer  
Asian Development Bank  
Telephone No. +86 10 8573 0909  
Fax No. +86 10 8573 0808  
Email: [wyihong@adb.org](mailto:wyihong@adb.org)

---

## D. Project Organization Structure

**Figure 2: SGDF Funds' Organizational Structure**



CCM=CICC Capital Management Co., Ltd; IFI=international financing institution, SGDF=Shandong Green Development Fund, IT= information technology

#### IV. COSTS AND FINANCING

25. The Government requested a financial intermediation loan of \$100 million (Euro equivalent at the time of the loan negotiation) from ADB's ordinary capital resources to help finance the Project. The loan will have a 20-year term, including a grace period of 15 years; an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year and such other terms and conditions are set forth in the draft loan and project agreements. Based on the straight-line method, the average maturity is 17.75 years, and the maturity premium payable to ADB is 0.20% per year

26. The tentative financing plan for the project is presented in Table 6. ADB finances: (i) investments in qualified enterprises by funds to pay for goods, works and services for qualified subprojects; (ii) the costs of operating the funds, including taxes and duties; and (iii) capacity development (mostly services, but potentially also goods).

**Table 6: Summary Financing Plan (SGDF-PRC)**

Source	Amount (\$ million)	Share of Total (%)
<b>Sovereign:</b>	<b>298.23</b>	<b>44.0</b>
ADB (Ordinary Capital Resources Financial Intermediation Loan)	100.00	15.0
KfW <sup>a</sup>	113.70	17.0
AFD <sup>a</sup>	84.53	12.0
<b>Public:</b> <sup>b</sup>	<b>363.33</b>	<b>54.0</b>
Qingdao Municipal Government <sup>c</sup>	363.33	54.0
<b>Private:</b> <sup>b</sup>	<b>14.53</b>	<b>2.0</b>
General Partners	14.53	2.0
<b>Total</b>	<b>676.09</b>	<b>100.0</b>

ADB = Asian Development Bank, AFD = Agence Française de Développement, KfW = Kreditanstalt Für Wiederaufbau

<sup>a</sup> KfW approved a loan of €100 million and signed a collaborative co-financing memorandum of understanding with ADB. AFD is approving a loan of €70 million and is signing a collaborative co-financing memorandum of understanding with ADB.

<sup>b</sup> Public and Private Investors' contributions are in Chinese Yuan equivalent.

<sup>c</sup> Qingdao will provide 25% of funds commitment (up to CNY2.5 billion).

Source: Asian Development Bank estimates.

27. Collaborative co-financing with KfW (Kreditanstalt Für Wiederaufbau) and AFD (Agence Française de Développement) is being finalized by the Government to achieve a critical mass of catalytic funds to significantly leverage PIC funds. Additional catalytic funds may be sought at a later stage, especially from the Green Climate Fund. PIC funding at SGDF level is expected to be over 50% (about \$800 million) mostly from private and institutional investors (pension funds and life insurance) and at the subproject level from one to two third of the total investment mostly from commercial banks. The leveraging ratio of the IFI and public funding is expected to be over five.

#### A. Cost Estimates Preparation and Revisions

28. ADB tested the Shandong Green Climate Assessment Guidelines and the CO<sub>2</sub> emission reduction as well as the environmental and social co-benefits on 10 subprojects concepts, including three pre-feasibilities on (i) *Transformational Energy Management for Zero Energy – Zero Waste at Expressway Service Centers in Shandong Province*: Low carbon - circular economy of service stations along the expressways based on micro-grid for energy production

and distribution from renewable energy available locally and systematic enhancement of energy savings measures, allowing the setting-up of service stations in isolated and remote areas without access to electricity; (ii) *Solar Smart-Grid for Inclusive Access to Information Communication Technology in Shandong Province*: Inclusive Photovoltaic Power Generation for telecom towers for mobile phones, wifi and Internet of Things equipped with solar panels; and (iii) *Large Scale Biomass Delivers Decarbonization and Improves Urban – Rural Linkages in Shandong Province*: Carbon storage biomass renewable energy production in peri-urban areas. The cost estimates of the three appraised subprojects have been prepared based on the information provided by the three owner companies and summarized by ADB. The appraised total costs of those three representative subprojects is over \$600 million with total CO<sub>2</sub> emission reduction of 3.5 million tons per year corresponding to a displacement of about 178,000 tons of coal and resulting in the reduction of NO<sub>x</sub> of 2,000 tons per year and SO<sub>2</sub> by 3,700 tons per year. One subproject linked to fossil fuel (improved gas boilers) was dropped and the other six subprojects are under preparation. The three pre-feasibility studies level cost estimates and the remaining subprojects concepts with primary cost estimates are shown in the Supplementary Documents accessible from the Appendix 2 of the Report and Recommendation of the President.

## B. Key Assumptions

29. The following key assumptions underpin the cost estimates and financing plan of the first three subprojects and provided as examples of the type of climate positive subprojects to be financed by SGDF, subject to approval by the Investment Committee of the FMC:

- (i) Exchange rate (as of 23 June 2019):
 

CNY1.00	=	\$0.1456	or	€0.1281
\$1.00	=	CNY6.8699	or	€0.8796
€1.00	=	CNY7.8082	or	\$1.1369
- (ii) Physical and Price contingencies have not been included (at pre-feasibility study level) for a Financial Intermediation Loan.
- (iii) Interest during implementation for ADB loan are not capitalized under the ADB loan.
- (iv) Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

## C. Detailed Cost Estimates by Expenditure Category

30. The project can finance (i) investment in funds, including cost of operating the funds; (ii) goods and services for capacity development.



**Table 8: Detailed Cost Estimates by Expenditure Category**

In USD (million)				
Item	Foreign Exchange	Local Currency	Total Cost	% of Total Base Cost
<b>A. Investment Costs</b>				
1. Investment in Funds	284.00	360.07	644.07	96.3%
2. Consultants				
a. Capacity development	10.00	0.00	10.00	1.5%
<b>Subtotal (A)</b>	<b>294.00</b>	<b>360.07</b>	<b>654.07</b>	<b>97.8%</b>
<b>B. Recurrent Costs</b>				
1. Salaries	0.00	15.00	15.00	2.2%
2. Office	0.00	0.00	0.00	0.0%
<b>Subtotal (B)</b>	<b>0.00</b>	<b>15.00</b>	<b>15.00</b>	<b>2.2%</b>
<b>Total Base Cost</b>	<b>294.00</b>	<b>375.07</b>	<b>669.07</b>	<b>100.0%</b>
<b>C. Financial Charges During Implementation</b>				
<b>C.</b> Interest during construction	0.00	3.35	3.35	0.5%
<b>D.</b> Commitment charges	0.00	0.58	0.58	0.1%
<b>Subtotal (D)</b>	<b>0.00</b>	<b>3.93</b>	<b>3.93</b>	<b>0.6%</b>
<b>Total Project Cost (A+B+C)</b>	<b>294.00</b>	<b>379.00</b>	<b>673.00</b>	<b>100.6%</b>

Notes: Numbers may not sum precisely because of rounding.

Source: Asian Development Bank

#### **D. Allocation and Withdrawal of Loan Proceeds**

31. The ADB loan proceeds have been allocated as described in Table 9. The category for allocation of Investment in Funds includes allocation to subprojects, green businesses and sub-funds, which are to be appraised and identified during loan implementation based on the financing requirements of these subprojects.

**Table 9: Allocation and Withdrawal of Loan Proceeds**

No.	Item	Total Amount Allocated for ADB Financing (Euro) Category	Basis for Withdrawal from the Loan Account
1	Investment in Funds	€ [\$90 million equivalent]	100% of total expenditure claimed
2	Goods and Services for Capacity Development	€ [\$10 million equivalent]	100% of total expenditure claimed
	<b>TOTAL</b>	€ [\$100 million equivalent]	

<sup>a</sup> Subject to the condition for withdrawal described in paragraph 6 of Schedule 2 of the Loan Agreement.

Source: Asian Development Bank estimates.

## E. Detailed Cost Estimates by Financier

Table 10: Detailed Cost Estimates by Financier (\$ million)

Item	ADB		IFI (KfW & AFD)		Qingdao		PIC		Total Cost
	Amount <sup>a</sup>	% of Cost Category	Amount <sup>a</sup>	% of Cost Category	Amount <sup>a</sup>	% of Cost Category	Amount <sup>a</sup>	% of Cost Category	Amount <sup>a</sup>
<b>A. Investment Costs</b>									
1. Investment in Funds	90.00	14.60%	194.00	30.12%	360.00	55.90%	0.00	0.00%	644.00
2. Consultants									
a. Capacity development	10.00	100.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	10.00
<b>Subtotal (A)</b>	<b>100.00</b>	<b>15.29%</b>	<b>194.00</b>	<b>29.66%</b>	<b>360.00</b>	<b>55.05%</b>	<b>0.00</b>	<b>0.00%</b>	<b>654.00</b>
<b>B. Recurrent Costs</b>									
1. Salaries	0.00	0.00%	0.00	0.00%	0.00	0.00%	15.00	100.00%	15.00
2. Office	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00
<b>Subtotal (B)</b>	<b>0.00</b>	<b>0.00%</b>	<b>0.00</b>	<b>0.00%</b>	<b>0.00</b>	<b>0.00%</b>	<b>15.00</b>	<b>100.00%</b>	<b>15.00</b>
<b>Total Base Cost</b>	<b>100.00</b>	<b>14.95%</b>	<b>194.00</b>	<b>29.00%</b>	<b>360.00</b>	<b>53.81%</b>	<b>15.00</b>	<b>2.24%</b>	<b>669.00</b>
<b>C. Financial Charges During Implementation</b>	<b>0.00</b>	<b>0.00%</b>	<b>0.00</b>	<b>0.00%</b>	<b>4.00</b>	<b>100.00%</b>	<b>0.00</b>	<b>0.00%</b>	<b>4.00</b>
<b>Total Project Cost (A+B+C)</b>	<b>100.00</b>	<b>14.86%</b>	<b>194.00</b>	<b>0.00%</b>	<b>364.00</b>	<b>0.00%</b>	<b>15.00</b>	<b>0.00%</b>	<b>673.00</b>
<b>% Total Project Cost</b>		<b>15.00%</b>		<b>29.00%</b>		<b>54.00%</b>		<b>2.00%</b>	<b>100.00%</b>

a. Includes taxes and duties.

Source: Asian Development Bank estimates

## F. Detailed Cost Estimates by Year

**Table 11: Detailed Cost Estimates by Year**  
(\$ million)

Item	Total Cost	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<b>A. Investment Costs</b>							
1. Investment in Funds	644.07	31.07	102.00	121.00	155.00	125.00	110.00
2. Consultants							
a. Capacity development	10.00	3.00	3.00	3.00	1.00	0.00	0.00
<b>Subtotal (A)</b>	<b>654.07</b>	<b>34.07</b>	<b>105.00</b>	<b>124.00</b>	<b>156.00</b>	<b>125.00</b>	<b>110.00</b>
<b>B. Recurrent Costs</b>							
1. Salaries	15.00	0.75	2.40	2.85	3.60	2.85	2.55
2. Accommodation	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Subtotal (B)</b>	<b>15.00</b>	<b>0.75</b>	<b>2.40</b>	<b>2.85</b>	<b>3.60</b>	<b>2.85</b>	<b>2.55</b>
<b>Total Base Cost</b>	<b>669.07</b>	<b>34.82</b>	<b>107.40</b>	<b>126.85</b>	<b>159.60</b>	<b>127.85</b>	<b>112.55</b>
<b>C. Financial Charges During Implementation</b>	3.93	0.20	0.63	0.75	0.94	0.75	0.66
<b>Total Project Cost (A+B+C+D)</b>	<b>673.00</b>	<b>35.02</b>	<b>108.03</b>	<b>127.60</b>	<b>160.54</b>	<b>128.60</b>	<b>113.21</b>
<b>% Total Project Cost</b>	<b>100%</b>	<b>5%</b>	<b>16%</b>	<b>19%</b>	<b>24%</b>	<b>19%</b>	<b>17%</b>

Source: Asian Development Bank estimates.

## G. Commitment and Disbursement S-Curves

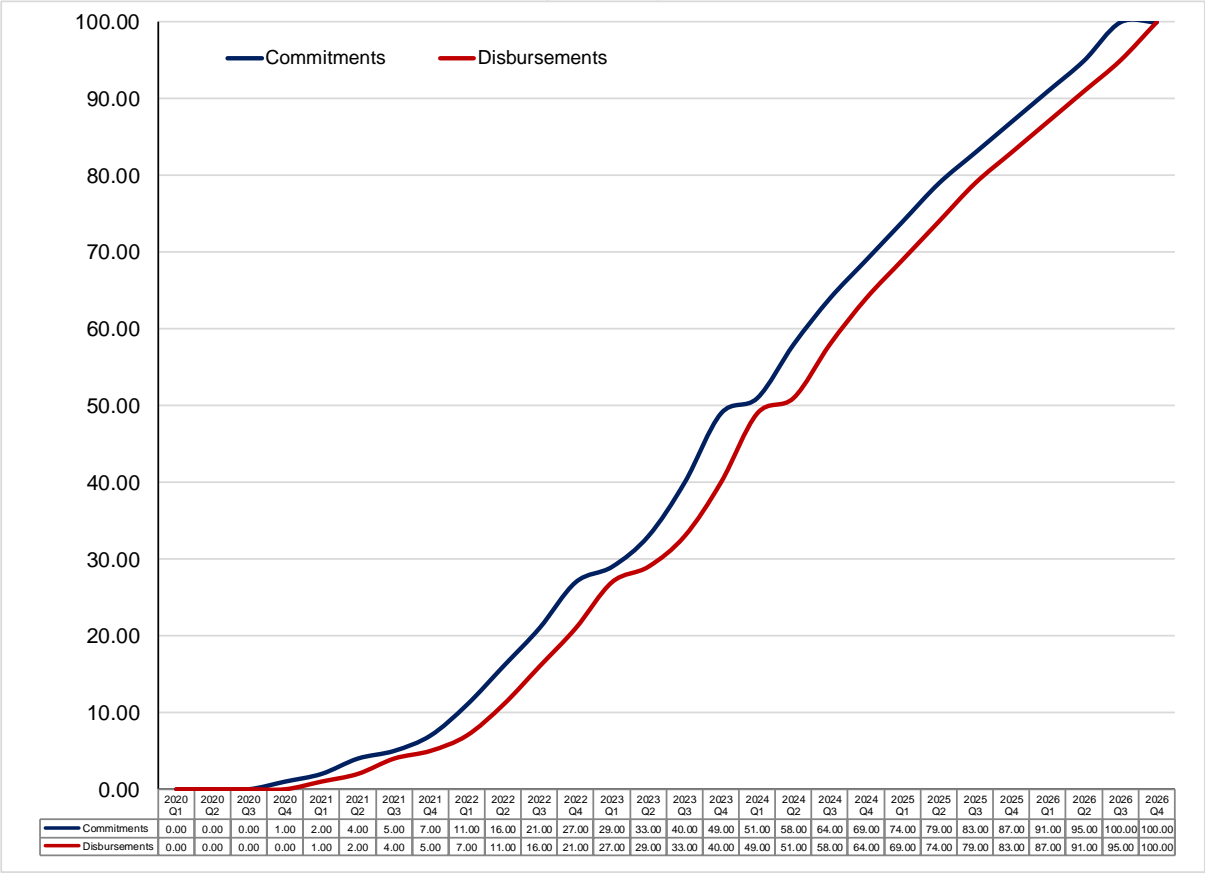
32. The S-curve provides estimates of how the ADB loan will be committed and disbursed during the course of loan implementation. It is only the ADB financing which will be recorded in ADB's systems for internal monitoring and reporting purposes. Counterpart funds and any other co-financing are therefore excluded. The projection for commitment in this case relates to approval of subprojects and contract awards of services as required to undertake the capacity development, policy and knowledge management.

**Table 12: Commitment and Disbursements Projections**  
(\$ million)

Year	Commitments					Disbursements				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2020	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
2021	1.00	2.00	1.00	2.00	6.00	1.00	1.00	2.00	1.00	5.00
2022	4.00	5.00	5.00	6.00	20.00	2.00	4.00	5.00	5.00	16.00
2023	2.00	4.00	7.00	9.00	22.00	6.00	2.00	4.00	7.00	19.00
2024	2.00	7.00	6.00	5.00	20.00	9.00	2.00	7.00	6.00	24.00
2025	5.00	5.00	4.00	4.00	18.00	5.00	5.00	5.00	4.00	19.00
2026	4.00	4.00	3.00	2.00	13.00	4.00	4.00	4.00	5.00	17.00
<b>Total</b>					<b>100.00</b>					<b>100.00</b>

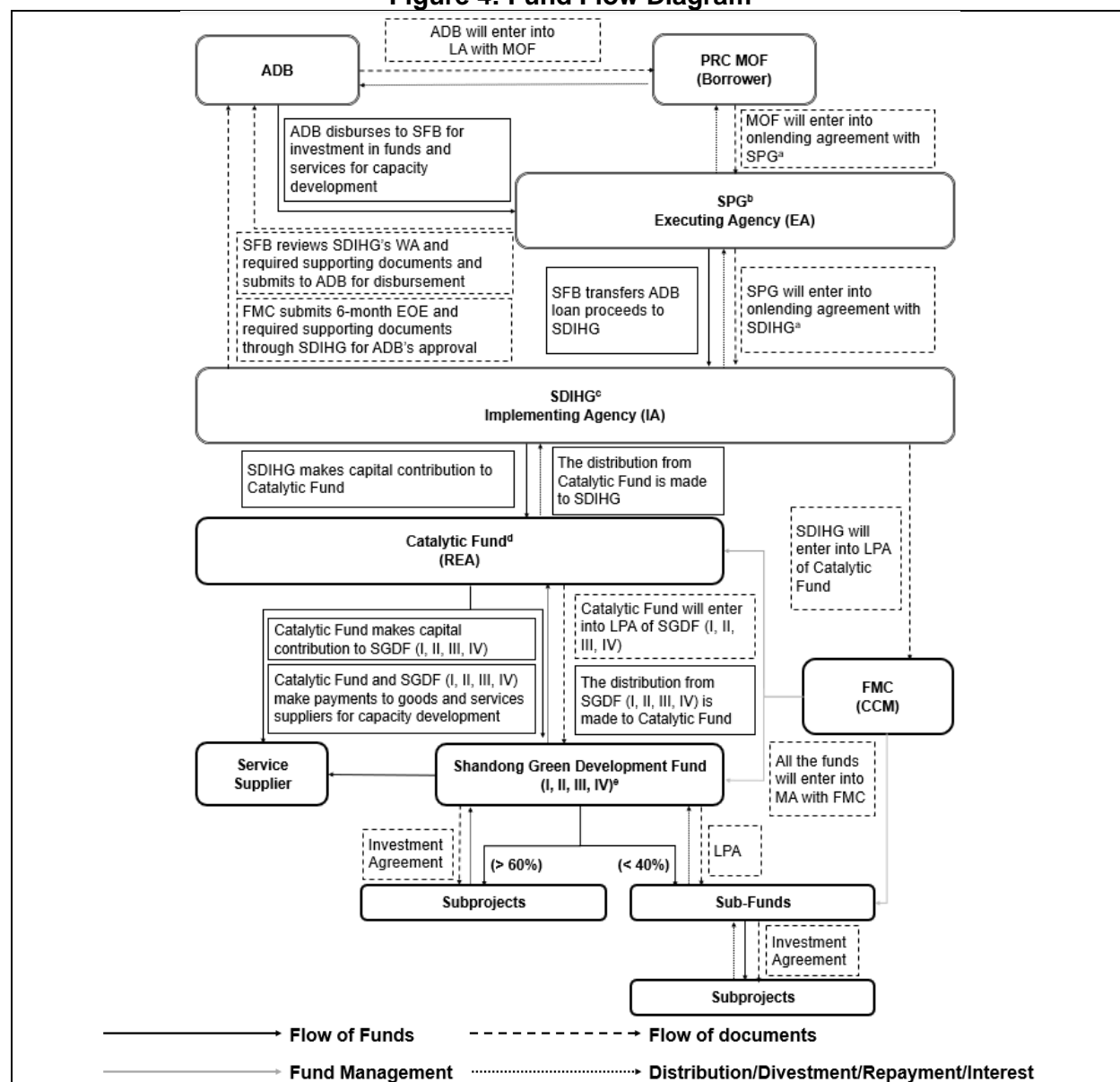
Source: Asian Development Bank estimates.

Figure 3: Commitments and Disbursements S-Curve  
(\$ million)



## H. Fund Flow Diagram

Figure 4: Fund Flow Diagram



<sup>a</sup> ADB loan will be onlent on the same terms and conditions as those received by the PRC MOF.

<sup>b</sup> Advance account will be established and maintained by SFB.

<sup>c</sup> SDIHG will establish and manage a separate project account to channel ADB loan proceeds to the Catalytic Fund.

<sup>d</sup> Catalytic Fund will establish REA and maintain separate ledger for contribution to SGDF (I, II, III, IV), payments to goods and services suppliers for capacity development; and the distribution from SGDF (I, II, III, IV).

<sup>e</sup> SGDF (I, II, III, IV) will establish a bank account and maintain separate ledger for investment to the subprojects, contribution to the sub-funds, payments of goods and services suppliers for capacity development; repayment, interests, divestment and profits from the subprojects, and the distribution from the sub-funds.

ADB = Asian Development Bank, CCM = CICC Capital Management Co., Ltd., EOE = estimate of expenditures, FMC = Fund Management Company, LA = Loan Agreement, LPA = Limited Partnership Agreement, MA = Management Agreement, MOF = Ministry of Finance, PRC = People's Republic of China, REA = Revolving Escrow Account, SDIHG = Shandong Development Investment Holdings Group, SFB = Shandong Province Finance Bureau, SGDF (I, II, III, IV) = Shandong Green Development Fund (I, II, III, IV), SPG = Shandong Provincial Government, WA = withdrawal application. Source: Asian Development Bank.

33. **Disbursement Processing Sequence.** The following disbursement sequence will be followed:

- (i) FMC prepares six-month's disbursement projections (based on estimates for market demand for potential subprojects, and the needs of capacity development), and submits through SDIHG for ADB's project division endorsement;
- (ii) SDIHG submits a withdrawal application for advance after confirming that all the disbursement conditions have been met, and the six-month's disbursement projections to SFB for checking and transmission to ADB;
- (iii) ADB reviews the withdrawal application and makes necessary advance to the advance account maintained by SFB;
- (iv) The loan proceeds are transferred from the advance account to SDIHG after the receipt of funds by SFB from ADB, following the necessary domestic procedures;
- (v) SDIHG makes capital contribution to the revolving escrow account (REA) of Catalytic Fund based on the six-month disbursement projections approved by ADB;
- (vi) Catalytic Fund makes capital contribution to SGDF (I, II, III, IV) and payments to service suppliers for capacity development; and
- (vii) SGDF (I, II, III, IV) makes investment to the subprojects, makes capital contribution to the sub-funds, and makes payments to service suppliers for capacity development.

## V. FINANCIAL MANAGEMENT

### A. Financial Management Assessment

34. The financial management assessment (FMA) was conducted in June 2018 in accordance with *ADB's Guidelines for the Financial Management and Analysis of Projects and the Financial Due Diligence: A Methodology Note*. The assessment covers financial and legal status, accounting staffing, accounting policies and procedures, fund flow arrangements, financial reporting and monitoring procedures and practice, financial management information systems in place, and requirements, guidelines and results of internal and external audits.

35. The FMA results for SDIHG show that financial management systems and procedures of SDIHG are all in place to perform proper financial management and reporting necessary for smooth implementation of the project. SDIHG practices accrual-based accounting and follow business accounting standards of the PRC, which are consistent with the international accounting standards. Their accounting procedures are aligned with the regulations and policies issued by MOF, which are considered effective and adequate for the Project.

36. For this Project, SDIHG delegates to the FMC the management of SGDF. The FMC and the newly recruited staff are likely to be not familiar with ADB's guidelines and procedures on procurement, disbursement and safeguard standard required by ADB. Appropriate measures including capacity development activities for SDIHG and the FMC staff were agreed between SDIHG and ADB and will be implemented before loan effectiveness.

37. SDIHG's internal controls and systems will be strengthened by CCM in the FMC. The FMC will adopt the financial management systems and procedures put in place based on CICC systems and procedures and will meet ADB requirements. The external audit reports from 2015 to 2018 for both SDIHG and CCM have unqualified opinion. CCM qualifies as *the institution of privately offered investment funds* by the Asset Management Association of China and as such is also highly regulated. The financial management risks before mitigation were assessed to be substantial considering that SGDF is a new entity even with the benefits from the professional and financial management expertise of CCM.

38. SDIHG, as a large state-owned enterprise (SOE) and a preferred infrastructure investment vehicle for Shandong Province, fully complies with the regulator's prudential regulations and is under constant monitoring by the SASAC (State-owned Assets Supervision and Administration Commission). Its profit margin is moderate. It is financially robust and has the financial strength to undertake the fundamental investment risks including technical, financial, and credit risks, and market risks including foreign exchange rate risk and interest rate risk associated with the ADB loan. When dealing with foreign exchange rate risk and interest rate risk, SDIHG expects to obtain regular monitoring report and professional advices from the FMC, the Account Bank and other financial intermediaries and will have timely access to related risk-mitigating financial instruments and measures arranged by the Account Bank and the FMC.

39. The existing financial management arrangements for executing agency, implementing agency and the FMC indicate that they have adequate capacity to administer the advance fund procedure and statement of expenditure (SOE) procedure. Shandong Province Finance Bureau (SFB) will be accountable and responsible for proper use of advances to the advance account. The implementing agency, the Catalytic Fund and the SGDF (I, II, III, IV) shall maintain a special bank account or separate bank account ledger where ADB loan will be channeled.

40. The following actions are required to be taken by the related parties:

**Table 13: Finance Management Action Plan**

No.	Actions	Timeline
1	Investment strategy and the selection process (template) of Investment Agreement shall be reviewed and accepted by ADB.	At the time of ADB's prior review of each SGDF fund and before any Investment is approved or signed for the first 3 subprojects and for subprojects above the free limit of \$75 million.
2	Limited Partnership Agreements and other Fund Documents (as defined in the Loan and Project Agreements) under SGDF are to be developed by the FMC with ADB no objection for each instance.	For the Catalytic Fund and SGDF I, prior to initial loan withdrawal; for each subsequent senior fund and each sub-fund, before the LPA is signed and before any funds are committed or invested by any Fund.
7	The FMC needs to get a recruitment plan and execute it on a timely basis.	In line with the ADB loan project implementation progress.

ADB = Asian Development Bank, FMC = fund management company, SDIHG = Shandong Development Investment Holdings Group

## **B. Disbursement Arrangements for ADB Funds**

41. The ADB's loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time) and detailed arrangements agreed upon between the Government and the ADB. Training for project staff on disbursement policies and procedures is available online.<sup>11</sup> Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

42. Loan proceeds will be used for (i) making investments, through Funds, in Qualified Enterprises to be applied to expenditures on Qualified Subprojects, (ii) paying Fund costs in accordance with the Fund Documents and (iii) paying for Goods and Services, and as required to undertake the capacity development. The FMC is required to submit the Investment Agreements and due diligence review documents for the first three subprojects and the subprojects above the free-limit proposed to receive SGDF investment, including technical, economic, financial, environmental and social safeguards based on the selection criteria and requirements in the ESMS to SDIHG for the SFB for checking and forwarding for ADB's project division review and approval.

43. The FMC will be responsible for preparing disbursement projections; collecting and retaining supporting documents to SFB. SFB will be responsible for checking and submitting the FMC's disbursement projections and withdrawal applications to ADB.

44. **Advance fund procedure.** A separate advance account should be established and maintained by the executing agency through SFB. The currency of the advance account is Euro. The advance account is to be used exclusively for ADB's share of eligible expenditures. SFB is accountable and responsible for proper use of advance to the advance account (Figure 4). The total outstanding advance to the advance account should not exceed the estimate of ADB's share of expenditures to be paid through the advance account for the forthcoming six months. SDIHG, through SFB, may request initial and additional advances to the advance account based on an

<sup>11</sup> Disbursement eLearning. [http://wpqr4.adb.org/disbursement\\_elearning](http://wpqr4.adb.org/disbursement_elearning)



Estimate of Expenditures (EOE) sheet setting out the estimated expenditures to be financed through the account for the forthcoming six months.<sup>12</sup>

45. Supporting documents should be submitted to ADB or retained by SFB, SDIHG and the FMC in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time) when liquidating or replenishing the advance account.

46. **Statement of expenditure.** Considering the EA's and SFB's administration of attaching voluminous documentation for numerous and small amounts of sub-loans to withdrawal applications, the statement of expenditures (SOE) procedure will be used for reimbursement of eligible expenditures or liquidation of advances to the advance account. SFB, SDIHG and the FMC are required to ensure that supporting documents and records for the ADB's loan amount claimed under SOE procedure are maintained and made readily available for review during ADB's disbursement and review missions, upon ADB's requests for submission of supporting documents on a sampling basis, and for independent audit.<sup>13</sup>

47. **Conditions for withdrawal/disbursement.** No withdrawals shall be made from the Loan Account until (a) ADB has issued a written non-objection to the Fund Contracts for the Catalytic Fund and for the first mixed-financing fund under the Catalytic Fund ("SGDF I"); (b) the Limited Partnership Agreements and Fund Management Agreements for the Catalytic Fund and for SGDF I have been executed by the General Partner(s) and such of the limited partners as are necessary, in ADB's determination, for these Funds to commence operations; (c) the Catalytic Fund and SGDF I are licensed and registered with such authorities of the Borrower as required by regulation for both to commence operations; (d) the Project Executing Agency has entered into the Onlending Agreement with the Project Implementing Agency; and (e) the Catalytic Fund, SGDF I and the Fund Manager have adopted the ESMS, and the Fund Manager has retained an appropriately qualified and experienced full-time staff to manage implementation of the ESMS.

48. Before the submission of the first withdrawal application, SDIHG through Ministry of Finance (MOF), will submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the government, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is in accordance with the ADB's *Loan Disbursement Handbook* (2017, as amended from time to time). Individual payments below such amount should be paid (i) by the executing agency and/or implementing agency and subsequently claimed to ADB through reimbursement, or (ii) through the advance fund procedure, unless otherwise accepted by ADB. The borrower should ensure sufficient category and contract balances before requesting disbursements. Use of ADB's Client Portal for Disbursements (CPD).<sup>14</sup> system is encouraged for submission of withdrawal applications to ADB.

### C. Accounting

49. SFB will maintain separate accounts for ADB loan including foreign currency withdrawal accounts (subject to regulatory approval); SDIHG will maintain CNY account; The FMC will maintain the accounts at the Catalytic Fund and SGDF series of Funds (I to IV) for drawdown,

<sup>12</sup> ADB. 2017. *Loan Disbursement Handbook*, Appendix 8A.

<sup>13</sup> ADB. 2017. *Loan Disbursement Handbook*, Appendix 7B and Appendix 7D.

<sup>14</sup> The CPD facilitates online submission of WA to ADB, resulting in faster disbursement. The forms to be completed by the Borrower are available online at <https://www.adb.org/documents/client-portal-disbursements-guide>.

and payments including accounts for any funds established under Project and prepare an annual consolidated statement of utilization of funds.<sup>15</sup> (SUF) for the Project in accordance with accounting principles acceptable to ADB.

50. In addition to the annual SUF, the FMC and each Fund shall provide to ADB its annual financial statements prepared in accordance with financial reporting standards acceptable to ADB.

51. ADB shall issue no objection before funds are disbursed to the first three subprojects approved for Fund investment. Whenever a Fund proposes to make an investment in a Qualified Enterprise where the proposed investment amount exceeds the Free Limit of \$75 million, SDIHG shall submit or cause the FMC to submit to ADB an application for approval of the investment, which shall contain a description and appraisal of the Qualified Subproject and Qualified Enterprise, the terms and conditions of the proposed investment, drafts of the Investment Agreement and Subproject Agreement for the proposed transaction and such other information as ADB shall reasonably request. An investment shall be deemed to exceed the Free Limit if the amount of such investment when added to the amount of all other investments previously made or authorized by the relevant Fund for the same Qualified Subproject or the same Qualified Enterprise exceeds the Free Limit.

#### **D. Auditing and Public Disclosure**

52. The FMC will cause the annual consolidated SUF to be audited annually in accordance with international standards on auditing and with the government's audit regulations, or with auditing standards acceptable to ADB, by an independent auditor whose qualifications, experience and terms of reference are acceptable to ADB. SDIHG and the FMC shall seek ADB's no objection if it proposes to change the auditor of the Project accounts [or of the accounts of any Fund]. The audited SUF together with the auditor's report will be furnished in the English language by the FMC through SDIHG to ADB within 6 months after the close of the fiscal year to which they relate.

53. The audit report for the SUF will include a management letter and auditor's opinions, which cover (i) whether the Project financial statements present an accurate and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting standards; (ii) whether the proceeds of the loan were used only for the purposes of the Project; and (iii) whether the executing agency was in compliance with the financial covenants contained in the legal agreements and this PAM (where applicable).

54. In addition to the annual audited statement of utilization of funds the FMC shall, and shall cause each Fund to (i) provide to ADB their annual financial statements prepared in accordance with national accrual-based financial reporting standards acceptable to ADB; (ii) have such financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with international standards for auditing or the national equivalent acceptable to ADB; (iii) as part of each such audit, have the

---

<sup>15</sup> In the case of financial intermediation loans, an audited SUF will be submitted in lieu of the audited project financial statements. The audited SUF will indicate: (i) the opening balance; (ii) the name of financial intermediary; (iii) details of sub loans; (iv) closing balance; (v) comparative figures for prior year; and (vi) cumulative amount to date. The audited SUF will also be accompanied by adequate explanatory notes which will include the basis of preparation, reporting currency, undrawn external assistance, and details of sub loans such as amounts committed, disbursed up to the previous year, disbursed during the current reporting period, cumulative disbursement, undisbursed commitments, percentage of loan utilized, etc.

auditors prepare the auditors' opinion(s) on the financial statements and compliance with any financial covenants it is required to maintain as specified in the Loan Agreement or the Project Agreement, and a management letter; and (iv) furnish to ADB not later than 6 months after the end of the fiscal year to which they relate, copies of such audited financial statements and auditors' opinion(s), all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request.

55. The Government, SDIHG and the FMC have been made aware of ADB's approach to delayed submission, and the requirements for satisfactory and acceptable quality of the SUF and of the accounts of the FMC and each Fund.<sup>16</sup> ADB reserves the right to require a change in the Project account auditor (in a manner consistent with the constitution of the borrower) or of the FMC's and Funds' auditor(s), or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the Project's and the FMC's and Funds' financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

56. Public disclosure of the annual audited SUF for the project, including the auditor's opinion on the statements, will be guided by ADB's Access to Information Policy (2018).<sup>17</sup> and the covenant in the in the legal agreements. After the review, ADB will disclose the audited SUFs and the opinion of the auditors on the statements no later than 14 days after ADB's confirmation of their acceptability by posting them on ADB's website. The management letter, additional auditor's opinions, and audited FMC and Fund entity financial statements will not be disclosed.

---

<sup>16</sup> ADB's approach and procedures regarding delayed submission of audited project financial statements:

- (i) When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (a) the audit documents are overdue; and (b) if they are not received within the next 6 months, requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.
- (ii) When audited project financial statements are not received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will (a) inform the executing agency of ADB's actions; and (b) advise that the loan may be suspended if the audit documents are not received within the next 6 months.
- (iii) When audited project financial statements are not received within 12 months after the due date, ADB may suspend the loan.

<sup>17</sup> ADB. 2018. *Access to Information Policy*. Manila.

## VI. PROCUREMENT AND CONSULTING SERVICES

57. All procurement to be financed under the Project, through the ADB, must be carried out in accordance with ADB's procurement policy and regulations for Financial Intermediary. Procurement including the recruitment of consultants must follow ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time).<sup>18</sup>

### A. Advance Contracting

58. **Advance contracting.** Consultants recruited through Individual Consultants and Firms under the \$10 million Capacity Development Program are summarized hereafter:

- (i) **Monitoring and Evaluation / Reporting and Verification (\$3 million Individual/ICS):** Reporting module support including: MERV; Financial and Project Management (PPMS), Safeguards (ESMS) and Gender; GHG and CO<sub>2</sub> Assessment; Bi-annual ADB reporting;
- (ii) **Green Rating (1 million Firm / QBS):** Green rating of subprojects and portfolio;
- (iii) **Design Review Advisory (\$5 million):** Subprojects screening; Feasibility Study Review; Climate/Green Indicator Assessment; Sector Specialists and Green Procurement;
- (iv) **Capacity Development (\$1 million Individual/ICS & RPS):** Shandong Climate Investing Policy Advisory; Institutional strengthening; Capacity building; Climate resiliency policy for 14th Five Year Plan and input into Province Low Carbon Development and Climate Resilience Policies; Impact Studies; Education; Training, including overseas training.

### B. Procurement of Goods, Works, and Consulting Services

59. Procurement under FI loan will be undertaken by the respective beneficiaries in accordance with established private sector or commercial practices, which are acceptable to ADB. Respective beneficiaries may use Open Competitive Bidding (OCB) for the purchase of large single items or in cases where large quantities of like goods can be grouped together for bulk purchasing. All the procurement under FI loan will ensure (a) reasonable prices as a result of preferably competitive procedures, (b) procurement from eligible source countries, and (c) fair canvassing and/or evaluation when selecting suppliers.

### C. Procurement Plan

60. Procurement under the loan will be undertaken by Qualified Enterprises for their respective Qualified Subproject in accordance with established private sector or commercial procurement practices (Annex 4.2), which are acceptable to ADB. The Qualified Enterprises may use Open Competitive Bidding for the purchase of large single items or in cases where large quantities of like goods can be grouped together for bulk purchasing. All the procurement will ensure (a) reasonable prices as a result of preferably competitive procedures, (b) procurement from eligible source countries, and (c) fair canvassing and/or evaluation.

61. The FMC is responsible for the procurement of consultants under the Capacity Development Program. A procurement plan for Consulting Services for the first 18 months has been prepared and is attached in Annex to the PAM.

<sup>18</sup> Available at <https://www.adb.org/documents/adb-procurement-policy>.

**D. Consultant's Terms of Reference**

62. The Outline Terms of Reference and scope of work for consultant are in Annex 4.4.

## VII. SAFEGUARDS

63. In compliance with ADB's Access to Information Policy and consultation requirements, the safeguard documents will be posted on ADB's website.

64. The Project has been categorized following ADB SPS: (i) FI for Environment with subprojects Category A Environment excluded from financing by SGDF; (ii) FI for Resettlement with subprojects Category A Resettlement excluded from financing by SGDF; (iii) FI-C for Indigenous People. In addition, the Project is classified Effective Gender Mainstreaming with a Gender Action Plan accessible from the Linked Documents in Appendix 2 of the Report and Recommendation of the President and a Gender Framework accessible from the Supplementary Documents of the Report and Recommendation of the President.

65. **Sustainability / Due diligence:** The design of the SGDF with SDIHG, FMC and the co-financiers provide a robust design, in which risk management and risk mitigation are embedded.

- (i) Technical and climate change. Develop eligibility systems per global climate change norms; undertake technical due diligence; define climate impact indicators; establish climate screening and appraisal systems; and provide design advice for new and advanced technologies.
- (ii) Economic and financial. Develop criteria and business processes, such as economic and financial internal rate of return, hurdle rates; capital markets roadmap; institutional investor roadmaps; 'Climate Finance Value for Money' frameworks; and credit rating approaches for the financial intermediary, SGDF. The Project: (a) provides analysis to underpin prioritization of Climate Finance needs; (b) develops economic eligibility criteria for climate finance; and (c) establishes clear guidance for SGDF on appropriate valuation techniques and data sources for nonmarket benefits generated by climate finance.
- (iii) Governance. Financial management, procurement, integrity due diligence, anticorruption, policy and legal, other institutional mechanisms and on lending mechanisms to be implemented through the capacity development of SGDF.
- (iv) Legal. Develop options for capital infusion from institutional investors; assess the legal aspect of capital markets access; and use escrow structures for risk mitigation.
- (v) Safeguards. SGDF follows the ESMS customized for the type of projects to be financed by SGDF. The Project monitors subproject's beneficiaries, including vulnerable people, through the socio-economic data disaggregated by gender and recorded in MERV report.
- (vi) Stakeholder coordination. Work with development partners and private, institutional and commercial funds on co-financing, policy development, institutional arrangements and harmonizing safeguard principles and requirements across co-financiers.
- (vii) Environmental co-benefits include improved air quality, water and soil quality, and biodiversity:
  - a) At a base level, ADB SPS and ADB's Prohibited List including exclusion of fossil fuel and asbestos require full compliance.
  - b) At a higher level, the Project can act as catalyst for broader adoption of policies and process which will provide significant co-benefits such a better air/water quality in a broader region or in other regions.
  - c) At SGDF level, the output of 25 million tons of CO<sub>2</sub> reduction displaces around 10 million tons of coal resulting in the reduction of: 80,000 tons of

- nitrogen oxide (NO<sub>x</sub>), 70,000 tons of sulphur oxide (SO<sub>x</sub>).
- d) At the subproject level, co-benefits are assessed during project feasibility and rewarded via the green climate indicators. The three indicative projects have environmental co-benefits, demonstrated in the Project Pre-FSRs: the 'Transformational Energy Management for Zero Energy at Expressway Service Centers Service Stations' reduces air pollution (SO<sub>x</sub> 2,680 and NO<sub>x</sub> 1,351 tons/year respectively), recycles solid and liquid waste and provides an education forum for showcasing zero waste technologies.

## **A. Environmental and Social Management System**

66. The CICC will ensure that prior to first disbursement of the ADB loan, CICC will (i) adopt an ESMS at FMC satisfactory to ADB; (ii) establish a Safeguards Unit in FMC and recruit two full-time FMC Safeguards Specialists; and (iii) enhance the capacity of the FMC Safeguard Specialists and the FMC Safeguard Unit in identifying and implementing environment and resettlement Category B to comply with applicable laws and regulations of PRC and Shandong Province; ADB SPS and the ESMS.

67. The FMC will ensure that prior to approval of subproject applications, the required safeguards documents for Category B and C subprojects are submitted to ADB for review and approval for the first three subprojects, and until such time ADB confirms that the FMC Safeguards Unit is fully staffed and the FMC safeguards specialists have sufficient capacity to do their own due diligence and review of safeguards documents.

68. The FMC will ensure that prior to approval of subproject applications of more than the free limit of €70 million, the required safeguard documents for subprojects are submitted to ADB for review and approval.

69. The FMC will ensure that an external monitoring agency, acceptable to ADB, is engaged to carry out its own monitoring and verification of environment and social safeguards implementation and assess ESMS implementation, and submit semi-annual monitoring reports annual consolidated environmental and social reports to FMC and ADB.

## **B. Disclosure**

70. For information disclosure, the FMC through SDIHG will submit to ADB the following documents for review and disclosure on ADB's website:

- (i) Semi-annual monitoring reports
- (ii) Annual consolidated environmental and social reports during Project implementation stage, including environmental performance and other social issues such as community concerns and internal labor issues in English.

71. The FMC will ensure that all the subprojects will provide relevant environmental and social safeguards information, including information from the above documents, in a timely manner, in an accessible place and in a form understandable to affected people, surrounding local communities, and other stakeholders before Project approval and during Project implementation.

## **C. Grievance Redress Mechanism**

72. The FMC needs to develop and operate the SGDF level grievance redressing mechanism (GRM) to ensure a proper GRM at all levels to be established and operated, so that all complaints under the Project will be recorded and addressed systematically. At the subproject level, regardless of environmental and social categorization, all subprojects shall establish GRM and implement them accordingly. At SGDF level, the FMC Safeguard Specialists will be the main focal person of the GRM and will ensure effective GRM implementation and GRM information disclosure through close cooperation and communications with subprojects.

**D. Prohibited investment activities**

73. Pursuant to ADB's Safeguard Policy Statement 2009, ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the Safeguard Policy Statement (2009). In addition, SGDF cannot finance subprojects and sub-funds with investment related to fossil fuel and using asbestos containing material.



## VIII. GENDER AND SOCIAL DIMENSIONS

74. The FMC shall cause SGDF and the municipal/sectoral sub-funds to ensure that contractors and service providers engaged in the Project and in the subprojects:

- (i) give equal pay for equal work regardless of gender, ethnicity or social group;
- (ii) give priority to women in the employment and training opportunities generated under the Project;
- (iii) maximize the employment of local people who meet the job and efficiency requirements for subproject construction, operation and maintenance;
- (iv) provide workers with adequate on-the-job and safety training;
- (v) disseminate information on sexually transmitted diseases (including HIV/AIDS) and human trafficking to subcontractors/employees and local communities surrounding the subproject construction sites;
- (vi) implement HIV/AIDS awareness and prevention training for subcontractors/employees;
- (vii) implement human trafficking awareness activities;
- (viii) provide necessary measures to ensure the safety and health of its subcontractors/employees; and
- (ix) observe local customs concerning acceptable behavior towards the local population. This is included in subproject Selection Criteria and the FMC is required to ensure this requirement is met with respect to future subprojects.

75. The FMC shall and shall cause the SGDF and the municipal/sectoral funds to ensure that the PRC's applicable laws and regulations are complied with during subproject implementation and that specific provisions are included in bidding documents and contracts financed by the ADB Loan under the Project requiring that the contractors, among other things:

- (i) comply with the PRC's applicable labor law and regulations and incorporate applicable workplace occupational safety norms;
- (ii) do not use child labor;
- (iii) do not discriminate workers in respect of employment and occupation;
- (iv) do not use forced labor; and
- (v) do not restrict workers from developing any legally permissible means of expressing their grievances and protecting their rights regarding working conditions and terms of employment.

76. Subprojects' pre-feasibility studies provide the gender development impacts. The project should, as a minimum, demonstrate that it has considered ways to maximize the local economic benefits of the proposed investment, where possible and incorporate gender sensitive design features to enhance women's inclusion and participation. It should be designed to provide opportunities for enhancing employment either directly (see Cities Development Initiative in Asia sectoral guidelines as an example) or indirectly through enhanced productivity, skills and / or competitiveness.

77. The Project is designed to meet the ADB's *Effective Gender Mainstreaming* categorization, as highlighted from the gender specific indicators in the design and monitoring framework:

- At least 2 million people (of which 50% are women) with strengthened climate and disaster resilience (2019 Baseline: 0)
- At least 2 climate and disaster resilient infrastructure assets and/or services for women and girls established or improved (2019 Baseline 0)

- At least 500 persons including 40% women with increased knowledge and skills in implementing mitigation and low carbon development actions (2019 baseline: 0).

78. Activities outlined focus on (i) ensuring women's equitable participation in the subprojects to be financed by SGDF, including public consultation, (ii) implementing gender-responsive features of the project, (iii) promoting employment and income generation opportunities for women, and (iv) building institutional capacity for gender mainstreaming. The implementation of the gender framework will be financed through the Capacity Development Program and monitored through collection of gender-disaggregated data.

79. Social co-benefits include improved access to education; cultural preservation; health and safety. At base, ADB social development and safeguards need to be addressed adequately, which ensures community involvement and education; limits negative health impacts and promotes safety. At a higher level the Project leads to active adoption of climate positive action by stakeholders involved in the Project, building their community resilience to climate change impacts and ensures that the investments benefits are shared by lower income/disadvantaged or vulnerable groups in terms of employment, community participation and quality of life. In relation to gender, relevant ADB gender policy needs to be addressed adequately, with more effective projects supporting proactive involvement of women in project planning and implementation and the most effective supporting gender mainstreaming. The Project includes technical assistance that will finance knowledge products, workshops, community outreach and specific education programs.

80. Finally, the Project has positive social impacts by building climate resilience in Shandong Province in general and in the targeted project areas in particular. It is expected that the Project will directly benefit about 10 million people in Shandong, and indirectly about 25 million from Shandong, neighboring Provinces. The Project will directly create new employment opportunities and improve local economic development in the Province.

## IX. PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION

### A. Project Design and Monitoring Framework

(Appendix 1 Report and Recommendations to the President)

### B. Monitoring

81. **Project performance monitoring. Project Performance Management System:** The Project performance is monitored through the project performance management system (PPMS). The estimated loan closing date is 31 December 2026 and the Project completion date 30 June 2027. The FMC will establish the PPMS in a form acceptable to ADB to monitor the progress in project implementation during the first 12 months following loan approval. The PPMS ensures the monitoring of Project and subproject's impacts, outcomes and outputs with respect to the climate and financial performance targets, ESMS and Gender set forth in the Design and Monitoring Framework. The PPMS is integrated within the MERV information system developed under the project preparation. Comprehensive project preparation of infrastructure projects is monitored through SOURCE.<sup>19</sup> digital platform available at no cost to SGDF.

82. The compliance status of loan covenants, including the provisions of the ESMS are reported and assessed through the semi-annual progress reports and verified by ADB review missions.

### C. Evaluation

83. ADB and the Government will review the Project implementation jointly at least twice a year during the first 7 years of the loan implementation and on demand during year 8 to 10. In addition, ADB and the Government will undertake a comprehensive midterm review approximately 3 to 4 years after the start of Project implementation. This midterm review will include a detailed evaluation of the Project scope, selection criteria, implementation arrangements, achievement of scheduled targets, and progress on engaging a subsequent batch of subprojects to be financed by SGDF revolving funds. Within 3 months after the end of grace period of the project, the FMC will submit through SDIHG a Project Completion Report (PCR) to ADB. This report will then be the basis for a joint evaluation of the Project conducted by SGDF and ADB during a Project completion review mission to be conducted by ADB. The co-financiers of the Project will join review missions as required.

84. The FMC shall engage an accredited agency or agencies acceptable to ADB to undertake, within 6 months after the physical completion of each subproject, measurement and verification of the reduction in emissions of CO<sub>2</sub> achieved by such subproject and shall provide to ADB the consolidated results of the measurement and verification of such savings and reductions of all physically completed subprojects, with reference to the emissions baseline established before the project implementation and from time to time at ADB's request. The verification can be financed by either the Qualified Enterprises or by the Capacity Development Program.

---

<sup>19</sup> An innovative information technology platform designed to speed up the delivery of infrastructure projects. It is designed to help public sector agencies prepare, manage and publish their infrastructure projects and to attract private sector investment. This cloud-based system (under UN servers) allows to present information on infrastructure project in a transparent and efficient manner, using sector-specific templates. SOURCE is managed by the Sustainable Infrastructure Foundation, a not-for-profit Swiss Foundation. <http://sif-source.org>

## D. Reporting

85. During the 7 years loan implementation period, the FMC will prepare semi-annual progress reports in a format acceptable to ADB and submit these reports within 30 days of the end of each semi-annual period. The semi-annual report will provide: (a) progress achieved by output as measured through the indicator's performance targets in the DMF (b) key implementation issues and solutions (c) an updated lending and disbursement plan and (d) updated implementation plan for the next 6 months; (ii) consolidated audited financial statements; (iii) semiannual environmental and social monitoring reports, including subprojects' environmental management plans; and (iv) a PCR within 3 months of physical completion of the project. The reports are disclosed in ADB website as per ADB's Access to Information Policy.

## X. ANTICORRUPTION POLICY

86. ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the Project. The Mission also noted that to support these efforts, relevant provisions of ADB's *Anticorruption Policy* will be included in the loan regulations and the subprojects documents for the Project. In particular, all contracts financed by the IFIs in general and ADB in particular in connection with the Project shall include provisions specifying the right of ADB to audit and examine the records and accounts of the EA/IA and all contractors, suppliers, consultants, and other service providers as they relate to the Project.

87. To support these efforts, relevant provisions of ADB's Anticorruption Policy are included in the Loan and Project Agreements. In addition, the following characteristics of the Project promote transparency and strengthen governance: (i) scrutiny of potential subprojects (technical, financial, economic, environmental, and social) and Fund investees by the FMC; (ii) the inclusion of anticorruption provisions in the project implementing contracts and in all Limited Partnership Agreements (and/or other Fund Documents) and Investment Agreements.

## XI. ACCOUNTABILITY MECHANISM

88. People who are, or may in the future be, adversely affected by the Project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.<sup>20</sup>

## XII. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

89. All revisions and/or updates, as agreed between SDIHG and ADB, during the course of the implementation are retained in this section to provide a chronological history of changes to implemented arrangements recorded in the PAM.

---

<sup>20</sup> Accountability Mechanism. <http://www.adb.org/Accountability-Mechanism/default.asp>.

<b>No.</b>	<b>PAM Changes/Updates</b>	<b>Date</b>	<b>Remarks</b>
1	Initial draft	13 August 2018	Fact-Finding Mission
2	Second draft	27 August 2018	GCF Board Consideration
3	Third draft	12 June 2019	Fact Finding Mission II
4	Fourth draft	30 June 2019	Pre-MRM
5	Fifth draft	11 July 2019	Post MRM for Loan Neg.

## **ANNEX 1: SUBPROJECT SELECTION CRITERIA**

1. These Eligibility Criteria have been defined by SDIHG in collaboration with ADB and the IFIs during Project preparation following the SGDF Green Climate Assessment Guidelines. The Eligibility Criteria are an entire part of the investment strategy of SGDF and are derived from the climate vulnerability assessment of Shandong province's "*Mitigation and Adaptation Priorities in Shandong*". SGDF will achieve at the portfolio level: (i) Reduction of carbon dioxide emission (CO<sub>2</sub>e) by 25 million tons equivalent over the lifespan of the Project (20 years); (ii) Portfolio balanced with not less than 60% of monies invested into Transformational and Advanced Benefit subprojects, with not less than 10% in Transformational subprojects; (iii) not more than 40% of monies invested into subprojects through third-tier (or lower) sub-funds. 70% of overall SGDF investment must be in subprojects located in Shandong Province.

2. The investment strategy and investment criteria are proposed by the FMC for potential investors to make an investment decision into SGDF as limited partners (LPs), and they will be established in the Fund Documents (as defined in the Loan Agreement). The strategy and criteria set out in ADB-approved Fund Documents cannot be changed without ADB prior written consent. All investments by SGDF must be into Qualified Enterprises and the investments must be applied exclusively to expenditures on Qualified Subprojects, as set out herein and in the Loan Agreement, Project Agreement, ESMS, and GAP.

### **A. Selection Criteria for All Subprojects**

3. To be a "Qualified Subproject" a subproject must meet the technical, financial, economic, environmental, and social criteria in this appendix as well as the criteria in the Loan Agreement and the Project Agreement and any criteria elsewhere in this PAM.

### **B. Subproject Technical Criteria and Review Processes**

4. Any specific undertaking (a "subproject") that contributes to climate change mitigation, measured through CO<sub>2</sub>e emission reduction, or climate change adaptation, as measured through improving the resilience of beneficiaries, as determined by the SGDF Green Climate Assessment Guidelines is a "Qualified Subproject" if it meets the other criteria referenced herein as determined under the processes set out herein.

5. SGDF Funds must invest only in subprojects that endorse the Fund's governance principles and reflect its investment strategy as set out in Fund Documents to which the IFIs have given their non-objection. Potential subprojects will be screened under the SGDF Green Climate Assessment Guidelines, and only those that achieve a qualitative assessment of "Good Practices"; "Advanced Benefits" or "Transformational" will be considered for investment. As part of the screening process, the subproject will be enhanced, where feasible, through Design-Review-Advice funded by the Capacity Development Program to maximize its climate and green benefits with cost effective and best available technologies. Finally, the subproject will be evaluated based on risk assessment and credit rating by the Investment Committee of the FMC.

### **C. Subproject Financial Criteria**

6. All subprojects shall be financially viable as determined through a financial analysis in accordance with guidelines set out in the Fund documents and acceptable to ADB/IFIs.

7. In particular:
  - (i) The estimated subproject investment and operations costs, as well as cash inflows, shall be clearly presented and shall be reasonable.
  - (ii) The financial internal rate of return (FIRR) calculated on a real basis shall be greater than the weighted average cost of capital (in reference to the funding cost of SGDF or the sub-fund, as applicable).
  - (iii) The FIRR shall be robust under various sensitivity scenarios.

#### **D. Subproject Environmental and Social Safeguards Criteria**

8. All subprojects shall meet the following criteria:
  - (i) Each subproject shall meet requirements of the ESMS.
  - (ii) Each subproject shall have all required approvals from relevant national, provincial, and local [environmental] authorities.
  - (iii) Each subproject shall be designed, constructed, and operated in accordance with relevant national and provincial social and environmental laws and regulations.
  - (iv) The subproject's owner shall have complied with all relevant domestic environmental regulations for the existing facilities where the subproject will be implemented, which shall also have all relevant environment approvals.
  - (v) The subproject shall not have significant adverse environmental impacts that are irreversible, diverse, or unprecedented and shall not be "Environment and Involuntary Resettlement Category A" within the meaning of the SPS.
  - (vi) The subproject shall not be Category A and B for Indigenous Peoples within the meaning of SPS.
  - (vii) The subproject shall not use fossil fuel and asbestos-containing material.
  - (viii) The subproject shall not be located in any designated environmental protection zone, ecological sensitive area, or cultural heritage site.
  - (ix) Each subproject shall incorporate a gender assessment and at least 50% a gender action plan following the Gender Framework.
  - (x) Each subproject shall generate employment, local economic development and environmental co-benefits in addition to climate change mitigation and/or adaptation benefits.

#### **E. Selection Criteria for Enterprises**

9. Any incorporated entity that owns a Qualified Subproject is a "Qualified Enterprise" if it meets the criteria for enterprises herein and in the Loan Agreement and Project Agreement and elsewhere in this PAM, as determined under the processes set out herein, including:
  - (i) The enterprise must be financially creditworthy and not have a poor credit record, as recorded in the People's Bank of China credit history database.
  - (ii) The enterprise must meet ADB Integrity Due Diligence.<sup>20F21</sup>
  - (iii) The enterprise must be capable to, and must undertake to, contribute a minimum of 33% of the total subproject investment cost as counterpart financing through a combination of debt and equity.
  - (iv) The enterprise must undertake to enhance its capacities in climate change mitigation or adaptation as well as project planning, financing, implementing and monitoring during the subproject preparation and implementation periods, with the assistance, where appropriate, of the Capacity Development Program as described in the PAM.

<sup>21</sup> ADB. 2015. *Staff Instruction Integrity Due Diligence for Sovereign Operations and Cofinancing*. Manila.

- (v) The enterprise shall comply with relevant domestic environmental and occupational health and safety standards, such as ISO9001/9002; ISO14001 or OHAS18001/ISO45001.



## ANNEX 2: ADB PROHIBITED INVESTMENT ACTIVITIES LIST

The following do not qualify for Asian Development Bank financing:

- (i) production or activities involving harmful or exploitative forms of forced labor;<sup>1</sup> or child labor;<sup>2</sup>
- (ii) production of or trade in any product or activity deemed illegal under host-country laws or regulations, or international conventions and agreements, or subject to international phase outs or bans, such as (a) pharmaceuticals;<sup>3</sup> pesticides, and herbicides;<sup>4</sup> (b) ozone-depleting substances;<sup>5</sup> (c) polychlorinated biphenyls<sup>6</sup> and other hazardous chemicals;<sup>7</sup> (d) wildlife or wildlife products regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora;<sup>8</sup> and (e) trans-boundary trade in waste or waste products;<sup>9</sup>
- (iii) production of or trade in weapons and munitions, including paramilitary materials;
- (iv) production of or trade in alcoholic beverages, excluding beer and wine;<sup>10</sup>
- (v) production of or trade in tobacco; (footnote 10)
- (vi) gambling casinos and equivalent enterprises; (footnote 10)
- (vii) production of or trade in radioactive materials,<sup>11</sup> including nuclear reactors and their components;
- (viii) production of, trade in, or use of unbonded asbestos fibers;<sup>12</sup>
- (ix) commercial logging operations or the purchase of logging equipment for use in primary tropical moist forests or old-growth forests; and
- (x) marine and coastal fishing practices, such as large-scale pelagic drift-net fishing and fine-mesh net fishing, harmful to vulnerable and protected species in large numbers and damaging to marine biodiversity and habitats.

In addition, no funding from SGDF shall be provided to subprojects or sub-funds with investment directly related to fossil fuels and using asbestos containing materials

<sup>1</sup> Forced labor means all work or services not voluntarily performed, that is, work or services extracted from individuals under threat of force or penalty.

<sup>2</sup> Child labor means the employment of children whose age is below the host country's statutory minimum age of employment, or the employment of children in contravention of International Labor Organization Convention No. 138, "Minimum Age Convention" ([www.ilo.org](http://www.ilo.org)).

<sup>3</sup> A list of pharmaceutical products subject to phase outs or bans is available at <http://www.who.int>

<sup>4</sup> A list of pesticides and herbicides subject to phase outs or bans is available at <http://www.pic.int>

<sup>5</sup> The chemical compounds that react with and deplete stratospheric ozone, resulting in the widely publicized ozone holes, are listed in the Montreal Protocol, together with target reduction and phase out dates.

<sup>6</sup> A group of highly toxic chemicals, polychlorinated biphenyls are likely to be found in oil-filled electrical transformers, capacitors, and switchgear dating from 1950 to 1985.

<sup>7</sup> A list of hazardous chemicals is available at <http://www.pic.int>

<sup>8</sup> A list is available at <http://www.cites.org>.

<sup>9</sup> This does not apply to project sponsors that are not substantially involved in these activities. "Not substantially involved" means that the activity concerned is ancillary to a project sponsor's primary operations.

<sup>10</sup> This does not apply to project sponsors that are not substantially involved in these activities. "Not substantially involved" means that the activity concerned is ancillary to a project sponsor's primary operations.

<sup>11</sup> This does not apply to the purchase of medical equipment, quality control (measurement) equipment, and any other equipment for which ADB considers the radioactive source to be trivial or adequately shielded.

<sup>12</sup> This does not apply to the purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.

**ANNEX 3: SAMPLE STATEMENT OF UTILIZATION OF FUNDS**

		<u>201x</u>	<u>201x</u>	<u>Cumulative</u>
<b>A.</b>	<b>Opening cash balance</b>	<u>xx</u>	<u>xx</u>	<u>xx</u>
<b>B.</b>	<b>Sources of funds</b>			
1	ADB loan proceeds	xx		xx
2	Reflows (repayments from SLA 1)		xx	xx
3	Reflows (repayments from SLA 2)			xx
4	Bank's own funds (equity)	xx	xx	xx
5	Others			xx
	Total (sum 1 to 5)	<u>xx</u>	<u>xx</u>	<u>xx</u>
<b>C.</b>	<b>Uses of funds</b>			
1	Subloans to qualified sub-borrowers (SLA 1)			
	ADB share	xx		xx
	Bank share	xx		xx
2	Subloans to qualified sub-borrowers (SLA 2)			
	ADB share		xx	xx
	Bank share		xx	xx
	Total (sum 1 to 2)	<u>xx</u>	<u>xx</u>	<u>xx</u>
<b>D.</b>	<b>Net cash activity (B - C)</b>	<u>xx</u>	<u>xx</u>	<u>xx</u>
<b>E.</b>	<b>Ending cash balance (A + D)</b>	<u>xx</u>	<u>xx</u>	<u>xx</u>

Include basis of preparation, reporting currency, undrawn external assistance, and details of subloans such as amounts committed, disbursed up to the previous year, disbursed during the current reporting period, cumulative disbursement, undisbursed commitments, percentage of loan utilized, etc.  
ADB = Asian Development Bank, SLA = subloan agreement.

## **ANNEX 4: PROCUREMENT**

### **Annex 4.1 - PROCUREMENT MANUAL**

#### **A. Introduction**

1. This procurement manual is to guide the procurement activities of Shandong Green Development Fund (SGDF) which will utilize an Asian Development Bank (ADB) financial intermediation loan (FIL). ADB anticipates that for FILs the procurement is implemented by the respective loan beneficiaries in accordance with established commercial practices and green procurement which is acceptable to ADB.

2. First objective of the manual is to ensure that sub-borrowers and Investees have the responsibility that the procurement activities they undertake to implement their projects shall:

- (i) Comply with any relevant laws and regulations of the People's Republic of China (PRC) and the municipal or provincial governments in Shandong province where the projects are located.
- (ii) Adhere to procurement principles and guidance determined by ADB to be applicable to this FIL.

3. A second objective of the manual is to offer specific guidance on how procurement activities can be undertaken that will ensure compliance with the ADB principles and guidelines.

4. Sub-borrower SGDF is responsible for the implementation of the project, the procurement, award, and administration of contracts under the project. ADB is to ensure that the proceeds of its financing are used with the core procurement principles. SGDF has the responsibility to ensure the procurement they undertake comply with the relevant laws and regulation of the PRC.

5. All the guidance provided in this manual is considered to be compatible with current applicable PRC law—and specifically the PRC Tendering and Bidding Law 1999 (effective from 1 Jan 2000), the scope and applicability of which includes all investment projects that utilize foreign capital funds. Subproject owners should therefore ensure that their procurement staffs are familiar with the requirements of this law and its applicable regulations, in addition to being provided with this procurement manual.

6. It is also not the intention of this manual to force changes in the procurement procedures of sub-borrower and subproject applicants where these already substantially comply with required ADB procurement principles. However, it is expected that sub-borrower and subproject applicants will review their own procurement using the contents of this manual as a guide and adjust their procedures to ensure the required substantial compliance.

7. The ADB procurement framework is guided by two documents: the Procurement Policy and the Procurement Regulations for ADB Borrowers which are supported by Guidance Notes, Staff Instructions/Project Administration Instructions and Standard Bidding Documents (SBD) and User Guides.

8. ADB procurement places emphasis on value for money and quality, usage of open competitive bidding, identification and resolution of abnormally low bids, application of standstill period, and the risk-based oversight function for the review of procurement transactions by ADB.

9. All the procurement under FIL will ensure (a) reasonable prices as a result of preferably competitive procedures, (b) procurement from eligible source countries, and (c) fair canvassing

and/or evaluation when selecting suppliers.

10. Green Procurement is an important tool to achieve environmental policy goals relating to climate change, resource use and sustainable consumption and production. Green procurement is a process whereby contracting authorities procure goods, services and works with a reduced environmental impact throughout their life-cycle when compared to goods, services and works with the same primary function that would otherwise be procured.

11. The contents of this procurement manual will be kept under review during project implementation and can be revised at any time according to the project requirements, or changes in applicable laws and regulations. Any changes in the manual will be jointly approved by SGDF and ADB.

## **B. Procurement Objectives**

12. The objective of the procurement is to provide the purchaser with goods, works or services that are:

- (i) Fit for the intended purpose.
- (ii) Best value for money to the purchaser.
- (iii) Procured in a timely and efficient manner, and
- (iv) Procured in a green manner

13. These objectives are wholly compatible with best commercial practice and endorsed by ADB. However, the objectives are not mutually exclusive and they can conflict to a degree. For example, sophisticated procurement procedures may well be justified for large scale or technically complex procurement but would not be justified on efficiency grounds for simpler small-scale procurement. ADB procurement guidelines and commercial best practice procurement regulations recognize the need for an efficient procurement process by providing simpler procedures for small-scale procurement.

14. Another cross-cutting objective of any procurement process is to adequately safeguard sub-borrower and subproject applicants against the risks of corruption and fraud that could damage the level of subproject performance (as measured in financial terms and/or energy/emissions savings), and potentially the competitiveness of the entire business.

## **C. ADB Procurement Principles**

15. The core procurement principles are: economy, efficiency, fairness, transparency, quality, and VfM.

16. **Economy** means taking into account factors such as price, quality, and any other non-price attributes, as appropriate, without adversely affecting the viability of the project.

17. **Efficiency** ensures that procurement process is proportional to the value and risks of the required outcome, project activities and taking into account implementation capacity, time constraints, and cost-effectiveness.

18. **Fairness** means ensuring (i) equal opportunity for and treatment for eligible bidders; (ii) equitable distribution of rights and obligations between borrowers and providers of goods, works, and services; and (iii) credible mechanisms for addressing procurement-related complaints and providing recourse.

19. **Transparency** ensures through appropriate documentation and review of activities in the procurement process, that (i) relevant procurement information is made publicly available to all interested parties, in a consistent and timely manner, through readily accessible and widely available sources at no (or reasonable) cost; (ii) established appropriate reporting of procurement activity; and (iii) justified use of confidentiality provisions in contracts.

20. **Quality.** This principle requires that the procurement arrangements be structured to conduct the procurement of inputs and delivery of outputs of appropriate standard in a timely and effective manner to achieve the project outcomes and development objectives, taking into account the context, risk, value, and complexity of procurement.

21. **Value for Money** obtains optimal benefits through effective, efficient, and economic use of resources based on cost-benefit analysis along with assessment of risks and nonprice attributes and life cycle costs. Price alone may not sufficiently represent value for money.

22. It is generally accepted by procurement experts that these principles, if properly applied, will ensure the procurement objectives set out in section B of this manual are realized by subprojects and represent best procurement practice. However, in setting the requirement that “FIL procurement is undertaken by the respective loan beneficiaries in accordance with established private sector or commercial practices, acceptable to ADB”, ADB recognizes that it may be in the interests of commercial borrowers of ADB funds to apply these principles in a more flexible manner than as stipulated in ADB’s detailed procurement guidelines that have been designed with public procurement primarily in mind.

23. Procurement including the recruitment of consultants under the Technical Assistance Program shall follow ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time).

#### **D. Specific Guidance on FIL Procurement**

24. This section gives sub-borrower and subprojects specific guidance on how generally accepted procurement objectives might be best achieved and then considers each of the ADB procurement principles in turn and gives guidance on compliance.

##### **1. Ensuring the Procurement Results are Fit for Purpose**

25. Project activities are tailored to fit the intended purpose and requirements of projects, reflect the strategic needs and circumstances of the country, environment and situation

26. Customized approach will be adopted, in case a standardized approach cannot effectively and efficiently meet project outcomes and development objectives

27. Sub-borrower should clearly articulate their needs and expectations to potential suppliers so suppliers can provide goods or services that meet the needs of the project owner. A written specification of purchaser needs will enhance the prospects for those needs being successfully met and will also provide a basis for any procurement disputes to be adjudged and settled in a fair way.

28. A more detailed design specification should be prepared by qualified technical staff together with procurement staff for the procurement of key equipment and/or civil works that are

critical to the performance of the subproject.

29. For the procurement of consulting services, such as technical assistance, it is important to ensure the potential service providers are suitably qualified and that the scope of work and the required outputs/deliverables of the service provider are clearly defined.

## **2. Achieving Value for Money**

30. Value for money (VfM) is normally considered to be achieved if the purchaser feels they have paid a fair price for what they have received. Specific guidance on making VfM is as follows:

- (i) Contracting authorities have the obligation to get the best value for everything they procure. Identifying the most advantageous tender does not necessarily go for the cheapest offer. Establish a procurement committee to evaluate VfM and make procurement decisions as a means of reducing the individual subjectivity in VfM assessments. Ensure that records are kept of decisions made and the reasons for them, so that independent or higher level reviews can assess their reasonableness.
- (ii) Use open procurement wherever possible so that the lowest available specification compliant price is known thus making the price premium paid for non-quantifiable VfM factors readily identifiable.
- (iii) Only use sole-source supplier purchasing where either (a) an existing competitively let rolling supplier contract already exist, or (b) there has been recent similar procurement made via open procurement, or (c) extenuating circumstances apply that justify short-cutting normal procedures and company standing orders allow for this (note: such a situation under the FIL is extremely unlikely and such short-cutting is normally only justified in response to an emergency).

## **3 Timeliness and Efficiency of Procurement**

31. The subprojects will need to be planned and budgeted, procurement activities are scheduled compatible with the subproject implementation plan and that financial commitments can be met.

32. Procurement plans should (i) be linked to the financial plans, (ii) allow a realistic time for the completion of all activities, and (iii) as far as possible avoid a "log jam" of activity in the procurement department.

33. Efficiency of procurement will be achieved where (i) sub-borrower develop standardized procedures and procurement documentation, (ii) the number of procurement packages are minimized without unduly restricting competitiveness, (iii) adopting simplified procurement procedures for small low value procurement, and (iv) the use of existing rolling annual or multi-year supplies of services and supplies for which a company has a regular demand.

## **4. Use of Competitive Procurement**

34. Competition is the default approach, and conditions for other methods are clearly described. ADB encourages open competition as the preferred procurement approach, whenever possible, to maximize fairness of the opportunity to bid.

35. Open Competitive Bidding (OCB), properly administered and open equally to national and international bidders, is the most appropriate method that is likely to result in value for money in

most cases. Respective beneficiaries may use OCB for the purchase of large single items or in cases where large quantities of like goods can be grouped together for bulk purchasing.

36. Effective competition undoubtedly reduces prices by forcing suppliers to innovate and become more efficient. Sub-borrower will only be able to benefit from reductions that are available if they use procurement procedures based on competitive bidding or shopping.

37. Competitive procurement is most commonly achieved in a project setting through advertising and an open invitation for suppliers to request tender document and submit bids.

38. For some specialized procurement packages a multi-stage procurement process may be advantageous whereby potential suppliers are first invited to pre-qualify by demonstrating they have the required skills and experience. Then all pre-qualified suppliers would be invited to submit their bids.

39. Preparing bids for some procurement packages can impose a heavy workload and expense on potential suppliers, and this can discourage some good quality suppliers from bidding if they feel their chance of being successful is low. Purchasers can guard against the risks this situation creates restricting the number of suppliers invited to bid to a small number (typically three to five) of those most qualified to be the supplier.

40. However, before deciding on the detailed procurement procedures to use they should ensure subprojects should consult any applicable government laws and regulations on the procurement methods permissible in specific circumstances. This especially applies to state-owned enterprise (SOE) subproject owners who will undoubtedly operate in a more regulated procurement environment than wholly private enterprises. Autonomous commercial enterprises in the public sector are eligible for partial financing of subprojects.

## **5. Fairness and Equal Opportunity**

41. All eligible bidders should have an equal and fair opportunity. Procurement processes are designed and implemented that avoid preferential or discriminatory measures that might favor or adversely affect certain participants.

42. Fairness and equal opportunity go hand in hand with procurement procedures that require open competitive bidding. It also goes hand in hand with transparency in procurement.

43. Further measures to promote fairness and equal opportunity include:

- (i) Ensuring that potential suppliers have adequate time to submit bids or expressions of interest (the actual time allowed should depend on the complexity of the procurement and the level of detail requested in bids/expression of interest);
- (ii) The terms of purchase contracts used are equitable to both sides;
- (iii) The purchasing organization has a grievance redress mechanism (GRM) to deal with cases of alleged unfairness, misprocurement, or other abuses. This mechanism should operate so as to be independent of the purchasing function;
- (iv) Subject only to issues of commercial confidentiality, unsuccessful bidders may request and receive feedback on why they were unsuccessful.

44. It is sub-borrower's responsibilities for addressing all complaints. Sub-borrower acknowledges receipt, and undertake timely review of any complaint, including providing the interested party concerned with due opportunity to explain or clarify any unresolved issues arising

out of such complaint; Sub-borrower resolves complaints fairly, impartially, and promptly.

## 6. Transparency in Procurement

45. Transparency of procurement processes are governed by clear rules that are easily accessible and can be consistently applied. This will show that the purchaser is fair and provides equal opportunity to all, as evidenced by their open and fair in procurement activity.

46. Tender opportunities shall be advertised widely enough to ensure competition. The procurement decision-making process shall also be transparent, to preclude any risk of favoritism or arbitrariness on the part of the contracting authority. Results are published and contracting authorities have the obligation to inform unsuccessful tenderers of the reasons for rejecting their tender.

## E. Guidance on Green Procurement

47. Green procurement is a procedure where environmental considerations are taken into account within the procurement process. Green procurement means improving the efficiency of procurement and at the same time using market power to bring major environmental benefit

48. Identifying the most economically advantageous tender does not necessarily mean going only for the cheapest. It means finding a solution, which meets the requirements the borrower has identified, including environmental ones, in the most cost-effective way. Environmental consideration can act as an equal consideration amongst others for the award of the contract.

49. To make green procurement work, it is essential to know which procedure to use, what criteria to apply, and how to properly assess and verify environmental claims.

50. **Cost considerations.** Are greener alternatives cost neutral or will they affect the budget? The cost should be considered throughout the life-cycle: purchase price, usage costs (energy/water consumption, maintenance), and disposal costs. In some cases, grants or subsidies may be available for investment in greener options

51. **Availability of criteria.** Have green purchasing criteria been developed which can be inserted directly into tender or considerable efforts to be made to obtain environmental performance characteristics and conduct market analysis.

52. **Visibility.** How visible are the green procurement activities to the public and market? High-profile changes like the type of vehicles can help build awareness of green procurement and improve the image of the Borrower/Subborrower.

53. **Practical issues** such as which procedure to use, what criteria to apply, and how to properly assess and verify environmental claims.

54. The green procurement criteria aim to reach a good balance between environmental performance, cost considerations, market availability and ease of verification so procuring authorities may choose, according to their needs and ambition level, to include all or only certain criteria in their tender documents.

55. The term green procurement criteria includes not only selection and award criteria, but also specifications and contract performance clauses, which can help to green the contract.



Identifying sources of green criteria is an important step in green procurement implementation.

56. Green considerations can be applied to each of the stage in green procurement implementation: (i) subject matter and technical specifications; (ii) selection criteria; (iii) award criteria; (iv) contract performance clauses.

57. Environmental objectives adopted for all selected sub-projects for funding by SGDF are to (i) ensure the environmental soundness and sustainability of each sub-project, (ii) support the integration of environmental considerations into the sub-project decision-making process. The Project is categorized B Environment by ADB and Category A Environment Projects are excluded from SGDF funding. The environmental policy principles adopted for all selected sub-projects follow the SGDF Environmental and Social Management System.

58. Proposed subprojects to be selected and funded by SGDF will strictly comply with relevant environmental protection laws and regulations of the PRC.

59. SGDF adopts project performance assessment criteria compatible with GCF criteria because these criteria constitute the only comprehensive, internationally-recognized green project assessment framework.

60. Subprojects selection is based on the green indicators that they contribute to climate change mitigation (measured through greenhouse gas [GHG]/carbon dioxide [CO<sub>2</sub>] emission reduction) or climate change adaptation (measured through improving the resilience of beneficiaries). The Fund can only invest in subprojects that endorse the principles set for SGDF in terms of governance and investment strategy. The subproject will be screened with the criteria set under the SGDF Green Climate Assessment Guidelines. In addition, the subprojects will be evaluated based on risk assessment and credit rating by the Investment Committee.

61. A methodology for developing sectoral indicators of green investment performance and initial estimates of indicator values was established and these green indicators by sector are summarized in the tables in the Transaction Assessment Guidelines.

62. Green assessment will be carried out for each subproject following the green assessment framework in the Transaction Assessment Guidelines. Subproject and its component are assessed per criteria and sub-criterion as to whether it is transformational, advanced, or good.

63. Based on some measure of good practice as a baseline for Business as Usual, the numerical difference between this and "best practice" can be divided in 3 segments corresponding to "good practice, "advanced practice" and "transformative or best" practice. Standards selected as "best practice" were, in general, European Union (EU) standards. These were chosen because (a) they were reasonably aspirational standards that had (b) been agreed by a range of EU countries across a spectrum of economic development.

64. To be effective, green procurement requires the inclusion of clear and verifiable environmental criteria for products and services in the procurement process. The EU has developed green procurement criteria for a number of product and service groups, which are regularly reviewed and updated. The criteria are designed to be inserted directly into tender documents and include information on best practice and verification methods. These green procurement criteria can be adopted or used as a reference by the borrower.

## Annex 4.2 Assessment of Private Sector and Commercial Procurement Practice

1. **Overview:** The assessment of private sector and commercial procurement practice has been prepared for the Shandong Green Development Fund (SGDF). Linuo, a potential sub-project owners/applicant to the SGDF, has been selected for the assessment. Linuo is one of the four pre-feasibility study (FS) project sponsors. The information were from document reviews, a procurement capacity and risk survey, and extensive in-depth interviews with relevant key local stakeholders.

2. **Project:** The Linuo Power Group Company Ltd proposes to construct 23,148 solar photovoltaic (PV) power generation installations on top of telecommunication tower base station structures in Shandong Province. Each PV power plant will be integrated into the national power grid but will supply all of its generated power to the telecommunication tower. The capacity of each PV power station is 6.48 kW, comprising 18 No 1.95X0.99 meter solar panels rated at 360 watts each. The project will replace 175 million kilowatt hour (kWh) of grid- supplied power annually and will thus reduce annual coal generated power supply emissions of 157,623 ton carbon dioxide (CO<sub>2</sub>), 21,917 ton of dust and ash and 1,090 ton of sulphur dioxide. The project is estimated to cost CNY 1.154 billion (\$126 million).

3. The project makes use of photovoltaic power generation at telecommunication towers in Shandong to demonstrate the potential of renewable energy sources in powering telecommunication systems. The projects are being undertaken in areas rich in solar energy resources and suitable for use of PV systems from the analysis of solar energy resources. The replacement of coal-fueled power generation reduces GHG emissions and air pollution. Analysis of cost and revenue from the project shows a typical payback period of about 5 years. The project is technically feasible and demonstrates financial and economic benefits.

3. **Project Sponsor:** The Linuo Power Group Company Ltd is the sub-borrower. This company has a registered capital of CNY 13 billion, was established in 1994 and is registered in Jinan. The company has interests in solar energy, pharmaceuticals, glass manufacture and petrochemicals. The solar energy business represents 30% of the company's business. Since 2014 the solar power business has focused on 100 megawatt (MW) solar power EPC projects to replace and augment grid power supply in rural and peri urban areas. The Linuo Company has installed 54 distributed power systems in Shandong in recent years to peri-urban and rural communities ranging from 0.32 MW in Laoshan District to 6.21 MW in Zibo City. The company has signed agreements to supply 3 to 6 kW of solar PV generated power with the China's Tieta Group Tower Company in Shandong Province which manages telecommunication towers in 70,000 towns in the People's Republic of China.

4. **Project Investment Rationale:** this Project is a kind of build and transfer contract because Linuo has ongoing agreement with China's Tieta Group Tower Company in Shandong Province. Tieta is a publicly listed company. This contract has been procured through competitive process with negotiations with different suppliers in the market. Linuo has been selected because big suppliers are not interested and small suppliers have no capacity. Linuo will apply for SGDF because they need to phase investments in Shandong and expand the market to other provinces. The Linuo Company has contracted with the Telecommunication Tower Company which operates 1.7 million telecommunication towers throughout China to expand the development of rooftop PV in 70,000 towns. Based on the success of the pilot in Shandong province, the company proposes to expand roof top PV generation to Hebei and Liaoning Province. Linuo BT/EPC current project locations are mainly in Shandong, Guangdong, Niaoning, Zhejiang province.

5. **Procurement Assessment interviews:** a procurement assessment meeting was held on 10 August 2018 at Linuo HQ Office in Jinan which were attended by Mr. Sun Xiaomin, Linuo Vice General Manager, Mr. Chen Weibin, Linuo Manager of Communication Division and ADB Consultants: Mr. Cuong Vu Hoang: Green Procurement Specialist, Mr. Wanshan Li: Infrastructure Specialist and Ms. Reese, Project Coordinator.

6. **Organizational and Staff Capacity:** Linuo has two departments working on the procurement: Resource Management Center and Procurement Management Center. The Resource Management Center acts as the marketing unit working on business development, i.e. client and business opportunities. The Procurement Management Center is staffed with dozens of skilled people working on the whole procurement process from preparation of proposals, bid offers to invoicing, payment, and contract management. Linuo has an in-house, class II level design institute which supports the Procurement Management Center with technical specifications and design as well as preparation of the technical offer. Linuo maintains on the corporate website a section called “Electronic Bidding Platform” which monitors the procurement process. It publishes bid invitations and notices, procurement status, and results.

## 7. **Procurement Practice:**

Linuo has four typical contract models:

- (i) Build and Transfer (BT)
- (ii) Engineering, Procurement, and Construction (EPC)
- (iii) Energy Management
- (iv) Operation and Maintenance (O&M)

8. Linuo is mainly a BT/EPC supplier/contractor. The main difference between BT and EPC is that as for the BT Linuo develops clients by themselves. Under Energy Management they provide comprehensive energy solutions to Client, for example, renewable energy options such as solar, wind power for industrial zones. O&M contract accounts for a small portion of their business and it normally comes with BT/EPC contracts when clients request it. In addition, Linuo has equity investment in two JVs with Shandong Water Development Group and Linyi Municipal Investment Company. Linuo also engaged a number of suppliers, i.e., for components (Jinneng Group, GCL-Poly, Longji Group, Leye, JASO, Inverter (Sungrow, Huawei), Monocrystalline Silicon (Leye, Longji Group). The procurement of supply contracts follows the common private sector practice, mainly using Request for Quotations (RfQ) to compare price quotations obtained from several suppliers.

9 All previous contracts are domestically funded and they have never worked on foreign capital funded projects. They have followed PRC Tendering and Bidding Law (1999). They have quality and environmental management system ISO 9000 and 14000 systems. Linuo received electricity price subsidy through a “first come first serve” process with Energy Management Bureau but there is no requirement for using public procurement.

10. **Conclusion:** Linuo has extensive experience in domestic procurement. However, Linuo does not have sufficient knowledge on ADB procurement and FI requirements. The risk will be mitigated as capacity development will be conducted by procurement agent and procurement consultants during project implementation. Considering these and also most of the contract packages are common and similar to those procured previously using commercial practice in PRC, it is concluded that Linuo will be able to conduct all procurements for the project fulfilling FI requirements.

## Annex 4.3 Procurement Plan SGDF Consulting Services

## Basic Data

<b>Project Name: SHANDONG GREEN DEVELOPMENT FUND PROJECT</b>	
<b>Project Number: XXX</b>	<b>Approval Number: XXX</b>
<b>Loan Number: XXX</b>	
<b>Country:</b> People Republic of China	<b>Executing Agency:</b> Shandong Provincial Government
<b>Project Procurement Classification: XXX</b>	<b>Implementing Agency:</b> Shandong Development and Investment Holding Group
<b>Procurement Risk:</b> Moderate	
<b>Project Financing Amount: US\$1,500,000</b> ADB Financing : US\$100,000,000 <b>Co-financing</b> AFD US\$87.200.000 KfW US\$116.300.000 <b>Counterpart Fund :</b> Local governments US\$375.000.000 <b>PIC Fund:</b> GP/Co-GP US\$15,000.000 PIC US\$810,000.000	<b>Project Closing Date:</b> Target final close date: December 2024
<b>Date of First Procurement Plan:</b> 12 August 2018	<b>Date of this Procurement Plan:</b> 30 June 2019

### Annex 4.4 Methods, Thresholds, Review and 18-Month Procurement Plan

#### A. Procurement and Consulting Methods and Thresholds

Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works		
Method	Threshold	Comments
Open Competitive Bidding (OCB) for Works	N/A	
Open Competitive Bidding (OCB) for Goods	N/A	
Request for Quotations for Works	N/A	
Request for Quotations for Goods	N/A	
Consulting Services		
Method	Comments	
Quality and Cost Based Selection (QCBS)	N/A	
Quality Based Selection	For consulting firm; ADB prior review, FTP	
Consultants' Qualifications Selection (CQS)	N/A	
Least-Cost Selection	N/A	
Fixed Budget Selection	N/A	
Individual Consultant Selection (ICS)	For individual consultants; ADB prior review (contracts over 3 person-months).	

#### B. Goods and Works Contracts Estimated to Cost US\$1 Million or More

The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Procurement Method	Review	Bidding Procedure	Advertisement Date (quarter/year)	Comments

#### C. Consulting Services Contracts Estimated to Cost \$100,000 or More

The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value (\$ million)	Recruitment Method	Review (Prior / Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
SGDF CS1	Design, Review and Advisory (DRA)	5.0	ICS	Prior	4/2019	ICS	IDF
SGDF CS2	Green Rating	1.0	QBS	Prior	1/2020	FTP	
SGDF CS3	Monitoring, Evaluation, and Verification and Framework	3.0	ICS	Prior	2/2020	FTP	
SGDF CS 4	Capacity Building	1.0	ICS	Prior	2/2020	ICS	IDF

**D. Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000 (Smaller Value Contracts)**

The following table groups smaller-value goods, works and consulting services contracts for which the activity is either ongoing or expected to commence within the next 18 months.

Goods and Works								
Package Number <sup>6</sup>	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review [Prior / Post/Post (Sample)]	Bidding Procedure	Advertisement Date (quarter/year)	Comments

Consulting Services								
Package Number <sup>6</sup>	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review [Prior / Post/Post (Sample)]	Bidding Procedure	Advertisement Date (quarter/year)	Comments

**E. Indicative List of Packages Required Under the Project**

The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Goods and Works							
Package Number <sup>6</sup>	General Description	Estimated Value (cumulative) (US\$)	Estimated Number of Contracts	Procurement Method	Review [Prior / Post/Post (Sample)]	Bidding Procedure	Comments
Goods				OCB	N/A	1S1E 1S2E	
Civil Works				OCB	N/A	1S1E 1S2E	

<b>Consulting Services</b>							
<b>Package Number</b>	<b>General Description</b>	<b>Estimated Value (cumulative)</b>	<b>Estimated Number of Contracts</b>	<b>Recruitment Method</b>	<b>Review (Prior / Post)</b>	<b>Type of Proposal</b>	<b>Comments</b>
				QBS/ICS	Prior	FTP/STP/BTP	International and National

**SHANDONG GREEN DEVELOPMENT FUND  
OUTLINE TERMS OF REFERENCE  
GREEN RATING (FIRM QBS/FTP)**

**A. Introduction**

The Shandong Green Development Fund (SGDF) or the Fund is designed to provide a common platform for climate positive subprojects initiated by a diverse group of investee companies or qualified enterprises to invest into qualified subprojects in Shandong Province (at least 70% measured by funds commitment). SGDF is an innovative pilot financing mechanism supporting financially and technically mixed financing structures. As part of the Monitoring and Evaluation Reporting and Verification (MERV), a Green Rating System for the subproject and for the portfolio is proposed to:

- Demonstrate that Fund-financed subprojects are both climate positive and bankable.
- Enhance transparency and facilitate an increase in the breadth of participation, the number of investors / investees and quantum of investment in climate positive subprojects.
- Aggregate knowledge on project performance to improve the programming of SGDF, i.e. for project selection and for improving MERV of subprojects.

**B. General Requirements for Green Rating**

**1. Rating Subject**

For subprojects to be financed by SGDF – with extension to sub-funds

**Rating Coverage**

The Rating shall cover not only Green aspects of the subproject but also its financial structure and context, and relevant social issues. In general, relevant governance, disclosure, transparency and risk aspects shall be covered.

**2. Rating Methodology**

The Rating Agency may have an existing Methodology that can be applied directly or opt to develop/adapt a tailor-made methodology for the SGDF.

In either case, the SGDF will require that:

- the rating's weighting and scoring scheme is clearly defined and articulated and incorporates key performance indicators such as GHG reduction, numbers of beneficiaries, financial returns, etc.
- the rater incorporates sector-specific criteria and subproject-specific indicator and context in its analysis. This is to ensure that the Rating focus on most material issues of each subproject.

**3. Rating Timeline**

The application of green ratings is intended at the time that the project reaches final design and is approved for SGDF funding - the cost will be included in the subproject cost and financed under



the SGDF. It is expected that the actual Rating task should start in 2020 when the first subproject is formally approved under the Fund.

Selection and contracting with Rating Agency shall be completed in 2020.

The detailed project services delivery timeline will be flexible over a 6 years period and should be adjusted according to the actual implementation needs of the SGDF financing program schedule and resultant frequency of rating.

#### **4. Rating Frequency**

The planned Rating frequency is 'Annually'. The Rating Agency is responsible to provide timely Rating as an input to SGDF's program performance management system (PPMS) and MERV systems.

All subprojects reaching final design and approved for SGDF funding will be required to carry out Green Rating. It is estimated in total this will involve around 20 projects. Periodic rating should subsequently be done, and additionally at later stages when additional financing and/or refinancing is to be undertaken. As referred to above, it is possible that further work to rate sub-funds, instruments such as bonds and the Fund itself may be required.

#### **C. Qualification Requirements for Green Rating Agency**

Ratings will play an important role in the operation of the SGDF. The key performance criteria for this role are those relating to the ability of the ratings entity to credibly "certify" that a given project is both "green" and a viable investment proposition. The selection of such an entity will hinge on its ability to both undertake the technical assessment in a consistent manner across all the sectors likely to be encountered by SGDF and to present this credibly to an audience of international investors.

In turn, to do this the chosen rating entity (vendor) will need to demonstrate a) Credibility, b) Quality, c) Capacity and d) Cost Effectiveness. The selection model is designed to assess potential vendors against these factors. As there is not yet a widely accepted Green Rating definition and market, existing or modified ESG/Sustainability/Green Bond/Green Fund rating systems will be eligible to tender.

The Rating Agency will have to provide self-estimation of each Sub-Criteria with reasonable justification and evidence.

SGDF will verify and have a final score for the Rating Agency.

<b>Selection Criteria</b>	<b>Selection Sub Criteria</b>	<b>Rationale</b>	<b>Brief Narrative Justification of Criteria by Raters</b>	<b>SGDF Score 0/1/2</b>
Credibility (20)	Overall Reputation (30%)	Proven track record in its application. Demonstrated use of such ratings by international investors / investees / Products.		
	<b>Disclosure of Methodology (50%)</b>	The disclose of Methodology allows users and stakeholders to understand how the ratings are constructed. When raters provide strong disclosure of their methodologies and results, they give companies clear blueprints for improving performance in the future (which is of the part of the purpose of the Green Rating process).		
	Stakeholder Involvement (20%)	The rater uses external advisory panel and/or systematically engages external stakeholders in the development and ongoing maintenance of the rating. The rater is transparent about the nature and outcomes of this convening and engagement. Such disclosure will allow users and rated companies to better hold ratings to account.		
Quality (40)	Quality of Inputs (25%)	The quality of a rating depends on the quality of its inputs, i.e. breadth, diversity and credibility. Rater gathers information from sources which are current, consistent, credible and diverse. The rater goes beyond company-submitted and public information, for example obtaining information from third-party data providers or stakeholders.		
	<b>Robust Methodology (50%)</b>	The rating's weighting and scoring scheme is clearly defined and articulated and incorporates the broader Dimensions and Project Indicators (e.g. Performance Indicators such as GHG reduction, Beneficiaries, Financial Returns, Risk Indicators, ). The rater explicitly ties key external norms, standards or principles to its questions and scoring.		
	Quality Management (25%)	The rater must have a robust and well-documented approach to ensuring quality control throughout the ratings process. Disclosure of Methodology and details of Rating Results to investors, consumers and the general public are encouraged.		

<b>Selection Criteria</b>	<b>Selection Sub Criteria</b>	<b>Rationale</b>	<b>Brief Narrative Justification of Criteria by Raters</b>	<b>SGDF Score 0/1/2</b>
Capacity (40)	Experience of Rating Team (20%)	The experience and capacity of the individuals conducting the assessment of companies. The Rater should show an understanding of the customer's needs. The rater has a formal approach to ongoing education.		
	<b>Sector Specificity (30%)</b>	The rating should be based predominately on sector-specific criteria, and the rater incorporates Project-specific Indicators and context in its analysis.		
	<b>Project Rating Experience (40%)</b>	The Rating Agency should have capacity to cover multiple areas/ Flexibility of Application projects, sub-funds, bonds etc. The Rating Agency is preferably to have direct Project Rating Experience. Whether the Rating system is existing or specifically developed for GFCF, it should be demonstrated that it is able to encompass the scale (varying investment sizes) and scope (range of sectors) of GFCF investments.		
	Local Experience (10%)	The Rating Agency is preferably to have Chinese local Experience.		
<b>Final Score</b>				

#### D. Deliverables

<b>Deliverable for 1st Rating Project</b>	<b>Description</b>	<b>Schedule</b>
Concept Paper	The Concept Paper should include Proposals of work plan from the Rating Agency. The Concept Paper needs to be submitted and approved by SGDF before any further work.	2 weeks from contract
Development and Disclosure of Methodology	The Rating Agency is requested to disclose to SGDF Methodology applied, whether developed, adapted or simply applied existing versions. The indicator system, the weighting and scoring mechanism, are to be fully disclosed.	2.5 months from contract
Rating Report	The Rating Report should contain process of the Rating and Result of the Rating. Monitoring requirements for future Rating needs should also be included.	5 months from contract
Rating Reports	Same as above.	1.5 months for each contract from commissioning

**SHANDONG GREEN DEVELOPMENT FUND  
OUTLINE TERMS OF REFERENCE  
MONITORING & EVALUATION REPORTING & VERIFICATION  
(INDIVIDUAL ICS/BIODATA)**

**A. Introduction**

The Shandong Green Development Fund (SGDF) or the Fund is designed to provide a common platform for climate positive subprojects initiated by a diverse group of investee companies or qualified enterprises to invest into qualified subprojects in Shandong Province (at least 70% measured by funds commitment). SGDF is an innovative pilot financing mechanism supporting financially and technically mixed financing structures managed by a Fund Management Company (FMC).

The Monitoring & Evaluation and Reporting & Verification (MERV) framework is a management tool to track progress against the expected output and outcomes, and to facilitate decision-making throughout SGDF lifetime. A two level MERV framework is required to track subproject level outputs and SGDF level outcomes. The audience for MERV include:

- a. Fund managers that require management information to aid decision-making and quality assurance and to support knowledge management
- b. Beneficiaries that require regular feedback to aid decision-making and quality assurance as well as support and guidance for their own MERV activities
- c. Supervisory board that requires sufficient information and analysis to enable them to make evidence-based recommendations on strategy and funding allocation decisions.
- d. Financing partners-who require regular reports to assess Facility progress and to fulfill their own accountability obligations.

Two levels of MERV are proposed:

- a. Fund Level Evaluation - The MERV Framework outlines the approach that will be taken to monitor and evaluate how the Fund is meeting its overall objectives over the SGDF lifetime.
- b. Subproject Level - MERV Framework outlines the approach that will be taken to monitor and evaluate whether the project achieved clearly defined outcomes / outputs (project performance)

**B. SGDF MERV Requirements:**

**Program performance monitoring**

The Program performance will be monitored through the project performance management system (PPMS), to be regularly updated by the FMC. The PPMS will ensure the monitoring of project's impacts, outcomes and outputs with respect to the climate and financial performance targets set forth in the DMF. The format and procedure for the reporting is described in the Project Administration Manual (PAM).

During the loan implementation period, the FMC will prepare with support, review and verification by the MERV consultant, semi-annual progress reports in a format acceptable to ADB and submit these reports within 30 days of the end of each semi-annual period. One of the two progress reports will follow the template of the Annual Performance Report of the GCF. The remaining semi-annual report will provide (i) a narrative description of progress in the Project implementation; (ii) any changes to the subprojects implementation schedule; (iii) problems or difficulties encountered, including the monitoring of creditworthiness of the PIC financiers; (iv) work to be

carried out in the next 6 months with respect to each subproject; and (v) compliance with Environmental Social Management System (ESMS) and the environmental management plans (EMPs) prepared for the subprojects. ESMS implementation reports will be prepared during the loan implementation period after loan signing for submission to ADB and disclosed on the ADB website.

### **Compliance monitoring**

The compliance status of loan covenants, including the provisions of the ESMS will be reported and assessed through the semi-annual progress reports and verified by ADB review missions.

### **Evaluation**

ADB and the government will review the project implementation jointly at least twice a year during the loan implementation. In addition, ADB and the government will undertake a comprehensive midterm review approximately 4 years after the start of project implementation. This midterm review will include a detailed evaluation of the project scope, selection criteria, implementation arrangements, achievement of scheduled targets, and progress on engaging a subsequent batch of subprojects to be financed by SGDF revolving funds. Within 3 months after the end of the implementation period (2026), the FMC will submit a Project Completion Report (PCR) to ADB with the assistance of the MERV consultant. This report will then be the basis for a joint evaluation of the Project conducted by the FMC and ADB during a Project completion review mission to be conducted by ADB. The cofinanciers will join review missions as required.

The FMC shall engage in a separate contract an accredited agency or agencies acceptable to ADB to undertake, within 6 months after the physical completion of each subproject, measurement and verification of the reduction in emissions of CO<sub>2</sub>eq achieved by such subproject, and recorded by the MERV consultant (who monitors projects annually), and shall provide to ADB the consolidated results of the measurement and verification of such savings and reductions of all physically completed subprojects, with reference to the emissions baseline established before the subproject implementation.

### **Reporting**

During the loan implementation period, the FMC with the assistance of the MERV consultant will provide ADB with (i) semi-annual progress reports in a format consistent with ADB's project performance reporting system, including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions, (c) an updated lending and disbursement plan, and (d) updated implementation plan for the next 6 months; (ii) consolidated audited and entity financial statements; (iii) annual consolidated environmental and social monitoring report in a format agreed with ADB; and (iv) PCR within 6 months of physical completion of the Project. The Annual Performance Report will follow the format of the GCF (see project supplementary documents of the report and recommendation to the President PRC51194-001). To ensure that subprojects will continue to be both viable and sustainable, subproject accounts and entity audited financial statements together with the associated auditor's report, should be adequately reviewed.

### **C. SGDF MERV Basis**

A Green Indicator system based on GCF Investment Criteria has been developed. It will serve as a general basis during the MERV process.

These Indicators will apply to both SGDF-level MERV and subproject-level MERV (including subproject components). As part of the due diligence process, a subproject must fill in the Subproject Information Checklist,<sup>1</sup> which will identify key indicators for the project. A three-level indicator structure will be used as shown in the following diagram.

Category	Sector	Indicator Type	Indicator
MITIGATION	Renewable Energy Energy Efficiency Transport .....	Core Indicator	1. 2.
		Sector Indicator	1. 2.
		Specific Indicator	1.
ADAPTATION		Core Indicator	1. 2.
		Sector Indicator	
		Specific Indicator	

In complex subprojects such indicators may be monitored at component level.

#### A. Core Indicators

The subproject must be categorized as either Mitigation and/or Adaptation. Following GCF Investment Criterion, two Core Indicators for Mitigation and Three Core Indicators for Adaption at subproject level will be applied to projects and aggregated to the SGDF level.

Mitigation		
1	GHG Mitigation (tons):	Tons of greenhouse gas emissions reduced
2	Cost effectiveness:	Cost per ton of CO <sub>2</sub> -equivalent reduced
Adaptation		
1	Beneficiaries of increased resilience to climate impacts – direct	
2	Beneficiaries of increased resilience to climate impacts – indirect	
3	Number of beneficiaries relative to total population	

Fund-level impact core indicators will be aggregated by each Subproject.

#### a. Sector Indicators

For each defined Eligible/Prioritized Green Sector, sector Indicators should be developed and applied during the assessment process. These will generally relate to relative performance in relation to (a) mitigation/adaptation outcomes; and (b) pollution outcomes (GCF Investment Criteria 1 and 3). In addition, indicators relating to GCF Indicator, on Cost-Abatement (in the case of mitigation projects) and adaptation ratio (in the case of adaptation projects) will be calculated.

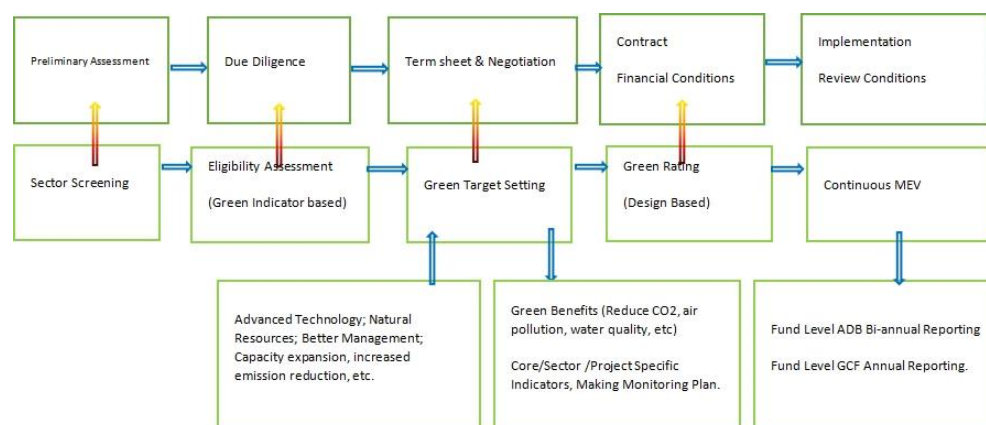
These indicators can be aggregated by sector at the sub-fund and SGDF levels.

#### b. Project Specific Indicators

<sup>1</sup> See: SGDF Transaction Assessment Guidelines

For each subproject, the subproject sponsor and the FMC will agree specific technical, procurement, social and financial indicators relevant to: (a) project design; (b) project implementation; (c) requirements of rating agencies;<sup>35</sup> and/or (d) monitoring of covenants.

## B. SGDF MERV Process



A monitoring plan based on the above process flow will be prepared for the SGDF and its subprojects detailing:

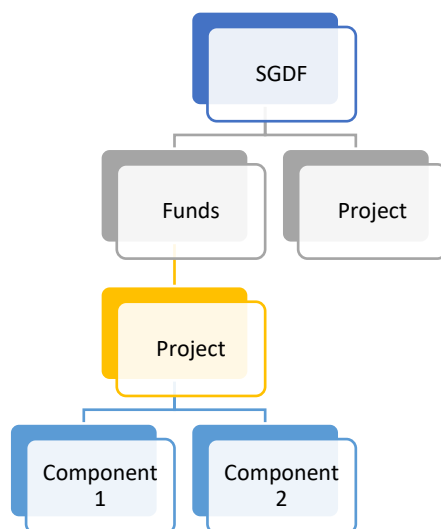
- a. Selected Indicators
- b. Targets and baseline for each identified Indicator
- c. Monitoring Method: How, When, Who

Performance on the indicators will be certified by an independent consultant on a yearly basis and submitted with the annual performance report.

## C. SGDF MERV System Design

The MERV System will allow monitoring at SGDF, subproject and component levels. It is important to note that there will be investments in sub-funds that will also require monitoring at the subproject and component levels. IT based structure of the system is set out in the diagram below.

<sup>35</sup> See: Green Rating Outline



#### D. SGDF MERV Deliverables Summary

**Table 1: Summary of Key MERV Deliverables**

	<b>Deliverable</b>	<b>Responsible by</b>	<b>Timing/ Frequency</b>
<b>Project</b>	Monitoring Plan include all selected Core/Sector/Project Specific Indicators	MERV Consultant	To be Included in the Final Design
	Monitoring Reports based on Monitoring Plan requirements	Prepared by investee companies, Verified by MERV Consultant	Annually
	Project Environmental & Social Reports	Prepared by investee companies, Verified by MERV Consultant	Semiannually during the first 7 years
	Green Rating Reports	Rating Agency	In time of Final Design
<b>SGDF</b>	Semiannual ADB progress reports	Prepared by MERV Consultant; Reviewed by ADB	Every 6 months until loan closing
	Annual Performance Reporting (APR, GCF format) including: <ul style="list-style-type: none"> <li>➤ Project outputs implementation status</li> <li>➤ Fund-level impact core indicators</li> <li>➤ Project/programme indicators (mitigation/adaptation)</li> <li>➤ Implementation milestones</li> </ul>	Fund Management Company (FMC)	Annually



	<ul style="list-style-type: none"> <li>➤ Implementation challenges and lessons learned</li> <li>➤ Financial information</li> <li>➤ Environmental, Social Safeguards and Gender</li> </ul>		
	Consolidated audited statement of utilization of funds including Auditor's report	FMC	Before 30 June of each year throughout the loan implementation period, i.e., from loan effectiveness until loan closing date
	Audited entity financial statements of SDIHG, the Implementation Agency	FMC	Before 30 June of each year throughout the loan implementation period, i.e., from loan effectiveness until loan closing date
	Consolidated environmental and social monitoring report	MERV Consultant	Annually
	ESMS Implementation Report	MERV Consultant	Annually
	ADB Mid Term Review Report	Prepared by MERV Consultant; Reviewed by ADB	Approximately 4 years after the start of project implementation.
	Project Completion Report	Prepared by MERV Consultant; Reviewed by ADB	Within 3 months after the closing date of the loan

## General Scope of Work

1. **Task 1. Prepare Work Plan; and Training Programme.** The MERV consultant should review the MERV requirements and prepare a detailed work plan to accomplish the tasks required. The consultant should also review the project performance management system (PPMS) and the Project Administration Manual (PAM) to verify the data quality objectives and formats. The work plan should include final formats for review and reporting; identify SGDF and project individuals for each task/area; schedules; and final deliverables. Then the MERV consultant shall prepare a training session to give to the responsible individuals in each category so that they can better prepare data and reports for review.
2. **Task 2. Review subprojects, monitoring plan and monitoring reports.** The MERV consultant will assist completion of subproject design with proper monitoring plan covering all selected Core/Sector/Subproject Specific Indicators, including Targets and baseline for each identified Indicators and the monitoring method defined for each indicator. The MERV consultant shall develop monitoring report format and verify Monitoring reports and environmental and social reports prepared by the investee companies.
3. **Task 3. Assist the FMC to Prepare the ADB Semi-Annual Reports.** The MERV consultant will assist the FMC with data monitoring, evaluation and verification needed to prepare the ADB semi-annual report. Specifically the report will provide: (i) a narrative description of progress in the project implementation; (ii) problems or difficulties encountered, including the monitoring of creditworthiness of the PIC financiers; (iii) work to be carried out in the next 6 months with respect to each subprojects; (iv) compliance with Environmental Social Management System (ESMS) and the environmental management plans (EMPs) prepared for SGDF projects; (v) progress achieved by output as measured through the indicator's performance targets; (vi) an updated lending and disbursement plan; and (vii) consolidated audited and entity financial statements;
4. **Task 4. Assist SGDF to Prepare Annual Performance Report (GCF Format).** During the loan implementation period, the FMC will prepare with support, review and verification by the MERV consultant, semi-annual progress reports in a format acceptable to ADB and submit these reports within 30 days of the end of each semi-annual period. One of the two progress reports will follow the template of the Annual Performance Report of the GCF.
5. **Task 5. Recommendations.** The MERV consultant shall provide yearly recommendations on any modifications required to the reporting system; recommendations regarding updates to the PPMS, ESMS or EMPs; and any recommendations for improving the MERV process.

### A. Individual Consultants to be recruited for the MERV

#### General Qualifications

- Proven track record in the MERV consulting including project performance assessment (both mitigation or adaptation projects), GHG Accounting, Green Certification. .
- At least 3 years experience reviewing technical and financial reporting.

#### Individual Consultants (expertise required)

- At least 10 consultants<sup>36</sup> with relevant expertise:

---

<sup>36</sup> The skills and expertise as well as the person-months can be reviewed by the FMC with ADB no objection.

- MERV Expert
- Financial Expert
- Financial Model/Software Expert
- Safeguarding Expert (Environmental and Social)
- Climate Change Expert
- Sector Expert (Renewable Energy, Energy Efficiency, Transportation, etc)
- Green Procurement Expert

**Team Leader-MERV Expert (International, 24 person-months):**

**Qualifications:**

- 12 years senior level experience in climate mitigation, climate adaptation, green urban infrastructure and green procurement.
- An advanced degree in Science, engineering or relevant field
- Previous experience in Project development, monitoring, verification and certification is essential.
- Experience in project management and administration for international development agencies is preferable.

**Responsibilities:** Overall Management of the MERV system, establish and functionalize the SGDF and subproject MERV system. The specific objectives of the assignment are:

- Develop monitoring work plan that should include final formats for review and reporting; identify SGDF and project individuals for each task/area; schedules; and final deliverables.
- Prepare MERV related Reports including Project Monitoring Reports and Environmental & Social Reports; Prepare Bi-Annual ADB Reports, Consolidated ESMS report; Support SDGF with GCF annual report preparation.
- Provide support for conducting MERV related activities.
- Design and conduct capacity development activities to subproject staff and stakeholders regarding MERV.
- Recommendations for improving the MERV process and recommendations regarding updates to the Project Management related documents, including PPMS, ESMS or EMPs.

**Financial Expert (International, 12 person-months):**

**Qualifications:**

- Degree in Financial, Accounting or relevant field.
- Minimum 5 years financial experience.
- Familiarity with Financial Management, Financial Risks and preparing or auditing financial statements.
- Experience with IFIs will be an advantage.

**Responsibilities:**

- Develop a Financial Management System that should include financial eligibility criteria, Financial Incentives, monitoring and reporting requirement as well as final deliverables.
- Verify compliance status of loan covenants related with financial aspects.
- Closely monitor Financial Risks of invested projects.
- Ensure proper and timely submission of Financial Performance reports

**Software Expert (International, 6 person-months)**

**Qualifications:**

- University Degree in Computer Science, Information Systems, or equivalent higher education.
- Thorough understanding of the software development life cycle;

- Minimum 5 years working experience in software business model planning, process, IT architecture design and operation management.

**Responsibilities:**

- Responsible for the design and management of MERV system for SGDF; Analyzing and understanding marketing/customer requirement well;
- Regular Maintenance of MERV system for SGDF.
- Training sessions to relevant individuals regarding application of the MERV system including data input, output, aggregation etc.

**Safeguards Expert-Environment (International, 12 person-months)**

**Qualifications:**

- Master's degree in Environmental Management, Social Science, Economics, Environmental/Civil Engineering, or other relevant field,
- At least 5 years relevant experience, Experience with international financing institutions will be an advantage.
- Experience with IFIs will be an advantage.

**Responsibilities:**

- Working together with Social safeguarding Specialist to develop work plan for Environmental and Social monitoring and reporting.
- Ensure environmental safeguards screening is taking place as per agreed environmental and social management system (ESMS).
- Coordinate and facilitate the work of consultants engaged to carry out environmental and social impact assessments and monitoring of environmental safeguards instruments implementation
- Monitor compliance with ADB environmental safeguards policies.
- Conduct training to responsible individuals regarding Environment Safeguards and Environmental management
- Ensure proper and timely submission of reports.

**Safeguards Expert-Social (International, 24 person-months)**

**Qualifications:**

- Master's degree in Environmental Management, Social Science, Economics, Environmental/Civil Engineering, or other relevant field,
- At least 5 years relevant experience, Experience with international financing institutions will be an advantage.
- Experience with IFIs will be an advantage.

**Responsibilities:**

- Working together with Environmental safeguard Specialist to develop work plan for Environmental and Social monitoring and reporting.
- Ensure Social safeguards screening is taking place as per agreed environmental and social management system (ESMS).
- Coordinate and facilitate the work of consultants engaged to carry out environmental and social impact assessments and monitoring of environmental safeguards instruments implementation
- Monitor compliance with ADB Social safeguards policies.
- Conduct training to responsible individuals regarding Social Safeguards.
- Ensure proper and timely submission of reports.

**GHG and Climate Expert (International, 12 person-months)****Qualifications:**

- Master's degree in Science, Environment, Engineering or any related qualification;
- Excellent knowledge of GHG baseline determination, GHG inventories, MRV systems, etc
- At least 5 years of professional experience in GHG emission accounting and analysis;
- Experience in Energy, buildings, transport, and waste sectors will be an advantage;
- Demonstrated experience and success in the engagement of, and working with both the public and private sectors is an advantage

**Responsibilities:**

- Propose GHG Methodology and assist projects to estimate ex-ante GHG reduction.
- Develop monitoring work plan and guide projects to implement ongoing monitoring tasks.
- Prepare Capacity Building Session to responsible individuals in terms of monitoring, evaluation and verification so that they can better prepare data and reports for review.
- Review and Verify periodic monitoring results for GHG parameters.
- Provide relevant inputs to the development of the project reports as required by the Team Leader.

**Sector Expert (International, 6 person-months)****Qualifications:**

- Higher education (a degree) in Science, Engineering or any (name of the sector) related qualification;
- Excellent knowledge of the (name of the sector) sector
- At least 5 years of professional experience in (name of the sector) sector.

**Responsibilities:**

- Propose sector specific parameters as part of the MERV system.
- Develop monitoring work plan and guide projects to implement ongoing monitoring tasks;
- Prepare Capacity Building Session to responsible individuals in terms of monitoring, evaluation and verification;
- Review and Verify periodic monitoring results for sector parameters.
- Provide relevant inputs to the development of the project reports as required by the Team Leader.

**Green Procurement/Supply Chain Expert (International, 12 person-months)****Qualifications:**

- Master's degree in Science, Environment, Engineering or any related qualification;
- Excellent knowledge of Green Procurement Standards, Practices.
- At least 5 years of professional experience in Procurement, Supply chain management, Green Procurement.

**Responsibilities:**

- Establish and integrate green into the SGDF Procurement strategies;
- Undertake training, mentoring and provide technical support to the relevant individuals for project Procurement;
- Integrate 'Green' into SGDF and projects procurement strategies.
- Supervise and ensure compliance with national regulations, ADB and other international lenders procurement requirements.

**Deputy Team Leader-MERV Expert (National, 60 person-months)****Qualifications:**

- 7 years senior level experience in climate mitigation, climate adaptation, green urban infrastructure and green procurement.
- An advanced degree in Science, engineering or relevant field.
- Previous experience in Project development, monitoring, verification and certification is essential.
- Experience in project management and administration for international development agencies is preferable.
- Fluency in Chinese and English.

**Responsibilities:** Overall Management of the MERV system, establish and functionalize the Fund and project MERV system. The specific objectives of the assignment are:

- Develop monitoring work plan that should include final formats for review and reporting; identify SGDF and project individuals for each task/area; schedules; and final deliverables.
- Prepare MERV related Reports including Project Monitoring Reports and Environmental & Social Reports Verification; Prepare Bi-Annual ADB Reports, Consolidated ESMS report; Support SDGF with GCF annual report preparation.
- Provide support to the Project for conducting MERV related activities.
- Design and conduct capacity activities to project staff and stakeholders regarding project MERV.
- Recommendations for improving the MERV process and recommendations regarding updates to the Project Management related documents, including PPMS, ESMS or EMPs.

**Financial Expert (National, 44 person-months)****Qualifications:**

- Degree in Financial, Accounting or relevant field.
- Minimum 3 years financial experience.
- Familiarity with Financial Management, Financial Risks and preparing or auditing financial statements.
- Experience with IFIs will be an advantage.
- Fluency in Chinese and English.

**Responsibilities:**

- Develop a Financial Management System that should include financial eligibility criteria, Financial Incentives, monitoring and reporting requirement as well as final deliverables.
- Verify compliance status of loan covenants related with financial aspects.
- Closely monitor Financial Risks of invested projects.
- Ensure proper and timely submission of Financial Performance reports

**Software Expert (National, 12 person-months)****Qualifications:**

- University Degree in Computer Science, Information Systems, or equivalent higher education.
- Thorough understanding of the software development life cycle;
- Minimum 3 years working experience in software business model planning, process, IT architecture design and operation management.
- Experience with IFIs will be an advantage.
- Fluency in Chinese and English.

**Responsibilities:**

- Responsible for the design and management of MERV system for SGDF; Analyzing and

- understanding marketing/customer requirement well;
- Regular Maintenance of MERV system for SGDF.
- Training sessions to relevant individuals regarding application of the MERV system including data input, output, aggregation etc.

### **Safeguards Expert-Environment (National, 24 person-months)**

#### **Qualifications:**

- Master's degree in Environmental Management, Social Science, Economics, Environmental/Civil Engineering, or other relevant field,
- At least 3 years relevant experience, Experience with international financing institutions will be an advantage.
- Familiarity with China's Environmental policies and regulations as well as ADB Safeguards Policies.
- Fluency in Chinese and English.

#### **Responsibilities:**

- Working together with Social safeguards specialist to develop work plan for Environmental and Social monitoring and reporting.
- Ensure environmental safeguards screening is taking place as per agreed environmental and social management system (ESMS).
- Coordinate and facilitate the work of consultants engaged to carry out environmental and social impact assessments and monitoring of environmental safeguards instruments implementation
- Monitor compliance with ADB environmental safeguards policies.
- Conduct training to responsible individuals regarding Environment Safeguards and Environmental management
- Ensure proper and timely submission of reports.

### **Safeguards Expert-Social (National, 44 person-months)**

#### **Qualifications:**

- Master's degree in Environmental Management, Social Science, Economics, Environmental/Civil Engineering, or other relevant field,
- At least 3 years relevant experience, Experience with international financing institutions will be an advantage.
- Familiarity with China's Social policies and regulations as well as ADB Safeguards Policies.
- Fluency in Chinese and English.

#### **Responsibilities:**

- Working together with Environmental safeguards specialist to develop work plan for Environmental and Social monitoring and reporting.
- Ensure Social safeguards screening is taking place as per agreed environmental and social management system (ESMS).
- Coordinate and facilitate the work of consultants engaged to carry out environmental and social impact assessments and monitoring of environmental safeguards instruments implementation.
- Monitor compliance with ADB Social safeguards policies.
- Conduct training to responsible individuals regarding Social Safeguards.
- Ensure proper and timely submission of reports.

### **GHG and Climate Finance Expert (National, 36 person-months)**

#### **Qualifications:**

- Master's degree in Science, Environment, Engineering or any related qualification;

- Excellent knowledge of GHG baseline determination, GHG inventories, MRV systems, etc
- At least 3 years of professional experience in GHG emission accounting and analysis;
- Experience in Energy, buildings, transport, and waste sectors will be an advantage;
- Demonstrated experience and success in the engagement of, and working with both the public and private sectors is an advantage.
- Fluency in Chinese and English.

**Responsibilities:**

- Propose GHG Methodology and assist projects to estimate ex-ante GHG reduction.
- Develop monitoring work plan and guide projects to implement ongoing monitoring tasks.
- Prepare Capacity Building Session to responsible individuals in terms of monitoring, evaluation and verification so that they can better prepare data and reports for review.
- Review and Verify periodic monitoring results for GHG parameters.
- Provide relevant inputs to the development of the project reports as required by the Team Leader.

**Sector Expert (National, 6 person-months)****Qualifications:**

- Higher education (a degree) in Science, Engineering or any (name of the sector) related qualification;
- Excellent knowledge of the (name of the sector) sector
- At least 5 years of professional experience in (name of the sector) sector;
- Fluency in Chinese and English.

**Responsibilities:**

- Propose sector specific parameters as part of the MERV system.
- Develop monitoring work plan and guide projects to implement ongoing monitoring tasks;
- Prepare Capacity Building Session to responsible individuals in terms of monitoring, evaluation and verification;
- Review and Verify periodic monitoring results for sector parameters.
- Provide relevant inputs to the development of the project reports as required by the Team Leader.

**Green Procurement/Supply Chain Expert (National, 36 person-months)****Qualifications:**

- Master's degree in Science, Environment, Engineering or any related qualification;
- Excellent knowledge of Green Procurement Standards, Practices.
- At least 3 years of professional experience in Procurement, Supply chain management, Green Procurement.
- Fluency in Chinese and English.

**Responsibilities:**

- Establish and integrate green into the SGDF Procurement strategies;
- Undertake training, mentoring and provide technical support to the relevant individuals for project Procurement;
- Integrate 'Green' into SGDF and projects procurement strategies.
- Supervise and ensure compliance with national regulations, ADB and other international lenders procurement requirements.



**Shandong Green Development Fund  
Outline Terms of Reference  
Design, Review and Advisory (DRA)  
(INDIVIDUAL / ICS)**

**A. Background**

1. The Shandong Green Development Fund (SGDF), herein referred to as the 'Fund', will pilot an innovative financing mechanism of US\$1.5 billion to catalyze climate finance for a portfolio of bankable climate positive subprojects in Shandong Province, People's Republic of China (PRC). Shandong is a coastal province located in the eastern part of the country and a labor reservoir with a population of 99.47 million people. Shandong faces significant climate change (CC) challenges including: (i) mitigation from energy, urban activities and industrial transformation; and (ii) adaptation from water resources, agriculture, coastal and ecological vulnerable areas, as a limiting factor for growth at the core of the water – food – energy nexus. Shandong tops the country's energy consumption and the number of motor vehicles, responsible for most of the greenhouse gas emission (GHG). The Fund will support provincial government's proactive policies to decarbonize its economy through coal substitution and industrial transformation. Shandong has set a target to achieve the peaking of carbon dioxide emissions around 2027, which is earlier than the national PRC goal.

2. SGDF will solicit applications for subproject funding and has already assembled a project pipeline. The primary objectives for the DRA contract include: (i) reviewing of subproject applications and feasibility studies; (ii) Green Assessment; (iii) providing technical and sector expertise to Qualified Enterprises and the Fund Management Company to increase green rating, provide access to innovative technologies and green the supply chain; (iv) provide green procurement advice; and (v) provide the technical inputs to the ESMS needed for reporting.

3. The DRA contract will be implemented over a period of 5 years. The FMC will engage international consultants (~50 person-months) and national consultants (~200 person-months) on time-based contract.

**B. Scope of Work**

4. **Task 1: Inception Report.** Inception Report. After mobilizing the team, the consultant will spend one month with the Fund management to introduce the team; review the project status; acquaint with the existing project applicant pipeline; review the green indicators; understand the project management system (PPMS); and review with the client what needs to be updated to the current proposals, what other efforts are needed to better the applicant proposals and what other tasks are needed to deliver the TA objectives. Based on the review, the consultant will prepare and deliver an inception report with any recommended revisions to the scope, schedule or staffing.

5. **Task 2: Detailed Analysis and Updating of FSs.** The consultant will review, comment and recommend updates of the pipeline projects. Specifically, the consultant will provide engineering, environment, social and cost review of the project.

6. **Task 3: Green Assessment.** The consultant, using the SGDF Green Climate Assessment Guideline will rate the projects as Good, Advanced or Transformational in the pipeline. This data will be inputs in to the PPMS.

7. **Task 4: Improving the Applications.** The consultant will provide technical and sector expertise to project applicants and the Fund Management to increase projects' green rating, provide access to innovative technologies and green the supply chain.

8. **Task 5: Green Procurement.** The consultant will provide green procurement advice, assist with greening applicants' supply chains and assist the applicants to develop greener approaches.

9. **Task 6: Inputs for the ESMS and PPMS.** The consultant will provide the technical inputs needed for bi-annual and annual reporting to the PPMS administration team.

10. **Task 7: Capacity Building and Training for National Staff.** The international consultants will have hands-on review during the first 2 years of the project, when the bulk of the projects will be reviewed, rated and funded. Thereafter national staff will review projects and advise the Fund. During the first 2 years, the international staff will work closely with the national staff to provide hands-on training and access to information.

### C. Qualifications

11. **General Requirements.** The international consultants should have experience in a wide variety of climate mitigation and adaptation projects. They should be familiar with: the most recent technology developments; current methods for deploying renewable energy; green infrastructure; resilient, integrated adaptation designs; green rating systems; and green procurement. Experience in China or Asia is a plus. The staffing can be reduced or increased depending on the requirement and the need of the FMC, so that not to duplicate other consulting assignments or in-house expertise as well as the type of subprojects financed.

#### **Green Project Expert.**

**Qualifications:** 12 years senior level experience in climate mitigation, climate adaptation, green urban infrastructure and green procurement. An advanced degree in engineering is preferable. Previous experience in project management and administration for international development agencies is essential, as is considerable experience on renewable energy designs, low carbon urban projects and GHG reduction projects in general.

**Responsibilities:** manage the implementation of the project, including project administration and preparation of the final FS reviews; technical oversight, monitoring and guidance; team training and management, preparation of inception, progress and final reports including financial summaries; liaison with the Fund. Manage and guide the team of international and national specialists in various professional fields including mobilization, assessment, reporting and communication with the Fund management.

#### **Sector Specialists Various in Green, Low Carbon Infrastructure, Renewable Energy, Green Manufacturing**

#### **Safeguards Expert-Social.**

**Qualifications:** Master's degree in Environmental Management, Social Science, Economics, Environmental/Civil Engineering, or other relevant field; At least 5 years relevant experience, Experience with international financing institutions will be an advantage.

**Responsibilities:** Ensure that the project is aligned with national Environmental and Social laws, policies and plans; Refine Social targets and activities including Gender, working together with Environmental Expert to prepare project Environmental and Social implementation plan; Design and deliver training and for project staff on safeguards issues;

**Safeguards Expert -Environment.**

Qualifications: Master's degree in Environmental Management, Social Science, Economics, Environmental/Civil Engineering, or other relevant field; At least 5 years relevant experience, Experience with international financing institutions will be an advantage; Familiarity with China's Environmental policies and regulations as well as ADB Safeguards Policies.

Responsibilities: Ensure that the project is aligned with national Environmental and Social laws, policies and plans; Refine Environmental targets and activities, working together with Social safeguards Expert to prepare project Environmental and Social implementation plan; Design and deliver training and for project staff on Environmental issues;

**Green Procurement/Supply Chain Expert.**

Qualifications: Master's degree in Engineering, manufacturing science or any related qualification; Excellent knowledge of Green Procurement Standards, Practices; At least 5 years of professional experience in procurement or contract management of projects funded by international lending agencies, including experience establishing procurement systems, preparing procurement manuals, and undertaking staff training and mentoring.

Responsibilities: Establish and integrate green into the SGDF Procurement strategies; Undertake training, mentoring and provide technical support to the relevant individuals for project Procurement; Supervise and ensure compliance with national regulations, ADB and other international lenders procurement requirements.

## **Annex 4.5 PRC Relevant Environmental Laws and Regulations**

### **PRC National Laws**

- Law on the Environment Protection (2014)
- Law on the Environmental Impact Assessment (EIA)(2016)
- Law on the Prevention and Control of Environmental Noise (1996)
- Law on the Prevention and Control of Atmospheric Pollution (2015)
- Law on the Prevention and Control of Water Pollution (2008)
- Law on the Prevention and Control of Environmental Pollution by Solid Waste (2015)
- Law on Water (2002)
- Law on Promoting Clean Production (2002)
- Law on Energy Conservation (2007)
- Law on Circular Economy Promotion (2008)
- Law on Renewable Energy (2009)
- Law on Water and Soil Conservation (2010)

### **PRC National Regulations**

- Decision of the State Council on Several Issues Relating to Environmental Protection (1996)
- The Administrative Regulations for Project Environmental Protection in Construction Projects (1998)
- Classified Administration Catalogue of EIAs for Construction Projects (2015)
- Administrative Measures for the Environmental Acceptance Inspection of Construction Projects (2002)
- The Measures for the Prevention and Control of Environmental Pollution by Discarded Dangerous Chemicals (2005)
- The Interim Measures for Public Participation in EIA (2006)

### Annex 4.6 Procurement Capacity Checklist

This checklist works systematically through the procurement cycle identifying key requirements at each stage.

#### Specific Assessment and Ratings

QUESTION			
Name of the Company			
Checklist filled by:			
Position:			
Tel/Mobile:			
Email:			
A. ORGANIZATIONAL AND STAFF CAPACITY	RESPONSE: 'YES' OR 'NO' WITH BRIEF COMMENTS		RISK
A.1. Is there a permanent properly staffed procurement unit in the IA?			
• Number of procurement staff			
• Position of the procurement unit in the company			
• Name of the procurement unit head and years of working experience in procurement			
A.2. Are the number and qualifications of procurement staff sufficient to undertake the procurement under the proposed project?			
A.3. Does the procurement unit undertake procurement in accordance commercial practices in the sector?			
• If the company is not an SOE, does the procurement unit have clear procurement rules and procedures?			
• Please indicate a simplified full procurement procedures			
A.4. Do the commercial practices comply with requirements of national and provincial procurement laws and regulations?			
• If the company is an SOE, does the procurement comply with the Law on Tenders and Bids?			
• Has the procurement unit prepared procurement rules and procedures accordingly?			
B. INFORMATION MANAGEMENT			
B.1. Is there a referencing system for procurement files in the company?			
• If "yes", please indicate how the system is referencing (i.e., by date, by types [civil works,			

equipment, services, etc.], amount, etc.)		
B.2. Is there adequate equipment and personnel to administer the procurement records management functions?		
• Does the procurement unit or company Archives Department administrate the records?		

<b>QUESTION</b>		
• The records are kept in e-file, hard copies or both?		
B.3. Does the procurement unit adhere to a document retention policy (i.e., for what period are records kept)?		
B.4. Is there a single contract file with a copy of contracts and all subsequent contractual correspondence?		
<b>C. PROCUREMENT PRACTICES</b>		
Goods and Works		
C.1 Does the procurement unit have a manual for procurement of goods and works?		
C.2 Is there a bid evaluation committee (permanent or ad-hoc) established within the IA?		
C.3 Is the decision of a bid evaluation committee final or subject to approval by higher authorities within the IA?		
C.4 Do the commercial practices applied by the IA comply with key procurement principles of open competition, economy, efficiency, fairness and transparency?		
<b>D. EFFECTIVENESS</b>		
D.1. Is contractual performance systematically monitored and reported?		
D.2. Does the agency monitor and track its contractual payment obligations?		
D.3. Is a complaints resolution mechanism described in national procurement documents?		
D.4. Is there a formal non-judicial mechanism for dealing with complaints?		
<b>E. ACCOUNTABILITY MEASURES</b>		
E.1. Is there a standard statement of ethics to which the procurement unit is required to formally commit?		
E.2. Are staff of the procurement unit required to declare any potential integrity violations during the procurement process?		

E.3. Is the performance of the procurement unit subject to annual audit?		
--	--	--

**I. General Rating**

<b>Criterion</b>	<b>Risk</b>
A. Organizational and Staff Capacity	
B. Information Management	
C. Procurement Practices	
D. Effectiveness	
E. Accountability Measures	
OVERALL RISK RATING	

## ANNEX 5: NATIONAL COMPETITIVE BIDDING

The Borrower's *Law of Tendering and Bidding of the People's Republic of China* promulgated by Order No. 21 of the President of the People's Republic of China on August 30, 1999, are subject to the following clarifications required for compliance with the Guidelines:

- (i) All invitations to prequalify or to bid shall be advertised in the national press, or official gazette, or a free and open access website in the Borrower's country. Such advertisement shall be made in sufficient time for prospective bidders to obtain prequalification or bidding documents and prepare and submit their responses. In any event, a minimum preparation period of thirty (30) days shall be given. The preparation period shall count (a) from the date of advertisement, or (b) when the documents are available for issue, whichever date is later. The advertisement and the prequalification and bidding documents shall specify the deadline for such submission.
- (ii) Qualification requirements of bidders and the method of evaluating the qualification of each bidder shall be specified in detail in the bidding documents, and in the prequalification documents if the bidding is preceded by a prequalification process.
- (iii) If bidding is preceded by a prequalification process, all bidders that meet the qualification criteria set out in the prequalification document shall be allowed to bid and there shall be no limit on the number of pre-qualified bidders.
- (iv) All bidders shall be required to provide a performance security in an amount sufficient to protect the Borrower/Project Executing Agency in case of breach of contract by the contractor, and the bidding documents shall specify the required form and amount of such performance security.
- (v) Bidders shall be allowed to submit bids by mail or by hand.
- (vi) All bids shall be opened in public; all bidders shall be afforded an opportunity to be present (either in person or through their representatives) at the time of bid opening, but bidders shall not be required to be present at the bid opening.
- (vii) All bid evaluation criteria shall be disclosed in the bidding documents and quantified in monetary terms or expressed in the form of pass/fail requirements.
- (viii) No bid may be rejected solely on the basis that the bid price falls outside any standard contract estimate, or margin or bracket of average bids established by the Borrower/Project Executing Agency.
- (ix) Each contract shall be awarded to the lowest evaluated responsive bidder, that is, the bidder who meets the appropriate standards of capability and resources and whose bid has been determined (a) to be substantially responsive to the bidding documents and (b) to offer the lowest evaluated cost. The winning bidder shall not be required, as a condition of award, to undertake responsibilities for work not stipulated in the bidding documents or otherwise to modify the bid as originally submitted.
- (x) Each contract financed with the proceeds of the Loan shall provide that the suppliers and contractors shall permit ADB, at its request, to inspect their accounts and records relating to the performance of the contract and to have said accounts and records audited by auditors appointed by ADB.
- (xi) Government owned enterprises in the Borrower's country may be permitted to bid if they can establish that they (a) are legally and financially autonomous, (b) operate under commercial law and (c) are not a dependent agency of the Borrower/Project Executing Agency.
- (xii) Re-bidding shall not be allowed solely because the number of bids is less than three



**ANNEX 6: TEMPLATE FOR SEMI-ANNUAL PROGRESS REPORT**

告期 (Reporting period)		提交日期 (Date of Submission)	
<b>A. 介绍及基础数据 (INTRODUCTION AND BASIC DATA)</b>			
<b>1. 项目基础信息 (Basic Project Information)</b>			
项目号 (Project/Loan Number)	PRC: Catalyzing Climate Finance (Shandong)		
项目名称 (Project Title)	Catalyzing Climate Finance (Shandong)		
接收人 (Recipient)	People's Republic of PRC		
执行机构 (Executing Agency)	Shandong Development Investment Holdings Group		
项目办 (Project Management Office)	SDIHG		
<b>项目汇总表 (Project Summary Cost Estimates) (€ million)</b>			
<b>Item</b>	<b>Amount</b>		
<b>A. Base Cost</b>			
1.			
2.			
3.			
<b>Subtotal (A)</b>			
<b>B. Contingencies</b>			
<b>C. Financial Charges During Implementation</b>			
<b>Total Project Cost (A+B+C)</b>			
<b>项目融资计划 (Project Summary Financing Plan)</b>			
<b>Source 资金来源</b>	<b>Amount (€ million)</b> 金额	<b>Share of Total (%)</b> 占比	
Asian Development Bank 亚行	100.0		
Ordinary Capital Resources 普通资金来源			
<b>Total Project Cost</b>			
<b>2. 项目批准、生效及关闭日 (Project Approval, Effectiveness and Closing Dates)</b>			
批准日期 (Approval date)		项目实施期限 (原) [Elapsed project period (original)]	
贷款协定、项目协定签字日 (Loan signing date)		关帐日 (修改后) (Loan closing date) (revised)	
生效日期 (Loan effective date)		项目实施期限 (修改后) [Elapsed project period (revised)]	
关帐日 (原定) (Loan closing date) (original)		亚行上次项目检查时间 (Date of last ADB review mission)	

## B. Utilization of Funds

### Table 1: Withdrawal Progress of Subprojects

[illegible]



<b>C. 实施进度 (IMPLEMENTATION PROGRESS)</b>
<b>1. 报告期间项目实施进度情况 (Project Implementation Progress during the Reporting Period by Output)</b>
[_____, (State the progress and achievements in implementation by output since the last progress report.)]
<b>2. 项目实施安排 (Project Implementation Arrangements)</b>
[_____, (State assessment of project implementation arrangements such as establishment, staffing, and funding of the PMO)]
<b>3. 项目进度评价 (Assessment of Project Progress)</b>
(Assess progress in implementing the overall project to date in comparison with the original implementation schedule—quantifiable and monitorable target, (include simple charts such as bar or milestone to illustrate progress, a chart showing actual versus planned expenditure, S-curve graph showing the relationship between physical and financial performance, and actual progress in comparison with the original schedules and budgets, the reference framework or guidelines in calculating the project progress including examples are shown in <i>the project administration memorandum [PAM]</i> ) (You can append existing chart/table/graph showing physical and financial progress as appendixes, if any.)
<b>4. 评价主要假设条件及风险的有效性 (Assessment of the Validity of Key Assumptions and Risks)</b>
[评价实现量化后的实施目标所设想的主要假设条件及风险的有效性 (Assess the validity and key assumptions and risks in achieving the quantifiable implementation targets)]
<b>5. Progress of Subborrower</b>
<b>6. Effectiveness of RFA and the Facility Account</b>
<b>7. Interest Differential Accumulated and Used, and effectiveness in achieving its targeted objectives</b>
<b>8. Implementation of ESMS</b>
(Include implementation of activities in the environmental management plan under the ESMS for Subprojects)
<b>9. Selection of Subsequent Batches of Subprojects</b>
(Include progress in identifying, screening, assessing, and selection future Subprojects).

<b>D. 项目建设目标 (PROJECT PURPOSES)</b>
<b>1. 建设内容/实施安排状况 (Status of Project Scope/Implementation Arrangements)</b>
[_____, (Assess the status of project scope/implementation arrangements compared with those in the project document, and whether major changes have occurred or will need to be made.)]
<b>2. 项目成果实现的可能性及补救措施 (Likelihood of Achievement of the Project Outcomes and Remedial Measures)</b>
[_____, (Assess the likelihood that the immediate development objectives (project purpose) will be met in part or in full, and whether remedial measures are required based on the current project scope and implementation arrangements.)]
<b>3. 主要假设和风险变更 (Changes to the Key Assumption and Risks)</b>
[_____, (If applicable, assess changes to the key assumptions and risks that affect attainment of the development objectives.)]
<b>4. 其他建设内容 (Other Project Developments)</b>
[_____, (If applicable, state any other project developments, including monitoring and reporting on environmental and social requirements that might adversely affect the project's viability or accomplishment of immediate objectives.)]
<b>E. 相关条款的遵从 (COMPLIANCE WITH COVENANTS)</b>
[_____, (Summarize the status of the borrower's and EA's compliance with key financial, safeguards, and other covenants, particularly, for those covenants on due.)]
<b>F. 主要问题与困难 (MAJOR PROJECT ISSUES AND PROBLEMS)</b>
[如适用, 请归纳影响或有可能影响项目实施进度、符合各条款要求, 及实现即期目标等的主要问题, 提出解决这些问题的建议 (如变更建设内容、项目实施安排及贷款资金的再分配) (If applicable, summarize the major problems and issues affecting or likely to affect implementation progress, compliance with covenants, and achievement of immediate development objectives. Recommend actions to overcome these problems and issues (e.g., changes in scope, changes in implementation arrangements, and reallocation of loan proceeds)]
<b>G. 下一汇报期工作计划 (WORK PLAN FOR NEXT 6 MONTHS)</b>

**ANNEX 7: STATUS OF COMPLIANCE WITH MAJOR LOAN AND PROJECT  
COVENANTS**

贷款协定和项目协定中主要条款的遵守情况

Schedule	Paragraph No.	Description	Status	Type

**ANNEX 8: SGDF GREEN CLIMATE ASSESSMENT GUIDELINES**  
**(Also included as a Supplementary Document)**

**1. For Project Finance**

**1.1 Overview**

The assessment format spreadsheet, as used by program/ project<sup>1</sup> sponsors to gather information to be added into the Transaction Assessment C (TAC) stage of the M&E (ESMS/ EMS) System, provides the basis for green assessment.

---

<sup>1</sup> The format can be expanded to take into account any number of projects in a program and/ or components. In a large program it may be more practical to have one format per (sub-) project.

Investment Criterion/ Sub-criterion	Component Assessments					Project Assessment			Component weight check total
		1	2	3	etc		Component Weighted Average	Overall Weighted Score	
	Weight	0.3	0.3	0.4		Average			1
<b>Impact (E1)</b>	25%								
GHG Mitigation (tons)	0.12					#DIV/0!	0	0	
Beneficiaries of increased resilience to climate impacts – direct	0.13					#DIV/0!	0	0	
Beneficiaries of increased resilience to climate impacts – indirect									
<b>Paradigm Shift (E2)</b>	20%								
Scaling up & replication	0.05					#DIV/0!	0	0	
Knowledge & learning	0.05					#DIV/0!	0	0	
Enabling environment and Regulatory Framework (about policies adopted/implemented by institutions)	0.05					#DIV/0!	0	0	
Innovation	0.05					#DIV/0!	0	0	
<b>Sustainable Development Potential (E3)</b>	15%								
Economic	0.05					#DIV/0!	0	0	
Social	0.05					#DIV/0!	0	0	
– Gender									
Environmental	0.05					#DIV/0!	0	0	
<b>Needs of Recipient (E4)</b>	10%								
Justification of additional financing	0.1					#DIV/0!	0	0	
Level of vulnerability									
<b>Ownership (E5)</b>	10%								
Ownership level	0.1					#DIV/0!	0	0	
Capacity to implement									
Engagement with relevant institutions and civil society									
<b>Efficiency &amp; effectiveness (E6)</b>	20%								
Economic effectiveness	0.05					#DIV/0!	0	0	
Financial effectiveness	0.05					#DIV/0!	0	0	
Cost effectiveness	0.05					#DIV/0!	0	0	
Co-financing leverage	0.05					#DIV/0!	0	0	
<b>Score</b>								0	= [Result]
Check total criteria	1								If > 1.00 & < 1.67 = Good
Check total sub-criteria	1								> 1.67 & < 2.33 = Advanced
									> 2.33 = Transformational/ Best practice

These assessment guidelines are structured according to the criteria set out in the above format. The example spreadsheet shown above is for a project that has 3 components.

The spreadsheet assesses the performance of each component against each of the GCF investment criteria (and sub-criteria).

The spreadsheet weights:

1. The criteria – users are free to change weightings but they must add up to 1 (see check totals at bottom of spreadsheet). Indicative weights were chosen to prioritize key GCF objectives.
2. The components – the weight is determined by the relative percent of total project cost that the component represents – they must add up to 1 (see check total at right top of spreadsheet).



Criteria 2, 3 (except environment), 4, 5 and 6 (except cost effectiveness) are scored according to judgement as to how well the component performs against narrative criteria set out in Section A3 below.

Criteria 1, 3 Environment sub-criterion, and 6 Cost effectiveness sub-criterion are scored according to performance against quantitative criteria using the process set in Section A4 below.

Each component is assessed per sub-criterion as to whether it is transformational (=3), advanced (=2) or good (=1).

The spreadsheet calculates the overall score for the project given the weightings set and the net result is classed as transformational (greater than or equal to 2.33 to 3), advanced (greater than or equal to 1.67 to 2.33) or good (1 to 1.67) according to this score.

Note: The standard template contains both mitigation and adaptation assessments under Criterion 1 with a total weighting of 25 points. Where the project has only mitigation or adaptation benefits, the Criterion will still retain the full 25 points weighting.

## 1.2 Multi-Sector Projects

The issue of projects with more than one sector is important for GFCF for two reasons: a) such projects have the potential to demonstrate synergies among related investments, giving the project a greater climate impact; and b) it is evident that there will be a number of such projects in the GFCF portfolio (for example, an energy efficient expressway logistics project incorporating major resilience components).

The proposed approach is to assess each of the sectoral investments separately and then weight assessments according to the investment cost of each. A 10% weighting in the final score will constitute a “bonus” for such projects provided they are of significant scale (over \$200m).

## 2. Program/ Project Criteria

### 2.1 Criteria Overview

The SGDF has developed a set of criteria based on the Green Climate Fund’s investment framework<sup>2</sup> as the basis for project assessment. These same criteria should guide project development. The priority for SGDF is:

#### **Shifting to low-emission sustainable development pathways through such investments as:**

- Low-emission energy access and power generation
- Low-emission transport
- Energy efficient buildings, cities and industries
- Sustainable land use and forest management.
- Increasing climate-resilient sustainable development for:
- Enhanced livelihoods of the most vulnerable people, communities, and regions
- Increased health and well-being, and food and water security
- Resilient infrastructure and built environment to climate change threats
- Resilient ecosystems.

<sup>2</sup> Based on the Green Climate Fund (GCF) Investment Framework see:

[https://www.greenclimate.fund/documents/20182/24943/GCF\\_B.07\\_06\\_-\\_Investment\\_Framework.pdf/](https://www.greenclimate.fund/documents/20182/24943/GCF_B.07_06_-_Investment_Framework.pdf/)

The SGDF can potentially support investments in all these areas. By keeping SGDF criteria as close to the GCF criteria as possible, the SGDF has a) adopted the only internationally-recognised comprehensive green project assessment framework; and b) given the SGDF may at a later date want to attract GCF funding either to the Fund itself or to one of its projects, the capacity to easily check and demonstrate that it is satisfying GCF criteria. The GCF requires the preparation of a Concept Note (CN) that describes and assesses any project on these criteria.

The criteria and indicators are set out below.

#### *Impact Potential:*

The project proponent must specify the climate mitigation and/or adaptation impact. The two core indicators for impact potential are:

- Mitigation core indicator: Total tons of CO<sub>2</sub> to be avoided or reduced per annum – see Section 4.5 Mitigation sub-sections for sector indicators.
- Adaptation core indicator - expected total number of direct and indirect beneficiaries and number of beneficiaries relative to total population (e.g. total lives to be saved from disruption due to climate-related disasters) – see Section 4.5 Adaptation sub-sections for sector indicators.

These core indicators should be based on supporting evidence for the project/program, possibly including pre-feasibility studies or feasibility studies. The methodology used for calculating the values should also be provided so that the values and underlying assumptions may be validated during the review process. Finally, the project proponent should provide a benchmark in a comparable context (e.g. country, sector and/or technology) against which the indicator(s) can be compared – this will be used for ranking the performance. Levels of performance in key infrastructure sectors are set out in Section 2.2 below.

In addition to the core indicators above, project proponents are encouraged to provide specific values for other indicators as they see fit. As with the core indicators, the methodology used for calculating the indicators and values should be provided. For example, a renewable energy project or program may wish to provide the expected number of MW of low-emission energy capacity installed, generated and/or rehabilitated.

Along with quantitative indicators, project proponents may wish to supplement with more qualitative information, such as the degree to which the proposed activity avoids lock-in of long-lived, high-emission infrastructure (mitigation) or long-lived, climate- vulnerable infrastructure (adaptation). The project proponent therefore has significant leeway to respond to quantitative and qualitative factors that will strengthen their application.

#### *Paradigm Shift Potential:*

In terms of paradigm shift, the application should address its achievement in relation to the factors below. The project proponent should provide the estimates and details of specific activities/ investments that will achieve the following:

- Scaling Up and Replication for mitigation and adaptation
  - The application should present specific values for scaling up and replication (e.g. a 30 MW hydroelectric power station that can be replicated at four different specific sites in the region). A proposal with a high potential for scaling-up, for example an early warning system for an individual province that can be scaled up to several surrounding provinces, should present a concrete plan to do so. A proposal with high

replication potential, for example a hydroelectric power station in a region with several potential sites identified in a supporting technical study, should also present specific replication opportunities that can be explored. Scaling up and replication potential will have a number representing the multiples of initial impact size combined with supporting justification.

- Innovation
  - Innovative ideas or elements should be highlighted and described by the project proponent. For example, fostering new market segments, creation of business models and/or the development or adoption of new technologies. Innovation is context-specific, and the application should specify the circumstances in which the innovation takes place.
- Knowledge and Learning
  - Any potential for knowledge sharing or learning at a project or institutional level should be highlighted. For example, if the project/program will generate useful lessons learned, a plan should be elaborated that specifies how those lessons can then be captured and shared with other individuals, projects or institutions, including through the monitoring and evaluation of the project or program.
- Improving the Enabling Environment/ Improving Regulatory Framework and Policies
  - The sustainability of outcomes and results beyond the completion of the intervention should be highlighted by the project proponent. The application may elaborate on the arrangements that provide for long-term and financially sustainable continuation of key outcomes and activities. In circumstances where the planned activities do not generate financial reflows, a thorough explanation of long term financial sustainability is needed. project proponents may also wish to highlight the aspects of market development and transformation in which the project or program creates new markets and business activities at the local, national or international levels. If the project or program addresses or eliminates systematic barriers to low-carbon and climate resilient solutions, or changes incentives by reducing costs and risks, these aspects can be highlighted.
  - If the project or program advances national or local regulatory or legal frameworks and is expected to bring significant benefits in this regard, the project proponent must elaborate. Of particular interest is the shifting or alignment of incentives to promote investment in low-emission or climate-resilient development, and/or the mainstreaming of climate change considerations into policies and regulatory frameworks at all decision-making levels.

#### *Sustainable Development Potential:*

The project proponent must provide the expected environmental, social and health, and economic co-benefits. Also, it must provide the gender-sensitive development impact, which will aim to reduce gender inequalities in climate change impacts. These co-benefits and wider positive impacts may be drawn from an economic analysis of the proposed activities and can be strengthened with more qualitative factors. As with the impact potential indicators in the previous subsection, quantitative sustainable development potential indicators are welcome and should be supported by an analysis or study. The calculation methodology should also be provided. Examples of sustainable development indicators include the following:

- Economic co-benefits, for example:
  - Total number of jobs created
  - Amount of foreign currency savings
  - Amount of government's budget deficits reduced
- Social co-benefits, for example:

- Improved access to education
- Improved regulation or cultural preservation
- Improved health and safety
- Gender-sensitive development impact
- E.g. Proportion of men and women in jobs created
- Environmental co-benefits, for example:
  - Improved air quality
  - Improved soil quality
  - Water savings
  - Improved biodiversity.

Proponents may propose their own indicators that highlight the sustainable development potential of the project or program. In addition to the indicators above, and the project proponent may wish to include other indicators to support a strong narrative of sustainability – for example, support targeted and minorities or ethnic groups.

#### *Needs of Recipient*

- Justification of SGDF financing
  - For example, the absence of alternative sources of financing - project proponents may describe the barriers that created the lack of alternative funding sources for the project or program and/or the unsuitability of the terms of finance such as tenor of loan.
- Vulnerability levels **(NOTE: while this issue will need to be addressed in a GCF application, this sub-criterion somewhat duplicates issues addressed under the Impact and Sustainability criteria – this sub-criterion can be skipped for a non-GCF application.)**
  - The project proponent must describe the scale and intensity of vulnerability of the country and beneficiary groups and elaborate how the project or program addresses the identified needs. Examples include the following;
  - Vulnerability of the country and beneficiary groups (adaptation only) - the application may address the scale and intensity of exposure to climate risks for the beneficiary country and groups, which could include the exposure of people, social or economic assets or capital to risks derived from climate change. Exposure could be expressed in terms of size of population and/or social or economic assets or capital. The proposed activities may support specific beneficiary groups which are identified as particularly vulnerable in national climate or development strategies, which should then be highlighted with relevant sex disaggregation.

#### *Country Ownership*

Country ownership is critical to the success of the project. The project proponent must provide details of:

- Coherence and alignment with national and provincial climate strategy and priorities: The application should detail how its objectives are aligned with the priorities in the country's national climate strategy. The project proponent may refer to NAMAs, NAPs, Technology Needs Assessments (TNAs) or others, as appropriate
- Capacity of project proponent to deliver a green project: the project proponent should provide a brief description of how the project will be implemented (e.g. local developers, partners and service providers), and the roles these entities will play, respectively. The track record and relevant experience of the entities in similar or relevant project or program

circumstances can be elaborated. The use of green procurement will be an important determinate of the performance in this indicator.

- Stakeholder engagement process and feedback received from civil society organizations and other relevant stakeholders: The consultative process must be emphasized in the description of the country ownership, both with the relevant national designated authority and with the wider group of stakeholders

### *Efficiency and Effectiveness*

Economic and financial analysis primarily drives the efficiency and effectiveness criterion, and the application should make the case for strong cost effectiveness and financial soundness. The efficiency and effectiveness of the proposed financial structure is particularly important, as the requested funding should be the appropriate amount necessary, and in the proper form (i.e. proposed financial instrument) to make the project or program viable, but not more. The two indicators are standard tests for any development financing institution:

- Economic Internal Rate of Return (EIRR); and
- Financial Internal Rate of return (FIRR).

Efficiency and effectiveness includes two core mitigation indicators. The project proponent must provide values and supporting justification, including the calculation methodology and citations of relevant studies, for these core indicators, if applicable:

- For mitigation the estimated cost per tCO<sub>2</sub> eq. (total investment cost/expected lifetime emission reductions) – benchmark against McKinsey China Cost-Abatement calculations<sup>3</sup> see Section 3 below; and for adaptation the Climate Resilience Benefit (CRB) as defined in the EBRD methodology is used to determine performance.
- Expected volume of finance to be leveraged as a result of the Fund's financing, disaggregated by public and private sources

In general, the economic and financial analysis, including the financial model if applicable, should guide the preparation of the response to this criterion. Project proponents should set out, in particular, the assessment of financial viability and the appropriateness (need for) of using concessional funds; and of how the proposed financial structure (funding amount, financial instruments, tenor and term) is adequate and reasonable to achieve the goals of the project.

## **2.2 Performance by Criterion**

The table below sets out how to score performance in the above criteria – from the level of a “good” project (score 1), to an “advanced” project (score 2) to a “transformational” project (score 3).

It should be noted that, where additional activities or outputs are required to reach a higher level of performance, the requirements for the lower levels still apply – the indicators are ‘additive’ in that achieving a higher level of performance means that the program or project also continues to meet indicators for lower levels of performance.

---

<sup>3</sup> See McKinsey and Company. 2009. China's Green Revolution: Prioritizing technologies to achieve energy and environmental sustainability. Beijing.

**Table 1: SGDF investment Criteria**

Table 1: GCDI Investment Criteria			
Investment Criterion/ Sub-criterion	Performance Level		
	Good Practice	Advanced Benefits	Transformational
Impact (E1)			
GHG Mitigation (tons)	GHG indicators and performance by sector – see Mitigation sub-sections of Section 3.2/3  Adaptation indicators and performance by sector – see Adaptation sub-sections of Section 3.2/3		
Beneficiaries of increased resilience to climate impacts – direct			
Beneficiaries of increased resilience to climate impacts – indirect			
Other relevant indicators			
Paradigm Shift (E2)			
Scaling up & replication (about institutional structures)	Providing well-designed on-the-job training for implementing the green project to involved stakeholders (project level)	Providing the basis for replication in terms of a sustainable business model that can continue to implement green projects (corporate level)	Providing organizational and financial bases for expansion of activities beyond the province (industry level).
Knowledge & learning	Program or project has a clear, funded set of activities to document and disseminate outcomes/ results (E&M plan as per IAFs)	Support to sectoral partnerships and dialogue to enhance green investment	Support to National and International Partnerships, knowledge exchange and dialogue on integrated approaches to enhancing green investment
Enabling environment and Regulatory Framework (about policies adopted/implemented by institutions)	Catalysing well-designed regulatory and other policies implementing the green project (project/ corporate level).	Fostering and participating in structured, well-resourced provincial national policy dialogue with the objective of upscale and maximize the impact of green investments in the sector (industry level).	Supporting a regulatory framework that provides incentives and funding to undertake efficient and sustained green investments (i.e. helping develop regulations at national level).
Innovation (about operational or financial technology – includes ICT	Program or project demonstrates that it has canvassed appropriate, available technical and financing options available and has selected	Program or project demonstrates that it is utilizing new planning, financing	Program or project demonstrates that it is utilizing

<b>overlays for current technology)</b>	appropriate options given client needs and capacities (innovative at project level).	and/or operational technology, processes or systems that will enable greater impact per unit input (replicable, innovative technology and/or process at industry level).	integrated systems for planning, new technology, financing and/or operations capable of driving synergies across investment sectors (innovation that will impact many sectors/ industries).
<i>Sustainable Development Potential (E3)</i>			
<b>Economic</b>	Project or programme demonstrates it has considered ways to maximise the local economic benefits of the proposed investment (project level).	Program or project is designed to provide opportunities for enhancing employment either directly or indirectly through enhanced productivity, skills and/or competitiveness; or through enhanced resilience eg energy and/or water security (community level).	Program or project is structured to promote more efficient markets for green technologies (national level).
<b>Social</b>	MDB equivalent social safeguards addressed adequately (project level).	Program or project leads to active adoption of climate positive action by stakeholders involved in the program or project or builds their community resilience to climate impacts. Program or project is designed to provide opportunities for social inclusion as an integral part of its design; protect cultural-heritage; and/or health-safety co-benefits (community level benefits).	Program or project leads to active adoption of climate positive action across a broad range of stakeholders both directly impacted by the program or project and external to it. Program or project is proactive in relation to ensuring that the benefits of the investment are shared by lower income/ disadvantaged groups in terms of employment and/or supplying

			inputs (community level systems).
– Gender	Relevant gender policy (MDB equivalent) addressed adequately	Supports proactive involvement of women in program or project planning and implementation.	Supports gender mainstreaming (ADB definition)
Environmental	MDB equivalent/ Equator Principles environmental safeguards addressed adequately. <sup>4</sup> (project level).	Program or project is designed to provide significant co-benefits such a better air/ water quality as an integral part of its design (community level).	Program or project to act as catalyst for broader adoption of policies and process which will provide significant co-benefits such a better air/ water quality in a broader region or in other regions (provincial or national level).
	Pollution indicators and performance by sector – see Pollution sub-sections of Section 3.2.		
Needs of Recipient (E4)			
Justification of additional financing	Project or programme demonstrates that there is a need for finance to address inability of local capital market to finance the project and/or there is a binding government budget constraint.	Project or programme acts as a catalyst for local climate finance in capital markets, new instruments and/or new funding sources/ mechanisms.	Project or programme acts as a catalyst for value adding international climate finance through capital markets, and/ or new instruments therefor.
Level of vulnerability	Number of people/ percent of economic activity at risk – both gross and as proportion of city/ region/ national totals. Disaggregate by social group and gender where appropriate (as in IAF).		
Ownership (E5)			
Ownership level	Program or project is included/ implied in climate strategy/INDCs.		
Capacity to implement	Previous track record satisfactory.		Green procurement.
Engagement with relevant institutions and civil society			Local institutions fully engaged in program or project design. Civil society informed as per guidelines.



<i>Efficiency &amp; effectiveness (E6)<sup>5,6</sup></i>			
<b>Economic effectiveness</b>	Economic rate of return analysis above climate-relevant hurdle rate, i.e. Economic BCR > 1 Justification for level of concessionality		
<b>Financial effectiveness</b>	Using the relevant Weighted Average Cost of capital, Financial BCR > 1 (with/ without GCF support) Justification of effectiveness of funds flow, financial management, funding mechanisms, financial instruments – and the sustainability of these structures beyond GCF support.		
<b>Cost effectiveness</b>	<p>For mitigation: \$/ ton Carbon equivalent See McKinsey Cost-Abatement estimates average (this number to 1/3 of way to zero limit or best performance is 'good practice') \$/ per person GHG related co-benefit (e.g. air quality) For adaptation: \$/ person direct adaptation benefit \$/ person indirect adaptation benefit</p> <p>Minimum of 10% of capital cost required for adaptation if it is to be considered as a combined mitigation/ adaptation project. Where data is available utilize EBRD calculation methodology set out at <a href="https://www.ebrd.com/documents/climate-finance/implementing-the-ebrd-green-economy-transition.pdf">https://www.ebrd.com/documents/climate-finance/implementing-the-ebrd-green-economy-transition.pdf</a> The Climate Resilience Benefit (CRB) as defined in the EBRD methodology is used to determine performance in adaptation cost effectiveness – ADB recommended climate-relevant discount rates to be used to determine present value of benefits. This is given as: CRB/ Project Cost Ratio (CRR). Where the CRR &gt;.1 = good practice.</p>	<p>1/3 to 2/3 of way to zero limit or best performance is 'advanced practice'</p> <p>CRR &gt; 1.5 but &lt; 2 = advanced practice</p>	<p>Above 2/3 of way to zero limit or best practice</p> <p>CRR &gt; 2 = transformational practice</p>
<b>Co-financing leverage</b>	1 = Good: 1-3 = Advanced; >3 = Best		

### 3. Quantitative Project Design Indicators and Performance

#### 3.1 Indicator Overview

The challenge for assessing Investment Criterion 1 Impact, Criterion 3 (Environmental) Sustainability and Criterion 6 Effectiveness is to establish not just standards, but some kind of ranking of performance against best practice. Given the above narrative criteria that can be applied to non-quantitative Investment Criteria, it was considered that a “three tiered” approach to quantitative indicators would be appropriate. Based on some measure of good practice as a

<sup>5</sup> At present, with the exception of cost-abatement figures benchmark figures for these indicators are tentative or do not exist. Narrative description of indicators should reflect a) increasing targeting of concessionality and b) relative timelines for removal of GCF-funded – and other – subsidies, in the economic and financial assessments respectively.

<sup>6</sup> Some sub-criteria have been rearranged and downgraded to indicators for analytical coherence.

baseline for Business as Usual, the numerical difference between this and “best practice” can be divided in 3 segments corresponding to “good practice”, “advanced practice” and “transformational or best” practice. Standards selected as the baseline of good practice were, in general, Chinese standards – where these are not applicable EU standards were used. These were chosen because a) they were reasonably aspirational standards that had b) been agreed by a range of EU countries across a spectrum of economic development. Where EU regulations required detail standards to be enacted in national laws, UK standards were generally used as they are accessible in English.

The concept used in respect of GHG emissions rating established, in each sector, current good technical practice Business as Usual (BAU) GHG performance<sup>7</sup> – for example, GHG emissions of Euro 5 for buses in the public transport sector – constitutes the baseline for “Good” performance under the project. Then this is translated into an indicator that is useable in relation to urban development and is technically “agnostic” – for example, GHG emissions per passenger km. The “zero limit” is then set – for example, electric busses running on wind power generation (Scope 2). The spectrum from current good practice BAU to zero limit is then divided into three segments – corresponding to the Good Practice, Advanced Benefits and Transformational/ Best categories set out above – see diagram below. These standards will be established, by sector, in the Mitigation sub-sections below. Comparable data are only available for Scope 2 emissions. It would be desirable to use Scope 3 emissions<sup>8</sup> but this appears not to be technically feasible at this stage given data availability.

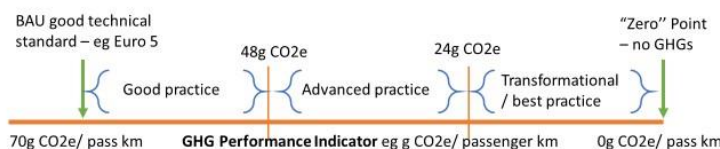
---

<sup>7</sup> GHG emissions should be calculated using IPCC methodologies where available (reference IPCC 2006 Guidelines: <https://www.ipcc-nggip.iges.or.jp/public/2006gl/>), otherwise consultants will have to define the methodology in line with either an analogue IPCC methodology, an established sector methodology or one they develop subject to scrutiny by GCF Independent Review panel or equivalent.

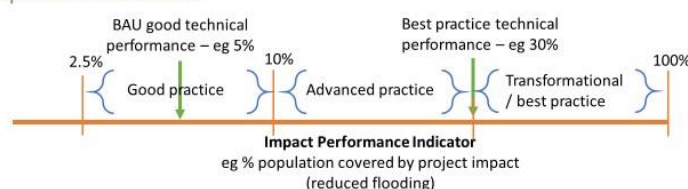
<sup>8</sup> Scope 3 emissions would include full life cycle assessment and encourage use of carbon offsets against manufacture/ construction and disposal.

## Performance Measurement for Green Indicators

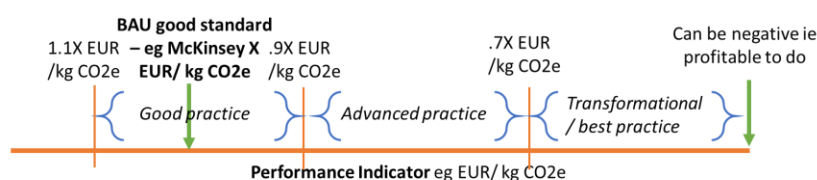
### • Mitigation (GHG) Indicators



### • Adaptation Indicators



### • Cost Abatement Indicators



### • Pollution Indicators



The base concept used in respect of adaptation rating establishes, in each sector, current levels of impact in terms of people affected in a significant way – either directly or indirectly. A BAU project of good current practice then establishes the BAU baseline (a 5% improvement). The definition of "significant" is, to some extent, based on professional judgement as to what is achievable in a sector, and thus will vary by sector. For example, the number of people being impacted by flooding – either directly through having possessions damaged or indirectly through. For example, being delayed on a commute. The "zero limit" is then set – for example, reducing the people impacted by flooding by 30%. These percentages were set based on the expected impact of a medium to large size ADB sector loan investment in a medium to large size (1 million to 5 million) city. The spectrum from current good practice BAU to zero limit is then divided into three segments – corresponding to the Good Practice.

Advanced Benefits and Transformational/ Best categories set out above – see diagram above. These standards will also be established, by sector, in the Adaptation sub-sections below. Where project benefit calculations are based on projections of worsening impacts due to climate change, it is important that the assessment of these benefits, ie those benefiting significantly from the investment (both directly and indirectly), be related to impacts demonstrated by down-scaled climate models.

The concept used in respect of pollution rating established, in each sector, related to the standards set for performance. The baseline levels (BAU) are established by Chinese standards. Higher levels

of performance are established by reference to additional standards which increase resilience or have other climate benefits. EU standards are often used (where appropriate) to establish “best practice” in these additional outcomes. Intermediate performance is determined according to the extent to which these outcomes are achieved. As above, the spectrum from current good practice BAU to zero limit is then divided into three segments – corresponding to the Good Practice, Advanced Benefits and Transformational/ Best categories set out above. These standards will also be established, by sector, in the Pollution sub-sections below. Where project benefit calculations are based on projections of worsening impacts, it is important that the assessment of these benefits, i.e. those benefiting significantly from the investment (both directly and indirectly), be related to impacts demonstrated by sound technical assessments, and supported by down-scaled climate models to define the impact of climate change on the pollutant.

The concept used in respect of cost effectiveness rating uses McKinsey estimates of average abatement cost in each sector (see footnote 6). As with most adaptation indicators, this level is taken as the BAU baseline. “Good practice” is then set as a percentage around this baseline – 10% either side unless this is impractical. Advanced Practice is defined as between a 10% and 30% improvement and Transformational/ Best practice is above 30% improvement. Indicative cost-abatement numbers are given in each sector.

The sub-sections below set out the logic and sources of indicators in each sector. The sector analyses are structured by the primary mitigation investment. Adaptation investments are discussed under the linked mitigation investment – for example water saving in agriculture is discussed under agriculture investments in the “environment” sector.

Section 3.2 below summarizes the indicators and recommended performance levels for the major infrastructure sectors. Other sectors must depend on professional assessments of performance.

The Terms of Reference for consultants working on SGDF projects will include a stipulation that engineers determine the performance of the project against the parameters relevant to the project concerned. These consultants will also be charged with assessing – for the technical criteria: Impact (mitigation and/or adaptation), Environmental Sustainability, and Cost Effectiveness – the performance of the project (good/ advanced/ transformational). These guidelines should be appended to the terms of reference of the consultant in order to provide guidance in this assessment.

Annex 1 provides the format for reporting from Consultants.

### **3.2 Sectoral Indicators**

*Water and sanitation,*

*Water supply*

Mitigation (Impact Criterion)

The following are Chinese best practice standards from experience in the carbon market. These standards are to be used as the BAU baseline for “good practice”.

**Table 2: Water Supply Chinese Mitigation Best Practice**

Unit (g CO <sub>2</sub> e/L)
0.105 (Groundwater ratio 0-20%)
0.156 (Groundwater ratio 21-30%)
0.182 (Groundwater ratio 31-40%)
0.207 (Groundwater ratio 41-50%)
0.233 (Groundwater ratio 51%-60%)
0.36 (Groundwater ratio 61%-100%)

For circumstances where these standards are not applicable the BAU standard is: UK Water 2008 – good practice in treatment and delivery (national so varying circumstances)

➤ .271g CO<sub>2</sub>e/ liter

Source: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/291728/sch\\_o0708bofv-e-e.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291728/sch_o0708bofv-e-e.pdf); <http://oco-carbon.com/metrics/embodied-carbon-of-water-update/> (gives .79g but this is combined water and sewerage)

“Zero limit” is 0 g CO<sub>2</sub>e/ liter using fully renewable energy with offsets for any related directly attributable emissions (e.g., maintenance fleet).

#### Adaptation (Impact Criterion)

BAU standard: Rainwater capture and recycling augmenting potable water deliveries by over 5%.<sup>9</sup> to consumers.<sup>10</sup> Good practice is from 5% to 10% increment.<sup>11</sup>

Advanced practice – 10% to 30%; Best practice – over 30%.

#### Pollution (Environmental Sustainability Criterion)

Standards: Council Directive 98/83/EC On Drinking Water Quality [also ISO]; EU Council Directive 75/440/EEC Quality Required of Surface Water Intended for the Abstraction of Drinking Water.

Indicators for drinking water set in Annex 1 of the Directive covering Microbiological and Chemical indicators

Indicators for Raw Water set in Annexes covering microbiological characteristics, toxic compounds and other substances with a deleterious effect on human health), variables affecting the taste and odor of the water (e.g. phenols), variables with an indirect effect on water quality (e.g. color, ammonium) and variables with general relevance to water quality (e.g. temperature).

In relation to water supply, full compliance with the above standards is considered Best Practice, with partial compliance of key indicators considered Advanced practice.

#### Cost Efficiency (Efficiency and Effectiveness Criterion)

The McKinsey abatement cost calculations do not nominate an average cost for abatement cost in this sector. This is probably because the actual level of emissions from this sector is relatively small.

<sup>9</sup> Needs to be significant based on good professional practice – this issue applies in the case of all adaptation metrics.

<sup>10</sup> Relevant service areas need to be defined – with clear justification – on a project-by-project basis – for example, the area could be city-wide for a water supply system in a medium sized city (say 500,000 to 1 million) but refer to a water service district in a megacity. Each sector will have a different definition of consumer service area.

<sup>11</sup> Improvement needs to be significant to impact the quality of individual's lives. This approach is taken in all adaptation sections.

No international comparator is evident. Consultants will be required to make a professional judgement of performance.

### *Wastewater*

#### Mitigation (Impact Criterion)

The following are Chinese best practice standards from experience in the carbon market. These standards are to be used as the BAU baseline for “good practice”.

**Table 3. Wastewater Chinese Mitigation Best Practice**

Unit (g CO <sub>2</sub> e/L)
0.315 (Urban sewage treatment and reuse of reclaimed water)
0.429 (Industrial wastewater treatment)
0.894 (Industrial reclaimed water production)

For circumstances where these standards are not applicable the BAU Standard is: UK Water 2008

➤ .476g CO<sub>2</sub>e/ liter

Source: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/291728/sch\\_o0708bofv-e-e.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291728/sch_o0708bofv-e-e.pdf)

“Zero limit” is 0 g CO<sub>2</sub>e/ liter – fully utilizing waste as an energy source and using fully renewable energy, for example, with offsets for any related directly attributable emissions (e.g. composting, maintenance fleet).

#### Adaptation (Impact Criterion)

BAU standard: Wastewater treatment infrastructure “hardened”<sup>12</sup> to flood and other impacts serving 5% to 10% of consumers is good practice.

Advanced practice – 10% to 30%; Best practice – over 30%.

#### Pollution (Environmental Sustainability Criterion):

Standards: Council Directives 86/278/EEC and 91/271/EEC for sludge

Indicators set in Annexes on Biochemical oxygen demand (BOD<sub>5</sub> at 20 °C) without nitrification, Chemical Oxygen Demand (COD), Suspended solids, Phosphorous and Nitrogen discharges.

In relation to water supply, full compliance with the above sludge treatment standards coupled with a waste-to-energy installation is considered Best Practice, with adherence to sludge standards considered advanced practice.

Source: <http://ec.europa.eu/environment/archives/enlarg/handbook/waste.pdf>

#### Cost Efficiency (Efficiency and Effectiveness Criterion)

The McKinsey abatement cost calculations do not nominate an average cost for abatement cost in this sector. This is probably because the actual level of emissions from this sector is relatively small. No international comparator is evident. Consultants will be required to make a professional judgement of performance.

### *Urban transport*

<sup>12</sup> Meaning that extra investment is made in the infrastructure to make it resilient to climate (and other potential) impacts – for example, investment in waste water treatment plants to enable them to continue to function and to prevent pollution if there is severe flooding.

### Mitigation (Impact Criterion) - Public transport

The following are Chinese best practice standards from national and provincial levels. These standards are to be used as the BAU baseline for “good practice”.

**Table 4: Transport Chinese Mitigation Best Practice**

g CO <sub>2</sub> /km
973 (City bus)
623 (Public passenger transport)
589-677 (Shandong Province, commercial passenger transport), (large vehicle 12 meters ≥ car length > 9 meters)
348-434 (Shandong Province, commercial passenger transport), (Medium vehicle 9 meters ≥ car length > 6 meters)

Notes: There is insufficient Chinese data to establish a well-to-wheel standard and so only direct vehicle emissions are used.

The average carbon emission level of public passenger transportation nationwide is calculated according to the energy consumption data of urban public transportation and highway class passenger transportation provided by the 2017 transportation industry statistical bulletin;

The emission level of Shandong Province is based on the local standard of Shandong Province. Data calculation for the fuel consumption limit of passenger transport vehicles of road transport enterprises (DB37/839-2007) using the calculation: carbon emission = (100 km energy consumption/ oil product discount standard coal coefficient) × oil product carbon dioxide emission coefficient.

For circumstances where these standards are not applicable the BAU Standard is: Euro 5 diesel, articulated bus

- 1,300g CO<sub>2</sub>e/ km (well-to-wheel – Scope 2 equivalent)

Source: Repic (Switzerland) *Real World Performance of Hybrid and Electric Buses* Grütter Consulting 2014

“Zero limit” is 0 g CO<sub>2</sub>e/ passenger km using fully renewable energy with offsets for any related directly attributable emissions (e.g. maintenance facilities and fleet). Note: this standard is technologically agnostic – a well-utilized light rail system would be expected to perform much better in relation to this indicator.

### Adaptation (Impact Criterion)

Transport rights-of-way serving over 5-10% of consumers hardened to flood and other impacts is good practice.

Advanced practice – 10% to 25%; Best practice – over 25%.

### Pollution (Environmental Sustainability Criterion)

The following are Chinese best practice standards for co-benefits from GHG reduction – to be used for Criterion 3 (Environment).

**Table 5. Transport Chinese Cobenefits Best Practice**

Synergistic NO <sub>x</sub> reduction - urban bus (Unit: t)	NO <sub>x</sub> =3.3×10 <sup>-2</sup> ×C
Synergistic NO <sub>x</sub> reduction - road passenger transport (Unit: t)	NO <sub>x</sub> =4.1×10 <sup>-2</sup> ×C
Synergistic NO <sub>x</sub> reduction - heavy vehicles (Unit: t)	NO <sub>x</sub> =4.5×10 <sup>-2</sup> ×C

Notes:1. C stands for the CO<sub>2</sub> emission reduction of transportation projects (Unit: t- CO<sub>2</sub>).

These figures should be provided by the consultants.

In terms of performance assessment on technical design, the applicable standards are: Euro 5 indicators see: Euro 5 (2009/9) for light passenger and commercial vehicles—715/2007/EC Indicators set for CO and NO<sub>x</sub> emissions, Hydrocarbons (HC), particulate matter (PM), particulate number (PN) and Smoke.

Good practice is pass all for Euro 5, advanced is pass Euro 6, and best practice is zero emissions vehicles.

#### Cost Efficiency (Efficiency and Effectiveness Criterion)

The McKinsey abatement cost calculations nominate an average cost of between EUR 9 (small hydro) and 134 (electric vehicles) per tonne CO<sub>2</sub>e – average EUR 46 – as the abatement cost in this sector. This is taken as the baseline of good practice – the actual benchmark number would depend on the actual vehicle type financed. Thus, a 10% margin around EUR 46/ tCO<sub>2</sub>e would constitute “good practice”, a 10% to 30% improvement on \$46 constitutes “advanced practice” and over 30% improvement constitutes “best practice”. Weightings for area of China could be considered – although this is not relevant for a Shandong-based Fund.

#### Waste management,

#### Mitigation (Impact Criterion)

The following are Chinese best practice standards from experience in the carbon market. These standards are to be used as the BAU baseline for “good practice”.

**Table 6: Waste Management Chinese Mitigation Best Practice**

Solid Waste Sanitary Landfill	0.72-0.48 (tons of CO <sub>2</sub> e/ton solid waste incineration)
Cogeneration	(g CO <sub>2</sub> / kWh)
Less or equal to 276 (Supercritical 600WM and above)	792-845 (Supercritical 600WM and above)
Less or equal to 295 (Ultra high pressure 200MW and below)	842-871 (pressure critical 600MW)
	863-897 (pressure critical 300MW)
	990 (Ultra high pressure 200MW and below)
	1043 (high pressure 100 MW and below)
	792 (The entry value of the new unit in normal area)
	815 (The entry value of the new unit in normal area)

Notes: The Chinese carbon market verification process investigated the use of cement kiln and other facilities to co-process the discharge of solid waste. There are no specific solid waste combustion emission statistics;

Where the above is not applicable as a baseline, the BAU standard is taken to be a well-run solid waste, sanitary landfill (life cycle w flaring)

- .72 tonnes CO<sub>2</sub>e/ tonne SW

Notes: (a) although GHG performance of a project will vary depending on the different ratios of different sorts of waste, the GFCF has to assess a range of projects, so there is no practical way around the use of an average value here (less well performing projects in relation to CO<sub>2</sub> – even if they are good performers in relation to the sort of waste they have – should not be favoured, but a lower rating will not necessarily knock the project out – there



are other indicators); and (b) waste to energy counts as investment reducing the BAU GHG emissions.

Source: <https://pdfs.semanticscholar.org/5abe/2b7e0be8ebf9874220428e064837718aba90.pdf>;  
<http://www.lms.com.au/assets/Media-Resources/Fact-Sheet-on-Emissions.pdf>

"Zero limit" is 0 g CO<sub>2</sub>e/ tonne SW using fully renewable energy with offsets for any related directly attributable emissions (e.g., flaring and collection fleet).

#### Adaptation (Impact Criterion):

Waste treatment hardened to flood and other impacts over 5% to 10% of consumers – number of people benefiting as a % of population of urban area as good practice.

Advanced practice – 5% to 25%; Best practice – over 25%.

#### Pollution (Environmental Sustainability Criterion)

Standards applicable: Council Directive on the landfill of waste (99/31/EC) (OJ 182, 16.7.99), as amended by Regulation (EC) No. 1882/2003

Standards set (in Annexes) for geological barriers, leachate management, gas control, "other nuisances and hazards", and segregation of particular types of waste

Directive 2000/76/EC of the European Parliament and the Council of 4 December

2000 on the incineration of waste (Official Journal L 332, 28.12.2000)

Communication from the European Commission on The role of waste-to-energy in the circular economy. 26.1.2017 .COM(2017) 34 final

Standards set (in Annexes) on dust, nitrogen oxides (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), hydrogen chloride (HCl), hydrogen fluoride (HF), heavy metals and dioxins and furans. The Directive also sets controls on releases to water resulting from the treatment of the waste gases.

Advanced practice is to pass 2/3 of applicable standards and best practice is full conformity to the full standards as amended.

Given the complexity of the parameters involved, consultants will be required to make a professional judgement of performance.

#### *Note on Hazardous Waste*

Hazardous Waste standard processes are set in Council Directive 91/689/EEC on hazardous waste (OJ L 377, 31.12.91), as amended by Council Directive 94/31/EC (OJ L 168, 2.7.94) but implemented through national legislation. The UK has a comprehensive set of legislation see: <https://www.gov.uk/dispose-hazardous-waste>. Related legislation/standards on batteries and others is found at: <http://ec.europa.eu/environment/archives/enlarg/handbook/waste.pdf>

Standards are set for hazardous chemicals and liquid waste containing such chemicals and other pollutants at high concentrations, asbestos waste, construction and demolition waste, lead acid batteries, tires, clinical and related waste, quarantine waste, radioactive waste, and waste mineral oil.

It is impractical to attempt to classify performance against such diverse and health-critical standards. Where such an investment is being considered, the application of UK or Chinese standards – whichever is the higher – is mandatory.

Source: <http://ec.europa.eu/environment/archives/enlarg/handbook/waste.pdf>

#### Cost Efficiency (Efficiency and Effectiveness Criterion)

The McKinsey abatement cost calculations nominate an average cost between EUR 215 per tonne CO<sub>2</sub>e as the average abatement cost in this sector. This is taken as the baseline of good practice – the actual benchmark number would depend on the mix of investments. Thus, a 10% margin around EUR 215 / tCO<sub>2</sub>e would constitute "good practice", a 10% to 30% improvement on \$215 constitutes "advanced practice" and over 30% improvement constitutes "best practice".

*Energy Efficiency**Green Building***Mitigation (Impact Criterion)**

The following are Chinese best practice standards. These standards are to be used as the BAU baseline for “good practice”.

**Table 7. Green Building Chinese Mitigation Best Practice**

<b>Residential Building</b>	<b>Applicable energy consumption limit value (Including power consumption index and gas indicator)</b>	<b>Calculated advanced emission level (kgCO<sub>2</sub>eq/household/year)</b>	<b>Note:</b> Note : 1. According to the "civil building energy consumption standard" for China's national building energy consumption indicators. In "standard" for the number of residential building is adopted according to the household living recommend excellent standard of energy consumption index definition method, the energy consumption and emissions excellent value for every three people living standard is given, such as the number of live not 3 people, according to the N/3 parameter values within the correction coefficient of adjustment form. If a comparison is required with the index value defined by area, the above index value is divided by the area of each building;  2. Due to the large difference in climate between north and south of China and east and west of China, climate division is conducted in accordance with relevant national standards, and energy consumption standards are implemented in buildings with different climate zones;  3. Carbon emissions calculation formula is: buildings carbon emission=Σ (building energy consumption index (power) × Power grid emission factor + building energy consumption index (gas) × Carbon dioxide emission coefficient of gas + building heating energy consumption index (coal or gas) × (gas or coal) CO <sub>2</sub> emission coefficient).
Hot-summer and cold-winter regions	3100 kwh/a.H	3469	

<b>Office Building Types</b>	<b>Applicable energy limit values (power consumption indicators) (KWH /(m<sup>2</sup>/ Year)</b>	<b>Calculated advanced emission level (kgCO<sub>2</sub>eq/ m<sup>2</sup>/year)</b>	<b>Note:</b> 1. According to the building area, public buildings follow the standard of energy consumption;  2. Based on ‘the standard of civil building energy consumption’, the advanced standard value of building energy consumption in China is calculated;
Class A party and government organs	55	57	
Class A business	70	73	
Class B party and government organs	65	68	

Class B business	80	83	3. Class A buildings refer to buildings with natural ventilation, Class B buildings that must be ventilated by mechanical means.
------------------	----	----	--

Hotel Types	Applicable energy limit values (power consumption indicators) (KWH /(m <sup>2</sup> /year)	Calculated advanced emission level (kgCO <sub>2</sub> eq/m <sup>2</sup> /year)	<b>Note:</b> 1. According to the building area, public buildings follow the standard of energy consumption; 2. Based on 'the standard of civil building energy consumption', the advanced standard value of building energy consumption in China is calculated; 3. Class A buildings refer to buildings with natural ventilation, Class B buildings that must be ventilated by mechanical means.
Class A Three-star and below hotels	90	94	
Class A Four-star hotels	115	120	
Class A Five-star hotels	135	141	
Class B Three-star and below hotels	120	125	
Class B Four-star hotels	150	156	
Class B Five-star hotels	180	187	

Large Commercial Buildings: Types	Applicable energy limit values (power consumption indicators) (KWH /(m <sup>2</sup> /year)	Calculated advanced emission level (kgCO <sub>2</sub> eq/ m <sup>2</sup> /year)	<b>Note:</b> 1. According to the building area, public buildings follow the standard of energy consumption; 2. Based on 'the standard of civil building energy consumption', the advanced standard value of building energy consumption in China is calculated; 3. Class A buildings refer to buildings with natural ventilation, Class B buildings that must be ventilated by mechanical means.
Large department stores	170	177	
Large shopping centers	210	219	
Large supermarkets	180	187	

Note: Large scale hospitals: For the large-scale hospitals, the advanced emission level is calculated as 74 kgCO<sub>2</sub>eq/m<sup>2</sup>/year, the value based on the research of verification and statistical analysis data of enterprises involved in the carbon market.

For circumstances where these standards are not applicable the BAU Standard is: Average building CO<sub>2</sub>e/ m<sup>2</sup>/ annum

➤ 163 kg CO<sub>2</sub>e/ m<sup>2</sup>/ yr

Source: [https://www.gbca.org.au/uploads/194/34754/The\\_Value\\_of\\_Green\\_Star\\_A\\_Decade\\_of\\_Environmental\\_Benefits.pdf](https://www.gbca.org.au/uploads/194/34754/The_Value_of_Green_Star_A_Decade_of_Environmental_Benefits.pdf)

"Zero limit" is 0 g CO<sub>2</sub>e/ m<sup>2</sup>/ yr (or better) using, for example, passive solar design with integrated rooftop solar PV and/or fully renewable energy with offsets for any related directly attributable emissions (e.g. maintenance facilities and fleet) if not energy positive or neutral.

**Adaptation (Impact Criterion)**

Building area hardened to flood and other impacts over 2 to 5% of the population of an urban area is considered to be good practice.

Advanced practice – 5% to 10%; Best practice – over 10%.

**Pollution (Environmental Sustainability Criterion)**

The following are Chinese best practice standards for co-benefits from GHG reduction – to be used for Criterion 3 (Environment).

**Table 8: Building Energy Efficiency Chinese Co benefits Best Practice**

Synergistic CO <sub>2</sub> reduction	$C=0.75 \times 10 \times E$
Synergistic sulfur dioxide emission reduction (Unit: t)	$SO_2=6.1 \times 10^{-3} \times C$
Synergistic NO <sub>x</sub> reduction (Unit: t)	$NO_x=2.4 \times 10^{-3} \times C$

Notes: C stands for the synergistic carbon dioxide emission reduction of electricity saving projects (Unit: t- CO<sub>2</sub>)  
E is the power saving amounts the unit is 10,000 kWh (10,000 kwh)

Other Standards: Victorian Guidelines for Environmental Guidelines for Major Construction Sites  
Standards for Land disturbance, Noise and vibration, Waste and Other Impacts

Source: <http://www.epa.vic.gov.au/~media/Publications/480.pdf>

Numerical performance indicators are not appropriate – advanced practice is compliance with the dust and noise standards above and best practice is full compliance with the standard.

Given the complexity of the factors involved the consultants will be required to assess the cobenefits of the project and to make a professional judgement of performance.

**Cost Efficiency (Efficiency and Effectiveness Criterion)**

The McKinsey abatement cost calculations nominate an average cost between EUR -130 (for lighting) to 7 (for district heating) per tonne CO<sub>2</sub>e – average -EUR 62 – as the average abatement cost in this sector. This is taken as the baseline of good practice – the actual benchmark number would depend on the mix of investments. Thus, using a lighting example (which will be a negative cost) a 10% margin around EUR -130 / tCO<sub>2</sub>e would constitute “good practice”, a 10% to 30% improvement on \$-130 constitutes “advanced practice” and over 30% improvement constitutes “best practice”. Weightings for type of building and area of PRC could be considered – although the latter is not relevant for a Shandong-based Fund.

***Energy Efficiency – Building retrofit and Industrial processes*****Mitigation (Impact Criterion)**

Due to the diversity of the types of investments under this category, it is not possible to set even a tentative GHG standard. The process of assessment to be followed is as follows:

1. Establish a BAU emissions level;
2. Establish GHG reduction (IPCCC methodologies where available);<sup>13</sup>
3. Pass if over 1% of Industry emissions for geographical area of project influence, advanced if over 10% of industry emissions, transformational if over 25% of industry emissions.

**Adaptation (Impact Criterion)**

BAU Standard: Industry area hardened to flood and other impacts includes 5% to 10% of workers constitutes good practice.

<sup>13</sup> See IPCC 2006 Guidelines: <https://www.ipcc-nggip.iges.or.jp/public/2006gl/>

Advanced practice – 10% to 25%; Best practice – over 25%.

#### Pollution (Environmental Sustainability Criterion)

Standards: WHO Air Quality Guidelines (2005)

Standards for Particulate matter, Ozone, Nitrogen dioxide, and Sulphur dioxide average annual exposure

Advanced practice is meeting to Interim targets in all (PM averaged 2.5 and 10), best practice is below full WHO targets in all.

#### Cost Efficiency (Efficiency and Effectiveness Criterion)

The McKinsey abatement cost calculations nominate an average cost of between EUR -90 (steel processing improvements) and 64 (chemical process improvements) per tonne CO<sub>2</sub>e – average - EUR 13 – as the abatement cost in this sector. This is taken as the baseline of good practice – the actual benchmark number would depend on the actual investment type financed. Thus, using an chemical plant efficiency as an example a 10% margin around EUR 64/ tCO<sub>2</sub>e would constitute “good practice”, a 10% to 30% improvement on \$64 constitutes “advanced practice” and over 30% improvement constitutes “ best practice”

### *Environment*

#### *Forest-related investments*

#### Mitigation (Impact Criterion)

Reducing Emissions from Deforestation and Degradation (REDD.<sup>14</sup>) and Improved Forest Management (IFM) – too difficult to justify also not China-relevant

Afforestation/ Reforestation (A/R) – very relevant – established CDM methodology. BUT needs to be large scale to have impact and covenant significant safeguards.

100 to 300 tCO<sub>2</sub>e per ha at 30 years is a good performance.<sup>15</sup> – HOWEVER this is reduced by harvesting etc. The impact of such investments is thus is VERY dependent on the project design and scale.

Say a net performance of 50 tCO<sub>2</sub>e over 100 ha over 30 yrs

= 5,000 tCO<sub>2</sub>e/ 30 per year

= 167 tCO<sub>2</sub>e per yr

In comparison, 50% reduction in BAU for a bus project where the average daily commute trip is 10km and 250 million trips per year = .000035 x 10 x 250,000,000.<sup>16</sup> = 87,500 tCO<sub>2</sub>e/ yr

So it is suggested that eligibility of A/R be benchmarked against, say, total transport emissions and any project which falls below, say, 1% of total transport emissions for the nearest city not be considered for funding on the basis of mitigation benefits (adaptation benefits may however be a sufficient justification – see below)

#### Adaptation (Impact Criterion) - Heat island

Green space reducing temperature and thus reducing heat-related additional hospital admissions over 5% to 15% constitutes good practice.

<sup>14</sup> These would probably include: planting of mixed species (at least two species, preferably more; with indigenous species being part of the mixture); quality control of seedling production; appropriate site-species matching; clear land ownership of site, with plantations integrated into broader land use of the region; clear management model with incentives for maintenance (minimum 3 years after planting, preferably longer); and independent (third party) monitoring of plantation performance.

<sup>15</sup> See: <https://carbonneutral.com.au/faqs/>

<sup>16</sup> Trips for Sydney buses 2016-7 "Bus Patronage - Monthly Figures". Transport for NSW. Retrieved 22 December 2017.

Advanced practice – 15% to 35%; Best practice – over 35%.

#### Pollution (Environmental Sustainability Criterion)

In respect of pollution produced by actual agriculture-related investments, it is impossible to determine as the use of chemicals/ hormones etc is hugely variable. Safeguards analysis should ensure no harm is caused, but it is not possible to rate performance in this area based on quantitative indicators. Consultants will be required to assess the cobenefits of the project and to make a professional judgement of performance.

#### Cost abatement efficiency

The McKinsey abatement cost calculations nominate an average cost of EUR 23 per tonne CO<sub>2</sub>e as the abatement cost in this sector. This is taken as the baseline of good practice – the actual benchmark number would depend on the actual vehicle type financed. Thus, a 10% margin around EUR 23/ tCO<sub>2</sub>e would constitute “good practice”, a 10% to 30% improvement on \$ constitutes “advanced practice” and over 30% improvement constitutes “best practice”. Weightings for area of China could be considered – although this is not relevant for a Shandong-based Fund.

#### *Water-related investments (including water saving in agriculture)*

#### Mitigation (Impact Criterion)

BAU standard: 34tCO<sub>2</sub>e/ ha/yr

Source: [https://www.researchgate.net/publication/269571686\\_Reducing\\_greenhouse\\_gas\\_emissions\\_with\\_urban\\_agriculture\\_A\\_Life\\_Cycle\\_Assessment\\_perspective](https://www.researchgate.net/publication/269571686_Reducing_greenhouse_gas_emissions_with_urban_agriculture_A_Life_Cycle_Assessment_perspective)

#### Adaptation (Impact Criterion)

Catchment Reforestation, Sponge City Investments, Drainage and Flood Control

Number of people not effected by flooding counts: (a) people in households flooded or households without services e.g., water, (b) vehicle owners with damaged vehicles not counted in (a), (c) commuters delayed by more than 30 minutes not counted in (a) or (b). Number as a percent of urban population – 10%-30% good practice, 31%-70% advanced, over 70% best practice.

In relation to water saving the BAU standard is the same as for water supply: Rainwater capture and recycling augmenting potable water deliveries by over 5% to consumers. Good practice is from 5% to 10% increment.<sup>17</sup> Advanced practice – 10% to 30%; Best practice – over 30%.

#### Pollution (Environmental Sustainability Criterion)

As above, in respect of pollution produced by water/ irrigation investments and associated agriculture-related investments, it is impossible to determine as the use of chemicals/ hormones etc is hugely variable. It is not possible to rate performance in this area based on quantitative indicators. Consultants will be required to assess the co-benefits of the project and to make a professional judgement of performance.

#### Cost Efficiency (Efficiency and Effectiveness Criterion)

The McKinsey abatement cost calculations do not nominate an average cost for abatement cost in this sector. This is probably because the actual level of emissions from this sector is relatively small. No international comparator is evident. Consultants will be required to assess the cobenefits of the project and to make a professional judgement of performance.

<sup>17</sup> Improvement needs to be significant to impact the quality of individual's lives. This approach is taken in all adaptation sections.

*Clean energy*

## Mitigation (Impact Criterion)

**Table 9: Clean Energy BAU Standards**

**Life cycle CO<sub>2</sub> equivalent (including albedo effect) from selected electricity supply technologies. Arranged by decreasing median (gCO<sub>2</sub>eq/kWh) values.<sup>a</sup>**

Technology	Min.	Median	Max.
Currently commercially available technologies			
Solar PV – Utility scale	18	48	180
Solar PV – rooftop	26	41	60
Geothermal	6.0	38	79
Concentrated solar power	8.8	27	63
Hydropower	1.0	24	2200
Wind Offshore	8.0	12	35
Nuclear	3.7	12	110
Wind Onshore	7.0	9.47(11) <sup>1</sup>	56
Ocean (Tidal and wave)	5.6	17	28

Note: Based on extensive current data number in original table replaced with Chinese good practice

<sup>a</sup> [https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc\\_wg3\\_ar5\\_annex-iii.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_annex-iii.pdf)

Median values are the benchmark for good practice. These must be deducted from BAU power emissions to get net savings in GHG emissions from renewable energy – and is thus dependent on the generation mix of the area in question and the renewable energy technology chosen. Again, advanced practice will be 1/3 to 2/3 towards zero limit. Best practice 2/3 to zero limit.

“Zero limit” is 0 g CO<sub>2</sub>e/ kWhr using offsets for any related directly attributable emissions (e.g., maintenance facilities and fleet).

These emissions will be set against the GHG emissions of replaced coal-fired power plants. The use of standard levels of coal emissions are suggested - 2.5 tonnes CO<sub>2</sub>e/ 1 tonne coal.

See: <http://carbon-sense.com/wp-content/uploads/2010/05/coal-burning.pdf>

In all cases in Shandong, the proposed investment will be coal replacement investments.

## Adaptation (Impact Criterion):

Generation sites hardened to flood and other impacts serving over 5% to 10% of consumers constitutes good practice.

Advanced practice – 10% to 25%; Best practice – over 25%.

## Pollution (Environmental Sustainability Criterion)

The following are Chinese best practice standards for co-benefits from GHG reduction – to be used for Criterion 3 (Environment).

**Table 10. Clean Energy Cobenefits Best Practice**

Indicators	Formula
Synergistic CO <sub>2</sub> reduction	$C=2.64 \times T$

Synergistic sulfur dioxide emission reduction (Unit: t)	$SO_2=8.2 \times 10^{-3} \times C$
Synergistic NO <sub>x</sub> reduction (Unit: t)	$NO_x=3.2 \times 10^{-3} \times C$

Note: 1. C stands for the synergistic carbon dioxide emission reduction of renewable energy projects. (Unit:t- CO<sub>2</sub>)  
T stands for the amount of alternative fossil energy (Unit:t-CO<sub>2</sub>)

The consultants will be expected to report on the performance of the project in respect of these indicators and provide a professional judgement of performance.

#### Cost Efficiency (Efficiency and Effectiveness Criterion)

The McKinsey abatement cost calculations nominate an average cost of between EUR -18 (small hydro) and 64 (solar PV worst case) per tonne CO<sub>2</sub>e – average EUR 46 – as the abatement cost in this sector. This is taken as the baseline of good practice – the actual benchmark number would depend on the actual vehicle type financed. Thus, using an PV example a 10% margin around EUR 64/ tCO<sub>2</sub>e would constitute “good practice”, a 10% to 30% improvement on \$64 constitutes “advanced practice” and over 30% improvement constitutes “ best practice”. Weightings for area of China could be considered – although this is not relevant for a Shandong-based Fund.

### 3.3 Indicator Summary

The above sections have established a methodology for developing sectoral indicators of green investment performance and estimates of indicator values. The default values are summarized in the tables below.

**Table 11: Mitigation Indicators by Sector (GCF Investment Criterion 1)**

Sector Indicator units	Indicative Performance Value Ranges		
	Good Practice	Advanced Practice	Transformational/ Best Practice
<b>Water Supply</b> gCO <sub>2</sub> / litre	.27	.18-.09	.09-0
<b>Wastewater</b> g CO <sub>2</sub> e/ litre	.48-.32	.32-.16	.16-0
<b>Urban transport</b> g CO <sub>2</sub> e/ km (well-to-wheel)	1,300-867	867-433	433-0
<b>Waste management</b> t CO <sub>2</sub> e/ t MSW	.72-.48	.48-.24	.24-0
<b>Green buildings</b> kg CO <sub>2</sub> e/ m <sup>2</sup> / yr	163-107	107-53	53-0
<b>Green Industry</b> kg CO <sub>2</sub> e/ unit	BAU base and units to be determined on case-by-case basis		
<b>Forest-related</b> tCO <sub>2</sub> e/ ha/ yr subject to min size	50-33	33-17	17-0
<b>Environment/Water</b> tCO <sub>2</sub> e/ ha/ yr	34-23	23-11	11-0
<b>Clean Energy</b> gCO <sub>2</sub> e/ kWh	BAU base needs to be determined according to current power generation profile and technology chosen		

**Table 12: Adaptation Indicators by Sector  
(GCF Investment Criterion 1 – note need to identify numbers of beneficiaries)**

Sector	Indicative Performance Value Ranges
--------	-------------------------------------



Indicator units	Good Practice	Advanced Practice	Transformational/ Best Practice
<b>Water Supply</b> Increment supply to consumers %	5-10	10-30	>30
<b>Wastewater</b> Hardened infra serving % of consumers	5-10	10-30	>30
<b>Urban transport</b> Hardened infra serving % of consumers	5-10	10-25	>25
<b>Waste management</b> Hardened infra serving % of consumers	5-10	10-25	>25
<b>Green buildings</b> Green adaptation development serving % of urban population	2-5	5-10	>10
<b>Green Industry</b> % of workers in resilient industrial areas	5-10	10-25	>25
<b>Forest-related</b> % of victims of heat island/ extreme temp reduced	5-15	15-35	>55
<b>Environment/Water</b> People not affected by flooding % of BAU affected	10-30	30-70	>70
<b>Environment/Water</b> Water saving increment supply to consumers %	5-10	10-30	>30
<b>Clean Energy</b> Hardened infra serving % of consumers	5-10	10-25	>25

**Table 13: Pollution Indicators by Sector  
(component GCF Investment Criterion 3)**

Sector	Indicative Performance Standards		
	Good Practice	Advanced Practice	Transformational/ Best Practice
<b>Water Supply</b>	China standards compliance	Compliance with 2/3 indicators in EU Directive 98/83/EC as amended	Compliance with full EU std in Directive 98/83/EC as amended
<b>Wastewater</b>	China standards compliance GB18918	Compliance with EU Council Directives 86/278/EEC and 91/271/EEC for sludge	Compliance with EU Directives Council Directives 86/278/EEC and 91/271/EEC for sludge with sludge to energy which complies with relevant standards of 99/31/EC, and

			2000/76/EC (incineration)
<b>Urban transport</b>	China std compliance Compliance with Euro 5 indicators in EU regulation 715/2007/EC	Compliance with Euro 6 indicators in EU regulation 715/2007/EC	Zero emissions vehicle
<b>Waste management</b> (incl. waste to energy)	China standard compliance	Compliance with 2/3 indicators in EU Directives 99/31/EC, and 2000/76/EC (incineration) and Communication 26.1.2017 COM (2017)	Compliance with EU Directives 99/31/EC, and 2000/76/EC (incineration) and Communication 26.1.2017 COM (2017)
<b>Green buildings</b>	China standards	Compliance with Victoria construction nuisance dust and noise standards	Full compliance with Victoria construction nuisance standards
<b>Green Industry</b>	China standards	Interim targets WHO Air Quality Guidelines (2005)	Full compliance with WHO Air Quality Guidelines (2005)
<b>Forest-related</b>	China standards – extremely variable according to type of processing involved in forest product processing		
<b>Environment/Water</b>	As above with agricultural processing		
<b>Clean Energy</b>	Generally not applicable		

**Table 14: Cost Abatement Indicators by Sector  
(component GCF Investment Criterion 6)**

Sector	Indicative Performance Value Ranges (EUR/ tCO <sub>2</sub> e)		
	Good Practice	Advanced Practice	Transformational/ Best Practice
<b>Water Supply</b>	China values not available		
<b>Wastewater</b>	As above		
<b>Urban transport</b>	41 to 51	29 to 41	< 29
<b>Waste management</b>	194 to 237	136 to 194	< 136
<b>Green buildings</b> Sub-sector investment costs available	-68 to -56	-88 to -68	> -88
<b>Green Industry</b> Sub-sector investment costs available	-14 to -12	-18 to -14	> -18
<b>Forest-related</b>	21 to 25	15 to 21	< 15
<b>Environment/Water</b>	China values not available		
<b>Clean Energy</b> Sub-sector investment costs available	41 to 51	29 to 41	< 29

#### 4. Portfolio Assessment

The portfolio assessment is based on the Climate Assessment carried out by CECEP.

##### *Priority Sector Investment Areas*

The mitigation priority sectors are derived from the GHG analysis presented in the report, but accepts CECEP's argument that the major industrial sectors that are high GHG emitters should NOT be a priority for the Fund because they are being "fixed" by administrative fiat. This means either being forced to invest in pollution control equipment, being given subsidies to install such equipment or being closed down. Since these are all state industries their investment pattern is not dependent on, or "influencable" by, a catalyst facility that is focused on generating viable investments. Further, given this policy setting it would be difficult to make the case to GCF and others that we were "transforming" much. The adaptation priority sectors are straight forward and derive from the climate vulnerability analysis.

##### *Ranking Priority Sector Areas Within Mitigation and Adaptation groups*

The mitigation priority topics have their total emissions listed in the adjacent column as a proxy for total impact. The adaptation topics have the estimated number of people at risk (as estimated in the annex) listed in the adjacent column as a proxy for potential climate impact. In the case of adaptation, the numbers are a broad approximation of impact as the severity of the impact on sub-groups of the population (either in terms of geographic location or in terms of type of livelihood or both) cannot be estimated. Also, it would be difficult to disaggregate investment priorities for a province-wide fund based on local vulnerabilities. It is likely that this issue will be solved by local governments and enterprises putting forward adaptation projects that they feel respond best to important local threats. This prioritization method conforms strictly to GCF's Impact criterion (i.e., GHG savings and total "beneficiaries" for mitigation and adaptation respectively).

##### *Mitigation vs Adaptation Split*

In between the two tables is an innocuous cell nominating a percentage for adaptation. Using this percentage, the portfolio allocation ACROSS mitigation and adaptation sectors is shown in Table 15. 25% was chosen as this has been the agreed split across the provincial DRC and the SGDF personnel.

**Table 15 Indicative Portfolio Allocation**

Portfolio Weights					
Mitigation Sector	Carbon Emissions CO <sub>2</sub> e Mtonnes	Percent	Adaptation Sector	Potential Beneficiaries Millions	Percent
Power	420.3936	51.22%	Flooding	8.2	5.91%
Green Building	105.2568	12.82%	Drought	6.9	4.97%
Transportation	51.4817	6.27%	Coast	14.4	10.37%
EE	38.4568	4.69%	Heat/Greening	5.2	3.75%
Check totals		0.75			0.25

### Appendix 1: SGDF Consultant Assessment Sheet

SGDF Assessment Criteria - Consultant Assessment							
Investment Criterion/ Sub-criterion	Unit	Component Assessments					Total Project
	see Section 3.2 for indicators & standards	No.1	No.2	No.3	etc		
Impact (E1)							
GHG Mitigation	tCO2e						
Performance Indicator Assessment	1,2 or 3 in relation to indicator eg g CO2 e						NA
Beneficiaries of increased resilience to climate impacts – direct	people						
Beneficiaries of increased resilience to climate impacts – indirect							
Performance Indicator Assessment	1,2 or 3 in relation to indicator eg % population covered						NA
Sustainable Development Potential (E3)							
Environmental	pollution cobenefits total eg reduction in NOX, Coal						
Performance Indicator Assessment	1,2 or 3 in relation to indicator eg standards achieved						NA
Efficiency & effectiveness (E6)							
Cost effectiveness	Euro/ tCO2e						
Performance Indicator Assessment	1,2 or 3 in relation to indicator standards eg McKinsey						NA

## Appendix 2: For Green Climate Project Finance

<b>A. Transaction Structure</b>			
Appropriate? Covenants required? If so, outline.			
<b>B. Sponsor/ Obligor</b>			
Adequate Capacity? Credit standing? Covenants required? If so, outline.			
<b>C. Assessment on Project Description – for assessment process and criteria by sector see Annex A</b>			
<i>Assessment Criteria Summary – see attached spreadsheet for assessment details and component assessments</i>			
Criterion	Sub-criterion	Overall Project Assessment (summary from spreadsheet) Ranking – 1 Good/ 2 Advanced/ 3 Transformational	Brief Narrative Justification of Ranking/ Comment
Impact	GHG		
	Adaptation		
Paradigm Shift	Upscaling		
	Innovation		
	Regulatory Frame		
	Knowledge/ Lessons learned		
Sustainability	Economic		
	Social		
	Gender		
	Environment		
	Pollution		
Needs of Recipient	Financing Gap		
	Constituency		
Ownership	Commitment		
	Capacity to Implement		
	Engagement of stakeholders		
Efficiency and Effectiveness	Economic effectiveness		
	Financial Effectiveness		
	Cost Effectiveness		
	Leverage		
<i>Additional Assessment: Brief description</i> <b>Poverty Impact</b> Covenants required? If so, outline.  <b>Safeguards Issues</b> Covenants required? If so, outline.			

<b>Governance:</b> Covenants required? If so, outline.	
<b>D. Costs (by component if necessary)</b>	
Covenants required? If so, outline.	
<b>E. Sources and Uses of Funds (by component if required)</b>	
Covenants required? If so, outline.	
<b>F. Financial Ratios/ Assessment</b>	
Adequate performance? Risks applicable? Covenants required? If so, outline.	
<b>G. Market/ Offtaker Assessment</b>	
Overall of the market projections (demand and supply scenarios) Assessment of credit-worthiness of key customer(s)/ offtakers. Comment on offtaker risk rating, financial data, offtake agreement (synopsis) Covenants required? If so, outline	
<b>H. Technical Assessment</b>	
Compliance with standards (See Annex B) <ul style="list-style-type: none"> <li>• Green city</li> <li>• Engineering/ pollution</li> </ul> Covenants required? If so, outline.  Green Procurement Guidelines (see Annex C) followed? Covenants required? If so, outline.	
<b>I. Policy Issues</b>	
Highlight any deviations from SDGF policies and outline rationale for exception Covenants required? If so, outline.	
<b>J. Level of Concessionality</b>	
Determine and justify level of concessionality	
<b>K. Assessed Risk Level (R1, R2, R3)</b>	
Determine and justify risk level	
<b>Portfolio Analysis</b>	
Sector representation ok? Comment on project sector in relation to portfolio priority	
<b>Appraisal and Approval</b>	

Initial Review by:	
Appraised by:	
Approved/endorsed by:	
Approved by credit committee	
Approved by Board (if applicable):	(name of meeting chairperson, signature and date of meeting)