

Terminal Evaluation Validation form, GEF Independent Evaluation Office

1. Project Data

Summary project data			
GEF project ID		3744	
GEF Agency project ID		40682	
GEF Replenishment Phase		GEF-4	
Lead GEF Agency (include all for joint projects)		Asian Development Bank	
Project name		Integrated Renewable Biomass Energy Development Sector Project	
Country/Countries		People’s Republic of China	
Region		Asia, Middle East & Pacific	
Focal area		Climate Change	
Operational Program or Strategic Priorities/Objectives		GEF Strategic Goal 4 (Building capacity on access and benefit sharing) GEF Climate Change Objective 4 (promotion of on-grid renewable energy) and Objective 5 (use of renewable energy for the provision of rural energy services)	
Stand alone or under a programmatic framework		Standalone	
If applicable, parent program name and GEF ID		N/A	
Executing agencies involved		Ministry of Agriculture; Provincial Departments of Agriculture	
NGOs/CBOs involvement		Not specified	
Private sector involvement (including micro, small and medium enterprises) ¹		6 Firms: secondary executing agencies (research, supervision, and technical monitoring) Agribusiness owners, farmers: beneficiaries	
CEO Endorsement (FSP) /Approval (MSP) date		3/30/2010	
Effectiveness date / project start date		7/17/2010	
Expected date of project completion (at start)		12/31/2015	
Actual date of project completion		12/31/2018	
Project Financing			
		At Endorsement (US \$M)	At Completion (US \$M)
Project Preparation Grant	GEF funding	0.21	0.21
	Co-financing		
GEF Project Grant		9.2	6.17
Co-financing	IA own	80	50.21
	Government	14.6	4.4
	Other multi- /bi-laterals	7.6 ²	1.57
	Private sector	73.4	26.5
	NGOs/CBOs		
	Other		
Total GEF funding		9.41	6.38
Total Co-financing		175.6	82.68

¹ Defined as all micro, small, and medium-scale profit-oriented entities, including individuals and informal entities, that earn income through the sale of goods and services rather than a salary. (GEF IEO 2022)

² This amount includes USD 3 million from the Clean Energy Fund (CEF) under the Clean Energy Financing Partnership Facility (CEPF), and USD 4.6 million from German Technical Cooperation (GTZ; Grant TE Report, p. 1).

Total project funding (GEF grant(s) + co-financing)	185.01	89.06 ³
Terminal evaluation validation information		
TE completion date	August 2021	
Author of TE	Marvin Taylor-Dormond, Nathan Subramaniam	
TER completion date	12/5/2022	
TER prepared by	Emanuele Bigagli	
TER peer review by (if GEF IEO review)	Ritu Kanotra	

Access the form to summarize key project features here: <https://www.research.net/r/APR2023>.

³ The project cost at completion does not include the investment by GTZ because it was not available (Grant TE Report, p. 1).

2. Summary of Project Ratings

Criteria	Final PIR	IA Terminal Evaluation ⁴	IA Evaluation Office Review	GEF IEO Review
Project Outcomes	S	S		S
Sustainability of Outcomes		L		L
M&E Design		N/A		S
M&E Implementation		N/A		S
Quality of Implementation		S		S
Quality of Execution		S		S
Quality of the Terminal Evaluation Report				S

3. Project Objectives and theory of change

3.1 Global Environmental Objectives of the project:

The global environmental objective of this project was to improve the biogas subsector's performance in China through the establishment of an integrated renewable biomass energy system in the poor rural areas of the participating provinces of Heilongjiang, Henan, Jiangxi, and Shandong (TE, p. 2).

3.2 Development Objectives of the project:

The Project Document and the TE do not mention any development objectives as separated from the global environmental objectives.

3.3 Were there any **changes** in the Global Environmental Objectives, Development Objectives, or project activities during implementation? What are the reasons given for the change(s)?

The TE (p. 3) reports four minor changes in scope during implementation, related to:

- 1) procurement methods – from quality and cost-based selection to international competitive shopping, and from national competitive bidding to direct contracting (March 2014);
- 2) the increase of ceiling for advances to the imprest account in Henan;
- 3) the modification of the targets of two outcomes: annual production for rural energy use, reduced from 70 to 55 million m³, and greenhouse gases' target from 1 million tonnes to 770,000 tonnes of carbon dioxide equivalent;
- 4) change in the target number of medium- and large-scale biogas plants performing technical standards, from 118 to 69 (August 2017).

3.4 Briefly summarize project's theory of change – describe the inputs and causal relationships through which the project will achieve its long-term impacts, key links, and key assumptions.

- **Problem:** the rapid expansion of the livestock industry in the People's Republic of China led to the discharge of pollutants and environmental degradation associated with waste generation. The rich organic wastes from livestock farmers can be converted to methane through anaerobic digestion, which can be

⁴ The TE (p. 9) gives an overall assessment of "Successful" and a preliminary assessment of impact as "Satisfactory". It does not rate M&E design and implementation.

used to generate electricity to power livestock farms and neighboring households; also, sludge can be used as bio-fertilizer.

- **Strategy:** (i) construction of 118 medium- and large-scale biogas plants for livestock farms and agro-enterprises; (ii) connecting 25 biogas plants to local power grids; (iii) pilot-testing and establishing business models for 10 centralized biogas plants; (iv) financing the purchase of (a) blending and mixing machines to produce bio-fertilizers from the sludge of medium- and large-scale biogas plants, (b) vehicles and equipment to transport and distribute the bio-fertilizers, and (c) seeds, seedlings, and other materials for farm production; (v) consulting services to strengthen the capacity of extension service centers and advisory assistance to the operation of biogas plants; and (vi) technical support for project implementation.
- **Outputs:** (i) sustainable development and demonstration of commercial practices of medium- and large-scale biogas plants; (ii) effective utilization of biogas sludge in eco-farming; (iii) capacity development for improved sector performance; (iv) project implementation support.

4. GEF IEO assessment of Outcomes and Sustainability

Please refer to the GEF Terminal Evaluation Review Guidelines for detail on the criteria for ratings.

The outcome ratings (relevance, effectiveness, efficiency, and overall outcome rating) are on a six-point scale: Highly Satisfactory to Highly Unsatisfactory. The sustainability rating is on a four-point scale: Likely to Unlikely.

Please justify the ratings in the space below each box.

4.1 Relevance and Coherence	S
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The TE rates the project as “relevant”. This review rates it as Satisfactory. The project was aligned with GEF, ADB, and national objectives, plans and programs, and was overall well-designed and targeted to achieve project outcomes, although with some design weaknesses.

The project was strongly aligned with GEF Strategic Goal 4 on building capacity on access and benefit sharing, and contributed to climate change-related strategic objectives 4 (promotion of on-grid renewable energy) and 5 (use of renewable energy for the provision of rural energy services). It was also consistent with ADB’s Strategy 2020 and 2008-2010 country partnership strategy for China (TE, p. 5). At national level, the project was closely aligned with government’s priorities on reduction of livestock pollution and promotion of the “energy-ecological type” of rural livelihood improvements included in the 11th Five-year Plan, the 2007 Medium- and Long-Term Development Plan for Renewable Energy of the National Development and Reform Commission, and the Circular Economy Promotion Law of 2009 (TE, p. 5). It also supported the national commitments to the Kyoto Protocol, the National Rural Biogas Development Plan, 2006–2010; and the four participating provinces’ rural energy development action plans.

The TE (p. 5) notes that the project had the following design weaknesses: (i) the criteria for selecting livestock subprojects should have been designed more rigorously and be more targeted to key agribusiness players instead of small- and medium-sized livestock farmers; (ii) the facilitation of adoption of advanced technologies was not included; (iii) weaknesses in the design and monitoring framework,

without quantifiable indicators for outputs 1 and 2, and key performance indicators for output 4 merely supporting routine project implementation and, thus, with limited value; (iv) a separate output should have been created to capture the synergies between Outputs 1 and 2 and capture the recycling nature of the circular economy model.

4.2 Effectiveness	S
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The TE rates the project as “effective”, and this review rates it as Satisfactory. All outcome targets were met, and almost all output targets were met, and the project made the expected contributions to global environmental benefits.

All four Outputs of the project were substantially delivered, and all outcome targets were met (TE, p. 6); more details for each component are as follows:

- (i) Sustainable development and demonstration of commercial practices of medium- and large-scale biogas plants – 65 of the planned 9 MLBGPs were constructed by 2018, while 6 centralized biogas plants of the 10 targeted, operated effectively. More than 90% (target was 80%) of energy sources of each livestock farm or agro-enterprise were from the biogas plant. A total of 62 methane capture devices were installed and worked about 95% of time by 2017, and business models for CBPs were established by 2018, meeting the expected targets set.
- (ii) Effective use of biogas sludge in eco-farming – the required handbook on eco-farming and application of bio-fertilizers for agricultural production was developed by 2013, and about 94% (over a target of 85%) of the biogas plants supplied sludge to nearby farms as organic fertilizer by 2017. The reduction of farmers’ use of chemical fertilizers was equal to 190,000 tonnes per year, i.e., 50% higher than the target.
- (iii) Capacity development – all outputs were completed. This included a handbook on operation and maintenance of MLBGPs, guidelines on the establishment of CBPs, four provincial technical service centers established supporting biogas plants, the training of about 320 technicians, the preparation of a performance monitoring system for the design and operation of medium- and large-scale biogas plants, and the establishment of business models for CBPs.

The TE (p. 7) notes that, despite the reduction in the number of biogas plants from 118 to 65 medium- and large-scale biogas plants, and from 10 to 6 centralized plants, the amount of carbon dioxide reduced and biogas produced was more than doubled compared to the set targets, but without explaining the reasons for this counterintuitive result.

4.3 Efficiency	S
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The TE rates the project as “efficient”, and this review rates it as Satisfactory. The project was overall cost-effective as part of the budget was unused while ensuring the delivery of almost all outputs according to targets, and despite some shortcomings in relation to implementation arrangements.

The TE (p. 7) highlights some shortcoming in the identification and valuation of project’s economic benefits, which may have been overestimated. The project’s economic internal rates of return were close

to the appraisal estimates, and equal to, or higher than, the opportunity cost of capital of 12%. Moreover, the implementation arrangements were overly complex, resulting in a less than efficient project implementation.

The two extensions did not trigger budget reallocation to the grant, which was extended twice, and the unused amount of USD 3.1 million was returned. Especially, the creation of the wholly privately owned subproject in Jiangxi not only attained the expected on-grid connection but also sold intermittent biogas-based renewable power to the local grid with established feed-in tariff, a result that exceeds expectations (Grant TE Report, p. 5).

4.4 Outcome	S
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Summarize key outcomes related to environment, human well-being, and enabling conditions (Policy, Legal & Institutional Development; Individual & Institutional Capacity-Building; Knowledge Exchange & Learning; Multistakeholder Interactions), as applicable. Include any unintended outcomes (not originally targeted by the project), whether positive or negative, affecting either ecological or social aspects.

Where applicable, note how both intended and unintended outcomes have positively and/or negatively affected marginalized populations (e.g., women, indigenous groups, youth, persons with disabilities), and where some stakeholder groups have benefited more/ less than others.

The TE rates the project's development impact as "satisfactory", and this review rates outcome as Satisfactory. The project was relevant, although with some flaws in design, and was implemented efficiently, with almost all outputs delivered and almost all targets met.

The key outcomes and impacts are summarized as follows:

Environmental. The project contributed to climate change mitigation through the replacement of coal consumption and carbon absorption (TE, p. 8), with a substantial reduction of greenhouse gases of about 1.72 million tonnes of carbon dioxide equivalent per year (Grant TE Report, p. 3), which was double the original approved outcome performance targets for 2019 (TE, p. 6). The utilization of organic fertilizer for expanded eco-farming allowed carbon dioxide absorption for soil enhancement, which acted as carbon sink, and allowed avoiding the use of about 190,000 tonnes of chemical fertilizers, thus reducing soil, water, and air pollution.

Socioeconomic. The demonstration of a resource-recycling model in rural China allowed to collect and treat more than 90% of livestock waste in project biogas plants, benefiting more than 10,000 poor household from the sale of organic products. About 126.41 million m³ of biogas per year were produced through anaerobic technologies, of which 13.68 million m³ were utilized for heating and electricity generation after being transmitted through local gas grids to village households. The project also created more than 3,000 jobs, including for the construction and operation of the medium- and large-scale biogas plants and centralized biogas plants (TE, p. 8). The 1.51 million m³ of liquid biogas slurry and 0.24 million tonnes of solid biogas residue were reused to produce 1.5 million tonnes of organic fertilizer per year for eco-farming, accomplishing a near zero-waste model for promoting circular economy. The project also made breakthrough achievements in enabling grid connections of medium- and large-scale biogas plants

in three provinces (Jiangxi, Henan, and Shandong; Grant TE Report, p. 5). In Shandong, the utilization of biogas sludge enabled the conversion of saline and alkaline land to arable land through soil enrichment practices, which contributed to enhance sustainable crop productivity and eco-farming. About 41,000 households, including 9,200 poor households, benefited from improved access to clean energy in rural areas, and more than 27,000 farmers increased their incomes through expanded contract farming (Grant TE Report, p. 3). Finally, the reduction of water and air pollution allowed to improve public health, although these impacts were not measured (TE, p. 8).

Enabling conditions. The project provided financing opportunities to expand awareness on social and economic benefits of renewable energy utilization in rural areas.

Unintended impacts. The TE does not indicate any unintended impacts.

Impacts on marginalized populations. The subprojects were designed to take place within the land owned by agro-enterprises; hence no land acquisition or resettlement was required; also, no subproject was located in a minority autonomous area and no ethnic minorities were identified at the subproject sites (TE, p. 4).

4.5 Sustainability	L
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Note any progress made to sustain or expand environmental benefits beyond project closure, using stakeholder (rather than project) resources, e.g. through replication, mainstreaming or scaling-up of GEF-supported initiatives. Examples would be farmers adopting practices using own funds, follow-on replication projects, development of plans for scaling, inclusion in local or national legislation, and allocation of government budgets or private sector investments for institutional adoption.

The TE rates this project as “likely sustainable”, and this review rates it as Likely, due to the lack of important risks to the continuation of the net benefits in the future.

Financial. The TE (p. 8) notes that the financial internal rate of return was sufficiently higher than the weighted average cost of capital. The financial viability of the sub-projects is demonstrated by the financial internal rate of returns of the representative sub-projects, which ranged from 1.1% to 17.1% at project completion, except for one project in Shandong (Grant TE Report, p. 4). The sustainability of revenues of operating entities was not clear, as the Project completion report indicated electricity sales from biogas conversion and cost savings from substituting liquified petroleum gas with biogas, but without providing information on the amount of output traded (TE, p. 8). Also, projects were found to be highly sensitive to cost increases, benefit decreases, and operation reductions, which would put them in unacceptable situations (Grant TE Report, p. 4).

Sociopolitical. The TE does not report on sociopolitical factors affecting the sustainability of project outcomes.

Institutional framework and governance. The TE does not report on institutional and governance factors affecting the sustainability of project outcomes.

Environmental. The TE (p. 7) notes that the project's environmental sustainability was significant as it reduced carbon dioxide emissions.

5. Processes and factors affecting attainment of project outcomes

Before describing the factors, you may choose to summarize reported outcomes and sustainability here: <https://www.research.net/r/APR2023>.

5.1 Co-financing. To what extent was the reported co-financing essential to the achievement of GEF objectives? If there was a difference in the level of expected co-financing and actual co-financing, what were the reasons for it? Did the extent of materialization of co-financing affect project's outcomes and/or sustainability? If so, in what ways and through what causal linkages?

The expected co-financing was USD 175.6 million, with ADB providing a USD 80 million loan from its ordinary capital resources, the Clean Energy Fund (CEF) under the Clean Energy Financing Partnership Facility providing a USD 3.0 million grant equivalent, and the German Technical Cooperation (GTZ) a USD 4.6 million grant. At project completion, ADB administered the loan and two grants, totaling USD 57.75 million in foreign exchange, while domestic financing was equivalent to USD 30.89 million in local currency. The TE (p. 3) reports that cost underruns were mainly due to a lower amount of civil works and goods needed for constructing the medium- and large-scale biogas plants and centralized biogas plants. Heilongjiang, Henan, and Jiangxi provinces requested to cancel the USD 6.02 million from the ADB loan in August 2017 due to worsening market conditions for the livestock industry, which led to a high number of bankrupt subproject enterprises. Also, the last round of cancellation was at loan closing in January 2020 for USD 9.85 million due to underspending on civil works and goods and an economic downturn. The total amount cancelled was about 24% of the approved ADB loan.

5.2 Project extensions and/or delays. If there were delays in project implementation and completion, then what were the reasons for it? Did the delay affect the project's outcomes and/or sustainability? If so, in what ways and through what causal linkages?

The original loan closing date was 30 June 2016; it was extended twice (31 December 2017 and 31 December 2018) because of: (i) slower than expected construction of the centralized biogas plants; (ii) bankruptcy and replacement of small and medium enterprise owners of medium- and large-scale biogas plants, and reduction of the number of such plants for construction; and (iii) the associated cumbersome coordination for established feed-in tariff to enable on-grid connections with local grids (Grant TE Report, p. 1).

5.3 Stakeholder ownership. Assess the extent to which stakeholder ownership has affected project outcomes and sustainability. Describe the ways in which it affected outcomes and sustainability, highlighting the causal links.

Although enough stakeholders participated in the project, including local governments, agribusiness owners, and farmers, the degree of ownership by the agribusiness owners was difficult to assess, as they were accustomed to rely heavily on subsidies from local governments. During implementation, it became apparent that the livestock industry was very prone to market fluctuations, which led to a high incidence of bankruptcies (Project Completion Report, p. 1). Also, the project Management Office played only a

moderate role in demonstrating leadership and ownership of the project (Project Completion Report, p. 12).

5.4 Other factors: In case the terminal evaluation discusses other key factors that affected project outcomes, discuss those factors and outline how they affected outcomes, whether positively or negatively. Include factors that may have led to unintended outcomes.

The outbreak of the swine flu and restrictions on land for pig farming contributed to the fact that the borrower of 2 covenants could not meet the sales requirement of 3,000 pigs per sub-project. Despite this, the annual sales averaged above 10,000 per subproject in Henan, Jiangxi, and Shandong (TE, p. 4).

6. Assessment of project's Monitoring and Evaluation system

Ratings are assessed on a six point scale: Highly Satisfactory to Highly Unsatisfactory.

Please justify ratings in the space below each box.

6.1 M&E Design at entry	S
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The TE does not rate M&E design, and this review rates it as Satisfactory. The M&E plan was robust and complete, including clear indicators for each output and outcome, data sources and arrangements for data collection, clear roles and responsibilities and appropriate reporting schedule.

The M&E design included a budgeted design and monitoring framework, with a clear definition of impact, outcome, outputs and activities with their associated performance targets and/or indicators, data sources, reporting mechanisms, assumptions and risks (Project Document, p. 23). The Project Management Office had the role of establishing and maintaining a Project Performance monitoring System, designed to permit adequate flexibility to adopt remedial action regarding project design, schedules, activities, and development impacts (CEO endorsement, p. 4). The TE (p. 11) notes that the design and monitoring framework had a weakness in relation to the measurement of project achievements, as no information was required to be collected on environmental quality improvements (air and water), grid connections, or electricity produced.

6.2 M&E Implementation	S
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The TE does not rate the implementation of M&E, and this review rates it as Satisfactory. The M&E plan implementation followed the plan, with all required data and information being collected and all reporting submitted timely.

The implementing and executing agencies complied with all M&E requirements. A Project performance and Management System was established to monitor, measure, and assess implementation progress, as well as the risks and assumptions specified in the design and monitoring framework for project activities, outputs, outcome, and impact (TE, p. 11). All reporting submissions were made timely as per plan, with complete information and data to measure project progress. Sufficient data and information were provided to measure project progress. In accordance with the design and monitoring framework, the social, gender, socioeconomic, and sector development progress was measured (Grant TE Report, p. 5).

7. Assessment of project implementation and execution

Quality of Implementation rating is based on the assessment of the performance of GEF Agency(s). Quality of Execution rating is based on performance of the executing agency(s). In both instances, the focus is upon factors that are largely within the control of the respective implementing and executing agency(s). A six-point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess.

Please justify ratings in the space below each box.

7.1 Quality of Project Implementation	S
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The TE rates the performance of the implementing agency as Satisfactory, and this evaluation concurs. The implementing agency had a robust performance without salient weaknesses, applying relevant policies and supervising well the project, adapting timely to changing circumstances to ensure project delivery.

The ADB provided timely support to correct the issues related to grants and loan procurement, accelerating contract awards and disbursements (TE, p. 9). It adapted to changing conditions of the livestock market, canceling loan savings and extending loans and grants' closing dates to achieve outcomes. Also, ADB changed scope and coverage to improve low investment returns. It worked closely with the GEF and Clean Energy Financing Partnership to obtain project extension and actively disseminate best practices through media channels (TE, p. 9).

7.2 Quality of Project Execution	S
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The TE rates the performance of the executing agencies as Satisfactory, and this review concurs. The executing agencies had no important weaknesses and executed the project with good quality, addressing unexpected circumstances and slow implementation to ensure the delivery of project outputs, although with some gaps in moderation, capacity and commitment.

The project was executed by the Ministry of Agriculture and the departments of Agriculture of the four provinces inside the geographical scope of the project. The Ministry of Environment was responsible for overall coordination and project management, supported by the Foreign Economic Cooperation Center. The four project implementation offices established in the four departments of Agriculture were responsible for project execution and compliance with safeguards, procurement, technical design, and relevant standards.

The TE (p. 9) notes that all executing agencies fulfilled their obligations in relation to the issue of loans. Some executing agencies showed strong leadership and overcame technical hurdles and external risks, and promoted innovative solution to address slow project implementation. However, there were gaps in the capacity and commitment of the project implementation offices, and the project management office played only a moderate role in terms of project leadership and ownership.

8. Lessons and recommendations

8.1 Briefly describe the key lessons, good practices, or approaches mentioned in the terminal evaluation report, including how they could have application for other GEF projects. Lessons must be based on project experience.

The TE (p. 10) reports three lessons, taken from the Project Completion Report:

1. implementation arrangements should be simple and not overly complex;
2. the National Energy Administration should have had a leading role in the project due to its technological know-how to guide and demonstrate policy commitment to achieve the renewable energy targets; and
3. procurement should ensure that contract packaging, contracting methods, and standard bidding documents are defined to suit the needs and capacities of the executing and implementing agencies to avoid changes and noncompliance during implementation.

It also identifies four lessons that the Project Completion Report proposed as recommendations:

4. A ministry with a strong commitment and binding political and policy targets should lead project design and implementation.
5. Stringent technical parameters should be established for anaerobic digestion capacity, biogas power generation capacity, and grid connection.
6. To hedge against external shocks and maintain robust cash flows, the selection of subprojects should focus on enterprises with diverse operations, such as livestock in combination with cold chain, crop, or grain processing, or organic fertilizer purification.
7. The selection of subprojects should focus on China's southern region due to its stronger policy coordination and financial capacities and its warmer climatic conditions, and one or two central or northern provinces could then follow the implementation experiences.

and adds two additional lessons:

8. As the project's design was not optimal at appraisal, a more thorough analysis of the livestock industry in assessing large- and small-scale enterprises and in assigning appropriate technologies to the subproject's specific requirements and capacity of its operators can help reduce scope changes during project implementation.
9. An adequately established project performance management system should be based on clearly-defined system parameters and its inclusion as a covenant in the loan agreement.

8.2 Briefly describe the recommendations given in the terminal evaluation.

The TE (p. 10) reports the following recommendations included in the Project Completion Report:

1. The executing and implementing agencies should monitor and report to ADB the outcome-level indicators for the fourth quarter of 2019–2021, and the Shandong project implementation office should monitor the Lihai subproject for any further technical progress.

2. In the loan covenant, “a subproject shall meet general quantitative feedstock requirements” related to pigs, broilers, beef cattle, and dairy cattle, should be changed to “subprojects in each province shall, on the average, meet the targets of” those feedstock requirements due to the many uncontrollable factors in the livestock industry.
3. The Henan, Jiangxi, and Shandong project implementation offices should follow up with and offer intergovernmental coordination support to subproject owners’ efforts to obtain subsidies for the feed-in tariff. This validation has no other recommendations to offer.

9. Quality of the Terminal Evaluation Report

Before rating the quality of the terminal evaluation, click here to summarize your observations on the sub-criteria: <https://www.research.net/r/APR2023>.

A six-point rating scale is used for each sub-criteria and overall rating of the terminal evaluation report (Highly Satisfactory to Highly Unsatisfactory)

Criteria/indicators of terminal evaluation quality	GEF IEO COMMENTS	Rating
1. Timeliness: terminal evaluation report was carried out and submitted on time?	The TE was prepared eight months after project completion, and submitted to GEF portal 4 years after	MS
2. General information: Provides general information on the project and evaluation as per the requirement?	The TE provides general information on project (GEF ID, executing agencies, project milestones, GEF environmental objectives) and lists evaluators	HS
3. Stakeholder involvement: the report was prepared in consultation with – and with feedback from - key stakeholders?	The TE identified key stakeholders of the project, but their feedback, and that of the OFP, were not sought in the finalization of the TE	MU
4. Theory of change: provides solid account of the project's theory of change?	The TE discusses causal links and mechanisms to achieve intended impacts, but does not present the key assumptions of the theory of change nor discusses whether they remain valid	MS
5. Methodology: Provides an informative and transparent account of the methodology?	The TE presents the information sources and provides information on project sites and activities, but does not give information on interviewees, and does not describe tools and methods used for evaluation nor it identifies limitations of evaluation	MU
6. Outcome: Provides a clear and candid account of the achievement of project outcomes?	The TE assesses relevance to GEF and country priorities, and of project design; it reports on performance of all targets and timeliness and discusses factors that affected outcomes, as well as on efficiency	HS
7. Sustainability: Presents realistic assessment of sustainability?	The TE indicates overall likelihood of sustainability and identifies risks to	S

	sustainability and their likelihood, but does not indicate their likely effects	
8. M&E: Presents sound assessment of the quality of the M&E system?	The TE does not assess quality of M&E design, but analyzed M&E implementation and discussed use of information for project management	MS
9. Finance: Reports on utilization of GEF funding and materialization of co-financing?	The TE reports on utilization of GEF resources, provides data on materialized co-financing, their sources, types, and reasons for deficit materialization and contribution to project results	HS
10. Implementation: Presents a candid account of project implementation and Agency performance?	The TE assesses quality of implementation and execution, factors that affected them and how challenges were addressed	HS
11. Safeguards: Provides information on application of environmental and social safeguards, and conduct and use of gender analysis?	The TE reports on environmental and social safeguards, gender analysis and related actions	HS
12. Lessons and recommendations are supported by the project experience and are relevant to future programming?	The TE includes lessons based on project experience and clear recommendations specifying the action taker	HS
13. Ratings: Ratings are well-substantiated by evidence, realistic and convincing?	The TE provides sufficient and credible evidence to support ratings	HS
14. Report presentation: The report was well-written, logically organized, and consistent?	The TE is written in English; it is well written and organized, consistent, and makes good use of tables	HS
Overall quality of the report		S

10. Note any additional sources of information used in the preparation of the terminal evaluation report (excluding PIRs, TEs, and PADs).

ANNEX 1. GEF IEO THEORY OF CHANGE FRAMEWORK

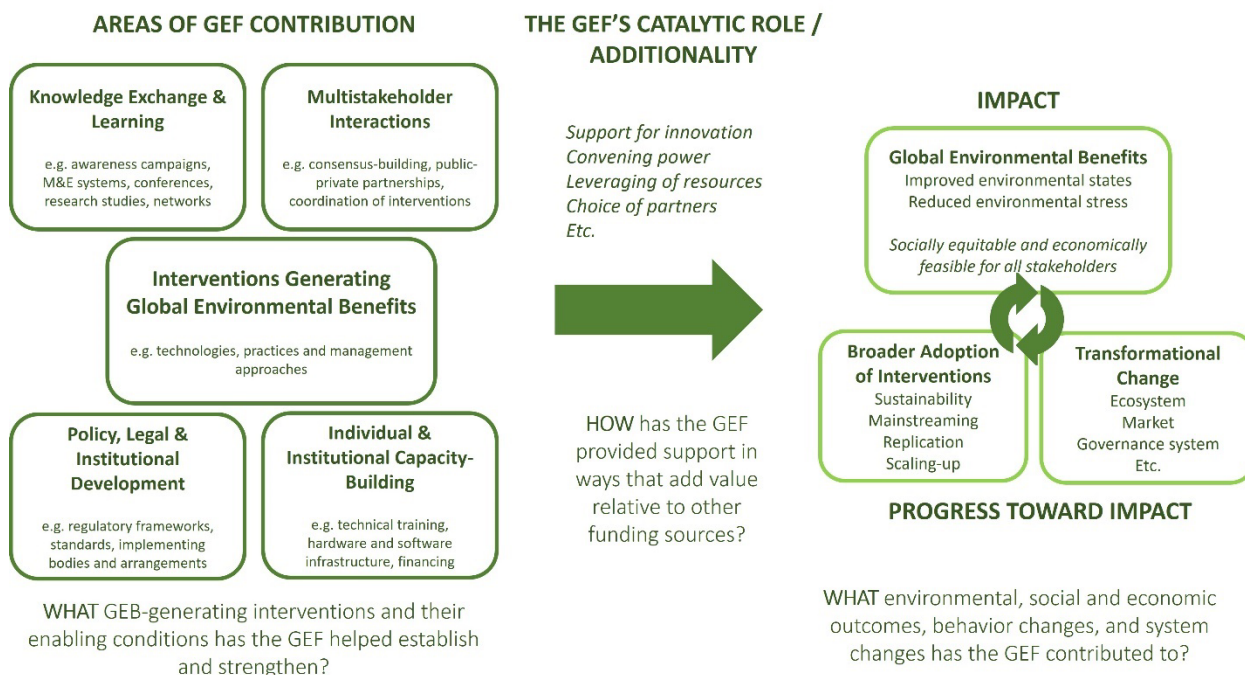


Figure 1. The GEF IEO's updated Theory of Change Framework on how the GEF achieves impact

The general framework for the GEF's theory of change (figure 1) draws on the large amount of evaluative evidence on outcomes and impact gathered over the years by the GEF Independent Evaluation Office. The framework diagram has been updated to reflect the IEO's learning since OPSS5 (GEF IEO 2014, p. 47-50) about how the GEF achieves impact, as well as the evolution of the GEF's programming toward more integrated systems-focused and scaled-up initiatives.

The framework outlines the three main areas that the IEO assesses in its evaluations: a) the GEF's contributions in establishing and strengthening both the interventions that directly generate global environmental benefits, and the enabling conditions that allow these interventions to be implemented and adopted by stakeholders, b) the GEF's catalytic role or additionality in the way that the GEF provides support within the context of other funding sources and partners, and c) the environmental, social and economic outcomes that the GEF has contributed to, and the behavior and system changes that generate these outcomes during and beyond the period of GEF support.

The circular arrow between impact and progress toward impact, as before, indicates how bringing about positive environmental change is an iterative process that involves behavior change (in the form of a broader group of stakeholders adopting interventions) and/or systems change (which is a key characteristic of transformational change). These three areas of change can take place in any sequence or simultaneously in a positively reinforcing cycle, and are therefore assessed by the GEF IEO as indicators of impact.

Assessing the GEF's progress toward achieving impact allows the IEO to determine the extent to which GEF support contributes to a trajectory of large-scale, systemic change, especially in areas where changes in the environment can only be measured over longer time horizons. The updated diagram in particular expands the assessment of progress towards impact to include transformational change, which specifically takes place at the system level, and not necessarily over a long time period.

The updated diagram also more explicitly identifies the link between the GEF's mandate of generating global environmental benefits, and the GEF's safeguards to ensure that positive environmental outcomes also enhance or at the very least do not take away from the social and economic well-being of the people who depend on the environment. Thus the IEO assesses impact not only in terms of environmental outcomes, but also in terms of the synergies and trade-offs with the social and economic contexts in which these outcomes are achieved.

ANNEX 2. DEFINITION OF TERMS

Intervention	Any programmatic approach, full-sized project, medium-sized project, or enabling activity financed from any GEF-managed trust fund, as well as regional and national outreach activities. In the context of post-completion evaluation, an intervention may consist of a single project, or multiple projects (i.e. phased or parallel) with explicitly linked objectives contributing to the same specific impacts within the same specific geographical area and sector. https://www.gefio.org/evaluations/gef-evaluation-policy-2019
Activity (of an intervention)	An action undertaken over the duration of an intervention that contributes to the achievement of the intervention's objectives, i.e. an intervention is implemented through a set of activities. E.g. training, (support to) policy development, (implementation of) management approach.
Outcome	An intended or achieved short- or medium-term effect of a project or program's outputs. https://www.gefio.org/evaluations/gef-evaluation-policy-2019
Impact	The positive and negative, primary and secondary long-term effects produced by a project or program, directly or indirectly, intended or unintended. https://www.gefio.org/evaluations/gef-evaluation-policy-2019
Environmental outcomes	Changes in environmental indicators that could take the following forms: <ul style="list-style-type: none"> • Stress reduction: reduction or prevention of threats to the environment, especially those caused by human behavior (local communities, societies, economies) • Environmental state: biological, physical changes in the state of the environment http://www.gefio.org/sites/default/files/ieo/evaluations/ops5-final-report-eng.pdf
Social and economic outcomes	Changes in indicators affecting human well-being at the individual or higher scales, e.g. income or access to capital, food security, health, safety, education, cooperation/ conflict resolution, and equity in distribution/ access to benefits, especially among marginalized groups.
Synergies	Multiple benefits achieved in more than one focal area as a result of a <i>single intervention</i> , or benefits achieved from the interaction of outcomes from at least two separate interventions in addition to those achieved, had the interventions been done independently.

	http://www.gefio.org/evaluations/evaluation-multiple-benefits-gef-support-through-its-multifocal-area-portfolio-map-2016
Trade-offs	A reduction in one benefit in the process of maximizing or increasing another benefit. http://www.gefio.org/evaluations/evaluation-multiple-benefits-gef-support-through-its-multifocal-area-portfolio-map-2016
Broader adoption	The adoption of GEF-supported interventions by governments and other stakeholders beyond the original scope and funding of a GEF-supported intervention. This may take place through sustaining, replication, mainstreaming, and scaling-up of an intervention and/or its enabling conditions (see definitions below). http://www.gefio.org/sites/default/files/ieo/evaluations/ops5-final-report-eng.pdf
Sustainability	The continuation/ likely continuation of positive effects from the intervention after it has come to an end, and its potential for scale-up and/or replication; interventions need to be environmentally as well as institutionally, financially, politically, culturally and socially sustainable. https://www.gefio.org/evaluations/gef-evaluation-policy-2019
Replication	When a GEF intervention is reproduced at a comparable administrative or ecological scale, often in different geographical areas or regions. http://www.gefio.org/sites/default/files/ieo/evaluations/ops5-final-report-eng.pdf
Mainstreaming	When information, lessons, or specific aspects of a GEF initiative are incorporated into a broader stakeholder initiative. This may occur not only through governments but also in development organizations and other sectors. http://www.gefio.org/sites/default/files/ieo/evaluations/ops5-final-report-eng.pdf
Scaling-up	Increasing the magnitude of global environment benefits (GEBs), and/or expanding the geographical and sectoral areas where they are generated to cover a defined ecological, economic, or governance unit. May occur through replication, mainstreaming, and linking. http://www.gefio.org/evaluations/evaluation-gef-support-scaling-impact-2019
Transformational change	Deep, systemic, and sustainable change with large-scale impact in an area of major environmental concern. Defined by four criteria: relevance, depth of change, scale of change, and sustainability. http://www.gefio.org/evaluations/evaluation-gef-support-transformational-change-2017
Additionality	a) Changes in the attainment of direct project outcomes at project completion that can be attributed to GEF's interventions; these can be reflected in an acceleration of the adoption of reforms, the enhancement of outcomes, or the reduction of risks and greater viability of project interventions. b) Spill-over effects beyond project outcomes that may result from systemic reforms, capacity development, and socio-economic changes. c) Clearly articulated pathways to achieve broadening of the impact beyond project completion that can be associated with GEF interventions. https://www.gefio.org/sites/default/files/ieo/council-documents/files/c-55-me-inf-01.pdf