

## KNOWING WHAT WORKS



# Central Project Evaluation

Renewable Energy and Energy Efficiency  
Programme, Bangladesh  
PN 2012.2097.9

## Evaluation Report

On behalf of GIZ by *Dr Theodor Goumas and Mr Hassan Mahmud*

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## List of abbreviations

BB	Bank of Bangladesh
BCSIR	Bangladesh Council of Scientific and Industrial Research
BPDF	Bangladesh Biogas Development Foundation
BFRI	Bangladesh Fisheries Research Institute
BIBM	Bangladesh Institute of Bank Management
BMZ	German Federal Ministry for Economic Cooperation and Development
BPDB	Bangladesh Power Development Board
BUET	Bangladesh University for Engineering and Technology
CAB	Consumer Association of Bangladesh
COD	Capacity and Organisational Development
DoE	Department of Environment
DU	Dhaka University
EE	Energy Efficiency
EnDev	Energizing Development
ERD	Economic Relations Division of Ministry of Finance
ESCO	Energy Service Company
FC	Financial Cooperation
GDC	German Development Cooperation
GFA	GFA Consulting Group
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
IDCOL	Infrastructure Development Company Limited
INDC	Intended Nationally Determined Contributions
JICA	Japan International Cooperation Agency
KfW	KfW Development Bank
LNOB	Leave-No-One-Behind
M&E	Monitoring and Evaluation
MOEF	Ministry of Environment and Forests
Mol	Ministry of Industry
MoU	Memorandum of Understanding
MPEMR	Ministry of Power, Energy and Mineral Resources
NDC	Nationally Determined Contributions

NRMA	National Rice Mills Association
NSDS	National Sustainable Development Strategy
OECD/DAC	Organisation for Economic Co-operation and Development/Development Assistance Committee
PPR	Project Progress Review
PV	Photovoltaic
RBM	Results-based Monitoring
RE	Renewable Energy
REEEP	Renewable Energy and Energy Efficiency Programme
SDGs	Sustainability Development Goals
SED	Sustainable Energy for Development, Renewable Energy and Energy Efficiency Programme, Bangladesh' predecessor of REEEP
SMART	Specific, Measurable, Achievable, Relevant, Time-Bound
SME	Small and Medium-sized Enterprises
SREDA	Sustainable and Renewable Energy Development Authority
TC	Technical Cooperation
ToC	Theory of Change
TOE	Tons of Oil Equivalent
WZPDCL	West Zone Power Distribution Company Limited



# The project at a glance

## Bangladesh: Renewable Energy and Energy Efficiency Programme (REEEP)

Project number	2012.2097.9
CRS-Code(s) (Creditor Reporting System Code)	23110
Project objective	Conceptual foundations for the spread of renewable energies and energy efficiency in Bangladesh are successfully applied
Project term	01.11.2013-31.10.2018
Project volume	EUR 10,000,000
Commissioning party	Ministry of Power, Energy and Mineral Resources (MPEMR), Government of Bangladesh and the German Federal Ministry for Economic Cooperation and Development (BMZ).
Lead executing agency	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Implementing organisations (in the partner country)	Sustainable and Renewable Energy Development Authority (SREDA)
Other development organisations involved	All those organisations, professionals, and institutions directly or indirectly involved in developing or changing the framework, production, dissemination, and maintenance of materials or equipment or components for energy efficiency or use of renewable energy. Indicatively: BIBM, BB, MoI, DoE, ERD, BUET, DU, BCSIR, industry associations, etc.
Target group(s)	The users of energy services in households, trade and industry. Renewable energy is expected to especially benefit villages with predominantly poorer populations in off-grid areas, as well as households and small businesses with medium and low incomes.

# Summary

The technical cooperation project 'Renewable Energy and Energy Efficiency Programme' (REEEP) has been carried out by the German Agency for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ) on behalf of the Federal Ministry for Economic Cooperation and Development (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, BMZ) in the period 2013-2018. The local partners are the Ministry of Power, Energy and Mineral Resources (MPEMR) and the Sustainable and Renewable Energy Development Authority (SREDA), which is also the implementing organisation. The objective of REEEP is: *'Conceptual foundations for the spread of renewable energies and energy efficiency in Bangladesh are successfully applied.'*

## Evaluation objectives and questions

The main objective of this evaluation is to provide a valid and reliable assessment of REEEP performance according to the evaluation criteria of Development Assistance Committee of the Organisation for Economic Co-operation and Development (OECD/DAC) and to inform decision-makers, stakeholders and change agents in the project context and/or organisations of the German development cooperation. The results will constitute useful experience-based knowledge for similar programmes in the country or in other countries of similar socio-economic conditions in this or other regions.

The project is assessed on the basis of standardised evaluation criteria, assessment dimensions and analytical questions to ensure comparability by GIZ. The analytical questions constitute the basis for all Central Project Evaluations in GIZ and can be found in the Evaluation matrix (Annex 1). In addition, the contributions to Agenda 2030 and its principles (universality, integrative approach, leave-no-one-behind, multi-stakeholder partnerships) are also taken into account, as well as cross-cutting issues such as gender, environment, conflict sensitivity and human rights.

## Object of the evaluation

Bangladesh, being one of the poorer countries, has maintained an average annual growth rate of about 6% for more than a decade. This growth has also been associated with improvement in social indicators, such as education, health, nutrition, housing and sanitation and has been facing fundamental challenges, including increasing energy supply to meet growing demand. The other challenge to sustainability stems from climate-induced changes caused by greenhouse gases in the atmosphere, which are growing at an unprecedented rate and magnitude. MPEMR's national energy policy encourages the implementation of programmes for energy development and coverage of present and forthcoming energy demand. In principle, all political forces support the access of the rural population to renewable energy and the improvement of the power supply crisis.

The object of the evaluation is the technical cooperation project REEEP. The project is broken down into three components/intervention areas (outputs): Renewable Energy (RE), Energy Efficiency (EE) and supporting Capacity and Organisational Development (COD) of SREDA. The components for RE and EE comprise mainly interventions at pilot and demonstration levels developed by the project to be further disseminated under relevant national and international policy measures. The third component of COD of SREDA aims at directly supporting the capacity of SREDA to design and implement countrywide EE and RE measures and become the branch of MPEMR in EE and RE policies.

From the environmental point of view, it is foreseen that the use of RE systems in the country will contribute to a decline in the expected use of wood and deforestation. In the area of EE, the project is supposed to lead to a reduction in the amount of conventional energy used and consequently to the reduction of polluting emissions

and greenhouse gases contributing to climate change. It is expected that the project will be directly related to the protection of human rights, such as the households' right of access to an appropriate energy supply, and less health burden – notably to women when cooking. At the same time, women should be encouraged to be active in the REEEP context even in rural areas, so that here, too, the human rights receive more weight than restrictions due to religion for the involvement of women in business opportunities.

The programme targets the broad group of users of energy services in households, services and industry. Especially, it is expected that RE technologies will offer benefits to villages with predominantly poorer populations in off-grid areas, as well as to households and small businesses with medium and low incomes. In general, the interventions selected and developed by REEEP in the RE and EE components are implemented on a pilot basis and they are mostly adaptations of commercial EE and RE technologies to the reality of Bangladesh. Furthermore, it was envisioned that these RE and EE technologies may advance in a commercial scale-up by private businesses with support from the government through SREDA and other relevant institutions. The strategic orientation of the project considered the use of initiatives, like Energizing Development (EnDev), or any other dissemination mechanism to scale up RE and EE applications in the country.

## Results model including hypotheses

An 'actual' results model based on the methodological approach of the 'GIZ's evaluation system/theory of change for GIZ's evaluations' was constructed during the evaluation phase and is presented in Figure 1. This results model indicates the numbering of described changes, the outcomes and impacts as they are anticipated in the project results model and the main hypotheses as they are related to results.

In the RE intervention area, the objective is to develop practical dissemination approaches concerning RE technologies and make them available for households and small medium-sized enterprises. The main project results comprise: development of pilot interventions for specific RE technologies; awareness raising for potential investors; and training industries in various RE development techniques, including appraisal of investments for different target groups with particular emphasis on women.

In the EE intervention area, the objective is to develop and avail practical quality and performance guidelines, as well as dissemination approaches for EE technologies in households, business and industry. The main project results comprise: development of pilot EE schedules for major energy consumers, including energy audits, analyses of EE equipment potential for domestic development and installation by branch, and pilot-proof testing in five sectors; preparation of energy savings assessments; awareness raising addressed to big energy consumers to demonstrate the financial attractiveness; and training courses addressed to selected industry personnel for EE implementation techniques.

In the (COD) intervention area, the objective is to ensure that SREDA will meet its responsibilities for the dissemination of EE and RE applications. The main project activities comprise: organisational development of SREDA departments aimed at preparing and concluding an action plan for implementing EE and RE policy measures; provision of support in coordinating and monitoring the planned international donor activities; and support to SREDA in preparing the necessary regulations related to the implementation of RE and EE.

Important synergies also exist regarding the project's results contribution to the three overarching development goals, since all the REEEP intervention areas either directly by the three outcomes or through the fourth outcome, i.e. of implementation of REEEP interventions scaling-up, influence the fulfilment of these goals. Moreover, eight hypotheses (Table 1) (the most significant according to the evaluators, which reflect the assessment of the links between various results) have been quoted and are indicated in the 'actual' results model.

## Evaluability

The basic documents for the evaluation based on an estimation of actuality and quality and on their relevance to the OECD/DAC criteria were mostly available. In general, the data delivered to the evaluators were of proper

quality and maintained in accordance to the internal procedures of GIZ and reasonable data collection and maintenance rules. Only the data related to the population of the Efficiency matrix were not available under the requested analysis, due to the inability of the accounting system to provide the required cost allocations by output. In this case, estimations and cumulative data were used.

During the REEEP execution, data were collected from the national systems, such as the website of Bangladesh Power Development Board, Power Cell, SREDA, Power Division or other government agencies. The same data sources used by the GIZ/REEEP office have also been used by the evaluators; there has been an effort to enrich and cross-check these data on the basis of additional sources and, thus, via applying a triangulation approach as far as possible.

The project indicators set for REEEP in the reorientation and extension of 2015 could be considered as SMART (specific, measurable, achievable, relevant, time-bound). However, certain definitions of parameters related to the assessment of output and outcome indicators are necessary and could be taken from the results-based monitoring (RBM) system that adequately defines these parameters. The REEEP/GIZ office has developed a methodology to measure changes in key indicators, i.e. to collect and elaborate data towards estimating the output and outcome of the project activities. The relevance of these calculations, the documentation of data sources and the data quality have been assessed by the local evaluator and the results are presented in the section 4.3: Effectiveness. On the other hand, the REEEP monitoring system supported both quantitative and qualitative data collection, analysis and reporting. SREDA also contributed in monitoring and validating of data.

## Evaluation process

The project is assessed using standardised evaluation criteria and questions to ensure comparability by GIZ. This is based on the OECD/DAC criteria for the evaluation of development cooperation and the evaluation criteria for German bilateral cooperation, namely Relevance, Efficiency, Effectiveness, Impact and Sustainability. An Evaluation matrix is used by the GIZ with reference to these criteria and analysis to specific assessment dimensions and to analytical questions. This tool constitutes the basis for all GIZ Central Project Evaluations and can be found in Annex 1 of this report. In addition to the OECD/DAC criteria, the relevant provisions of the Agenda 2030 are also taken into account, as well as cross-cutting issues such as gender, environment, conflict sensitivity and human rights.

A theory-based approach has been used to ensure the robust verification of results, realistic evaluation, process tracking and contribution analysis. To this end, an 'actual' results model was created to present the theory of change, as it was perceived at the evaluation stage. In addition, the main project risks and eight most significant hypotheses related to REEEP execution were quoted so that they could be used during the evaluation exercise.

For most intervention areas and assessment dimensions, a mix of the methods, namely document analysis, semi-structured interviews, analysis of secondary data, and field visits, were applied. Interview data were continuously cross-checked with information from project and/or sector documents to validate the respective information or discover incongruencies (triangulation of methods). In all intervention areas, different stakeholders were interviewed in order to cover and compare different perspectives (e.g. regarding sustainability and impact issues). Throughout the report, several sources (literature, specific project or partner documents) and interviewed stakeholders were extensively quoted.

The REEEP/GIZ office took the lead in organising interviews with the local stakeholders. The interviews took place in Dhaka, primarily with local partners and collaborators, and in the region around Khulna, where, in principle, the target groups were reviewed. Within the context of the evaluation mission a de-briefing presentation and discussion of preliminary results took place.

## Assessment of relevance

The evaluation basis of 'relevance' is defined by the relevant documents used in the REEEP design, but also by newer documents and analyses released during REEEP's implementation period, the 'actual' results model and the main project assumptions.

All project intervention areas contribute to the implementation of national policies and strategies. The project is closely aligned with the objectives and intervention areas in EE and RE of the 7th Five-Year Development Plan (FY2016-FY2020). REEEP is also aligned with the National Sustainable Development Strategy (NSDS), which has been prepared to meet the formidable environmental challenges that Bangladesh faces on its way to development; and the REEEP concept is also in line with the relevant Bangladesh's Intended Nationally Determined Contributions (INDC). Bangladesh is a highly climate-vulnerable country; therefore its main focus of activities is on increasing the resilience to the impacts of climate change that are already affecting the livelihoods of a large part of population and will continue to do so in the future. Furthermore, REEEP complied with the Bangladesh proposal on its Sustainable Development Goals (SDGs) and more specifically with SDG 'Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all'. On the other hand, the project is aligned with the relevant concepts and strategies of the German development cooperation (GDC) for Bangladesh (July 2016 report), i.e. of the BMZ as commissioning party. Therefore, the project fits into the relevant strategic reference frameworks at all levels, i.e. national policies and strategies, international standards and GDC strategies.

The leave-no-one-behind (LNOB) principle was not the major criterion in the concept of most of the REEEP interventions. Placing focus on the near poor populations of rural areas, each facing different risks of exclusion from basic energy supply services, was a way to embrace the LNOB principle in the REEEP strategy. Beyond mainstreaming the LNOB principle, the design of REEEP places a strong emphasis on gender issues by supporting the involvement of women's participation in activities and business development. Different perspectives and concerns of women and men played an important role in the intervention areas related to business development, where equal access to the REEEP capacity-building activities was supported and monitored through collection of gender data. Nevertheless, the strategy was mostly suitable to match the core problems/needs of the target groups, albeit with greater focus on the poorer populations.

REEEP was designed so that its objectives and interventions were linked with government targets such as the 6th and 7th Five-Year Plans, the Power System Master Plan 2016, the Renewable Energy Policy 2008 and the Energy Efficiency and Conservation Master Plan. Therefore, the project directly contributes to the fulfilment of the Government of Bangladesh's policy ambitions for RE and EE. Moreover, REEEP redesigned and rescheduled some of its interventions that were affected by change of the project environment, especially it was properly adapted to various conditions that were formulated during the execution period. REEEP was launched in October 2013 and was upgraded in terms of budget in October 2015. During the project period there were no significant changes neither in energy policy nor in the technological, sectoral and institutional development that influenced significantly the project execution.

## Assessment of effectiveness

The basis for the evaluation of 'effectiveness' is the set of three objective indicators presented in the REEEP Results matrix. For each of the three indicators, base and targeted values are clearly defined. These indicators could be considered as SMART and plausible for the REEEP objective.

The attainment of the project's indicators (outcomes) was satisfactory, given certain arguments of the evaluators on the calculation of indicators. The indicator of 80 service providers (15% of whom are women) was mostly covered by the end of the project. However, the definition of 'service provider' is rather loose and therefore all attendants of training-for-trainers' courses could be considered as service providers. A more conservative interpretation reduces the number of potential service providers to around the targeted figure. With regard to the calculation of energy savings stimulated by the project, a revisited methodology was used and verified by the evaluators. The cumulative energy savings and the production of energy from renewable sources, or from commercial activities stimulated by the project, annually yield 18,000 tons of oil equivalent (TOE). This is a higher saving than that envisaged in the relevant REEEP indicator (i.e. an annual average of

15,000 TOE). This indicator was satisfied mostly by 2 out of 24 interventions, because these two interventions encompassed, in addition to conceptual foundations for the spread of renewable energies and energy efficiency, specific dissemination actions that spread the use of EE technologies. The third indicator addressed the capacity building of SREDA, which should ensure stable funding to implement its annual Action Plan, starting in 2017, from Bangladesh government and third-party funds. Finally, the draft of the SREDA Action Plan was completed by REEEP in collaboration with SREDA. It included an outline of third-party funds, i.e. funds for RE and EE measures that are coming from development partners or private sector or any other source. So, the indicator of securing funding by SREDA in promoting EE and RE has been mostly attained and is soon expected to be fully achieved.

There are 15 REEEP interventions, which contribute to the achievement of indicator 1, the most significant of which are the commercial biogas interventions with 47 service providers. All the other interventions contribute with just a few service providers. This fact indicates that the market interest, the scope of the intervention and the expected prospects are not symmetric in terms of the effect to outcomes. An explanation is that the selection of interventions was also subject to criteria more significant than that of contribution to the outcome indicators, or that the results often exhibit a different performance to what was expected at the design stage.

The main factors of the implementation strategy that contributed to the successful achievement of the REEEP project objectives were the selection and support of business cases in most interventions (which could be developed under the current economic and environmental reality of the country); the political neutrality approach, allowing effective work and emphasis on technical and technological issues; and the hiring of competitive and skilful staff under local market conditions. Conversely, the main problems were related to the fluid economic situation, the time-consuming procedures used to make local partners understand the GIZ rules, and the need for compromise in intervention requests which were marginally within the context of the REEEP objectives.

The project didn't contribute to (potential) negative and unintended results; limited remarks to very specific aspects have been collected.

## **Assessment of impact**

The evaluation basis against which 'impact' was assessed was clearly defined by the programme indicators included in the REEEP Results matrix (impact level), but also by the overarching results included in the 'actual' results model and its relevant hypotheses.

The overarching development goals to which REEEP contributes are defined by the programme goals of the GDC. The programme indicator 1 anticipates that the proportion of the population in Bangladesh having access to energy will increase to 90% by 2020. MPEMR recently announced that that figure was already around 92% in 2018, however, this included captive generation and off-grid RE. This percentage should be compared to 83% in 2017. This increase is actually too high, and the estimations are surely certainly on different methodology and criteria, which changes every year. Albeit the argument of the evaluators on the correctness of the rate of increase in 2017-2018, we may recognise that the Government of Bangladesh has explicitly declared its decision to support full electrification of the country. Programme indicator 2 states: 'Decreasing production losses due to an unstable energy supply (value lost due to electrical outages, in percentage (%) of sales) to 3% in 2020'. This reflects that the small and medium enterprises (SMEs) and industries still face daily electricity supply deficiency on average from one to about four hours. Actually, there were no recent data on the evolution of the programme indicator 2, due to the complexity of methodology to estimate it. However, the installation of decentralised generation units, many of which are based on RE, is expected to improve the electricity network conditions and reduce the percentage of lost electricity sales. With regard to programme indicator 4: 'The share of energy generated by renewable resources in Bangladesh is increasing to 2,000 MW in 2020', SREDA has prepared an annual plan with the expected capacity of RE installations of 500-600 MW by 2020. The overall RE capacity installed in Bangladesh was 516 MW by 2017; therefore, it is very ambitious to expect that, in the two years since 2018, such a large RE power capacity will be installed given the country's land-use problems.

The REEEP outcomes contribute to the achievement of the overarching results. Therefore, the development of service providers in EE and RE applications is expected to replicate and scale up the REEEP interventions

under market conditions with or without the support of the state programmes, which will be managed mostly by SREDA. The latter has been established and capacity developed by REEEP to be able to cope with the necessary supporting measures, which will contribute to the RE and EE outcome of energy saving (TOE). This outcome contributes to the fulfilment of all three programme indicators, because where better access to electricity is achieved, the loss of generation will be relaxed and the trend for an increase in the RE share is strengthened.

Both the Economic Relations Division of Ministry of Finance (ERD) and MPEMR have mentioned that the REEEP interventions might positively affect the national targets where there is proper scope for disseminating the results. The results of REEEP are well received, the conceptual level is fine for the beneficiaries and reasonable dissemination is expected to follow. Thus, they favour continuation of the REEEP project model and expect more effort in scaling-up the results in order to achieve the anticipated impact.

## **Assessment of efficiency**

The 'efficiency' assessment in the context of the GIZ project evaluations is based on the Efficiency matrix, an Excel tool that captures all project-related costs at the time of the evaluation. The matrix also indicates how the costs are distributed among cost-categories and among the three outputs of REEEP, which allows an understanding of the cost-intensity of each output ('follow-the-money approach').

This project was initially built on the approach of a previous technical cooperation measure, SED, in 2013 which was extended in 2015. The extension includes a financial increase from EUR 3 million to EUR 10 million, without co-financing agreement with local or international institutions. There was one large international company, GFA, which undertook the operation of the RE component after 2015. Based on the estimations of cost allocation and the use of the Efficiency matrix, the allocation of the project budget was 57% for RE, 27% for EE and 16% for COD. The high percentage of the RE component is due to the broadness of the relevant activities incorporating a number of 'expensive' interventions, including pilot projects like the solar photovoltaic (PV) drinking water systems established in the regions suffering from floods. In the case of EE interventions, the main target was generally the industrial companies; thus, REEEP encouraged stakeholder's cost contribution for implementation of agreed EE measures to promote ownership, and given that the intervention will repay them in the future. The lower budget of the component addressed to SREDA is reasonable, because all the tasks were rather 'desk-based' and aimed at institutional and legislative development.

There were considerable variations (from 11% to 77%) between the estimated budget lines and the actual costs overall, and especially in some categories of costs. This happened because of the inability to properly estimate the categories of cost for such an innovative project, like REEEP, which includes many pilots and capacity building. The identification of interventions during the project execution and the involvement of a big sub-contractor (GFA) created variations from the estimated budget lines. However, the overall budgeted cost (EUR 8,742,300) is close to the overall direct cost (EUR 8,654,133). This is an indication of appropriate financial management implemented in REEEP.

The GIZ/REEEP office structure complies with the specifications and the administration experience of GIZ for technical assistance projects in developing nations and may not be considered as a structure established specifically for REEEP. According to GFA experts, in the beginning of its involvement, GIZ set up a very bureaucratic modus operandi, which later changed with GIZ approval and followed a more flexible operational scheme. For this reason, the first 6 months of the GFA contract were not very efficient. Too much time was required to make decisions/approvals and necessary modifications to the interventions operation. This was most probably because it was the first big contract signed with a non-Bangladeshi company and there was no previous relevant experience. On the other hand, the office structure seems reasonable and follows the principles of good management in coordinating the whole project. Moreover, the REEEP office established proper collaboration with all pertinent organisations working in parallel or as scaling-up actors, and implemented synergies with EnDev operation towards optimising the GIZ/REEEP office resources.

## Assessment of sustainability

In the 'sustainability' criterion, the analysis focuses on the positive synergies and the negative trade-offs among the three sustainability dimensions (economic, social and ecological). The 'actual' results model reflecting the REEEP theory of change (ToC) has also been considered to facilitate the sustainability assessment.

From a conceptual point of view, REEEP was explicitly focusing on the development of partner capacities at all levels (individual, organisational, networks and policy field) to ensure that intended medium and long-term effects can be achieved by the partners themselves. All three components follow multilevel approaches that consistently combine policy advice and process consulting at the system level with organisational development measures for key stakeholders and a wide range of human capacity development activities. Especially, Component-C (output): Organisational development (COD) of SREDA, definitely focuses on strengthening the organisational and capacity development of SREDA in undertaking the design and management of national-level EE and RE programmes. Sustainability was inherent in all REEEP interventions, but it did not perform equally effectively for all local stakeholders.

In the RE and EE components, 21 interventions were carried out with considerable sustainability content. A large number of training courses and workshops were organised within most of the interventions towards increasing the sensitivity and awareness of pertinent experts and officials. A large number of pilot projects, feasibility studies and business model development activities were carried out and their results were disseminated to interested institutions for follow-up activities. The sustainability effect was positively reported by more market-oriented and decentralised organisations such as BPDB, BBDF, BFRI, WZPDCL, service providers, local municipalities and others, which have benefited from the capacity-building tasks of REEEP that were addressed to personal and organisational/management capacities at different levels.

The anticipated durability of project results is 100% related to specific factors, the most significant of which are the increasing and permanent readiness of the Bangladesh government to invest in the value of EE and RE policies, the government's active leadership in designing and managing the ongoing and forthcoming support measures, and the adequate understanding of the potential and limitations of technical assistance that has increased in the recent years.

## Conclusions

The GIZ activities, and especially REEEP, are considered highly by local stakeholders in all sectors where local participants were involved. This is on account of proper organisation at all stages of the project and especially because of the integrated managerial set-up of team composition, competencies, headquarter support, logistic support, monitoring and evaluation (M&E) functions, etc. Almost all local stakeholders and participants in REEEP interventions expressed their positive opinion about the cooperation management implemented by the GIZ/REEEP office and stressed their satisfaction with the approach, procedures followed, strategy, collaboration, steering and innovation.

The concluding recommendations of the evaluators concentrate on the following findings:

- REEEP has not **ensured the scaling-up of its successful interventions** in the RE and EE components by enhancing cooperation with international donors oriented to dissemination activities.
- There is a need of better adaptation of REEEP interventions to **Bangladesh market conditions**, which are oriented towards lower quality products and services, to avoid making difficult replication of interventions, which were piloted under high-quality standards of equipment, construction and operation.
- Emphasis of REEEP has been placed on RE and EE **small-scale interventions** by which small results could be achieved at unit level. However, interventions for big projects (e.g. energy from municipal waste) having significant output are beyond the scope of REEEP, even though the country is seeking such opportunities with significant impact.
- **Broad promotion of marketable RE and EE solutions** addressed to **large groups of consumers** had not linked with successful EE and RE applications and had not taken place through campaigns with mass media, or via other means facilitating broad information dissemination.

Criterion	Score	Rating
Relevance	92 of 100 points	<i>Very successful</i>
Effectiveness	84 of 100 points	<i>Successful</i>
Impact	81 of 100 points	<i>Successful</i>
Efficiency	89 of 100 points	<i>Successful</i>
Sustainability	83 of 100 points	<i>Successful</i>
Overall score and rating for all criteria	85.8	<i>Successful</i>

# 1 Evaluation objectives and questions

This section comprises a brief presentation of the objectives of the evaluation for the German Federal Ministry for Economic Cooperation and Development (BMZ) in assigning the present Central Evaluation, which is carried out as a Final Evaluation of the Renewable Energy and Energy Efficiency Programme (REEEP), which was implemented in Bangladesh in the period 2013-2018. In addition, we present the context of standardised criteria and the evaluation approach questions.

## 1.1 Objectives of the evaluation

In general, evaluations of projects commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) fulfil three basic functions:

- support evidence-based decisions
- promote transparency and accountability
- foster organisational learning within the scope of contributing to effective knowledge management.

The main function of the evaluation is to provide a valid and reliable assessment of the project success according to the evaluation criteria of Development Assistance Committee of the Organisation for Economic Cooperation and Development (OECD/DAC) and to inform decision-makers, stakeholders and change agents in the project context and/or organisations of the German development cooperation (GDC). The Central Evaluation activity includes all commissions in BMZ business, such as technical cooperation (TC) modules; global, convention and sectoral projects; international cooperation projects with regions, special initiatives, fund measures, etc. with a commission value in excess of EUR 3 million. From this statistical population, a 50% random sample is selected annually which is proportionally regionally structured. The REEEP central project evaluation took place approximately six months after the end of the project (10/2018). It will generate conclusions that enrich the planning process of anticipated follow-on-measures and inform the stakeholders responsible for the planning process and decision-makers in the involved organisations of GDC (GIZ and the Federal Ministry for Economic Cooperation and Development/ BMZ).

The results will constitute useful experience-based knowledge for similar programmes in Bangladesh or in other countries of similar socio-economic conditions in the region or in other regions. The results may help improve approaches, design and implementation principles, as well as the rules of cooperation with local partners towards increasing all types of programme effects.

## 1.2 Evaluation questions

The project is assessed on the basis of standardised evaluation criteria and questions to ensure comparability by GIZ. This is based on the OECD/DAC criteria for the evaluation of development cooperation and the evaluation criteria for German bilateral cooperation: Relevance, Efficiency, Effectiveness, Impact and Sustainability. Aspects regarding the criterion coherence, complementarity and coordination are included in the other criteria.

Specific assessment dimensions and analytical questions are derived from this given framework by the GIZ. The former constitutes the basis for all GIZ Central Project Evaluations and can be found in the Evaluation matrix (Annex 1). In addition, the contributions to Agenda 2030 and its principles (universality, integrative approach, LNOB, multi-stakeholder partnerships) are also taken into account, as well as cross-cutting issues such as gender, environment, conflict sensitivity and human rights. Aspects regarding the quality of implementation are also included in all OECD/DAC criteria.

During the contacts with stakeholders and local partners in the context of the Remote Mission (7-10 January 2019), the evaluators encouraged them to express questions that might be incorporated in the Evaluation matrix. There were no such contributions (i.e. additional questions) to those existing in the Evaluation matrix.

## 2 Object of the evaluation

In this chapter the object of the evaluation is described with emphasis on framework conditions, the content of the REEEP technical cooperation measure and results model, as well as relevant assumptions linking the REEEP outputs with the main expected results.

### 2.1 Definition of the evaluation object

#### Framework conditions

Bangladesh, being one of the poorer countries, has maintained an average annual growth rate of about 6% for more than a decade. This growth has also been associated with improvement in social indicators, such as education, health, nutrition, housing, sanitation; but it has been facing fundamental challenges, including increasing energy supply to meet growing demand. The other challenge to sustainability stems from climate-induced changes caused by greenhouse gases in the atmosphere, which are growing at an unprecedented rate and magnitude. The manifestation of climate change is very much evident in Bangladesh.

The coastal region in the south and south-western part of Bangladesh already faces frequent high tide episodes, induced inundation and salinity intrusion, all of which contribute to reduced livelihood opportunities and similar effects. Energy is one of the primary drivers of economic growth and sustainable development. The lack of coverage and low-quality energy supply is one of the key barriers to the development of economic sectors and against the improvement of human lives. In order to meet the present and future challenges, energy supply facilities should be expanded efficiently, and alternative sources of power should be developed.

The Government of Bangladesh considers energy sector (National Five-year Development Plan) as crucial for meeting the increasing demand originating from economic growth and especially the needs of the poor population. Since a large part of the non-electrified villages will be not connected to the power grid over the next few years, the promotion of renewable, decentralised and locally usable energy sources for rural areas is a high priority. The national energy policy of the Ministry of Power, Energy and Mineral Resources (MPEMR) encourages the implementation of programmes for energy development and coverage of present and forthcoming energy demand. In principle, all political forces support the access of the rural population to modern energy and the improvement of the power supply crisis.

#### Technical cooperation measure REEEP

The Central Evaluation concerns the 'Renewable Energy and Energy Efficiency Programme' in Bangladesh, PN: 2012.2097.9. For simplification it will be called 'REEEP' or the 'project' in this document. REEEP is a follow-on to the 'Renewable Energy and Energy Efficiency Programme, Bangladesh or (SED)' (PN: 2010.2121.1) programme. REEEP was implemented in the whole geographical territory of Bangladesh; however, specific interventions (e.g. retained heat cookers) initially developed for Bangladesh, were also widely spread to the neighbouring Indian regions.

The objective of REEEP was to support the successful application of 'Conceptual foundations for the spread of renewable energies and energy efficiency in Bangladesh'. The project concentrated on the improvement of the framework conditions for development and dissemination of RE applications and improvement of EE in major energy consumption sectors. Moreover, the project was designed in compliance with the objectives of the Bangladesh Joint Cooperation Strategy through facilitating improvements of sector strategies and framework conditions, in particular by strengthening SREDA's capacity in policy design measures and implementation, and EE/RE market development. REEEP places emphasis on technology dissemination approaches, which encompass feasibility studies, technology customisations and field pilots, market potential assessments, business cases and service provider development for a broad range of RE and EE technologies having great potential in Bangladesh.

The REEEP concept is characterised by:

- The **target group** consisting of users of energy services in households, services and industry. They were chosen on the basis that RE technologies are expected to offer benefits to villages with predominantly poorer populations in off-grid areas, as well, in general, to households and small businesses with medium and low incomes.
- The **technologies selected** and developed by REEEP through pilot interventions were foreseen as **adaptations of commercial EE and RE technologies for the Bangladesh context**.
- The **promotional and scale-up activity of the successful pilot interventions** to the target group through various methods, which were discussed, supported and elaborated with the pertinent local and international institutions.
- The necessary **capacity building** to local institutions in the context of EE and RE implementation actions.

REEEP is broken down into three components with relevant outputs: **Renewable Energy (RE), Energy Efficiency (EE) and supporting Capacity and Organisational Development (COD) of SREDA**. The three components focus on the development and testing of pilot applications and on the design and support of a dissemination concept for RE. The components for RE and EE comprise pilot interventions and demonstrations developed by the project to be further disseminated under relevant national and international policy measures. The third component (i.e. COD of SREDA) aims at supporting SREDA capacity to be able to design and implement countrywide measures and become the arm of MPEMR in EE and RE policies. Standards and associated legal regulations are developed in parallel, which are then also used by technology producers. The system of dissemination is based on market service centres providing EE and RE technology sales, installations, maintenance and after-sales services.

In all REEEP interventions capacity-building activities were designed and carried out for local stakeholders and especially for SREDA's staff. In most cases, project activities were accompanied by on-the-job training or coaching, including information visits to Europe or to neighbouring countries, or specialist training with a targeted focus, such as in different financing mechanisms available in the international market.

Coordinating the process of establishing a good EE and RE understanding in politics, law and society, and also in schools and educational institutions, such as universities or technical colleges, was considered an important component of the methodological concept of REEEP. The relevant bodies have been targeted for medium-term support in their efforts to educate and/or report to the population or selected expert groups or bodies on the extent of energy saving, the potential of energy savings or climate-relevant effects. In recent years, laws and guidelines in force for RE and EE have been promulgated and form a solid legal basis for the implementation of significant interventions, some of them supported by REEEP.

At the political level, MPEMR was the commissioning party in Bangladesh (main stakeholder) and the newly established RE and EE agency (SREDA) was the specialised authority in-charge in the national context. The political framework of cooperation was established through the strengthening of SREDA so that it can fulfil its responsibilities for managing the dissemination of RE and EE applications. With REEEP support, SREDA is expected to be able to define its own action plan based on funds channelled from other donors. The necessary planning and negotiations with relevant donors help substantiate this cooperation and undertake initiatives for donor coordination on energy projects.

It was identified that the partners involved in the implementation of REEEP's pilot interventions, such as sector-specific groups of the Chamber of Commerce, various ministries, Department of Fisheries, Directorate of Food, specialised associations and local governments, have expanded the framework of collaborations.

The project was designed to intervene at the micro and meso political levels by supporting the market development for innovative RE and EE technologies through pilot demonstration, feasibility studies, awareness raising, business case illustration and service provider development. Furthermore, it was envisioned that the **RE and EE technologies may go in a commercial scale-up by private businesses with support from government through SREDA** and other relevant institutions. The strategic orientation of the project (macro level) considered the use of initiatives, like Energizing Development (EnDev), or any other international donor to scale up RE and EE applications in the country.

The main hypotheses needed to happen outside the sphere of influence of the project are:

- the energy equipment and services developed by the project will be marketed to reach different target groups, including groups in rural areas and poorer population groups
- proper information and incentive campaigns will mainly be coming from state initiatives and addressing these population groups.

The major socio-economic effect concentrates on the increased provision of necessary energy services promoting the formation of small businesses and service companies and, thus, contributing directly to an increase of income. The economic situation of the target groups, i.e. the users of energy services in households, tertiary sector and industry, will be further improved by the access to high-quality energy provided through interventions developed by REEEP. An important contribution to rural development and to improvement of living conditions can be rendered feasible, especially through the focused interventions in the rural areas. Solar energy systems, improved stoves, kilns for parboiling rice, or development of biogas plants in rural areas, could also constitute additional income opportunities.

From the environmental point of view, the use of RE and EE systems in the country is expected to contribute to a decline in the expected use of wood and deforestation. Particularly in the area of EE, the project is anticipated to lead to the reduction of conventional energy used and, consequently, to the reduction of polluting emissions. The latter will significantly contribute to the reduction of greenhouse gases and, thus, to the amelioration of country's climate change performance.

The project is supposed to be directly related to the protection of human rights, such as the right to avail specific supply of energy to the households, and associates with less health burden, notably to women when cooking. At the same time, women should be encouraged to be active in the REEEP context even in rural areas, so that here, too, the human rights receive more weight than religious obstacles. In general, based on the relevant GIZ gender strategy framework, REEEP was expected to incorporate specific provisions for gender equality, including formulation of specific gender analysis and a gender action plan, which has been systematically incorporated in the intervention design and addressed in the operation planning process.

A follow-on project, called REEEP 2, has been launched and is in operation by the GIZ/REEEP office. The new project changes the focus of content and methodology. The objective of REEEP 2 is to enhance the promotion of RE and EE by selected actors from the public system, society and the private sector. Thus, it is anticipated that the interventions of REEEP 2 will likely support the dissemination of the REEEP pilot technology developments.

The REEEP 2 was designed before the present evaluation report, so its conclusions and recommendations may be considered at the intermediate stage of assessing the REEEP 2 progress. However, it is worth mentioning that during the evaluation mission, MPEMR and other local stakeholders expressed their satisfaction with the design of REEEP 2 and that they expect the new project will contribute to the scale-up of developments in REEEP.

## 2.2 Results model including hypotheses

This project was initially built on the approach of a previous technical cooperation measure ('Renewable Energy and Energy Efficiency Programme, Bangladesh (SED)', PN: 2010.2121.1) in 2013 and was extended in 2015 after an assessment carried out for this purpose in May/June 2014. The extension includes a financial increase from EUR 3,000,000 to EUR 10,000,000 without a conceptual change in the design of REEEP. As a result, an updated results model followed from 2015 onwards. The ToC related to the updated project results model, which was followed in the REEEP implementation, is presented in Annex 2.

In this section, an 'actual' results model based on the methodological approach of the '*GIZ's evaluation system /theory of change for GIZ's evaluations*' was constructed during the evaluation phase; it is presented in Figure 1. This results model indicates the numbering of described changes to be used in the following paragraphs, the outcomes and impacts as they are anticipated in the project results model and the main hypotheses as they are related to results.

In the **intervention area (A)**, the objective is to develop practical dissemination approaches concerning **RE technologies** for households and SMEs. The main project results comprise:

- **A1:** Development of pilot interventions for specific RE technologies and research strengthening and monitoring under the specific conditions of the country.
- **A2:** Development of dissemination approaches for RE technologies piloted for their adaptability and the market conditions of the country.
- **A3:** Awareness raising for potential investors, industries, including actions through the Chamber of Trade and Industry and other market-oriented institutions.
- **A4:** Training in various RE development techniques, including appraisal of investments for different target groups (including SREDA as application processor and industry as applicant), with particular emphasis on women.

In the **intervention area (B)**, the objective is to develop and avail practical quality and performance guidelines, as well as dissemination approaches for **EE technologies** in households, business and industry. The main project results comprise:

- **B1:** Development of pilot EE schedules for major energy consumers, including energy audits, analyses of EE equipment potential for domestic development and installation by pilot-proof testing in five sectors, preparation of energy savings assessments for selected major consumers to attract their investment interest and development of necessary standards for certain EE techniques and equipment.
- **B2:** Awareness raising addressed to big energy consumers to demonstrate the financial attractiveness of expected results from EE measures and their broader socio-economic benefits.
- **B3:** Training courses addressed to selected industry personnel for EE implementation techniques and to industrial production/laboratory personnel to ensure compliance of EE equipment with international and national standards.

In the **intervention area (C)**, the objective is to ensure that SREDA will meet its responsibilities for the dissemination of EE and RE applications. The main project activities comprise:

- **C1:** Organisational development of SREDA departments in coordination with the ministry and other institutions aiming at formulating and concluding to an action plan for implementation of EE and RE policy measures.
- **C2:** Provision of support in coordinating and monitoring the planned international donor activities in the EE and RE sectors in the country.
- **C3:** Support to SREDA in preparing necessary regulations related to the implementation of RE and EE policies and their promulgation under the national legal regime.

Each intervention area contributes to one specific outcome (M1, M2, M3) of the REEEP objective (*'Conceptual bases for the spread of renewable energies and energy efficiency in Bangladesh are successfully applied.'*) The respective outcome indicators are already referred to in the project results model (Annex 2). It is worth mentioning that the outcome *M1 Service providers offer EE and RE market solutions* is dependent on results produced in the other two intervention areas, because the development of service providers as a scale-up and dissemination tool relates also to EE and the policy initiatives undertaken (SREDA). Furthermore, all three outcomes relate to an outcome, namely *M4 Policy measures are implemented for scale-up of REEEP interventions*, which is expected to happen outside the project's sphere of influence, but actually connects the project outcomes with the overarching impacts.

Important synergies also exist regarding the project's contribution to the three overarching development goals (I1, I2, I3), since all the REEEP intervention areas either directly or through the fourth outcome (i.e. of implementation of REEEP interventions scaling-up) influence the fulfilment of these goals. More specifically:

- **I1: Increase population with access to energy**, is directly benefited from REEEP's pilot and training activities, especially in the RE component, because new opportunities are developed for access to energy, including remote areas from the grid. The resulting development of service providers and design/implementation of RE policy measures by SREDA/Government of Bangladesh both positively influence the number of inhabitants with access to reasonable energy supply.

- **I2 Improve electricity supply conditions to consumers**, anticipates proper quality of electricity distribution and consequent electricity generation conditions that allow consumers to organise their professional and personal activities with low risk of interruptions or damage to their tools and energy consuming equipment. This overarching goal is in principle affected by the development of alternative (RE in our case) electricity supply solutions at decentralised level and implementation of EE measures at the establishments of major energy consumers (industry, commerce). Many pilot and training activities addressing the sensitive consumers contribute to the alleviation of electricity supply problems.
- **I3 Increase share of energy produced by RE**, is actually influenced by the outcome results, which relate to the scaling-up of RE solutions. The implementation of policy measures providing the necessary initiatives and the market development through the service providers constitute the two major reasons for an increase of renewables penetration at both centralised and decentralised level that is the most promising option for Bangladesh. Regulatory issues, such as net metering, equipment standards on the one hand, and proper financial incentives motivate the market forces (service providers), which are able to contribute to considerable penetration of RE.

In addition to the above, the results are related to cross-cutting issues in the areas of poverty reduction (reduction of economic hardships due to energy supply availability), good governance (increased needs orientation of public planning processes through society participation) and gender mainstreaming (consideration of gender-specific needs in the design of RE and EE measures and service quality standards). For this reason, an additional overarching target is considered: *I4 Poorer groups of population have benefited, LNOB principle*. Regarding the Agenda 2030, the results of REEEP not only achieve the goal to supply energy in a socially, economically and environmentally sustainable manner so that Bangladesh can combat the climate-vulnerable challenges and, thus, meet SDG-7 and SDG-13, but also operates in favour of SDG 1 ('End poverty in all its forms and everywhere') and SDG 5 ('Achieve gender equality and empower all women and girls').

**Eight hypotheses** are quoted in the 'actual' results model prepared at the evaluation stage; the most significant hypotheses according to the evaluators as they reflect the assessment of the links between various results. The hypotheses are presented in Table 1. These hypotheses are absolutely related with the links of results are marked with red triangles in the 'actual' results model. Five of the hypotheses (1 to 5) link the REEEP output results with outcome results and will be used in the relevant contribution analysis. The other three hypotheses link the outcome results with the overarching results and will be used in the contribution analysis for overarching results. The influence of the considered hypotheses is also assessed in section 4.7 of this report along with the key results achieved by REEEP.

Hypothesis 1 links the elaboration of SREDA's Action Plan of with the safeguarding of donors' and national funds for the implementation of EE and RE policy measures, given that the political situation might delay the necessary procedures to be followed by SREDA. Hypothesis 2 relates to the results of REEEP interventions with the preferences of donors to support, in their relevant scaling-up activities, EE and RE solutions coming from REEEP. Hypothesis 3 concentrates on the required coordination and exchange of information among donors for more efficient scaling-up measures. Hypothesis 4 concentrates on the required awareness campaigns towards all groups of consumers that will be undertaken at state level to facilitate dissemination of RE and EE solutions which have been developed at pilot stages. Hypothesis 5 relates to the REEEP interventions with high energy saving potential for consumers, in preference, to be able to achieve viable intervention EE projects. Hypothesis 6 considers the relation between the prices of conventional energy with the market actors' involvement in the areas of EE and RE solutions which, under higher prices, become more competitive and thus attractive for the service providers. Hypothesis 7 focuses on the required proper coordination of MPEMR with SREDA, IDCOL and other institutions towards setting up and implementing the necessary scaling-up policy measures and thus achieve the overarching goals. Finally, the evaluators recognise the necessity of a distinguished link between the scaling-up RE and EE implementation activities with the poor and sensitive groups of population in accordance to the LNOB principle.

Table 1: Significant REEEP hypotheses and their relation to the results of the 'actual' results model

No	Hypotheses	Related results
1	Scale-up preparation and design is influenced by political decisions and could be achieved more slowly than anticipated	C1, M3
2	Scale-up donors and the service providers adopt REEEP interventions in their dissemination concepts and activities	M1, M4 & M2, M4
3	Cooperation of REEEP with other TC and XXX (FC) measures develops focusing on enhanced exchange of information and experiences	C2, C3
4	Proper information and incentive campaigns on the results of REEEP are mainly coming from state initiatives and addressing target groups	A3, M1 & B2, M2
5	Scaling-up measures based on REEEP interventions are specifically geared towards industry with high energy savings potential	B1, M2
6	Development of activity of market in RE and EE depends on prices of energy supply both to private households and to industry, services	M1, I1, I2, I3
7	SREDA and the Ministry of Energy cooperate; IDCOL and other financial institutions continue to be interested in becoming active with RE and EE	M4, I1, I2, I3
8	Specific measures are prioritised to be implemented supporting poor groups of population	M4, I4

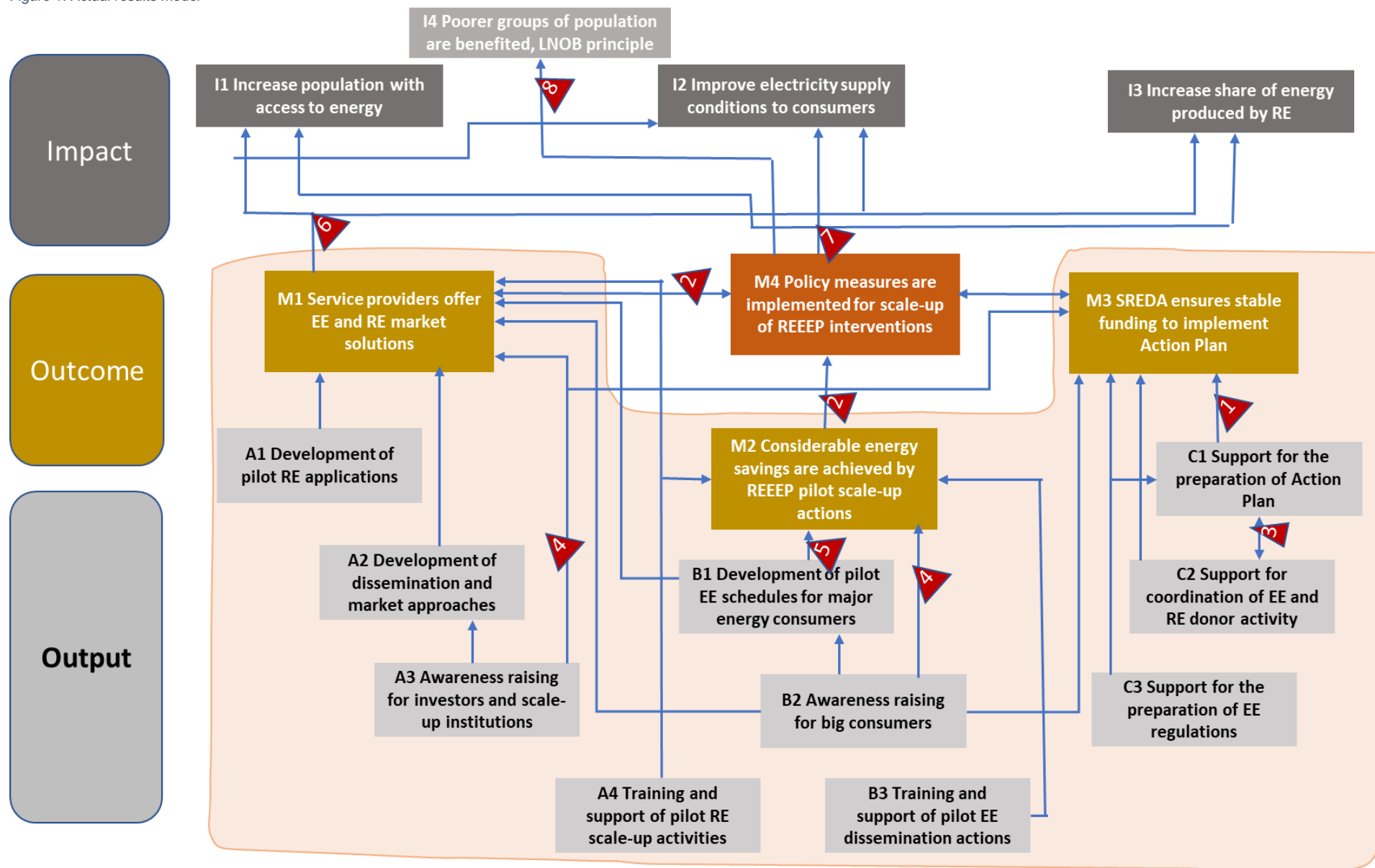
The following three **significant risks** are indicated by the project design documents and have to be considered in the analyses of results:

1. The development of sustainable market structures for decentralised RE technologies could be jeopardised by **low-cost, low-quality products**. The project should undertake to inform customers about the benefits of quality products through advertising and education. **(Risk marked: Medium)**
2. The project aimed at stimulating companies' interest in EE business. There is often little interest from companies, as they receive **electricity at subsidised prices** and, therefore, the cost-benefit effect of investing in EE is not significant under current prices. Acceptance of smaller, low-cost RE and EE systems ought to be supported by appropriate marketing and incentive activities performed by the international donors and encouraged by REEEP. The project had very limited influence on the government's energy price policy and its role to undertake necessary reforms in the sector. **(Risk marked: High)**
3. Due to the **political situation**, there was a risk that project progress could be achieved more slowly than planned. This means that product/material deliveries and business activities of partners would slow down and travel in the country would become partially impossible. The security situation in Bangladesh continued to be tense and posed a latent threat to the security of national and international staff. Consequently, additional risk mitigation measures were necessary. **(Risk marked: High)**

In addition, the following two risks have been assessed by the evaluators after discussion with the GIZ/REEEP office experts and should be also considered in the evaluation of the achievement of results:

4. REEEP always aimed to **ownership of beneficiaries** in the successful technology pilot interventions, so that local actors (SREDA and others) can work for the market uptake of the technology. However, REEEP found more and more difficulties to convince beneficiaries even after providing clear concept and business cases. This happens due to (a) limited generic awareness in the society, (b) limited regulatory pressure on energy savings, as well as (c) subsidised energy prices.
5. **Limited donor coordination** in the energy sector due to the fact that the formal consultative group of donors [LCG-Energy] was not active for the past few years. Thus, it was very difficult to have a clear picture of the donor activities and, specifically, of who is doing what.

Figure 1: Actual results model



### 3 Evaluability and evaluation process

In this section we present the basic documents, the base line and monitoring data as well as the partner data based on which the evaluation is prepared.

#### 3.1 Evaluability: data availability and quality

Table 2 groups the available basic documents for the evaluation based on an estimation of actuality and quality and on their relevance to the OECD/DAC criteria. Additional documents were also provided by the GIZ/REEEP office during the evaluation mission. In general, the data delivered to the evaluators were of proper quality and were maintained in accordance to the internal procedures of GIZ and reasonable data collection and maintenance rules.

Table 2: List of available basic documents for the evaluation

Basic document	Is available (Yes/No)	Estimation of actuality and quality	Relevant for OECD/DAC criterion:
Projects proposal and overarching programme/funds proposal (etc.) and the 'Ergänzende Hinweise zur Durchführung' / additional information on implementation	Yes	<i>REEEP Project Offer 03/2013</i>	Relevance
Modification offers where appropriate	Yes	<i>REEEP Offer Modification 10/2015</i>	Relevance
Contextual analyses, political-economic analyses or capacity assessments to illuminate the social context	Yes	<i>National Sustainable Development Strategy (NSDS)</i>	Relevance
Peace and Conflict Assessment (PCA Matrix), gender analyses, environmental and climate assessments, safeguard & gender etc.	Yes	<i>PCA Result matrix for the REEEP change proposal Gender Action Plan 2016 Gender Poster COP24</i>	Relevance
Annual project progress reports and, if embedded, also programme reporting	Yes	<i>4 Annual progress reports up to 10/2018</i>	Effectiveness, Impact, Sustainability
Evaluation reports	Yes	<i>REEEP M&amp;E Framework 2017</i>	Relevance, Effectiveness, Impact, Sustainability
Country strategy BMZ	Yes	<i>BMZ Country Strategy</i>	Relevance
National strategies	Yes	<i>7th Five-Year Plan 2016-2020 SDGs aligning with 7th Five-Year Plan (2016-2020)</i>	Relevance

Basic document	Is available (Yes/No)	Estimation of actuality and quality	Relevant for OECD/ DAC criterion:
Sectoral/technical documents (please specify)	Yes	<i>All technical documents on RE, EE interventions</i>	Efficiency, Effectiveness
Results matrix	Yes	<i>Dok 2 Wirkungsmatrix SED 2</i>	Relevance, Effectiveness
Results model(s), possibly with comments if no longer up to date	Yes	<i>Wirkungsmatrix SED ÄÄ 20150518 (results model)</i>	Effectiveness, Impact
Data of the results-based monitoring system (WoM)	Yes	<i>Document on the M&amp;E system of REEEP, M&amp;E Framework 2017</i>	Effectiveness, Impact
Map of actors	Yes	<i>Stakeholder mapping</i>	Impact, Sustainability
Capacity development strategy/overall strategy	Yes	<i>Capacity development strategy plans and charts</i>	Sustainability
Steering structure	Yes	<i>Steering Structure of REEEP, organisational structure</i>	Efficiency
Plan of operations	Yes	<i>Annual Operational Plans for EE, RE, COD</i>	Efficiency, Effectiveness
Cost data (at least current cost commitment report/Kostenträger-Obligo Bericht). If available: cost data assigned to outputs	Yes	Budget allocations to outputs were estimated after the end of the project; they were not direct results of the accounting system	Efficiency
Excel sheet assigning working-months of staff to outputs	Yes	Relevant Excel sheet was prepared; cumulative figures per expert category and output could be used	Efficiency
Documents regarding predecessor project(s) (please specify if applicable)	Yes	PPR on SED	Predecessor(s)
Documents regarding follow-on project (please specify if applicable)	Yes	Project offer REEEP 2	Follow-on project

Only the data related to the population of the Efficiency matrix was not available in detail under the requested analysis, due to the inability of the accounting system to provide the required cost allocations by output. In this case, estimations and cumulative data were used; thus, the Efficiency matrix indicators are subject to these retrospective estimations; the evaluators suggest that they are not accurate enough.

<sup>1</sup> Mandatory for all projects based on 'Quality Assurance in Line (Qsil)'.

The REEEP/GIZ office has developed a methodology to measure changes in key indicators, i.e. to collect and elaborate data towards estimating the output and outcome of the project activities. This calculation methodology considers the interventions and capacity-building actions provided to SREDA and concludes in quantifiable results indicating the magnitude of the indicators' change. The relevance of these calculations, the documentation of data sources and the data quality have been assessed by the local evaluator and the results will be presented in section 4.3: Effectiveness.

The GIZ/REEEP office and the relevant government counterpart (SREDA) are responsible for their component monitoring – and intervention – of specific progress data gathering. The REEEP M&E process has been designed to monitor the programme progress and evaluate the results, such as the successful establishment of conceptual foundations for the spread of RE and EE applications. REEEP has collected data through the deployment of such tools to provide results for the REEEP interventions and indicators, which should also be monitored. The REEEP monitoring system supported both quantitative and qualitative data collection, analysis and reporting. In addition to quantitative information, REEEP gathered qualitative information, which generally covers the justification of numbers or quantitative data, descriptive factors that influenced progress (failure/success), opinion/updates from managers, etc.

The indicators set for REEEP in the reorientation and extension of 2015 could be considered as SMART (specific, measurable, achievable, relevant, time-bound) and more convenient than those set in the project proposal of 2013. However, certain parameter definitions of related to the assessment of output and outcome indicators are necessary and could be taken from the RBM system that adequately defines them.

The M&E system used is not related to any similar system of the partner organisation (MPEMR/SREDA). According to the bilateral cooperation between Bangladeshi and German governments, every 2 years there is a government-to-government consultation and negotiation. During this procedure, the M&E results are assessed towards improving or extending specific activities and against the scope of the technical assistance provided.

During its interventions' implementation, REEEP has collaborated with several international or local organisations, not only in collecting the monitoring data but also in identifying the performance of the piloted technology. These organisations and the REEEP intervention of their involvement are shown in Table 3.

SREDA was also supported in monitoring and validating data; support from individual consultants and assigned interns has been instrumental in collecting monitoring data.

During the project execution data were collected from the national systems, such as the website of Bangladesh Power Development Board, Power Cell, SREDA, Power Division or other government agencies. Government data are generally considered reliable and representative because they are based on a robust methodological approach. However, in certain cases, REEEP experts questioned this methodology used in the relevant assessments, for example, under the heading, 'access to electricity'. In the governmental approach, any form of electricity availability at household level is considered as 'access to electricity' incorporating even the small-scale solar home systems. Therefore, reliability and quality of electricity supply, which are often the basis of REEEP interventions, are not explicitly considered. The same data sources used by the GIZ/REEEP office have been used by the evaluators. Nevertheless, there has been an effort to enrich and cross-check this data on the basis of additional sources and, thus, via applying a triangulation approach.

Table 3: List of collaborating organisations in data collection by REEEP intervention

Name of organisations involved	REEEP intervention
TÜV SÜD South Asia Pvt Ltd	Solar water pumping system, biomass briquette
Khaya (Samaj Unnayan Sangstha)	Biomass briquette, retained heat cooker
Nature Conservation Management (NA-COM)	Biomass briquette, retained heat cooker
North-Bengal Research Foundation & Development (NRD)	Solar chiller

Name of organisations involved	REEEP intervention
Sodev Consultant International Ltd	Energy efficiency promotion in composite textile, steel re-rolling mills, leather processing industry
GFA Consulting Group	Overall renewable energy interventions
Bangladesh University of Engineering and Technology	LED ESCO in garments, energy efficient 3-wheeler electricity charging stations
German Solar Association (BSW)	Solar rooftop for market development
INTECUS GmbH	Waste-to-energy conversion in Keraniganj area of Dhaka City (Bangladesh)
Clean Energy Alternatives Inc. (CEA)	Waste heat recovery from power plants for operating cold storages in Bangladesh

## 3.2 Evaluation process

A **theory-based approach** has been used to ensure the robust verification of results, realistic evaluation, process tracking and contribution analysis. This approach consists of the following methodological elements:

- A **results model** (included in GIZ's project proposal to BMZ) that maps expectations of the project's cause-and-effect relationships and demonstrates the paths to achieve the targeted results via the inputs, activities and outputs and comparison of observations regarding the 'actual' results model.
- A **theory of change** that is based on the results model and **incorporates hypotheses** and, where applicable, mechanisms for describing the cause-and-effect relationships that are set out in the results model and can be examined and assessed in the evaluation.
- A **contribution story** that documents the observed changes and the role the project under review plays in achieving results, and that is based on reliable, transparent and credible evidence.

It is an explicit goal of the Central Project Evaluations to assure as high a participation in the evaluation process as possible. In addition to the GIZ staff and local partners (commissioning party), this particularly applies to the integration of partners and target group(s) in the evaluation, if possible. Therefore, relevant stakeholders – in particular local partners and indirect target groups, sector experts and other donors – have been actively engaged during the evaluation's inception phase, the implementation phase and, provisionally, in the subsequent utilisation phase.

Since data collection methods and evaluation methods for each OECD/DAC criterion are documented in detail in the *Central Project Evaluation Implementation Guidelines*, the methods applied for this evaluation are briefly summarised:

- **Document analysis** has been applied for all OECD/DAC criteria, all evaluation dimensions and results at all levels. Analysed and screened documents are listed in Annex 3.
- **Semi-structured interviews** have also been applied for all OECD/DAC criteria, all evaluation dimensions and results at all levels. The focus of the interviews varied according to the perspectives and involvement of the specific stakeholders.
- **Analysis of secondary data**, including monitoring the project data, was essential for the calculation of the quantitative indicators for the module objective (outcome level indicators) and the programme objective (impact-level indicators).
- **Focus group discussions** were not planned at RE and EE facility level to triangulate staff perceptions with quantitative variables. Instead, semi-structured interviews with staff members were carried out and group discussions were held to assess intervention related results.

- **Field visits** have been made in the project provinces (Khulna, Satkhira, Rainagar, Gollamari) to (a) obtain an exemplary overview of the achieved outputs and outcomes; and (b) increase the understanding of change processes. Field visits are not a method in itself, but include semi-structured interviews, focus group discussions and the retrieval of additional secondary data.

For most intervention areas and evaluation dimensions, the evaluation team applied a mix of the above-mentioned methods. Interview data was continuously cross-checked with information from project and/or sector documents to validate the respective information or discover incongruencies (triangulation of methods). In all intervention areas, different stakeholders were interviewed in order to cover and compare different perspectives (e.g. regarding sustainability and impact issues). Throughout the report, several sources (literature, specific project or partner documents) and interviewed stakeholders are extensively quoted, ensuring keeping track of method and data triangulation on specific evaluation dimensions.

The GIZ guidelines for interviews have been implemented, including the 'Interview Coding List', the 'Report Writing Guidelines for GIZ Central Project Evaluations' (section 4.2 of for citation guidelines, as well as the provisions for source and data protection of interviewee).

The REEEP/GIZ office took the lead in organising the interviews with local stakeholders. Criteria for this task are the estimated duration of the interview, the place of the local organisation/target group (optimisation of local transport) and the availability of interviewees. The interviews took place in Dhaka, primarily with local partners and collaborators; and in the region around Khulna, where the target groups were in principle reviewed. Within the context of the evaluation mission a debriefing presentation and discussion of preliminary results, which among others could contribute to the transfer of the evaluation knowledge to the REEEP stakeholders, took place in the presence of the local GIZ/REEEP office experts, the GIZ country director and German Embassy officials. Even though certain conclusions and recommendations were expressed in the debriefing meeting, the evaluators reserved judgement to compile these in more detail in this evaluation report.

The evaluation team held short, daily internal meetings for the recapitulation of collected information, discussion of findings and conclusions and, towards the second week of the field phase, discussion about the evaluation dimensions' assessments. Each assessment is the result of comprehensive discussions and reflects consensus achieved by both evaluators (i.e. researcher triangulation). Specific meetings with the GIZ/REEEP office staff were organised to estimate the missing cost allocation data, which is necessary for the Efficiency matrix.

The local evaluator was involved in tasks related to significant amounts of local data and calculations required for verifying the REEEP results, especially the outcome and secondly the impact. Triangulation was used in cases where relevant data were available or alternative calculation approaches could be used. It was scheduled that both evaluators would participate in almost all significant interviews; however, in cases of poor communication in the English language, the local evaluator took the lead in asking the interviewees questions in the Bangladeshi language.

A remote or semi-remote evaluation approach was implemented in few cases where interviewees were unavailable for a meeting during the evaluation mission time.

Table 4 below presents a list of stakeholder interviews carried out. The list of interviewees is not exhaustive, since during the meetings a number of additional experts participated and contributed to the issues discussed.

Table 1: List of evaluation stakeholders and selected interviewees

Organisation/company/target group	Overall number of persons involved in evaluation	Envisaged participation in interview	Envisaged participation in FGD	Envisaged participation in workshops	Envisaged participation in survey
(Please do not list persons or functions)	(*gender disaggregation)	(no. of persons)	(no. of persons)	(no. of persons)	(no. of persons)
<b>Donors</b>	2	2			
<i>JICA, management level</i>					
<i>WB Power Cell, senior management level</i>					
<b>GIZ</b>	12, 3W	12			
<i>GIZ/Bangladesh management level</i>					
<i>REEEP management level and staff</i>					
<i>GFA, REEEP/RE management level</i>					
<i>KfW, management level</i>					
<i>EnDev, senior staff</i>					
<b>Partner organisations (direct target group)</b>	3	3			
<i>MPEMR, senior management level</i>					
<i>SREDA, management level</i>					
<b>Other stakeholders (public actors, other development projects, etc.)</b>	4, 2W	4			
<i>IDCOL, senior staff</i>					
<i>MoEF/ERD, senior management level</i>					
<b>Civil society and private actors</b>	15	15			
<i>BIBM, management level</i>					
<i>BPDB, management level</i>					
<i>WZPDCL, management level and staff</i>					
<i>CAB, senior staff</i>					
<i>BFRI, management level</i>					
<i>NRMA, management level</i>					
<i>BBDF, management level and staff</i>					
<b>Universities and think tanks</b>	3	3			
<i>BUET, 3 Professors</i>					
<b>Final beneficiaries (indirect target groups)</b>					
<i>Kheya: The retained heat cooker entrepreneurs</i>	4, 3W	4			
<i>Solar water pumping system target group 2 EE, Khulna</i>	6, 2W	6			
<i>Solar net metering system at Gollamari, Khulna</i>	2	2			

## 4 Assessment of the project according to OECD/DAC criteria

The following sections detail how each OECD/DAC criterion was assessed by the evaluators, as well as the concluded score in accordance to the GIZ rating system. In addition, the basis, design/methods and assessment approach will be described for each assessment dimension and criterion.

### 4.1 Long-term results of predecessor(s)

REEEP followed on from the SED programme, which placed emphasis on the promotion of the implementation of RE technologies in Bangladesh. SED started in 2004 with the objective to improve energy efficiency and the supply of households, commerce and industry with renewable energy in Bangladesh. The main components of SED were the promotion of renewable energy (in particular solar energy, biogas and improved cooking stoves), the promotion of energy efficiency, and the improvement of the institutional framework for these two areas through the foundation of a new national institution, which was SREDA.

It was clearly noted by the local partners that SED operated mostly in an area, i.e. renewables, in Bangladesh where no other donor was involved; thus, SED is considered as the starting point for implementation of RE in the country. On the other hand, the first steps of the SREDA concept took place in the context of SED interventions and policy recommendations to Bangladeshi stakeholders.

More specifically the expected sustainable positive changes (outcomes) due to SED interventions with positive developments at impact level were:

- Use of improved cooking technologies are exposed to less house air pollution than in kitchens of traditional stoves. The scaling-up of SED support should be further developed under market conditions.
- Development of the market of solar home systems after the period of subsidisation and creation of substantial turnover to the service providers.
- Saving of biomass resources due to more efficient use of wood and penetration of new technological applications at household level but also at more sophisticated applications based on biogas.
- Generation of additional electricity by using RE applications based in principle on photovoltaics and bioenergy.

#### Evaluation basis

The evaluation basis should be placed on the SED outcomes, as they were assessed after the end of SED. To this end, the SED evaluation report under the PPR mission of February 2013 could be used, as well as information coming from interviews with the local partners and the GIZ/REEEP office.

#### Evaluation design/methods

These outcomes are associated with the spread of specific RE technologies, and the assessment of their use in-country due to the SED programme's significant contribution. The data collection being used comes from the state statistics and analyses of reports issued from international donors and the pertinent state institutions, particularly of SREDA and MPEMR and analyses/data maintained by the GIZ/REEEP office.

Given that the update of the SED assessment is made to link the renewables intervention of REEEP with SED and the focus of this evaluation exercise is placed on the activities of REEEP, the extent of the SED assessment is rather minimal. Therefore, one assessment dimension has been selected with questions covering the criteria of high-level impact and sustainability.

## Analysis and assessment regarding long-term results of the predecessor

The SED project has directly contributed to the dissemination of 80,000 solar PV systems and 150,000 improved cooking stoves. It supported the installation of 55 commercial biogas plants, which use organic waste from agriculture and slaughterhouses. According to GIZ office estimations, the directly supported RE systems have generated in the project period 2 GWh electricity. Significant impacts could be observed in particular on the dissemination of RE technologies, while the area of energy efficiency had not progressed that much. These results in RE could be assessed in terms of sustainability and impact criteria 5 years after the end of SED.

The evaluation of scaling-up, of broad impact and of sustainability conditions aims at identifying mechanisms and approaches that support the achievement of impact and sustainability levels in 2019. One can attribute the changes to the projects' interventions, as there is always an attribution gap over time, to a number of external factors and outputs of other interventions coming from other international donors that frequently involve several governmental and administrative levels.

It is broadly recognised by local stakeholders that SED grounded the RE projects at policy and implementation levels (in 2009, a RE policy has been adopted by the MPEMR). The project results of SED's direct scaling-up activity indicate the development of a core market activity in bioenergy and solar applications related to utilisation of RE resources and coverage of energy needs at the decentralised level. According to the monitoring system of SREDA, there have recently been 5,505,907 applications of solar house PV systems; and the adoption of modern bioenergy technologies takes place in both traditional uses (3,646,183 firewood improved cook stoves) and innovative applications (73,223 biogas units). These figures indicate many times higher results than the targeted results set for the SED outcomes.

Therefore, SED has intervened by supporting the creation of a core activity on RE to be further developed under market conditions. The figures presented above indicate a substantial scaling-up and creation of sustainability conditions having a considerable impact in the country's objectives for an increase in the population's access to energy, and an increase in the RE share in the country's energy supply.

The evaluators consider that the two main SED interventions on the solar PV and bioenergy sectors have been further enhanced by REEEP. However, this was by placing the emphasis on new applications for which the first steps related to a feasibility study, demonstration or pilot project and the creation of foundations for scale-up of the implementation. Therefore, the market and institutional conditions and the local stakeholders were mature enough to accept and adopt the REEEP interventions.

No significant failure factors of SED implementation were identified nor mentioned to the evaluators; on the contrary, it was considered as a highly prestigious programme and has been associated with tangible and successful interventions proving the significance of incorporating decentralised and demand-sided policies in the country's energy supply.

All local stakeholders, and especially MPEMR and SREDA, recognise the sustainability effect delivered either to the policy-making actors or to the RE implementation entities. Capacity building was incorporated in all the SED activities, thus, improving the skills and competencies of necessary experts and technicians. Furthermore, the need of an institution with the capability of SREDA was identified and promoted (the creation of a Sustainable and Renewable Energy Development Authority (SREDA) was approved by the cabinet in 2012) as a necessary tool for broadening the implementation of RE and EE. In this context, SED has supported capacity improvements, as well as the institutional and legal work related to founding such new institution that could incorporate the knowledge and development experience in the RE and EE field.

Also, according to local stakeholders interviewed, SED supported a 'Roadmap for Energy Efficiency' defining priority areas and even calculating costs and benefits. Furthermore, SED worked against the main barriers to EE investments, which are: the long pay-back periods (mostly of more than 5 years); the subsidised energy prices; the lack of available capital and the high capital costs; the lack of skilled personnel and energy managers; and the low visibility of the impacts of EE measures. So far, the REEEP, as a follow-on of SED, has built up its EE activities based on the preparatory work and the capacity building (sustainability effect) carried out by SED.

Furthermore, and based on the SED evaluation report findings under the PPR mission of February 2013, SED has contributed to the establishment of a sustainable dissemination scheme for solar PV systems with IDCOL and a large number of partner organisations. This scheme is still operating under various supporting incentives and constitutes the major scale-up arm in RE and EE of the country. As the smaller PV systems show good results in terms of energy poverty mitigation and the interest of international donors is keen in supporting such applications, the impact of SED on contributing to the increase of RE generation in the country could be reasonably justified.

The evaluators estimate that the last two paragraphs above indicate what local stakeholders think about the impact of SED and the need for REEEP to continue EE and RE activities.

## 4.2 Relevance

### Evaluation basis

The evaluation basis of this 'relevance' criterion is defined by the relevant documents used in REEEP design, and by newer documents and analyses released during the REEEP implementation period. The most significant available documents belong to the following categories:

- National Development Plans with emphasis on sustainability, EE, RE and energy, including, among others, the: Bangladesh Climate Change Strategy and Action Plan, Renewable Energy Policy 2008, Energy Efficiency and Conservation Master Plan, National Sustainable Development Strategy, Perspective Plan (Vision 2021) and the 7th Five-Year Plan.
- International conventions and obligations in the area of climate change, including the National Adaptation Plan and Intended Nationally Determined Contributions (INDC).
- Analyses and reports on economic development from international donors like the Bangladesh Development Update of World Bank.
- BMZ Country Strategy for Bangladesh, Bangladesh Joint Cooperation Strategy and 2030 Agenda for Sustainable Development.

The target groups' interests and needs for energy supply are described in the aforementioned documents and in reports of energy demand analysis which has been carried out by national and international organisations. The evaluation basis for the target groups' problems and needs (defined as the users of energy services in households, trade and industry) as relate to assessment dimension 2, is the situation of the target groups' energy consumption at the beginning of REEEP. This has specific emphasis on the renewable energy contribution especially in villages with predominantly poorer populations in off-grid areas, as well in households and in small businesses with medium and low incomes.

Regarding assessment dimension 3 and the appraisal of the adequate project concept design to adapt to the REEEP objective, the evaluation basis is placed on the outputs of the 'actual' results model, the relevant ToC and the hypotheses as presented in Table 1 and Figure 1. The REEEP objective is served by the three project outcomes under the five main hypotheses, and this assessment focuses on the relevance of project results to the fulfilment of the REEEP objective.

The assessment basis on the issue of project concept adaptation to changes of framework conditions in line with requirements and re-adaptation where applicable is the 'actual' results model as above.

### Design for assessing relevance

Project relevance will be assessed by using the Evaluation matrix (Annex 1) and the relevant specific assessment dimensions.

Four assessment dimensions have been selected (see Evaluation matrix – Relevance) with questions covering the criterion of relevance. These questions have been assessed in principle through semi-structured interviews and document analyses aiming at assessing the needs of the beneficiaries. The targeted interviews for this criterion are, in theory, with experts from the main REEEP partners, MPEMR and SREDA, as well as other experts from state development organisations, academia, etc.

The collected documents have been analysed with focus on the energy sector, and especially on the provisions for EE and RE, as well as on the intended measures and policies related to REEEP's objectives. To this end, the evaluators have reviewed relevant strategies and frameworks in the sector and region (assessment dimension 1), with which REEEP was supposed to be aligned.

Although REEEP was upgraded in the middle of the project period, no significant changes in the concept, either in energy policy or in the technological, sectoral and institutional structure took place. Thus, the assessment concentrates on how re-adapted results were serving the project objective.

### Analysis and assessment regarding relevance

The analysis is structured according to the assessment dimensions of the Evaluation matrix (Annex 1).

#### In line with relevant strategic reference frameworks

At the national level, the current overarching strategic framework for the Bangladeshi energy development sector is outlined in the **7th Five-Year Development Plan (FY2016-FY2020)**, which follows the **6th Five-Year Development Plan (FY2010-FY2015)**. Both of them comply with and specify the 'Perspective Plan of Bangladesh (2010-2021)' and are launched by the Ministry of Planning/General Economics Division of Bangladesh Planning Commission in June 2015. The 7th Plan expresses the commitment of the Government of Bangladesh through the message 'Accelerating Growth, Empowering Citizens'. With regard to the REEEP content, the following relevant actions are anticipated:

- Renewable energy is expected to provide 5-10% of total generation.
- Energy efficiency and conservation will be enhanced across the industry within the whole spectrum, ranging from generation to the consumer end.
- Industrial users of gas as well as captive generators will have to increase efficiency through cogeneration/tri-generation.
- Climate change is recognised as an added challenge to reduce poverty and environmental degradation, i.e. natural conservation achieved by increased forest coverage with appropriate tree density, water bodies and protected areas at a desired level.

REEEP was launched in the middle of the 6th Five-Year Development Plan period and ended in the middle of the 7th Five-Year Development Plan period. Assessment of the project documents showed that the objectives and intervention areas of the REEEP directly contribute to the energy and climate change strategic objectives of the 7th and the 6th Five-Year Development Plans, as follows:

- Output A, Renewable Energy (RE): increase the penetration of renewable energy to reach 5% in 2015 and 10% in total electricity generation of the country in 2020, based on the development of solar and bioenergy technologies in principle. Considering the country's future energy security, the government has given priority to the implementation of RE during the Sixth Plan. The Renewable Energy Policy was approved in 2008. Through this policy the government is committed to facilitate both public and private sector investments in RE projects to substitute indigenous fossil fuel energy supplies and to scale up contributions of existing renewable energy-based electricity production at the decentralised level.
- Output B, Energy Efficiency (EE): the consumption conservation and new technologies to be adapted across the industry and from generation to the consumption end-users of all sectors. Energy efficiency as well as energy conservation programmes will be implemented in tandem to RE and target 10% of primary and secondary energy saving by 2015, 15% by 2021 and 20% by 2030.
- Output C, supporting Capacity and Organisational Development (COD) of SREDA: it will act as a central agency, which has already been established and is expected to fully undertake its significant role soon. Several fiscal incentives have been extended by the government to RE project developers and investors.

REEEP is also aligned with the **National Sustainable Development Strategy (NSDS)**, which has been prepared to meet the formidable environmental challenges that Bangladesh faces on its way to development. The NSDS (2010-21) has identified five strategic priority areas and three cross-cutting areas with a view to achieve its stated vision and address long-term sustainability issue of productive resources. The strategic

priority areas include sustained economic growth, development of priority sectors, social security and protection, environment, natural resources and disaster management. The three cross-cutting issues that will support the sustainable development of priority areas include disaster risk reduction and climate, good governance, and gender. In the area of RE, EE and SREDA development, the NSDS complies with the goals set in the 'Perspective Plan of Bangladesh (2010-2021)' and the 6th Five-Year Development Plan. Therefore, the REEEP contributes as above to the fulfilment of the set goals.

The REEEP concept is also in line with Bangladesh's relevant **Intended Nationally Determined Contributions (INDC)**. Bangladesh is a highly climate-vulnerable country and its main focus of activities is on increasing the resilience to the impacts of climate change that are already affecting the livelihoods of much of the population and will continue to do so in the future. The INDC includes both unconditional and conditional emissions reduction goals for the power, transport and industry sectors, alongside with further mitigation actions in other sectors, which Bangladesh intends to carry out. The foundation of this INDC is Bangladesh's existing strategies and plans, in particular the Bangladesh Climate Change Strategy and Action Plan, Renewable Energy Policy 2008, the Energy Efficiency and Conservation Master Plan (EE&C Master Plan), the NSDS, the Perspective Plan (2010-2021) and the 6th and 7th Five-Year Development Plans and other planning documents. The mitigation part of measures included in the INDC anticipate a reduction in total greenhouse gas emissions of 20% in 2030 in comparison to a business-as-usual scenario. Among the mitigation actions considered in INDC, the following were included, supported and developed in REEEP:

- Energy Efficiency Labelling programme to promote sales of high-efficiency products in the market
- Solar Homes programme, providing off-grid electricity access to rural areas
- Improved cook stoves and solar home systems distributed across the country
- Under the Solar Rooftop programme, solar systems have been and will be installed on the vacant rooftops of government and private buildings
- Scale up the potentials of solar irrigation pumps, solar mini and nano grids to address the energy access issue of off-grid population
- Energy audits to incentivise the uptake of EE&C in the main industrial sectors based on the Bangladesh Energy Efficiency and Conservation Masterplan, prepared for SREDA.

**Sustainable Development Goals (SDGs)** refer to an agreement of the United Nations Conference considering the formulation of a set of future international development goals for the period 2015-2030. With 17 goals and 169 targets, SDGs represent a bold new agenda to end poverty, fight inequality, tackle the adverse effects of climate change and ensure a sustainable future for all. Bangladesh has set 47 targets in 9 sectors of its SDGs proposal, and particularly the 'Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all' constitutes the most relevant SDG to REEEP. The SDG complies with the 7th Five-Year Development Plan (FY2016-FY2020) and expands with goals up to 2030. The REEEP concept complies with the priorities and proposed actions and policies of SDG.

Safeguards and gender equality issues are anticipated in all the above-mentioned economic development planning documents and the SDG document. It is assessed that the REEEP strategy for the inclusion of safeguards and gender issues is mandated by several of the previously mentioned policy and strategy documents, which consider the inclusion of relevant population groups as a cross-cutting or even as a priority issue. (e.g. 7th Five-Year Development Plan).

In total, all dimensions of REEEP are designed to contribute to the implementation of national policies and strategies. Furthermore, the project has made significant contributions to policy and strategy formulation, particularly in the fields of adaptation of RE and EE solutions in the local conditions, and supports the necessary development of SREDA. However, the interventions of REEEP have not been designed to properly respond to the national objective of decreasing poverty.

From both a sector and a regional/country perspective, the project is aligned with the relevant **concepts and strategies of the German development cooperation (GDC)** for Bangladesh (July 2016 report), i.e. of the BMZ as commissioning party. The German Development Policy in the energy sector focuses on 'renewable energies and energy efficiency' and 'good governance'. It stresses that energy supply, particularly in rural areas where 80% of the total population lives, is inadequate and inefficient. Private households are highly dependent on biofuels for cooking energy, thus, depending on traditional biomass. Kerosene lamps are used for lighting and inefficient cooking with kerosene increases the biomass consumption, the smoke of which

heavily pollutes indoor air. Therefore, the GDC concentrates on measures to improve the energy efficiency, primarily in the network area and in uses, and possibly also in production. In addition to investments in infrastructure, the dissemination of efficient technologies and the improvement of sector strategies and framework conditions, especially through empowerment of the SREDA, should be supported. Germany sees its involvement in the energy sector as a contribution to the implementation of Bangladesh's national climate protection contributions (INDC, SDGs).

In summary, the results of the REEEP contributing to the specific targets for 2020 and the SDGs for energy in 2030 interact positively with the socio-economic-environmental SDGs of relaxing poverty conditions by offering electricity to poor isolated areas; of achieving gender equality by offering better solutions for cooking; of promoting sustainable economic development by providing energy solutions to industry and agriculture; of combating climate change and its impacts through reduction of greenhouse gas emissions from EE and RE technologies; and sustainable use of forest resources (biomass) for energy uses, thus, conserving the environment from desertification and biodiversity loss.

**Conclusion:** The evaluation team concludes that the project fits well into the relevant strategic reference frameworks at all levels, i.e. national policies and strategies, international standards and GDC's strategies of. However, its consideration of the criterion of relaxing poverty conditions that is incorporated in all national economic development plans should be more emphasised by the REEEP design (**rating: 28 of 30 points**).

### Suitability to match problems/needs of the target groups

According to the project design, the groups targeted by REEEP are the users of energy services in households, trade and industry. Renewable energy is expected to benefit especially villages with predominantly poorer populations in off-grid areas, as well households and small businesses with medium and low incomes. The REEEP interventions are focused on all the target groups by coping with acute quality and quantity energy supply problems. In addition, the concepts of adapting the technological solutions to the local conditions, developing local capacities and examining the appropriate business/market models that will facilitate replication and scaling-up of implementation, highlight the effort to optimise and multiply the effect for the targeted groups.

The project strategy considers feasible interventions with all of the above-mentioned dimensions. The RE applications such as (a) solar drinking water system for sea-flood affected areas; (b) retained heat cookers for rural and urban households; (c) biomass briquette production for rural households; and (d) rooftop solar PV for individual off-grid uses support some of the crucial problems of population. This population especially consists of disadvantaged groups (LNOB principle, as foreseen in the Agenda 2030) and women, whose lives substantially improve by using the piloted and disseminated modern techniques and technologies promoted by the REEEP. The above-mentioned 4 interventions are among 21 carried out within REEEP. Probably, more emphasis should be given to applications addressed to these categories of population.

The LNOB principle was not the major criterion in the selection of most of the REEEP interventions, although REEEP tried to address LNOB as much as possible within the project framework. Placing focus on the near poor populations of rural areas, each facing different risks of exclusion from basic energy supply services, was a way to embrace the LNOB principle in the REEEP strategy. It is assessed that beyond the mainstreaming of the LNOB principle, the design of the REEEP places a strong emphasis on the empowerment of gender issues by supporting the involvement of women's participation in activities and business development. Different perspectives and concerns of women and men played an important role in the intervention areas related to business development, where equal access to the REEEP capacity-building activities was supported and monitored through the collection of gender data. It was also mentioned (GIZ office) that after the termination of the REEEP interventions, gender mainstreaming has become less present in the project strategy.

REEEP established a new concept in energy policy and influenced developments in supply/demand approach, project financing of EE and RE, and an incentives approach for small and large consumers. It is recognised by the Bangladeshi academia that experienced and specialised professionals should be shaped in local institutions; there has been major progress in meeting this target through the REEEP activities to attract financing institutions and increase the impact on the targeted groups. The limitation of funds for follow-up activities reduces, probably, the expected impact.

**Conclusion:** In summary, the strategy is mostly suitable to match the core problems/needs of the target groups, but the support to the poorer populations had to be more favoured. Also, SREDA and other local stakeholders have emphasised the support of such activities despite money flows to this segment of consumers (CAB comment). The strong focus on all categories of target groups contributes to the positive assessment (**rating: 24 of 30 points**).

### **Adequate design of the concept to achieve the module objective**

The project therefore directly contributes to the fulfilment of the Government of Bangladesh's policy ambitions for RE and EE. Poorer populations can improve their living conditions through the implementation of innovative and effective technologies in the field of RE and EE, and the energy supply in industry will be stable and more efficiently used.

The project objective (Conceptual foundations for the spread of renewable energies and energy efficiency in Bangladesh) sounds realistic from the REEEP perspective and the given resources in the period 2013-2018. It is assessed that during this period the potential of implementing RE and EE was great but the lack of implementation maturity and proper financial conditions in most applications justified the need of a project like REEEP, the outputs of which introduced localised pilots and technological adaptations for scaling-up. The REEEP objective is still attractive; however, it was a necessity in 2013 when REEEP started.

The project design produced the main outputs of REEEP that interrelate with outcomes and consequently its objective (Figure 1, 'actual' results model). The design of project interventions (activities) was subject to criteria and procedures that followed the set results model (GIZ office). The evaluators' assessment is that almost all outputs comply with the set objective and there is no doubt for the proper selection and design of outputs to contribute to one of the three project outcomes and thus serve the objective.

The most significant uncertainties and risks related to the energy and economic policy framework in Bangladesh are presented in section 2.2. Indicatively, there was a risk in the evolution of the political situation in Bangladesh that slowed up the REEEP progress, especially when countrywide strikes increased. To cope with this situation, REEEP redesigned and rescheduled some of its affected interventions. In general, the above-mentioned and the other risks presented in section 2.2 are assessed as very plausible and more or less indicate the uncertainties of the project environment.

The other risk relates to the likely event of limited donor coordination in the energy sector, due to the formal consultative group of donors [LCG-Energy] not being active for the past few years. Thus, it was very difficult to have a clear picture of the donor activities and, specifically, of who is doing what. In particular, the dissemination policy was managed by IDCOL, which collaborates with EnDev (GIZ) in specific areas of RE financing, and neither of them were involved in most of the interventions carried out by REEEP. On the other hand, REEEP collaborated with MPEMR and SREDA, which influence the design and selection of RE and EE policy measures. The cooperation with other technical and financial assistance donors in the country was not always as it should be; however, the overlap was minimised.

According to SREDA's statement, GIZ follows a different approach compared to other donors in implementation. The Government of Bangladesh was used to working with WB, JICA, KfW, etc., that normally identify specific projects and fund their implementation through governmental agencies. GIZ implements activities through its own resources, discusses and identifies scope with relevant flexibility and applies its procedures. The evaluators consider that this approach contributes better to define and properly utilise the participation of the project stakeholders and, moreover, to adequately design the activities, instruments and outputs to achieve the set project objectives.

MPEMR communicated to the evaluators that REEEP was in line with state objectives and energy planning. The ministry is particularly satisfied with the design because it combines clear identification of targets and consistency in trying to solve the problems of energy supply in Bangladesh.

**Conclusion:** Throughout the three components (outputs), the project applies a consistent multilevel approach, supporting the ministry to advance its RE and EE policies. This enables energy policy objectives to be properly pursued by the local institutions and facilitates scaling-up through international donors. Nevertheless, the project design fully responds to the project objective (**rating: 20 of 20 points**).

### Adaptation to changes in the framework conditions

REEEP was launched in October 2013 and was upgraded in terms of budget in October 2015. During the project period there were no significant changes either in energy policy or in the technological, sectoral and institutional development that significantly influenced the project execution. Probably there was increased 'competition' against other donors of technical assistance in the RE and EE areas, causing issues of potential overlapping; however, the concept of REEEP was rather unique and managed to stand out from other similar initiatives. On this issue, the Consumers Association of Bangladesh (CAB) mentioned to the evaluators that REEEP did a good job promoting EE and RE, but the maintenance of installations was not equally covered. More specifically, despite the fact that the design covering technological areas and regions was good, the next stages of commercialisation and business development, which ought to follow on (beyond the project scope), were not equally successful during the project period.

According to the MPEMR comment, REEEP was very flexible and tried to accommodate new areas of EE and RE implementation. REEEP had many other initiatives working in parallel and placed emphasis on new fields of intervention and on customisation of technical solutions in EE and RE and dissemination policies. Flexibility was proven when REEEP availed consultants to assess options and possibilities in various areas of RE and EE when required due to emergency reasons. It is assessed that REEEP introduced many new areas of intervention, e.g. the EE programme, piloting of biogas production, rice parboiling etc., and gave systematic support to the founding of SREDA. For this reason, the project proved appropriate and satisfied the ministry's expectations. REEEP opened the door to many follow-on activities, such as the energy auditing of large consumers, and the use of solar PV technology for various things like pumping, lighting, etc. (BUET).

**Conclusion:** Due to the adequate flexibility of REEEP to technological developments and its ability to adapt the solutions to the country's reality, even without significant changes in the concept and in the project execution conditions, and due to the positive assessment of the appropriateness of the underlying strategic decisions, the evaluators' rating is: **20 of 20 points**.

Criterion	Assessment dimension	Score and rating
Relevance	The project concept* is in line with the relevant strategic reference frameworks.	28 of 30 points
	The project concept matches the needs of the target group(s).	24 of 30 points
	The project concept* is adequately designed to achieve the chosen project objective.	20 of 20 points
	The project concept* was adapted to changes in line with requirements and re-adapted where applicable.	20 of 20 points
Overall score and rating		Score: 92 of 100 points Very successful



Picture 1: 37,000 units of retained heat cookers sold have saved fuel consumption

### 4.3 Effectiveness

#### Evaluation basis

The basis for the 'effectiveness' evaluation in accordance with the project objective indicators (assessment dimension 1) is the set of three objective indicators presented in the REEEP Results matrix (Annex 2). For each of the three indicators, base and targeted values are clearly defined. The indicators set for REEEP in the reorientation and extension of 2015 could be considered as SMART and more convenient in comparison to those set in the project offer of 2013. However, certain definitions of parameters related to the assessment of output and outcome indicators are necessary and could be taken from the RBM system where these parameters are adequately defined.

The following three project objective indicators will be assessed:

1. 80 service providers offer RE or EE technologies, related services and support for credit requests (15% of the total numbers of staff are women)
2. The energy savings and the production of energy from renewable sources, from commercial activities stimulated by the project, yield an equivalent of 15,000 tons of oil (TOE)
3. The Energy Agency (SREDA) ensures stable funding to implement its annual Action Plan, starting in 2017, from Bangladesh government funds and third-party funds.

With regard to the evaluation of the activities and outputs of REEEP that contributed substantially to the project objective achievements (outcomes) (assessment dimensions 1, 2), the basis will be the 'actual' results model and the related 5 hypotheses (hypothesis 1 – hypothesis 5), presented in Table 1 and Figure 1, which link the REEEP outputs with the outcome results. These are:

1. Scale-up preparation and design is influenced by political decisions and could be achieved more slowly than anticipated.
2. Scale-up donors and the service providers adopt REEEP interventions in their dissemination concepts and activities.
3. Cooperation of REEEP with other TC and FC measures develops focusing on enhanced exchange of information and experiences.
4. Proper information and incentive campaigns on the results of REEEP are mainly coming from initiatives of the state and addressing target groups.
5. Scaling-up measures based on REEEP interventions are specifically geared towards industry with high energy savings potential.

With regard to assessment dimension 3, the basis is placed on the existing situation of the project target groups; the assessment replies whether project-related negative results have occurred and, if so, whether the project responded adequately. It is assessed also whether the occurrence of additional (not formally agreed) positive results has been monitored and additional opportunities for further positive results have been seized.

### **Design for assessing effectiveness**

The project's effectiveness will be assessed using the Evaluation matrix (Annex 1) and the questions in the relevant assessment dimensions. The evaluation design being used, as already mentioned in section 3.2, follows the already discussed standardised, central evaluations approach. Thus, empirical approach, secondary data and qualitative collection method will be applied. The available evaluation documents to be used are:

- Theory of change analyses for REEEP, its update and the relevant Project Offers to BMZ.
- Annual progress reports, including assessments of compliance to the set objective indicators.
- Monitoring report of REEEP.

The results at outcome level will be assessed and causal links to the project activities, instruments and implementation strategies established will be examined. GIZ/REEEP office have developed a certain calculation methodology to assess the outcome or the compliance to the REEEP objective indicators. This methodology is based on a bottom-up calculation of the annual savings of one unit of equipment, then that figure is multiplied by the number of pieces of equipment in the REEEP intervention under consideration in order to calculate the total annual savings of this intervention.

With regard to the evaluation of the contribution of REEEP outputs to the project objectives or outcome results, a contribution analysis will be used that will assess the evidence of outputs' performance in achieving the objectives, as well as potential evidence of other influencing factors, which have been expressed mostly with the five above-mentioned hypotheses of the 'actual' results model.

In brief the evaluators concentrated on the following evaluation aspects:

- Reasonable calculation method applied for the assessment based also on triangulation approach, whenever possible.
- Assessment of actual contribution of REEEP interventions to the reported results using the Contribution Analysis approach and based on the availability of data and the 'actual' results model.
- Identification of problematic assumptions and areas for reconsideration of REEEP contribution.

The issues relating to effectiveness were discussed in the interviews with local partners, and other parallel initiatives in EE and RE. These interviews were useful where additional data could be provided and/or estimations of experts are justified on recent analyses. The collected datasets were elaborated to conclude to reasonable and comparable results for the justification or not of the objective indicators.

### **Analysis and assessment regarding effectiveness**

The analysis is structured according to the assessment dimensions of the Evaluation matrix (Annex 1).

## Achievement of outcome on time in accordance with the project objective indicators

The achievement of the objective is assessed according to the indicators for the outcome level. In this section, the assessment focuses on the current objective achievement indicator status and on the attainability of indicators by the end of the project. The respective project contributions will be assessed in the subsequent section.

- *Indicator 1: 80 service providers offer RE or EE technologies, related services and support for credit requests (15% of the total numbers of staff are women)*

According to the GIZ/REEEP office monitoring function, by the end of the project 123 service providers have been trained/engaged under REEEP to offer a variety of services, e.g. equipment manufacturers or suppliers for construction or technical services. The target, according to the module, was 80. Thirteen female service providers have been engaged and developed by REEEP for promoting commercial biogas and retained heat cookers. One female service provider has been engaged in the design and construction of solar water pumps. The project indicator envisioned to develop 12 female service providers. These service providers should be operating in the market on a commercial basis and were contributing to the dissemination of technologies as a viable business. Table 5 presents the list of service providers developed within REEEP and Table 6 the respective list of female service providers, as provided by the GIZ/REEEP office.

Table 5: List of service providers developed within REEEP

RE/EE technology	Service providers	Service offers/source of verification
Retained heat cooker	16	Manufacturer or supplier
Solar water pumping system	13	Civil construction, equipment provider, technicians
Solar pipe light	2	CHANGE, RIMSO Foundation
LED ESCO light	3	Energy + Electric & Electronics Pvt. Ltd, IDLC Finance, BUET
Improved rice parboiling system	15	Workshop owners including 74 boiler fabricators, technicians, masons and welders
Briquette	4	Manufacture or producer
Nano grid	1	SOL – share
Solar aquaculture	2	Bengal solar, BFRI
EE in steel re-rolling mills/EE in composite textiles/EE in leather processing industry	1	Energy audit firm
Rooftop solar	6	Solar system provider
EE Improvement for submersible pump	4	BUET, 3 other parts distributor
Solar milk biogas chiller	2	HASI (installed the chillers and implemented the construction of biogas plant)
Slaughterhouse waste-based biogas	6	Biogas and slurry management construction
Commercial biogas	47	Training-for-trainers and service providers several organisations
Promotion of Green Education	1	Light of Hope
<b>Total</b>	<b>123</b>	

Table 6: Significant REEEP assumptions

Name of intervention	Female service providers
Solar water pumping system	1 female owned farm involved in design and installation
Training-for-trainers and service providers in commercial biogas	6 female trainer/service providers
Retained heat cooker	6 female owners/service providers
<b>Total</b>	<b>13 female service providers</b>

According to the definition in the M&E exercise, service providers are: 'individual, small and medium enterprises or organisations, public/private organisations capable to provide specific services on RE/EE technologies'. This is a very general term and may be interpreted widely, incorporating also trainers who have attended specific training-for-trainers course, although they do not constitute an organisation or an enterprise. Taking a more conservative approach, under the criterion that service providers are not individuals but represent entrepreneur or active organisation activity, the number of service providers may be around 80 and the respective number of female service providers around eight. Since most of the REEEP projects introduced innovative activities to service providers, the criterion of innovation was not directly mentioned in this indicator.

On the other hand, it was assessed that the GIZ/REEEP M&E department professionally and systematically monitored the task by collaborating with GFA, local partners and stakeholders under agreed rules for data collection and elaboration, thus, providing reliable data about the evolution of the outcome indicators of the project.

- *Indicator 2: The energy savings and the production of energy from renewable sources, from commercial activities stimulated by the project, yield an equivalent of 15,000 tons of oil (TOE)*

REEEP revisited the methodological approach of calculating the energy saved and the renewable energy produced due to the REEEP interventions and further enriched it during the reporting period. The methodology was based on a bottom-up calculation of annual savings per unit of equipment, then multiplied with the number of units of equipment to calculate annual savings (in TOE) per type of equipment used in each REEEP intervention. This methodology was also shared with the evaluators during the on-site mission in April 2019 and was validated. The cumulative energy savings and the production of energy from renewable sources, or from commercial activities stimulated by the project, yield an equivalent of 18,000 TOE annually. This is higher than the relevant REEEP indicator envisioned to save (i.e. 15,000 TOE annually on average).

A table of cumulative average and annual energy savings in TOE has been prepared by the GIZ/REEEP office and is presented in Annex 4. These figures were verified by the local evaluator in terms of calculations and number of installations. The deviations estimated by the evaluator were not significant and, thus, do not influence the final result.

During the 5 years of REEEP operation, around 24 interventions were undertaken. Most of the energy savings have been achieved by the 'retained heat cooker' intervention. Approximately 31,577 retained heat cookers were being used at the end of the project and, as a result, around 14,152 TOE of energy was saved. During the same period of REEEP, 45 Improved Rice Parboiling System installations were achieved, resulting in an annual average saving of 3,545 TOE of energy. This finding indicates that the indicator was largely satisfied by 2 out of 24 interventions, because these two interventions allowed, in addition to conceptual foundations for promulgating RE and EE, specific dissemination actions that spread the use of EE technologies. It is the evaluators' opinion that this indicator was placed to cover the part of REEEP that contributed to scaling-up of EE applications. This might be considered as a pilot dissemination activity towards investigating proper business models and practices. It should not characterise the majority of the REEEP interventions, whose pilots are more gear towards local adaptation with small installed RE or EE capacity, as already proved by reading the results of Table in Annex 4.

- *Indicator 3: The Energy Agency (SREDA) ensures stable funding to implement its annual Action Plan, starting in 2017, from Bangladesh government funds and third-party funds*

The Bangladesh government placed due importance on RE and EE issues and as such was persuaded to enact the Sustainable and Renewable Energy Development Authority (SREDA), by the pertinent Act in 2012, in order to facilitate, regulate and promote all aspects of energy conservation and development of sustainable RE in the country. SREDA started its official journey from May 2014 with limited organisational capacity. The German technical cooperation and especially REEEP, being its collaborative partner, was instrumental in establishing SREDA; it provided support in developing the initial action plan and orientation to a newly created organisation. In less than 3 years, SREDA has established proper links with the international development agencies and secured funds from JICA, WB, UNDP, etc. However, SREDA has not persuaded the Bangladeshi stakeholders about its capability to have a key role in EE and RE policy implementation and many of the local interviewees complained about that. Indicatively, SREDA was not so active when revising the National Energy Master Plan in 2016 that requires stronger coordination among sector participants and SREDA in order to implement RE project targets within certain timeline. The REEEP interventions in supporting SREDA's capability focused on preparing the implementation roadmap for Energy Efficiency and Conservation Master Plan (project supported by JICA) and contributed to formulate the Energy Audit and the Energy Efficiency Labelling regulations. Finally, the draft of the SREDA Action Plan was completed by REEEP in collaboration with SREDA. It included an outline of third-party funds, i.e. funds for RE and EE measures that are coming from development partners or private sector or any other source. So, the indicator of securing funding by SREDA in promoting EE and RE has been mostly attained. The implementation phase (out of the scope of REEEP) of EE and RE policies would be the next very challenging step of SREDA's activity; however, such activity was not justified by the evaluators.

**Conclusion:** The attainment of the two indicators is based on a verification approach of using calculation formulas on data collected by the monitoring system. Therefore, two indicators seem to have been adequately achieved (indicators 1 and 2); with regard to indicator 3 the evaluators consider that it has been mostly attained since practical examples of SREDA follow-on activity could not be shown during the project term. The evaluators consider that the degree of goal-attainment **is rated with 32 of 40 points**.

### **The activities and outputs of the project contributed substantially to the project objective achievement (outcome)**

Based on the 'actual' results model (Figure 1) and the hypotheses (Table 1) for outcome results attainment, the contribution analysis will try to answer the question: how do REEEP outputs/results in each intervention component (RE, EE, COD) contribute to outcomes and how do the hypotheses and risks identified influence the achievement of outcomes? To this end, evidence from the performance of REEEP interventions in RE and EE will be considered. The assessment will be distinguished by each intervention component (RE, EE, COD) and the targeted project outcome.

- *Contribution of the intervention components of RE and EE to support service providers to be able to offer EE and RE market solutions (project indicator 1)*

The interventions in RE applications are mainly related to the involvement of service providers who at a later stage will undertake dissemination activities under market conditions. According to Table 5, there are 15 interventions that contribute to the achievement of project objective 1, most of which are based on RE and, according to Annex 4, more than half interventions promote RE solutions. The most significant are the commercial biogas interventions with 47 service providers. The argument has already been made as to whether the trainers attending the training-for-trainers course could be considered as potential or active service providers. Three interventions, namely Solar Water Pumping System, Retained Heat Cooking and Improved Rice Parboiling System, contribute with 13–16 service providers each. All the other interventions contributed a small number of service providers. This fact indicates that the market interest, the scope of the intervention and the expected prospects are not symmetric in terms of the effect to outcome indicators. An explanation (evaluators' opinion) is that the selection of interventions is subject to other more significant criteria than the that of contribution to the outcome indicators, or that the results often show different acceptance levels than expected. In reality, this irregularity sounds reasonable and should not be highly criticised. For example, the training course of Green Financing (BIBM) does not contribute directly to any of the targeted indicators of outcomes, although it is very useful for market financing of EE and RE projects and thus contributes indirectly through the projects it supports and actually lie in the areas of EE and RE.

The main hypothesis of market interest increase in RE and EE (due to proper information and incentive campaigns that will be mainly coming from state initiatives and address target groups) is plausible and focuses on the increase of awareness about the performance of EE and RE, which is a significant requirement for energy consumers worldwide. Information and incentive campaigns influence the demand of energy products and services in-country and consequently the commercial interest of service providers to offer relevant solutions to consumers. There were only a few information campaigns by systematic state initiatives and they especially addressed the low-income categories of population. It is assessed that this hypothesis although critical in advanced societies did not substantially affect investors and scale-up institutions, whose core market segments are different from poor consumers.

Nevertheless, The RE and EE components contributed to the current progress towards developing the capacity of service providers to be able to offer market solutions to Bangladeshi energy consumers. Since this activity is still emerging, the actual outcome for service providers (originally measured by indicator 1) is expected to increase, especially when the awareness and scaling-up campaigns will be expanded to all targeted consumer groups.

- *Contribution of the intervention components of RE and EE to achieve considerable energy savings by REEEP pilot scale-up projects (project indicator 2)*

As presented in Annex 4 and already commented upon, only the outputs of the two interventions, namely retained heat cookers and improved rice parboiling systems contribute to the fulfilment of indicator 2, because these two interventions provide significant replication of installations within REEEP, thus, significant energy savings. All the other RE and EE interventions contribute by small amounts to the satisfaction of indicator 2, since they are based on pilot projects or feasibility studies or capacity-building actions with small or zero effect to this indicator.

The main hypothesis is that scale-up donors and the service providers adopt REEEP interventions in their dissemination concepts and activities, thus increasing the potential savings which could come from the REEEP interventions because other technology concepts from other developers on a pilot basis could be scaled-up. This latter fact partly happened due to priorities of all these donors that didn't coincide with the interventions of REEEP. The evaluators consider that the influence of this factor didn't affect so much the attainment of the relevant outcome; rather, it is assessed that the performance of indicator 2, as well as indicator 1, could be higher in cases where there was better coordination between the scaling-up and piloting of RE and EE interventions among GLZ and donors.

The energy savings performance is also achieved under the hypothesis that EE is, prioritised with high energy savings industries. There is strong evidence that REEEP gave precedence to this criterion when selecting rice parboiling, iron and steel, garment, textile, etc. as industrial sectors for pilot EE interventions. The high potential of energy savings increases the interest of consumers (industry, tertiary sector) to undertake significant EE interventions and be attracted away from state policy supporting measures. This scaling-up activity has to exploit REEEP's outputs of the EE interventions and address the big energy consumers of Bangladesh. This hypothesis was significant in contributing to pilot-level energy saving results and offer particular input for scaling-up measures.

In conclusion, it is likely that REEEP's EE and RE components and their relevant scale-up activities contribute to the achievement of significant energy savings (measured by indicator 2), which will certainly increase when the EE policy measures further disseminate the REEEP pilot approaches to the Bangladeshi high energy consuming groups.

- *Contribution of the intervention components of COD to support that SREDA ensures stable funding to implement the Action Plan (project indicator 3)*

The situation is clearer regarding indicator 3, since the result is SREDA's Action Plan for implementing RE and EE measures in order to set SDGs and other planning targets, that the Government of Bangladesh should achieve. At present, the draft Action Plan should be considered an important step forward for the maturity of SREDA in organising and planning its core activity, which is complicated enough in terms of securing funds and formulating effective and transparent measures. The REEEP relevant outputs contributed directly to the satisfaction of indicator 3, whereas indirect contribution of other donors, e.g. JICA in supporting the EE and Conservation Master Plan, occurred and should be mentioned.

The main hypothesis that scale-up progress can be achieved though more slowly than anticipated – e.g. where the political situation negatively influences the planning of policy measures – has partly affected the effectiveness of government procedures in assigning to/agreeing with SREDA on its first Action Plan. It was assessed that this hypothesis justified one of the main factors of SREDA delay in operating under its expected capacity for scaling-up EE and RE solutions during the REEEP period.

With regard to the hypothesis about the necessary cooperation among TC and FC donors focusing on enhanced exchange of information and experiences on their approaches and implementation measures, it was mentioned that the situation was complicated, although major overlapping was avoided. The rather poor coordination made the preparation of SREDA's Action Plan more difficult and justified the weaknesses of SREDA as a young organisation. This hypothesis influenced REEEP's contribution in properly assisting SREDA to ensure support for the scaling-up of project solutions.

In brief, the contribution of REEEP's COD intervention component has substantially supported SREDA's proper operational conditions, i.e. SREDA to be able to cope with procedural and organisational conditions. It is likely that as far SREDA undertakes more activities in scale-up measures, the planning activity and status will be enhanced (measured by indicator 3).

➤ *Contribution of other factors to achievement of project objectives*

It was mentioned by reviewed stakeholders that the main factors of the implementation strategy that contributed successfully to the achievement of REEEP's objectives were:

- Selection and support of business cases in most interventions, which could be developed under the actual current economic and environmental of the country.
- Political neutrality approach, at project level, allowing effective work and emphasis on technical and technological issues.
- Hiring of competitive and skilful staff under local market conditions.

On the contrary, a number of obstacles could be mentioned, as they were assessed after discussions with the GIZ office and the main stakeholders:

- It should be taken into consideration that it is time consuming to make stakeholders familiar with the rules of technical assistance projects and how these contribute to benefit, whereas they fully understand the financial assistance activities.
- The economic situation is fluid enough in Bangladesh, thus the RE and EE interventions always need to adapt to the local conditions; for this reason, both discussions and time are required.
- Where the proposed interventions were very significant for the country but didn't serve the targeted outcomes, a compromise concept was proposed and agreed upon.

It was assessed after discussion with stakeholders that REEEP was actually the single initiative supporting innovative EE and RE projects regarding implementation under local conditions. This need was not covered by other donors and a lack of this activity could delay many investments in EE and RE. On the other hand, REEEP was the most supportive initiative to the capacity building of SREDA, appreciating the latter's role in scaling-up RE and EE investments and applications.

The evaluators consider that RE and EE interventions were designed to properly address environmental, climate change, security of supply and gender issues. For example, some interventions offer particular opportunities to women: e.g. the retained heat cookers, solar water pumps, solar lighting and promotional activities that address women, like the training of service providers. Gender and safeguard issues were always considered from the outset of the intervention design and the relevant risks and assumptions related to the intervention execution were examined towards relaxing as much as possible potential risky situations. This effort continued and sometimes reasonable changes were decided during the intervention.

**Conclusion:** The contribution of project outputs to outcome is positively assessed, given the consideration that the criterion of contribution to outcomes was not always the most significant in the selection of interventions and that the delay of SREDA's activation influenced the potential scaling-up activities. Overall, this assessment dimension **is rated with 24 of 30 points**.

## Additional positive or negative results at outcome level

In the evaluators' opinion there is no direct evidence for project-related negative results. However, some stakeholders mentioned that:

- The risk associated with small-scale adoption of the RE and EE schemes in the REEEP interventions could compromise the target group's attitudes towards major large-scale projects requiring significant funds and supporting effort.
- The energy savings from retained heat cookers might not be preserved/increased where the marketing of them was not supported and ensured.
- As discussed with the Rice Mill Association, it was evident that they are facing serious problems with paddy drying and milling. The installation of the Improved Rice Parboiling System may not give a proper solution; there is ample opportunity for modernisation in this sector, and EE is only one component of required interventions.

The occurrence of additional (not formally agreed) positive results has been discussed with stakeholders and the GIZ office and additional opportunities for further positive results have been seized by some local stakeholders. Indicatively:

- The intervention of submersible pumps in irrigation and water supply allowed university students to be involved and to set up a research project.
- The intervention of net metering highlighted the need for starting preparations for installation of electricity smart meters.
- The solar drinking water system contributed to an improvement in the local population's life, to an increase of stability conditions in flood affected regions, and to avoiding health problems.

**Conclusion:** The contribution of the project to negative and unintended results relates to the broadness of interventions, which significantly exceed the dimensions measured by official goal-attainment indicators, whereas (potential) project-related negative results are limited to very specific aspects, which have limited influence on the overall achievements (**rating with 28 out of 30 points**).

Criterion	Assessment dimension	Score and rating
Effectiveness	The project achieved the objective (outcome) on time in accordance with the project objective indicators.*	32 of 40 points
	The project's activities and outputs contributed substantially to the project objective achievement (outcome).*	24 of 30 points
	No project-related negative results have occurred – and if any negative results occurred the project responded adequately.	28 of 30 points
	The occurrence of additional (not formally agreed) positive results has been monitored and additional opportunities for further positive results have been seized.	
Overall score and rating		Score: 84 of 100 points Successful



Picture 2&3: Net-metering solar PV system in fish farming unit

## 4.4 Impact

### Evaluation basis

The evaluation basis against which impact will be assessed is clearly defined by the programme indicators included in the REEEP Results matrix on impact level, but also by the overarching results included in the 'actual' results model (Figure 1). An additional programme result, namely: *'Poorer groups of population have benefited, LNOB principle'*, is considered to cover mainly the SDG for poverty reduction. According to the 'actual' results model three of the overarching results are mentioned in the REEEP results model and the fourth is added at the evaluation phase. All these overarching results are linked to the three project results (outcomes of REEEP results model) and especially to the fourth outcome *'Policy measures are implemented for scale-up of REEEP interventions'*, which has been added in the 'actual' results model. This latter project result is beyond the scope of REEEP but reflects the main intermediate link between the project results (outcomes) and the overarching results (impact).

The following three overarching results indicators will be assessed:

1. The proportion of the Bangladesh population that has access to energy will increase to 90% by 2020.
2. Production losses due to an unstable energy supply (value lost due to electrical outages, in percentage (%) of sales) will decrease to 3% by 2020.
3. The share of energy generated by renewable resources in Bangladesh will increase to 2,000 MW by 2020.

With regard to the evaluation of REEEP activities and outcomes that contributed substantially to the overarching achievements (impacts) (Assessment dimensions 1, 2), the basis will be the 'actual' results model and the related three significant hypotheses (hypothesis 6 – hypothesis 8), presented in Table 1 and Figure 1, which link the REEEP outcomes with the overarching results. These are:

1. Development of market activity in RE and EE depends on the level of energy supply prices both to private households, to industry and services sectors

2. SREDA and the Ministry of Energy cooperate, IDCOL and other financial institutions continue to be interested in becoming active with RE and EE
3. Specific measures are prioritised to be implemented supporting poor groups of population

The basis for assessment dimension 3 is placed on the existing situation of the project target groups; the assessment replies whether project-related negative results have occurred at impact level, and where any negative results occurred, the project responded adequately. It is assessed also whether the occurrence of additional (not formally agreed) impact-level positive results has been monitored and additional opportunities for further positive results have been seized.

### Design for assessing impact

Project impact will be assessed using the Evaluation matrix (Annex 1) and the specific assessment dimensions. As previously stated, the evaluation design follows the standardised, central evaluations approach that is common in GIZ final evaluations. This approach is usually sufficient to capture, as robustly as possible, the contribution that the project has made to achieving its objectives (i.e. association) as a basis for plausibly meeting accountability requirements. Thus, an empirical approach, secondary data and qualitative collection methods will be applied. In addition to the available documentation already provided to the evaluators, data were retrieved in analyses and statistics related to the SDGs and the monitoring of Bangladeshi plans to support EE and RE technologies.

In the interviews with local partners and other parallel EE and RE initiatives, the issues related to impact were discussed. These interviews were useful for the experts to make assessments justified on recent analyses. The collected information was elaborated to conclude any reasonable and comparable results for the justification or not of the contribution to the programme's goals and objectives.

REEEP outcomes will be assessed for their contribution or potential contribution to the fulfilment of the four overarching results, as mentioned above and under the relevant questions of the assessment dimensions of the Evaluation matrix/impact. The presentation of the assessment will be distinguished by each programme indicator.

The contribution of the outcomes to the occurred or foreseen overarching results will be based on a contribution analysis that will assess the evidence of outcomes' performance in achieving the overarching results, as well as potential evidence of other influencing factors, which have been expressed mostly with hypotheses in the results model. The contribution analysis will consider the main hypotheses, especially those linking the fourth outcome (beyond REEEP scope), which reflects the project framework influences for scale-up of REEEP EE and RE activities.

### Analysis and assessment regarding Impact

The analysis is structured according to the assessment dimensions of the Evaluation matrix (Annex 1).

### Occurrence of overarching long-term results

The overarching development goals to which REEEP contributes are defined by the GDC programme goals and are presented in the REEEP offer and its subsequent amendment of 2015.

- *Program indicator 1: The proportion of the population in Bangladesh that has access to energy will increase to 90% by 2020*

This indicator comes from the country's development plans and its international declarations for SDGs and other economic and climate change initiatives. It is documented by the intervention reports that REEEP intervened in rural population as well as in the small and medium industrial sector by developing customised technologies. These EE and RE technologies are expected to result in more energy access and sustainable electricity in parts of the population that are not connected to the electricity grid or their connection is poor, to cover their basic needs. MPEMR has recently announced that the proportion of the population that has access to energy was around 92% in 2018; however, this figure includes captive generation and off-grid RE and

should be compared to 83% in 2017. The increase is actually too high, and the MPEMR estimations are actually based on different methodology and criteria. It is also estimated that around 5% of the population gained energy access directly through RE installations in off-grid areas, for which the Government of Bangladesh has set an implementation target based on large-scale PV and wind power, as well as on decentralised RE.

The main source of this information comes from MPEMR; and many other local institutions have adopted the above-mentioned achievement figures. Albeit the evaluators' argument on the correctness of the rate of increase in 2017-2018, we may recognise that the Government of Bangladesh has explicitly declared its decision to support the full electrification of the country. The remaining infrastructure towards Bangladesh gaining full access to electricity supply is reasonably missing from rural, remote and poor areas, where the majority of the population either cannot afford to use electricity or belong to the target group of 'leave-no-one-behind' (LNOB).

Notwithstanding the lack of current data to verify the MPEMR's data (triangulation), the evaluators may reasonably assess, due to the strong political willingness, that the programme indicator will be achieved in 2020, and that expansion of electricity supply infrastructure could reach the expected percentage of 90%, even under stricter criteria for access to proper quality conditions of electricity supply.

- *Programme indicator 2: Production losses due to an unstable energy supply (value lost due to electrical outages, in percentage (%) of sales) will decrease to 3% by 2020*

Programme indicator 2 targets the reduction of production losses resulting from an unstable energy supply (the value of lost electricity sales due to electrical outages shall decrease from 5.5 % of sales in 2013 to 3 % in 2020). Practically, this reflects the experience that SMEs and industries still face daily electricity supply deficiency averaging from one to about four hours.

Actually, there are no recent data from official sources on the evolution of the above-mentioned indicator, due to the complexity of the methodology to estimate it. Therefore, it is the evaluators' opinion that the indicator will decrease, but in order to calculate the level of decrease, a specific study or technical assessment is required at the level of electricity networks operators. Such study/assessment was not available at the time of this evaluation.

- *Program indicator 4: The share of energy generated by renewable resources in Bangladesh will increase to 2,000 MW by 2020*

The Bangladesh government had prepared a 'Power System Master Plan-2010 (PSMP)' aiming at improving and expanding the electricity supply to support gross domestic product (GDP) growth in the range of 7–8%. At present, the 'Power System Master Plan' of 2018, which still awaits final approval, anticipates significant development of electricity generation based on RE. In addition, the 'Net Metering Guidelines' of 2018 have been formulated and are expected to give a new push for PV installations, mainly in houses and small businesses. According to international donor assessments, to meet the whole country's electricity demand with reasonable reliability, installed power generation capacity must be increased to around 24,000 MW and 39,000 MW by 2021 and 2030, respectively. The 'Renewable Energy Policy' necessitates the renewable energy share to be 10% by 2020, which means its established capacity should be around 2,000 MW, i.e. the capacity projected by indicator 4. To meet this target, SREDA has prepared an annual plan with the expected capacity of RE installations by technology for the years 2018-2021, as shown in Table 7.

In other words, it is expected that from 2018 onwards, the installed RE capacity should be similar or even higher to the total capacity installed in the country for all years until 2017. Even though the regulatory framework has been improved and significantly facilitates RE installations, the evaluators' estimation is that it is very difficult, or impossible, to fulfil the programme indicator 1, even partly, given the existing trend of RE investments in the country.

Table 7: Required annual capacity of renewables till 2021

Technology	Achieved by 2017	2018	2019	2020	2021	Total
Solar	282	350	250	250	250	1432
Wind	2.9	150	350	300	300	1103
Biomass	0.4	6	6	6	6	24.4
Biogas	0.68	1	1	2	2	6.68
Hydro	230	1	1	2	2	236
<b>Total</b>	<b>516</b>	<b>508</b>	<b>608</b>	<b>610</b>	<b>560</b>	<b>2802</b>

Source: SREDA Annual Report 2017-2018

**Conclusion:** REEEP's indicators are clearly linked with the overarching indicators. However, it is worth mentioning that evidence supporting intended changes of impact is relatively weak for all three programme indicators. More specifically, for indicator 1 future results in line with the intended changes are probably assumed. For indicator 2, the estimation is that the outlook is positive, but slower than expected trends are assumed and the uncertainty due to lack of relevant assessments should also be considered. For indicator 4, it is even very unlikely to reach the projected values; however, the trend is positive. The occurrence of overarching long-term results is **rated with 25 of 40 points**.

### Contribution of the project outcome to the overarching results

- *Contribution of the outcome that service providers offer EE and RE market solutions to programme overarching results (all programme indicators)*

The development of service providers in EE and RE applications is expected to replicate and scale up the REEEP interventions under market conditions with or without the support of the state programmes, which will be managed mostly by SREDA. The latter has been established and its capacity was built mostly by REEEP to cope with the necessary supporting measures, which will contribute to the RE and EE outcome of energy saving (TOE).

The hypothesis that the increase in electricity prices, and of energy generally during the REEEP period, and the expectation that future prices will become cost reflective, indicates the expectation of a new growing market in RE and EE, since both solutions will become more competitive against conventional energies, that encouraged the involvement of service providers in the training and technology support actions of REEEP. The installation of decentralised generation units by service providers, many of which are based in RE, is expected to increase the share of RE technologies in the country and offer new opportunities for isolated off-grid supply of electricity to parts of population. Moreover, the market is expected to respond positively to the new regulatory conditions allowing substantial grid-connected electricity generation, especially under a cost/benefit analysis based on real electricity prices without incentives. The evaluators assess that the promotion and implementation of many small-sized installations by service providers might also improve the electricity network conditions and thus reduce the percentage of lost electricity sales.

It is plausible that the results based on the activity of service providers contribute to the fulfilment of all three programme indicators, since better access to electricity is achieved, the loss of generation could be relaxed and the trend for increase of the share of RE is strengthened. Moreover, the opportunities for better energy supply for poorer categories of consumers increase when more options are available in decentralised parts of the market.

- *Contribution of the outcome that considerable energy savings are achieved by REEEP pilot scale-up actions to programme overarching results (all programme indicators)*

The evaluators have the opinion that the contribution of REEEP to the achievement of the impact reflected by the programme indicators could be traced in almost all the EE and especially the RE interventions for which

scaling-up programmes are or will be implemented. Towards this effect, other necessary development programmes – with the objective to disseminate energy solutions developed by REEEP – are employed and certain examples could be mentioned, as they were discussed with the GIZ/REEEP office:

- BPDB has launched a project of 2,000 solar irrigation plants (relevant REEEP intervention) and the relevant feasibility study is under preparation
- UNDP is planning an expansion of its plans and intends to install 100 plants of solar drinking water units (relevant REEEP intervention)
- Waste-to-Energy MoUs have been concluded by Clean Energy Alternative (CEA) with three city corporations (relevant REEEP intervention)
- USAID designs a scaling-up project on solar aquaculture based on a net metering system and independent units (2 relevant REEEP interventions).

The above-mentioned programmes, which have been designed under the coordination and support of SREDA and/or MPEMR, indicate that the hypothesis under which SREDA and the Ministry of Energy cooperate, IDCOL and other financial institutions continue to be interested in becoming active with RE and EE, has happened in this case.

In conclusion, the REEEP outcome results in EE, which are under policies of scale-up by the relevant donors and state organisations, contribute in principle to the overarching goal of increasing the possibilities for the population's better access to energy supply, as well as to the other goals.

- *Contribution of the outcome that SREDA ensures stable funding to implement the Action Plan to programme overarching result of increase of share of energy produced by RE (programme indicator 4)*

For the Government of Bangladesh to achieve the programme objectives' goals, more investments in RE and EE are necessary. However, due to land scarcity, the necessity of more innovative and decentralised RE applications is evident. Rooftop Solar and Waste to Electricity are a few REEEP interventions that directly contribute towards that ambition by techno-economic feasibility study, technology adaptation and piloting, business model development and policy advocacy. In connection with this, MPEMR has already taken an initiative on implementing Net Metering Guidelines for Rooftop Solar System. It is evidenced that the idea of scaling-up was integral to the design of REEEP interventions and that SREDA was considered as the proper institution to undertake such activities (e.g. power cooling and 3-wheelers interventions, etc.)

The hypothesis that SREDA and the Ministry of Energy cooperate, and that IDCOL and other financial institutions continue to be interested in becoming active with RE and EE, anticipates the elaboration, assessment and implementation of EE and RE scale-up policy measures. SREDA was strengthened and its capacity is appropriate to be able to promote scaling-up measures in RE and EE applications, which have been piloted and supported by REEEP. The evaluators' opinion is that this development has been delayed due to financial and structural difficulties related to state procedures and political willingness to set SREDA's operation as a priority for dissemination of EE and RE solutions.

Therefore, the contribution of REEEP intervention results, which are related to SREDA's organisation and operation to the overarching goal of increase of RE share, is plausible due to the content of the relevant scale-up measures; however, the observed delays from the state procedures side reduce the anticipated results during the REEEP period.

- *Contribution of the outcome that policy measures are implemented for the scale-up of REEEP interventions to programme, overwhelmingly result in that poorer groups of the population have benefited – LNOB principle*

As mentioned in the relevance section, REEEP contributes directly to the national implementation of the SDGs under 2030 Agenda, specifically to SDG 7 (Access to affordable, reliable, sustainable and timely energy for all) and to SDG 13 (Combating climate change). Furthermore, it makes a direct contribution to the achievement of the goals set under the Nationality Determined Contributions (NDC) and indirectly supports other SDGs, among which the most significant concerns the reduction of poverty and implementation of the LNOB principle.

The contribution is assessed under the hypothesis that the implementation of specific REEEP measures should be prioritised in their support of the poorer population groups. Both ERD and MPEMR have mentioned that the REEEP interventions might have certain impact contributing to the national targets where there are proper perspectives for dissemination of results to broader parts of population. The results of REEEP are well received, the conceptual level is fine for the beneficiaries and reasonable dissemination is expected to follow. Thus, they favour continuation of the project model introduced by REEEP and expect more effort in scaling-up the results to achieve the anticipated impact. It is plausible that there are no prioritisation criteria, which will target scale-up measures to poor categories of population and consider the LNOB principle, but these categories of population have benefited by measures designed under other priorities.

Therefore, it is assessed that implementation of scaling-up and dissemination measures contribute or might contribute to the needs of the poorer groups of Bangladeshi consumers, but the scale-up activities are not prioritised under criteria favouring these categories of beneficiaries.

➤ *Contribution of other factors to achievement of overarching results*

It is assessed that the project's impact was positively influenced by relevant framework conditions or other policy areas complementary to REEEP, since the spirit of collaboration and increase of results impact prevailed. Indicatively the GIZ technical assistance project entitled: 'Energy Efficiency and Integration of Renewable Energy into the Grid in Bangladesh' (PN: 16.2136.6) supports the regulatory framework and the grid operators' capacity to integrate RE into the grid and improve efficiency of the power distribution system. REEEP complemented this approach with a focus on the business model development for grid-connected distributed RE applications, e.g. PV rooftop, developing technical integration guidelines on demand side, and capacity development of the concerned agencies, etc.

The necessity of the project and its unique characteristics have already been explained in sections 4.2: Relevance and 4.3: Effectiveness. The absence of the project would delay occurrence of outcomes and consequently delay contribution of outcomes to overarching results.

**Conclusion:** The REEEP outcomes are mostly linked to the achievement of the overarching results. The contribution of the project outcome to overarching results is positively assessed in general, given the consideration that the expected impact depends on many other factors beyond the control of REEEP. Overall, this assessment dimension **is rated with 28 of 30 points**.

### **Additional positive results and project-related negative results**

The results achieved or to be achieved regarding the impact level mostly relate to the institutional development for strengthening and enhancing the stakeholders' capacity, and especially of SREDA, to implement broad EE and RE policy measures. Most of these additional results, however, are direct results and have already been analysed in the 'effectiveness' section 4.3, although they have partly occurred at the impact level. Therefore, no further additional results are reported in this section.

Contributions to cross-cutting issues, too, are incorporated in the intervention strategy and are therefore closely related to the module or programme indicators. Contributions to the reduction of access to electricity and other social services for the poor and other vulnerable groups were considered in certain REEEP interventions, as explained in the 'Relevance' section 4.2. Although the original direct effects through the SREDA and IDCOL schemes and the expected scaling-up of dissemination activities with ongoing support at the system level may have an equally significant effect on the long-run for poor and sensitive categories of population, like women.

During the evaluation, no indications of project-related negative results or trade-offs with the ecological, economic and social dimensions at the impact level have been observed. It is assessed that the EE and RE approach of REEEP cannot create negative results to the three dimensions of sustainability in the Agenda 2030; on the other hand, positive synergies are plausibly expected and are presented in the evaluation of the relevance criterion.

Though no formal risk monitoring was established, regular progress monitoring in each intervention area was identified and discussed, and relevant risks followed up (e.g. political risks regarding the continuity of current policy momentum, the appropriateness of governmental resource allocation, structural stakeholder interest conflicts, binding constraints at electricity supply level, such as problems with the capacity and the management of state stakeholders to design and implement scaling-up activities for EE and RE). It is assessed that at this level, risks are mostly outside the scope of the project, particularly those relating to the overarching policy momentum for energy system reform processes.

**Conclusion:** Therefore, the REEEP contributes to poverty reduction, gender equity and the adequate risk monitoring and response, whereas (potential) project-related negative results are limited or absent (**rating with 28 out of 30 points**).

Criterion	Assessment dimension	Score and rating
Impact	The intended overarching development results have occurred or are foreseen.*	25 of 40 points
	The outcome of the project contributed to the occurred or foreseen overarching development results.*	28 of 30 points
	No project-related negative results at impact level have occurred – and if any negative results occurred the project responded adequately. The occurrence of additional (not formally agreed) positive results at impact level has been monitored and additional opportunities for further positive results have been seized.	28 of 30 points
Overall score and rating		Score: 81 of 100 points Successful



Picture 4: Energy efficient, safe and environment friendly rice mill in operation

## 4.5 Efficiency

### Evaluation basis

The efficiency analysis in the context of the GIZ project evaluations is based on the Efficiency matrix, an Excel tool that captures at the time of the evaluation all project-related costs and indicates how they are distributed among cost-categories (e.g. for personnel, consultancies, financing instruments, equipment, partner contributions, etc.), and among REEEP's three outputs, to gain an understanding of the cost-intensity of each output ('follow-the-money-approach'). To identify deviations from the original planning, operational plans are compared to the actual implementation process.

Thus, the evaluation basis for the assessment dimensions 1 and 2, which investigate whether the project's use of resources is appropriate with regard to the outputs achieved and whether the project's use of resources is appropriate with regard to achieving the projects objective (outcome), are the actual costs of the achieved outputs and used resources.

### Design for assessing efficiency

Project efficiency will be assessed using the Evaluation matrix (Annex 1) and the specific assessment dimensions.

The GIZ has decided to implement the follow-the-money approach as a standard method for efficiency analysis in the Central Project Evaluations. Within this method, all costs and commitments that are assigned to the project are monitored and allocated to its respective outputs. The evaluator will look for profit-maximisation options. Therefore, as a first step, a systematic 'mapping' of the costs and commitments is defined; and, in a second step, the evaluation of the costs per output, as well as the estimations of involved or external players are examined.

The assessment will be based on all the documents indicating the operation of the GIZ/REEEP office, on the documents related to interventions cost, on the project offer highlighting an allocation of REEEP costs, and on the Efficiency matrix with analytic allocation of costs. The latter document has not been supported by the REEEP accounting system, so estimations and aggregate quantities were used in the Efficiency matrix as agreed between the evaluators and the GIZ/REEEP office.

In the interviews with local partners, and especially with the experts in the GIZ/REEEP country office, the issues related to efficiency were also discussed. These interviews were useful to the evaluators for making assessments justified on recent analyses. The collated information included reasonable and comparable results for the justification of appropriateness of resources used.

For the issues of result maximisation and optional more efficient approaches, relevant questions were put to the stakeholders' and GIZ/REEEP's' experts involved during the interviews.

### Analysis and assessment regarding efficiency

The analysis is structured according to the assessment dimensions of the Evaluation matrix (Annex 1).

### Appropriate resources with regard to the outputs achieved (Production efficiency)

Regarding the efficiency of the project's organisational set-up, the steering structure has been reviewed and analytical questions have been discussed with the officer-in-charge and the REEEP manager to identify potential inefficiencies in relation between costs and achieved results.

This project was initially built on the approach of a previous TC measure, SED in 2013 and was extended in 2015. The extension includes a financial increase from EUR 3,000,000 to 10,000,000 without co-financing agreement with local or international institutions. There was one big international company, GFA, which undertook the operation of the RE component after 2015.

With regard to the internal organisation, it was straightforward and subject to the management principles for unity of command and clear responsibilities. The overall coordination was carried out by the REEEP manager. Three managers for RE (GFA), EE, COD were assigned to follow and organise the three interventions, and at least one intervention manager for each of the 21 interventions was allocated from REEEP/GIZ office staff. External support, either international or local, was used for all interventions. Horizontal support in M&E – procurement, contracts, financing, communication, links with BMZ, KfW, etc. – was provided by the office staff. In addition, the REEEP manager acted as GIZ energy projects coordinator (three projects at present).

It is evident that the aforementioned structure complies with the specifications and the administration experience of GIZ for technical assistance projects in developing countries and may not be considered as a structure established specifically for REEEP. GFA experts have the view that, in the beginning of its involvement, GIZ set up a very bureaucratic modus operandi which later on GFA changed following a more flexible operational scheme, with the approval of GIZ. For this reason, for the first 6 months, the GFA contract was not so efficient. Decisions/approvals took too long and then required modifications to how interventions should be carried out. This probably happened because it was the first big contract signed with a non-Bangladeshi company and there was no relevant experience.

The BUET point of view indicates that the procedure followed by the GIZ/REEEP office was effective and constructive. This procedure included making a proposal for requested services and carrying out hard negotiations on equipment cost and fees to be allocated for consultancy services, so that a conservative total cost for the offer was concluded. During intervention execution too many GIZ experts were involved and provided useful remarks as feedback for improvements. The interventions were carried out more efficiently, since even personal links were used, and all costs were minimised; thus, the GIZ management of resources was highly appreciated. It is noted that for the EE activities in industry there were always negotiations for the industry to undertake part of the implementation cost (i.e. a rate of 60 : 40 was pursued).

The evaluators consider that the implementation of the GIZ rules, even with certain variations to facilitate the GFA operation, implied a reasonable use of resources under a well-organised working environment, which was not so fast to respond due to necessary controls and approvals at higher GIZ levels.

In most cases, the REEEP stakeholders and participants express their satisfaction that things were done in the best possible way. However, evident improvements could be justified in a few cases retrospectively and after using the experience obtained during intervention execution. The evaluators consider that improvements can be done as long as the same interventions are repeated and the gained knowledge and experience are exploited. Thus, maximised results could be produced with the same amount of resources or with reallocation of resources among the outputs. Especially for the REEEP interventions, which were innovative and included ad hoc approaches, the reviewed results are considered by the REEEP stakeholders as very satisfactory.

In accordance to the Efficiency matrix and the financial balances of REEEP, deviations between the actual costs and the projected costs were identified in the following budget lines:

- Cumulative fees had an estimated budget of EUR 5,963,024; the actual cost was lower by 11%.
- Travelling costs had an estimated budget of EUR 164,000; the actual cost was higher by 83%.
- Property acquisition, including construction costs, had an estimated budget of EUR 300,000; the actual cost was higher by 63%.
- Financing costs had an estimated budget of EUR 650,000; the actual amount was lower by 18%.
- Participant related costs had an estimated budget of EUR 144,000; the actual amount was lower by 77%.
- Other direct costs had an estimated budget of EUR 1,521,276; the actual cost was higher by 27%.

It was evident that there were considerable variations between the estimated budget lines and the actual costs overall and especially in some categories of costs. This happens because it is nearly impossible to properly estimate the categories of cost in a project having such an innovative character, including pilots and capacity building, like REEEP. The identification of interventions during the project execution and the involvement of a large sub-contractor (GFA) created variations from the estimated budget lines. However, the overall budgeted cost (i.e. EUR 8,742,300) equals the overall direct cost (i.e. EUR 8,654,133) and this is an indication of appropriate financial management implemented in REEEP.

**Conclusion:** The evaluators conclude that the cost–output relationship of each of the components has been mostly reasonable and that the variations among the project budget lines did not ultimately create financing problems. In comparison with potential alternatives, the evaluation team concludes that, in general, the actual utilisation of resources has been efficient and that the operation and administration of REEEP was effective, albeit not so fast to respond. Therefore, the production efficiency is **rated with 62 of 70 points**.

### **Appropriate use of resources with regard to REEEP's objective/outcome (Allocation efficiency)**

As mentioned above, the project did quite well in 'following the money' of the interventions in all components (RE, EE, COD). Another argument arose, namely whether – according to the maximum principle – the initial approach of strongly supporting the conceptual foundations for the scale-up of RE and EE in Bangladesh offered the most appropriate relationship between cost and potential outcome (i.e. increasing the market turnover and the energy savings of EE and RE). A vigorous policy framework was lacking before 2013 and no specific climate change and environmental measures were endorsed by the government, so that there was a consensus among local stakeholders and international technical assistance donors that it was technically a valid approach to support and learn from pilot experiences even though unconnected to a government policy. Conceptual foundations for the spread of RE and EE in Bangladesh have been successfully applied. Since the REEEP simultaneously provided policy advice and technical support for innovative solutions in RE and EE, no other opportunities were missed that could have enhanced the cost-effectiveness in the intervention areas. However, with today's knowledge, the same outcome might have been achieved with fewer resources in one or two EE cases. In the other intervention areas, no alternative resource allocation options have been identified during the evaluation that would have maximised the project outcome. This conclusion was discussed with almost all of REEEP's local stakeholders and participants.

The GIZ/REEEP office collaborates and coordinates with all pertinent organisations working in parallel or as scaling-up actors. For example, KfW coordinates with GIZ, shares information, keeps direct collaboration in financing specific projects (e.g. electricity distribution substations. KfW, as a Development Bank, acts under BMZ – government channel) and makes agreements through ERD to cooperate with SREDA or IDCOL offering grants or grants and loans to end-users. The relevant implementation is undertaken by IDCOL and SREDA. Monthly coordination meetings with GIZ and the German Embassy are organised during which discussions focus on preparation of forthcoming supporting programmes and projects.

Synergies with EnDev are also a case of optimising the resources of GIZ/REEEP office, since GIZ is responsible for the management of the EnDev initiative in Bangladesh. During REEEP's time frame there was discrimination between REEEP and EnDev – different visualisation, next door – but well-established cooperation continued, so economies of scale in resources and means was achieved. It is worth mentioning that EnDev used SED and REEEP interventions to scale up the use of RE technologies in Bangladesh. In the past it was considered as a combined activity to SED.

JICA collaborates also with GIZ in financing EE projects, e.g. USD 100,000,000 programme for textile, garments and cement industry. In addition, JICA coordinated with REEEP in formulating an EE Action Plan for the needs of SREDA.

BFRI assesses a big potential for replications of the REEEP pilot PV project in shrimp farming units and identifies the need for accommodation of technological solutions under different conditions. It has a plan for further research and preparation of an action plan to be adopted by the Government of Bangladesh for the development of extensive shrimp farming and is eager to collaborate with GIZ on a follow-up project of pilots and business development activities.

According to the cost analysis (see the results of GIZ 'Tool for the efficiency assessment', Cockpit-screenshot), the allocation of the project budget was 57% for RE, 27% for EE and 16% for COD. The high percentage of the RE component is due to the broadness of the relevant activities incorporating a number of 'expensive' interventions, including pilot projects like the solar PV drinking water systems established in the flood-prone regions. The lower budget of the component addressed to SREDA is reasonably low, because all the tasks were rather soft and aimed at the institutional and legislative development.

**Conclusion:** The cooperation efficiency is positively assessed, given the consideration of scaling-up options (though not equally elaborated in each area) and synergies with other development partners (including coordination with the German financial development cooperation). Overall, the allocation efficiency is **rated with 27 of 30 points**.

Criterion	Assessment dimension	Score and rating
Efficiency	The projects use of resources is appropriate with regard to the outputs achieved. [Production efficiency]	62 of 70 points
	The projects use of resources is appropriate with regard to achieving the project's objective (outcome). [Allocation efficiency]	27 of 30 points
Overall score and rating		Score: 89 of 100 points Successful



Picture 5: An ice cream factory is illuminated using solar pipe light

## 4.6 Sustainability

### Evaluation basis

The evaluation will be based on the components of REEEP actions that encompass sustainability characteristics through their relevant results, as reported in the intervention reports. The evaluation of the two assessment dimensions – which concentrate on whether the results are anchored on partner structures and on whether the results of the project, are permanent, stable and long-term resilient – will focus on the sustainability effect against the situation without the existence of REEEP results.

## Design for assessing sustainability

In the sustainability criterion, the analysis focuses on the positive synergies and the negative trade-offs among the three sustainability dimensions (economic, social and ecological). However, it is worth mentioning that the time of evaluation might not be appropriate for the justification of the entire sustainability effect of REEEP. The 'actual' results model reflecting the REEEP's ToC, as it has been presented in Figure 1, will be considered to facilitate sustainability assessment.

The guidelines for the sustainability evaluation will be given by the assessment dimensions and the related questions will be presented in the respective part of the Evaluation matrix/sustainability (Annex 1).

The evaluation design to be used follows the already discussed standardised, central evaluations approach. Thus, an empirical approach will be applied using secondary and qualitative data collection methods. In addition to the available documentation already provided to the evaluators, data were retrieved in analyses and statistics related to development of capacities of all the project's stakeholders.

In the interviews with local partners and other parallel initiatives in EE and RE, the issues related to sustainability were extensively discussed. The collected information from interviews primarily with the GIZ/REEEP office and the local partners (SREDA, MPEMR), but also with the other stakeholders and external sector experts, have been useful and have been properly used. It should be mentioned that the evaluators have particularly discussed sustainability issues with MPEMR and SREDA, both of them being directly related to the sustainability objectives of the country.

## Analysis and assessment regarding sustainability

The analysis is structured according to the assessment dimensions of the Evaluation matrix (Annex 1).

### Extent to which results are anchored in (partner) structures

It was mentioned by the international donors in Bangladesh that there is a risk in their programmes focusing on RE and EE support, because the Government of Bangladesh might decide to stop this activity and re-direct its strategy towards building more conventional generation capacity, due to the lower investment cost per power unit and rapid increase of electricity demand. Therefore, the Government of Bangladesh may impose rules and regulations on EE and RE and, on the other hand, avoid implementing the necessary policies with incentives and supporting measures. For this reason, all donors have as a priority to train and develop experts and institutions; that is, place emphasis on the sustainability of their activities and, thus, increase the institutions' capacity, which will to some extent facilitate the relevant EE and RE projects. On the other hand, it should be mentioned that MPEMR expressed the clear political commitment of the Government of Bangladesh that its policy in EE and RE will be properly interpreted into actions.

It was evident that from a conceptual point of view, REEEP explicitly focuses on the development of partner capacities at all levels (individual, organisational, networks and policy field) to ensure that intended medium and long-term effects can be achieved by the partners themselves. All three REEEP components follow multilevel approaches that consistently combine policy advice and process consulting at the system level with organisational development measures for key stakeholders and a wide range of human capacity development activities. Component-C (output): Organisational development of SREDA (COD), especially focuses on strengthening the organisational and capacity development of SREDA in undertaking the design and management of EE and RE programmes at national level. Sustainability was inherent in all REEEP interventions, but it did not perform equally effectively for all local stakeholders.

It is assessed that the degree to which the project's advisory content, approaches, methods and concepts are already anchored/institutionalised in the partner system varies among the three REEEP components. In particular, they could be distinguished between the RE and EE components on the one side and the dedicated COD component, which targeted solely the capacity building and support of SREDA, on the other:

- In the RE and EE components, 21 interventions were carried out with considerable sustainability content, as it is presented in Table 8. The type and number of similar tasks are also indicated and

clearly imply that the interventions were designed to aim at capacity building for local stakeholders, i.e. SREDA, electric and energy utilities, academia, private consulting and engineering companies, associations, etc. A large number of training courses and workshops were organised within most of the interventions towards increasing the sensitivity and awareness of pertinent experts and officials and a large number of pilot projects, feasibility studies and business model development activities were carried out and their results were disseminated to interested institutions for follow-up activities. Extensive training and training-for-trainers, who have repeated the training courses, e.g. in Green Banking or commercial biogas production, are among these activities. SREDA's staff has participated in all these training activities; however, the repeat of the training activity does not always occur due to other priorities of the agency.

- **In the COD component,** SREDA enjoyed main support to develop necessary capacity in EE and RE through training, formulation of regulations in Energy Labelling and Energy Audits and setting a planning activity for RE and EE expansion in the country. In the RE sector, REEEP supported the preparation of an action plan for 500 MW solar power and a more general guideline for RE development in Bangladesh. Various options for utilities to develop PV installations under new national legislation were considered. Until that time, only 23 MW of RE power had been implemented and a capacity of 60 MW in PV were under construction. Another 60 MW of wind energy had been approved and signed. To promote the broad use of RE electricity generation, SREDA and REEEP – among other institutions – supported the change of legal framework and licensing/pricing system from *feed-in tariff* to *price bidding process*. In addition, the promulgation of the *net metering system* and its pilot implementation within REEEP interventions was also supported; this approach may offer solutions in a country where the main problem is land use.

Table 8: Activities/tasks implemented by REEEP with considerable sustainability content

No.	Intervention	Type of intervention	Tasks implemented in intervention	No. of
1	Solar drinking water system	(a) RE technology (b) Drinkable water solution for rural people (coastal)	(a) Piloting plants (b) Business model development (c) Community-based management system (d) Impact assessment study	44 1 1 1
2	Slaughterhouse waste-based biogas	(a) RE technology (b) A solution of household energy supply for rural and peri-urban people	(a) Sectoral study (b) Workshop and MoU signing (c) Biogas plant design and construction (d) Documents on design, construct., O&M	1 2 1 3
3	Commercial biogas	(a) RE technology (b) Alternative electricity solution for industries/SMEs	(a) MoU signed (b) Piloted the biogas plant (c) Training materials (d) Training courses	2 1 5 3
4	Retained heat cooker	(a) EE technology (b) Alternative cooking solution for rural and urban households	(a) Research and development study (b) Pilots (c) Developed crushing machine (d) Manufacturing and user training (e) Awareness and demonstration (f) Feasibility analyses to most promising serv. providers	1 4 1 17 35 1
5	LED ESCO in garments	(a) EE technology (b) EE potential of LED tube lights and the viability of the ESCO	(a) Feasibility study (b) Tri-partite MoU signed (c) LED tubes piloted in textile industry (d) Monitored the performance of the pilot	1 1 4310 1

No.	Intervention	Type of intervention	Tasks implemented in intervention	No. of
		model in Bangladesh	(e) Standards for LED tube lights	1
6	Solar pipe light	(a) RE technology (b) Alternative affordable solution for the micro, small industries lighting	(a) R&D study (b) Pilots (c) Performance monitoring (d) Software Product Line design developed	1 2 2 4
7	Improved rice parboiling system	(a) EE technology (b) Improved boiler solution for the rice millers	(a) Piloted IRPS and dryer (b) Training to the service providers (c) Agreement with Swiss contact	45 15 1
8	Waste heat recovery	(a) EE technology (b) Waste heat from power plant	(a) Feasibility study (b) Training course	3 2
9	Waste-to-energy	(a) RE technology (b) Utilising municipal solid waste to run power plant	(a) Feasibility study (b) Technical support to BPDB for tender (c) Study tour for policy makers (d) Training for utility engineers	1 1 1 1
10	Solar aquaculture	(a) RE technology (b) Alternative environment friendly technology (c) Options of PV electricity	(a) Piloted aeration technology (b) Study on shading effect (c) Training courses	1 1 1
11	Biomass briquette	(a) EE technology (b) Alternative cooking fuel solution for rural users	(a) Study on process development (b) Training to service providers (c) Machine pilot (d) Performance study	1 5 4 1
12	Solar chiller	(a) RE technology (b) solution of power supply, off-grid or rural areas	(a) Feasibility study (b) Customised business model (c) Pilot	1 1
13	EE in composite textiles	EE technology promotion through energy audit	(a) Walk through audits (b) Investment grade audit (c) Training to utility engineers	3 1 1
14	EE in re-rolling mills	EE technology promotion through energy audit	(a) Walk through audits (b) Investment grade audit (c) Training to utility engineers (d) Stakeholder workshops	3 1 1 2
15	EE improv. of submersible pumps	EE technology	(a) Stakeholder workshops (b) R&D study	2 1
16	EE in leather industry	EE technology promotion through energy audit	(a) Walk through audit (b) Investment grade audit (c) Stakeholder workshop	1 1 1

No.	Intervention	Type of intervention	Tasks implemented in intervention	No. of
17	Master scheduler power sav. device	EE technology	(a) Performance study	1
18	Rooftop solar	RE technology	(a) Pilots (b) Technical feasibility study (c) Commercial feasibility study	5 1 1
19	Solar water heater	RE technology	(a) Pilot (b) Sector feasibility study	1 1
20	EE charging station for electric 3-wheelers	EE technology	(a) R&D study (b) Pilot	1 1
21	Capacity and organisational development/ green banking (financing)		Local, international. trainings and workshops (a) 2014 (b) 2015 (c) 2016 (d) 2017 (e) 2018	33 5+5 5 3+3

It was also understood that in some cases, the SREDA's response was expected to be more effective, given the extent of support by REEEP and other donors' programmes. Doubts whether SREDA could really absorb the capacity-building input from REEEP were expressed by local stakeholders. The continuation of the capacity support activity was mentioned as necessary for the next years for the country to be able to implement policies on EE and RE.

SREDA, IDCOL and other Bangladeshi institutions are involved in scaled-up programmes and follow-up projects based on the REEEP results. The relevant policy measures of incentives (e.g. for biogas production and PV installations) have been adopted. The local stakeholders consider that SREDA's institutional development is sustainable and can exploit KfW opportunities to implement EE and RE, thus, exploiting the necessary follow-up activity of REEEP. SREDA working as a central organisation channels funds to large implementation projects and is expected to increase its activity in the short term. Therefore, ERD estimates that sustainability is served since the Government of Bangladesh is highly committed to EE and RE and this is the reason for which SREDA was created. SREDA has shown high commitment since the beginning and relevant outputs are expected in the coming years.

The evaluators assessed that the sustainability effect was positively reported by more market-oriented and decentralised organisations like BPDB, BBDF, BFRI, WZPDCL, service providers, local municipalities and others, which have benefited from the REEEP's capacity-building tasks and were focused on personal and organisational/management capacities at different levels. The REEEP interventions also placed emphasis on individuals in carrying out their business development activities to service and advise providers, especially to women and people from poor regions, who wanted to be involved in entrepreneurship activities. Characteristic examples of results based on this decentralised sustainability effort are:

- The replication of the solar-based drinking water system, which was realised by service providers together with donors.
- Rooftop solar PV applications supported by distribution utilities and carried out with various other partners.

It was also mentioned that REEEP implemented an exit strategy during the last months by undertaking:

- handover of developed pilot projects to local stakeholders
- provision of all necessary documents to SREDA for tasks carried out
- organisation of a REEEP closing event.

**Conclusion:** Considering the strong conceptual orientation towards sustainable capacity development, the adequate degree of absorption of project outputs and consulting contents in the partner structures, and the combined effort regarding the adequate availability of financial, management and personal experts'/officials' capacities in the partner system in general, this assessment dimension is **rated with 45 of 50 points**.

### Forecast of project results durability

The forecast of project results durability is absolutely related to the analyses in the previous section. The most significant factor that increases the probability of a sustainable system's strengthening is the increasing and permanent readiness of the Bangladesh government to invest in the value of EE and RE policies, the active leadership of the government in designing and managing the ongoing and forthcoming supporting measures, and an adequate understanding of the potential and limitations of technical assistance that has increased in recent years.

Regarding the sustainability of specific outputs and outcomes, the evaluation judgement is somewhat based on the current assumptions of stakeholders and the willingness of them to further develop policies, markets and expertise. This is also the case in SREDA, which absorbs most of the capacity-building tasks of REEEP.

MPEMR recognises the usefulness and need of technical assistance projects of the type in REEEP's interventions in RE and EE, because the Government of Bangladesh has no other means to introduce technological developments and improve the required capacity at state level. It is especially thought that SREDA might keep its capacity of young experts who have been trained and developed by the REEEP activities. Durability is served by the REEEP experts and stakeholders in general, and the local society has accepted the results pursuing further implementation and advancements. In interviews, many stakeholders question the durability of SREDA's capacity to manage EE and RE supporting measures. The risk of management, staff and administrative structure changes is reasonable, due to public sector rules and practices in the country; therefore, it is assessed that there is a clear risk of capacity loss and future inability to support EE and RE programmes.

On the other hand, the evaluators are of the opinion that the capacity developed in other stakeholders' institutions and experts is more promising under the durability criterion. For example, the BPDB capacity development of its engineers regarding technological and management issues through on-the-job training and a study tour to Germany is related to the development of two feasibility studies in REEEP interventions on waste-to-cooling and waste-to-energy. Sustainability was proven since many follow-up actions were undertaken without the presence of GIZ experts. However, durability depends on the willingness of city corporations and other stakeholders to proceed to waste management and possibly to waste-to-energy solutions, i.e. to continue developing projects in these areas.

Nevertheless, as commented by BBDF, REEEP tried to intervene and develop new fields in biogas production (solid waste, slaughterhouse, etc.). To this end, intensive capacity-building activities took place in the form of four workshops countrywide in the presence of main stakeholders and SREDA and that BBDF is satisfied with the support offered in REEEP and the relevant capacity-building activities as well as with the high prestige and capability of GIZ to act as mediator to support biogas projects, something that was missing till the REEEP period. To the assessment of evaluators, this argument implies clearly that the durability of project's results is closely related to the need of new project activities to be launched in the specific RE sector and, particularly, in the field of scaling-up activities.

**Conclusion:** Taking into account the durability of project results and related capacities on follow-up activities, the well-focused interventions but still uncertain scaling-up activities and dissemination programmes, the positive outlook of the decentralised stakeholders on project outputs and the willingness of the Government of Bangladesh to support the development of SREDA, although its follow-up activities do not ensure full incorporation of knowledge and experience, the forecast for durability of project results is **rated with 38 of 50 points**.

Criterion	Assessment dimension	Score and rating
Sustainability	Prerequisite for ensuring the long-term success of the project: results are anchored in (partner) structures.	45 of 50 points
	Forecast of durability: project results are permanent, stable and long-term resilient.	38 of 50 points
Overall score and rating		Score: 83 of 100 points Successful



Picture 6: Mongla's Rafid aquaculture was the first pilot site for solar aquaculture

## 4.7 Key results and overall rating

### Relevance

REEEP fits into the relevant strategic reference frameworks at all levels, i.e. national policies and strategies, international standards and GDC strategies. However, more emphasis should be placed on its consideration of the criterion of relaxing poverty conditions. The project strategy is generally suitable to match the core problems/needs of the target groups but the support to the poorer populations needs to be more favoured. Also, SREDA, the local implementing agency, had not placed enough focus on the support of such activities

despite money flows to this segment of consumers (CAB comment). The strong focus on all categories of target groups is very positive point for the evaluators. Throughout the three intervention areas, the project applies a consistent multilevel approach, supporting the ministry to advance its RE and EE policies. This enables local institutions to properly pursue the energy policy objectives and facilitates scaling-up through international donors; thus, the project design fully responds to the set objective. Finally, REEEP demonstrated adequate flexibility to technological developments and to adapt the solutions to the country's reality, even without significant changes in the concept and in the project execution conditions.

## Effectiveness

Through the attainment of the project objective indicators (outcome level) and based on the approach of verification by the use of a bottom-up calculation approach, two indicators seem to have been fully achieved (indicator 1: *'80 service providers offer RE or EE technologies, related services and support for credit requests (15% of the total numbers of staff are women'*; and indicator 2: *'The energy savings and the production of energy from renewable sources, from commercial activities stimulated by the project, yield an equivalent of 15,000 TOE'*). The third was mostly achieved (indicator 3: *'The Energy Agency (SREDA) ensures stable funding to implement its annual Action Plan, starting in 2017, from Bangladesh government funds and third-party funds'*) during the project term. There are arguments about the definition of 'service providers' and the attainment of indicators by a few interventions (2 out of 24), while there are interventions with very low or zero contribution to the fulfilment of indicators. On the other hand, the contribution of project outputs to outcome is positively assessed, given the consideration that the criterion of contribution to outcomes was not always the most significant in the selection of interventions. The project contribution to negative and unintended results relates to the broadness of interventions, which significantly exceed the dimensions measured by official goal-attainment indicators. Nevertheless, it was justified that (potential) project-related negative results were limited to very specific aspects.

## Impact

The evidence supporting intended changes of impact is relatively weak for all three programme indicators. More specifically, for programme indicator 1: *'The proportion of the population in Bangladesh that has access to energy is increasing to 90% by 2020'* future results in line with the intended changes are plausibly assumed. For programme indicator 2: *'Production losses due to an unstable energy supply (value lost due to electrical outages, in percentage (%) of sales) decrease to 3% by 2020'*, the estimation is that the outlook is positive but slower than expected trends are assumed and the uncertainty due to lack of relevant assessments should be also considered. For programme indicator 4: *'The share of energy generated by renewable resources in Bangladesh is increasing to 2,000 MW by 2020'*, it is even very unlikely to reach the projected values; however, the trend is positive. Generally, the contribution of the project outcome to overarching results is positively assessed, given the consideration that the expected impact depends on many other factors beyond the control of REEEP. Moreover, REEEP contributes to poverty reduction, gender equity and the adequate risk monitoring and response, whereas (potential) project-related negative results are limited or absent.

## Efficiency

The cost–output relation of each of the components has been mostly reasonable and the variations among the project budget lines did not ultimately create financing problems, although significant variations were observed between the projected and the actual costs in each budget line. In comparison with potential alternatives, the evaluators concluded that, in general, the actual utilisation of resources has been efficient and that the operation and administration of REEEP was effective, albeit not so fast to respond. The cooperation efficiency is positively assessed, given the consideration of need for improvement on scaling-up options (though not equally elaborated in each area) and synergies with other development partners (especially including coordination with the German financial development cooperation).

## Sustainability

The strong conceptual orientation towards sustainable capacity development, the adequate degree of absorption of project outputs and consulting contents in the partner structures, together with the combined effort regarding the adequate availability of financial, management and personal experts'/officials' capacities in the partner system, in general, indicate an important perspective for REEEP's sustainability performance. However, one should take into consideration the dependence of the project's results durability and related capacities on follow-up activities, the well-focused interventions but still uncertain scaling-up activities and dissemination programmes, the positive outlook of the decentralised stakeholders on project outputs and the willingness of the Government of Bangladesh to support the development of SREDA, although its follow-up activities do not ensure full incorporation of knowledge and experience.

## Key results regarding selected hypotheses

The eight main hypotheses of this REEEP evaluation are presented in Table 1. Five of the hypotheses (1 to 5) link the REEEP output results with outcome results and the other three hypotheses link the outcome results with the overarching results.

The hypothesis related to the political situation, since there was a risk that project progress would be achieved more slowly than anticipated if countrywide strikes increased (**hypothesis 1**), largely influenced the geographical scope of interventions. This therefore affected the spread of project outcomes and especially of M3, which relates to SREDA and MPEMR activation for an action plan and preparation of policy measures. However, the level of expected outcome was achieved. Due to this evolution, the project results, which were related to the outcomes M1 (RE interventions) and M2 (EE interventions), were also partly affected, since the execution of interventions was not always optimised under the criterion of selected site.

The hypothesis under which scale-up donors and the service providers adopt REEEP interventions in their dissemination concepts and activities (**hypothesis 2**) indicates the strong interest to collaborate with REEEP in scale-up actions. Actually, there was no proper coordination between the technologies promoted by REEEP and the scale-up donors' plans. Moreover, this coordination was proved weak in involving SREDA, which is the pertinent national organisation for technical and financial assistance of EE and RE solutions. Due to this fact, the potential impact and the contribution to fulfilling the programme (overarching) indicators was not as expected.

The hypothesis that the cooperation of REEEP with other TC and FC measures develops by focusing on enhanced exchange of information and experiences (**hypothesis 3**) indicated the need for projects like REEEP to ensure follow-up policies and implementation. The actual coordination was not appropriate due to the lack of a necessary local institutional framework that supports the substantial cooperation in planning and implementation of policy measures in the EE and RE areas. This fact affected, in principle, project result M3 (outcome), since SREDA should have a more active role based on developed capacity and should undertake the proper initiatives. It also contributed negatively to the attainment of all other outcomes and overarching results.

The hypothesis of proper information and incentive campaigns on the results of REEEP are mainly coming from state initiatives. Also addressing target groups (**hypothesis 4**) focuses on the required awareness of the outputs of REEEP to all stakeholders who could scale up implementation. Awareness raising was executed within the scope of each EE and RE intervention and was addressed to project stakeholders – especially to those who might contribute to scale-up activities. On the other hand, a general awareness campaign was not undertaken by involved local partners to promote EE and RE solutions to broader target groups. Thus, the potential actors and beneficiaries of REEEP interventions were reduced and both outcome and overarching results were influenced.

The interventions in EE were decided under the major technical hypothesis of high energy saving performance, or the selection of industries is specifically geared towards those with high energy savings potential (**hypothesis 5**). This approach sounds reasonable for sectors that had not been treated under national EE measures and relevant obligations in the past. The expected output of energy auditing and interventions supporting (especially, implementation of soft (low-cost) measures like energy management, monitoring and targeting, etc.) is optimised when priority is placed on awareness of companies with high energy saving

potential. This way, the REEEP results contributed significantly to the attainment of all three project outcomes and potentially of relevant overarching impacts.

The prices of energy fuels and electricity were lower at the beginning of REEEP and increased during the project period following a process towards adjusting to actual costs. In general, the hypothesis that the activity development of the RE and EE market depends on the price of energy supply to both private households and to industry (**hypothesis 6**) indicates the strong relation of energy consumer prices with the potential of EE and RE penetration. The relevant increase in prices was not sufficient to contribute to an important change of priorities regarding implementation of EE and RE. However, this fact contributed to better results affecting the involvement of service providers (outcome M1) and consequently of the expected impact in all overarching targeted areas.

The significant hypothesis that SREDA and MPEMR cooperate, and that IDCOL and other financial institutions continue to be interested in becoming active with RE and EE (**hypothesis 7**), anticipates the continuation of policies and measures supporting scale-up activities, which may exploit the intervention potential of the REEEP activities. Thus, the expected outputs influencing project and overarching results, especially regarding result M4 (outcome) and all the overarching results (impact) did not create a need for significant changes. Where this hypothesis does not occur, i.e. the main scale-up activity does not continue, then the REEEP should be modified to cope with the new reality and the relevant results might contribute to reduced outcomes and impacts, as they are defined in this evaluation exercise.

The hypothesis that dissemination of RE in poor households and other sensitive parts of target groups remains a priority at the national-level (**hypothesis 8**), indicates the intention of national energy policy to support decentralisation of energy supply and offer various possibilities to consumers/institutions towards improving electricity supply conditions under the LNOB principle. Characteristic orientation of public policy towards satisfying poorer categories of population has been expressed in all state planning documents and it is anticipated that relevant scale-up measures will be implemented. Within the REEEP context, various interventions were designed to contribute with potential impact to the poorer target groups.

Criterion	Score	Rating
Relevance	92 of 100 points	<i>Very successful</i>
Effectiveness	84 of 100 points	<i>Successful</i>
Impact	81 of 100 points	<i>Successful</i>
Efficiency	89 of 100 points	<i>Successful</i>
Sustainability	83 of 100 points	<i>Successful</i>
Overall score and rating for all criteria	85.8	<i>Successful</i>
100-point scale (score)	6-level scale (rating)	
92-100	Level 1 = very successful	
81-91	Level 2 = successful	
67-80	Level 3 = rather successful	
50-66	Level 4 = rather unsatisfactory	
30-49	Level 5 = unsatisfactory	
0-29	Level 6 = very unsatisfactory	

## 5 Conclusions and recommendations

### 5.1 Factors of success or failure

Factors of success or failure include different aspects that range from external factors beyond the project's immediate range of responsibility (e.g. changes in the political and institutional environment), as well as aspects related to the quality of implementation, to the expectation of beneficiaries and to managerial aspects, such as the overall managerial set-up and the quality of the cooperation management.

The most important external factors that have influenced the project success, are:

#### 1. Positive factors

- a. During the recent years of economic growth, the positive economic and budgetary situation has been an important catalyser for the country's path towards improving energy supply quality (EE) and introducing alternative energy sources (RE).
- b. The formulation of sectoral and broader national development plans (7th Five-Year Development Plan, National Sustainable Development Strategy etc.) acknowledge the environmental and other benefits of RE and EE and, thus, promote the necessary activities towards increase of relevant projects.
- c. The environment of international policies on climate change actions (Sustainable Development Goals, Paris Agreement, Intended Nationally Determined Contributions, etc.) has requested the adoption of stricter measures and plans that favour the faster penetration of RE and the increase of EE in all energy consumption sectors.
- d. REEEP followed the previous similar project of GIZ (SED), which had prepared the EE and RE energy policy framework and had influenced the opinion and position of the competent experts and officials about the significance of adopting actions supporting RE and EE policies.
- e. The decisions and planning intentions of many international donors operating in Bangladesh support technically and/or financially the EE and RE implementation programmes in many sectors.
- f. The Government of Bangladesh decided to take action in promoting EE and RE but had no clear pathway and experience on how to plan actions and programmes to this end, so gave the necessary opportunity to REEEP, which responded explicitly to this call.

#### 2. Negative factors

- a. The political crisis after 2016 delayed or distracted the focus from interventions, which were planned to be implemented in decentralised regions, due to measures related to security reasons.
- b. The activation of many international donors in the EE and RE field created problems of coordination and – at a certain level – confusion on potential overlapping, especially in the areas of solar PV, efficient lighting among others.
- c. In certain interventions, the inability of market actors to repeat a successful pilot project was attributed to the reason that REEEP, as all other donors, uses equipment of better specifications than is available in the local market (negative factor); however, in this way, these donors (GIZ included) contribute to the sustainability of the local market and enhancement of state policy in EE and RE (positive factor).
- d. In some bigger projects, such as the biogas production units, emphasis was not particularly placed on operation and maintenance conditions, given that there is lack of experience in Bangladesh and the approach of operating with minimum maintenance until abandoning prevails.
- e. Cultural barriers hindered the scaling-up of technological interventions by involving women, e.g. the ladies trained on retained heat cooker cannot travel alone to promote sales (family restrictions).
- f. The supporting measures from IDCOL, SREDA or other local or international financial initiatives were not systematically coordinated with REEEP at the time of design and selection of pilots, thus, expanding of intervention activity was not always ensured.

The GIZ activities, and especially REEEP, are highly appreciated by local stakeholders in all sectors where

local participants were involved. This happens due to proper organisation of all stages of the project and especially because of integrated managerial set-up of team composition, competencies, headquarters support, logistic support, M&E functions, etc., as reported in the relevant paragraphs of the 'efficiency' section. Almost all local stakeholders and participants in REEEP interventions expressed their positive opinion about the cooperation management implemented by the GIZ/REEEP office and stressed their satisfaction with the approach, procedures followed, strategy, collaboration, steering, learning and innovation. In brief, the internal factors of REEEP success are presented in the first 5 points below, whereas the issues for further consideration are given in points 6 & 7:

1. Systematic management effort and clear rules in implementation of activities
2. Use of competent experts, either international or national, to carry out technical interventions with practical results
3. Incorporation of high-quality equipment and specifications in engineering and construction works
4. Particular emphasis on capacity building and sustainability issues
5. Well-organised visibility and promotional activities addressed to local officials and institutions
6. Adaptation to market conditions, which are oriented to lower quality products and services thus making replication of interventions difficult
7. Need for upgrading of project collaboration with scale-up initiatives

## 5.2 Findings and recommendations

Building on the experiences and results of the predecessor SED project, which also elaborated the design of the RE and EE interventions and policy measures, REEEP has provided significant technical assistance to the operationalisation and implementation of the RE and EE solutions. However, many of the achieved results are feasibility studies, regulation drafting and pilots, accompanied by capacity-building activities that in the longer-term will conclude in the establishment of supporting policy measures and relevant market opening activities. It is realistic and, in many cases, requested by local stakeholders that these interventions and their scaling-up activities will require further technical assistance by international development institutions that are active in this field of services. GIZ through REEEP 2 continues its presence in the respective intervention areas and might broaden the scope of interventions. The same applies to the intervention area of supporting SREDA's capacity building, in the context of which the project has supported the readiness for the upcoming regulatory changes. Once the transfer of powers becomes effective by the government, further technical assistance should be available to accompany SREDA and other local stakeholders in addressing the capacity gaps.

In conclusion, based on the findings of the evaluation, the overall structure of REEEP could be maintained in a follow-on project to provide continued advice in the aforementioned three key intervention areas. Since the REEEP evaluation comes after the initiation of REEEP 2, this statement is placed here to express the consent opinion of the evaluators.

Within the different intervention areas of REEEP, the following specific recommendations can be drawn from the evaluation findings.

**Finding:** REEEP has not ensured the scaling-up of its successful interventions in the RE and EE components of activity.

**Recommendation:** The initial design of REEEP places the framework of the specified interventions to be executed in the project period in detail. The interventions to be implemented are mainly pilots, feasibility studies, capacity-building activities, etc. that are always considered first steps towards challenging supporting measures and market contribution for broad implementation. Therefore, the type of REEEP interventions, in order to penetrate and expand at country level, require the next steps and especially that of scaling-up support, for which SREDA and IDCOL are the competent national entities to design and manage. The financing of the scaling-up measures derives, in principle, from the financial assistance availed by international donors such as EnDev, KfW, WB, USAID, JICA, etc. It is encouraging that all or most of these financial assistance donors have focused and prioritised EE and RE activities. The evaluators' recommendation is that the project should work

more closely with the financial donors and select the interventions with an 'upgraded criterion' of next step support. The difficulty in strengthening the function of closer cooperation with financiers, under the technical assistance work, is evident, because the safeguarding of relevant commitments is very difficult. However, the effectiveness of project effort is expected to increase considerably, and its interventions are integrated in results for which the design of technical assistance was made.

**Finding:** Better adaptation of REEEP interventions to Bangladesh market conditions, which are oriented to lower quality products and services; thus, to avoid making difficult replication of interventions.

**Recommendation:** The approach of installing a pilot project for replication and scaling-up was mostly based on equipment of highest quality subject to design under high standards of performance and operation. The Bangladeshi market is not in a position to supply equipment of similar quality to potential installers and designers, which hinders the replication process. This may send out a message that the pilots made under REEEP are perfect but do not fit into the local market supply adequacy. This latter message might come also from equipment suppliers who sell low-quality, low-performance but cheap equipment. The recommendation is that the concept of designing EE and RE interventions should be based on best local market available equipment and integrated solutions which do not require very specific and expensive components available in the international market but not in the local market. Thus, the replication could be easily achieved at a reasonable cost.

**Finding:** Emphasis of REEEP has been placed on small-scale RE and EE interventions by which small results could be achieved at unit level; interventions for large-scale RE projects with significant output are beyond the scope of REEEP.

**Recommendation:** Projects of significant size in the areas of waste-to-energy, e.g. large wind and solar parks, could offer different opportunities for RE development in the country. The investigation and support of the implementation of such projects requires a different approach than that followed for the small-sized projects of REEEP. These projects are treated as opportunities for significant investments stemming from the private sector and relevant financial support of the international development banks is indispensable. The technical assistance might combine the development of the projects, which is a very complicated task, up to the stage for international tendering. The upgrading of the local regulatory and legislative framework to support the implementation of such projects and the capacity building of state institutions may take a long and transparent procedure, which leads to the construction of significant sized power stations based on RE. The recommendation is to start preparing the change of concept and approach in agreement with the local partners. In parallel, a starting case, for which REEEP was already involved, could be included in the proposed activity: i.e. the exploitation of solid waste from large urban areas for power production and other uses.

**Finding:** Broad promotion of marketable RE and EE solutions for large groups of consumers had not taken place through campaigns with mass media, nor via other means of information dissemination.

**Recommendation:** Most of the small-scale EE and RE interventions could be addressed to large groups of potential users in domestic and commercial/SME sectors or to a significant number of specified users in industrial and commerce branches. Until now the effort has been directed to ensure financial support aimed at creating a core market, which in the future might operate under commercial conditions only. In cases of cheap EE equipment (e.g. LED lamps, retained heat cookers or biomass briquette), an information campaign addressed to potential users of these products could be very effective in opening up and developing the relevant market. The recommendation is to incorporate publicity activities addressed to much of the population for solutions that are suffering from poor information dissemination. The systematic organisation of such campaigns should become a new instrument for SREDA. It is worth mentioning that the respective EE and RE organisations in developed countries are mainly using publicity techniques to promote relevant EE and RE solutions to the population.

The above-mentioned four recommendations could be considered by the ongoing REEEP 2 where they are in compliance with its scope and priorities. Since some of them constitute a significant shift of the REEEP's existing approach, a thorough assessment of them is required.

## 6 Annex

### Annex 1 Evaluation matrix

#### Relevance

	Assessment dimension	Evaluation questions (pilot phase, work in progress)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
Relevance	<b>RELEVANCE (max. 100 points)</b>						
	1.1 The project concept* is in line with the relevant strategic reference frameworks  Max. 30 points	1.1.1 Which strategic reference frameworks exist for the project? (e.g. national strategies incl. national implementation strategy for 2030 Agenda, regional and international strategies, sectoral, cross-sectoral change strategies, if bilateral project especially partner strategies, internal analysis frameworks e.g. safeguards and gender**).	List of available documents to evaluators	Strategic documents of national, international organisations		Empirical design, Secondary data, Qualitative collection method	High
		1.1.2 To what extent is the project concept in line with the relevant strategic reference frameworks?	Compliance of strategic concepts of documents related to REEEP concept	Strategic documents of national, international organisations		Empirical design, Secondary data, Qualitative collection method	High
		1.1.3 To what extent are the interactions (synergies/trade-offs) of the intervention with other sectors reflected in the project concept – also regarding the sustainability dimensions (ecological, economic, social)?	Compliance of strategic concepts of other sectors related to REEEP concept	Strategic documents of national, international organisations		Empirical design, Secondary data, Qualitative collection method	High
		1.1.4 To what extent is the project concept in line with the Development Cooperation programme (If applicable), the BMZ country strategy and BMZ sectoral concepts?	Compliance of REEEP concept to BMZ strategic documents	BMZ, GIZ/REEEP office		Empirical design, Secondary data, Qualitative	High

	Assessment dimension	Evaluation questions (pilot phase, work in progress)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
						collection method	
		1.1.5 To what extent is the project concept in line with the (national) objectives of the 2030 Agenda? To which Sustainable Development Goals (SDG) is the project supposed to contribute?	Compliance of REEEP concept to 2030 Agenda strategic documents	Agenda 2030, Intended Nationally Determined Contributions		Empirical design, Secondary data, Qualitative collection method	High
		1.1.6 To what extent is the project concept subsidiary to partner efforts or efforts of other relevant organisations (subsidiary and complementarity)?	Compliance of REEEP concept to partner subsidiary initiatives	7th Five-Year Plan, National Sustainable Development Strategy		Empirical design, secondary data, qualitative collection method	High
	1.2 The project concept* matches the needs of the target group(s)  Max. 30 points	1.2.1 To what extent is the chosen project concept geared to the core problems and needs of the target group(s)?	Guidance of REEEP design to core problems of target groups	REEEP progress reports	Interview with local partners	Empirical design, secondary data, qualitative collection method	High
		1.2.2 How are the different perspectives, needs and concerns of women and men represented in the project concept?	Guidance of REEEP design to different needs of men and women	REEEP progress reports, specific gender reports	Interview with local partners and GIZ/ REEEP office	Empirical design, secondary data, qualitative collection method	High
		1.2.3 To what extent was the project concept designed to reach particularly disadvantaged groups (LNOB principle, as foreseen in the Agenda 2030)? How were identified risks and potentials for human rights and gender aspects included into the project concept?	Guidance of REEEP design to reach particularly disadvantaged groups Identification of relevant risks	Gender reports, progress/intervention reports – poor citizens applications	Interview with local partners	Empirical design, Secondary data, qualitative collection method	High
		1.2.4 To what extent are the intended impacts realistic from today's perspective and the given resources (time, financial, partner capacities)?	Estimated impact under present conditions	Progress reports, interviews with SREDA and MPEMR	Interviews with local partners and GIZ/	Empirical design, Secondary data, qualitative	High

	Assessment dimension	Evaluation questions (pilot phase, work in progress)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
					REEEP office	collection method	
	1.3 The project concept* is adequately designed to achieve the chosen project objective  Max. 20 points	1.3.1 Assessment of current results model and results hypotheses (ToC) of actual project logic: - To what extent is the project objective realistic from today's perspective and the given resources (time, financial, partner capacities)? - To what extent are the activities, instruments and outputs adequately designed to achieve the project objective? - To what extent are the underlying results hypotheses of the project plausible? - To what extent is the chosen system boundary (sphere of responsibility) of the project (including partner) clearly defined and plausible? - Are potential influences of other donors/organisations outside of the project's sphere of responsibility adequately considered? - To what extent are the assumptions and risks for the project complete and plausible?		REEEP project reports, technical reports	Interviews with local partners, target groups and international donors	Empirical design, Secondary data, Qualitative collection method	Medium
		1.3.2 To what extent does the strategic orientation of the project address changes in its framework conditions?		REEEP Project Reports, Technical Reports	Interview with local partners	Empirical design, Secondary data, Qualitative collection method	Medium
		1.3.3 How is/was the complexity of the framework conditions and guidelines handled? How is/was any possible overloading dealt with and strategically focused?		REEEP Project Reports, Technical Reports	Interview with local partners	Empirical design, Secondary data, Qualitative collection method	Medium
	1.4 The project concept* was adapted to changes in line with requirements and re-adapted where applicable.  Max. 20 points	1.4.1 What changes have occurred during project implementation? (e.g. local, national, international, sectoral, including state-of-the-art or sectoral know-how).		Updated project offer, GIZ? REEEP office reports	Interviews with local partners and international donors	Empirical design, Secondary data, Qualitative collection method	Medium

	Assessment dimension	Evaluation questions (pilot phase, work in progress)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
		1.4.2 How were the changes dealt with regarding the project concept?		Updated project offer, GIZ? REEEP office reports	Interviews with local partners and international donors	Empirical design, Secondary data, Qualitative collection method	Medium

\* The 'project concept' encompasses project objective and (ToC<sup>\*\*\*</sup>) with outputs, activities, instruments and results hypotheses as well as the implementation strategy (e.g. methodological approach, CD-strategy, results hypotheses).

\*\* In the GIZ safeguards system risks are assessed before project start regarding following aspects: gender, conflict, human rights, environment and climate. For the topics gender and human rights not only risks but also potentials are assessed. Before introducing the new safeguard system in 2016 GIZ used to examine these aspects in separate checks.

\*\*\* Theory of change = GIZ results model = graphic illustration and narrative results hypotheses.

**Effectiveness**

	Assessment dimension	Evaluation questions (pilot phase, work in progress)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
<b>Effectiveness</b>	2.1 The project achieved the objective (outcome) on time in accordance with the project objective indicators.* max. 40 points	2.1.1 To what extent has the agreed project objective (outcome) been achieved (or will be achieved until end of project), measured against the objective indicators? Are additional indicators needed to reflect the project objective adequately?	The project estimates values of evaluation indicators calculated by the GIZ/REEEP office. The project assessment procedures estimate need for additional indicators	REEEP Progress Reports, Monitoring Report, BMZ Project Offer		Empirical design, Secondary data, Qualitative collection method	Medium
	2.2 The activities and outputs of the project contributed substantially to the project objective achievement (outcome).* max. 30 points	2.2.1 To what extent have the agreed project outputs been achieved, measured against the output indicators? Are additional indicators needed to reflect the outputs adequately?	The project achieves and reports of delivery of outputs	REEEP Progress Reports, Monitoring Report		Empirical design, Secondary data, Qualitative collection method	Medium
		2.2.2 How does project contribute via activities, instruments and outputs to the achievement project objective (outcome)? (contribution analysis approach)	Contribution analysis carried out and concluded to results	REEEP Progress Reports, Monitoring Report	Interviews with local partners, statistical and monitoring data from SGD	Contribution analysis, Empirical design, Secondary data, Qualitative collection method	Medium
		2.2.3 Implementation strategy: Which factors in the implementation contribute successfully to or hinder the achievement of the project objective? (e.g. external factors, managerial set-up of project and company, cooperation management)	The project assesses the level of contribution of REEEP implementation factors	REEEP Progress Reports, Monitoring Report, Intervention Reports	Interviews with local partners, the GIZ/ REEEP office	Contribution analysis, Empirical design, Secondary data, Qualitative collection method	Strong
		2.2.4 What would have happened without the project?	The project assesses the situation without the project outputs	REEEP Progress Reports, Monitoring Report, Intervention Reports		Empirical design, Secondary data, Qualitative collection method	Medium

	Assessment dimension	Evaluation questions (pilot phase, work in progress)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
		2.2.5 To what extent have risks (see also Safeguards & Gender) and assumptions of the ToC been addressed in the implementation and steering of the project?	The project reports consideration of risks and assumptions in decisions for interventions	REEEP Progress Reports, Monitoring Report, Intervention Reports		Empirical design, Secondary data, Qualitative collection method	Strong
	2.3 No project-related negative results have occurred – and if any negative results occurred the project responded adequately.  The occurrence of additional (not formally agreed) positive results has been monitored and additional opportunities for further positive results have been seized.  max. 30 points	2.3.1 Which negative or positive unintended results does the project produce at output and outcome level and why?	Project reference to unintended results	REEEP Progress Reports, Monitoring Report, Intervention Reports	Interviews with local partners, the GIZ/ REEEP office	Empirical design, Secondary data, Qualitative collection method	Medium
		2.3.2 How were risks regarding unintended negative results at the output and outcome level assessed in the monitoring system (e.g. compass)? Were risks already known during concept phase?	Monitoring system reference to assessment of unintended results at output level	Monitoring report		Empirical design, Secondary data, Qualitative collection method	Medium
		2.3.3 What measures have been taken by the project to counteract the risks and (if applicable) occurred negative results? In how far were these measures adequate?	Project reference to measures relaxing unintended results		Interviews with local partners, the GIZ/ REEEP office	Empirical design, Secondary data, Qualitative collection method	Medium
		2.3.4 To what extent were potential unintended positive results at outcome level monitored and exploited?	Monitoring system reference to assessment of unintended results at outcome level		Interviews with local partners, the GIZ/ REEEP office	Empirical design, Secondary data, Qualitative collection method	Strong

\* The first and the second evaluation dimensions are interrelated: if the contribution of the project to the objective achievement is low (2nd evaluation dimension) this must be considered for the assessment of the first evaluation dimension also.

**Impact**

	Assessment dimension	Evaluation questions (pilot phase, work in progress)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
	<b>IMPACT (max. 100 points)</b>						
Impact	3.1 The intended overarching development results have occurred or are foreseen. *  Max. 40 points	3.1.1 To which overarching development results is the project supposed to contribute (cf. module and programme proposal, if no individual measure; indicators, identifiers, link to national strategy for implementing 2030 Agenda, link to SDGs)? Which of these intended results at the level of overarching results can be observed or are plausible to be achieved?	The overarching development results as they have been identified by the project offer	Project offer, partner strategic documents, BMZ country strategy		Empirical design, secondary data, qualitative collection method	Strong
		3.1.2 Target group and 'leave-no-one-behind' (LNOB): Is there evidence of results achieved at target group level/specific groups of population? To what extent have targeted marginalised groups (such as women, children, young people, the elderly, people with disabilities, indigenous peoples, refugees, IDPs and migrants, people living with HIV/AIDS and the poorest of the poor) been reached?	The REEEP has been addressed to LNOB category of target groups, which share benefits from the REEEP overarching development results	Project offer, partner strategic documents, BMZ country strategy		Empirical design, secondary data, qualitative collection method	Strong
	3.2 The outcome of the project contributed to the occurred or foreseen overarching development results. *  Max. 30 points	3.2.1 To what extent is it plausible that the results of the project on outcome level (project objective) contributed or will contribute to the overarching results? (contribution analysis approach)	Contribution analysis carried out and concluded to results	REEEP result matrix, project progress reports, intervention reports	Interviews with GIZ/REEEP office and local partners, SDG monitoring data	Contribution analysis, empirical design, secondary data, qualitative collection method	Medium
		3.2.2 What are the alternative explanations/factors for the results observed? (e.g. the activities of other stakeholders, other policies)	The project assesses the level of contribution of alternative to REEEP implementation factors	REEEP result matrix, project progress reports, intervention reports	Interviews with GIZ/REEEP office and local partners	Contribution analysis, empirical design, secondary data, qualitative collection method	Medium
		3.2.3 What would have happened without the project?	The project assesses the evolution of overarching development results without REEEP	REEEP Result Matrix, Project Progress Reports, Intervention Reports	Interviews with GIZ/REEEP office and local partners	Contribution analysis, Empirical design, Secondary data, Qualitative collection method	Medium

	Assessment dimension	Evaluation questions (pilot phase, work in progress)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
		3.2.4 To what extent is the impact of the project positively or negatively influenced by framework conditions, other policy areas, strategies or interests (German ministries, bilateral and multilateral development partners)? What are the consequences of the project?	The project assesses the level of contribution of REEEP implementation conditions in impact	REEEP Result Matrix, Project Progress Reports, Intervention Reports	Interviews with GIZ/REEEP office and local partners	Empirical design, Secondary data, Qualitative collection method	Medium
		3.2.5 To what extent has the project made an active and systematic contribution to widespread impact? (4 dimensions: relevance, quality, quantity, sustainability; scaling-up approaches: vertical, horizontal, functional or combined)? If not, could there have been potential? Why was the potential not exploited?	Specific supportive actions of the REEEP to widespread impact	REEEP Result Matrix, project progress reports, intervention reports	Interviews with GIZ/REEEP office and local partners	Empirical design, Secondary data, Qualitative collection method	Medium
	3.3 No project-related negative results at impact level have occurred – and if any negative results occurred the project responded adequately.  The occurrence of additional (not formally agreed) positive results at impact level has been monitored and additional opportunities for further positive results have been seized.  Max. 30 points	3.3.1 Which positive or negative unintended results at impact level can be observed? Are there negative trade-offs between the ecological, economic and social dimensions (according to the three dimensions of sustainability in the Agenda 2030)? Were positive synergies between the three dimensions exploited?	Project reference to unintended results at impact level	Project progress reports, intervention reports	Interviews with GIZ/REEEP office and local partners	Empirical design, Secondary data, Qualitative collection method	Medium
		3.3.2 To what extent were risks of unintended results at the impact level assessed in the monitoring system (e.g. compass)? Were risks already known during the planning phase?	Monitoring system reference to assessment of unintended results at impact level	REEEP result matrix, project progress reports, intervention reports	Interviews with GIZ/REEEP office and local partners	Empirical design, Secondary data, Qualitative collection method	Medium
		3.3.3 What measures have been taken by the project to avoid and counteract the risks/negative results/trade-offs**?	Project reference to measures relaxing unintended results	Project progress reports, intervention reports	Interviews with GIZ/REEEP office and local partners	Empirical design, Secondary data, Qualitative collection method	Medium
		3.3.4 To what extent were potential unintended positive results and potential synergies between the ecological, economic and social dimensions monitored and exploited?	Monitoring system reference to assessment of unintended results at impact level	Project progress reports, intervention reports	Interviews with GIZ/REEEP office and local partners	Empirical design, Secondary data, Qualitative collection method	Medium

\* The first and the second evaluation dimensions are interrelated: if the contribution of the project outcome to the impact is low or not plausible (2nd evaluation dimension) this must be considered for the assessment of the first evaluation dimension also.

\*\* risks, negative results and trade-offs are separate aspects and are all to be discussed here.

**Efficiency**

	Assessment dimension	Evaluation questions	Evaluation indicators	Evaluation indicator achievement	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
Efficiency	<b>EFFICIENCY (max. 100 points)</b>		<b>0%, 25%, 50%, 75% 100%</b>					
	4.1 The project's use of resources is appropriate with regard to the outputs achieved.  [Production efficiency: Resources/outputs]  Max. 70 points	4.1.1 To what extent are there deviations between the identified costs and the projected costs? What are the reasons for the identified deviation(s)?	The project manages its resources according to the planned cost plan (cost lines). Only for comprehensible reasons deviations from the cost plan		Project Offer, Efficiency matrix, Annual Action Plan	Interview with GIZ? REEEP office, local partners		Low
		4.1.2 Focus: To what extent could the outputs have been maximised with the same amount of resources and under the same framework conditions and with the same or better quality (maximum principle)? (methodological minimum standard: Follow-the-money approach)	The project reflects whether the agreed effects can be achieved with existing resources		Project Offer, Efficiency matrix, Annual Action Plan	Interview with GIZ? REEEP office, local partners	Efficiency matrix based design, Secondary data, Qualitative collection method	Strong
			The project manages its resources according to the planned costs of the agreed services (outputs). Only with comprehensible justification deviations from the costs occur					
			The overall cost of the project is proportionate to the cost of the outputs					
		4.1.3 Focus: To what extent could outputs have been maximised by reallocating resources between the outputs? (methodological minimum standard: Follow-the-money approach)	The project steers its resources to achieve faster/better other outputs when outputs have been achieved or cannot be achieved (final evaluation)		Project Offer, Efficiency matrix, Annual Action Plan	Interview with GIZ? REEEP office, local partners	Efficiency matrix based design, Secondary data, Qualitative collection method	Strong
		4.1.4 Were the output/resource ratio and alternatives carefully considered during the design and implementation process – and if so, how? (methodological minimum standard: Follow-the-money approach)	The approach in the proposed concept proposal could be well realised in terms of estimated costs in relation to the projected outputs of the project		Project Offer, Efficiency matrix, Annual Action Plan	Interview with GIZ? REEEP office, local partners	Efficiency matrix based design, Secondary data, Qualitative collection method	Medium
			The thematic outputs proposed for the project in the proposed module were well implemented in terms of estimated costs in relation to the projected outputs of the project					

	Assessment dimension	Evaluation questions	Evaluation indicators	Evaluation indicator achievement	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
			<p>The risks described in the proposed concept are well traceable in terms of estimated costs in relation to the projected outputs of the project</p> <p>The scope of the project (for example, regions) described in the proposed concept could be fully realised in terms of estimated costs in relation to the projected outputs of the project</p>					
	<p>4.2 The project's use of resources is appropriate with regard to achieving the projects objective (outcome).</p> <p>[Allocation efficiency: Resources/Outcome]</p> <p>Max. 30 points</p>	<p>4.2.1 To what extent could the outcome have been maximised with the same amount of resources and the same or better quality (maximum principle)?</p> <p>4.2.2 Were the outcome/resources ratio and alternatives carefully considered during the conception and implementation process – and if so, how? Were any scaling-up options considered?</p>	<p>The project is oriented to internal or external benchmarks in order to achieve its effects cost-effectively</p> <p>The <b>project controls its resources</b> between the outputs so that the maximum effects in terms of the module objective are achieved</p> <p>The proposed <b>instrument</b> in the proposed module could be well realised with regard to the estimated costs in relation to the intended module objective of the project</p> <p>The <b>thematic layouts</b> for the project proposed in the module proposal were well implemented with regard to the estimated costs in relation to the intended module objective of the project</p> <p>The <b>scope of the project (for example, regions)</b> described in the module proposal could be fully realised in terms of estimated costs in relation to the intended module objective of the project</p> <p>The <b>approach</b> of the project described in the module proposal with regard to the module objective to be achieved corresponds to the state-of-the-art under the given framework conditions</p>		<p>Project Offer, Efficiency matrix, Annual Action Plan</p> <p>Project Offer, Efficiency matrix, Annual Action Plan</p>	<p>Interview with GIZ? REEEP office, local partners</p> <p>Interview with GIZ? REEEP office, local partners</p>	<p>Efficiency Matrix based design, Secondary data, Qualitative collection method</p> <p>Efficiency Matrix based design, Secondary data, Qualitative collection method</p>	<p>Medium</p> <p>Medium</p>

	Assessment dimension	Evaluation questions	Evaluation indicators	Evaluation indicator achievement	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
		4.2.3 To what extent were more results achieved through synergies and/or leverage of more resources, with the help of other bilateral and multilateral donors and organisations (e.g. Kofi)? If so, was the relationship between costs and results appropriate?	<p>The project is taking the necessary steps to fully realise synergies with intervention by other donors at the impact level</p> <p>Losses in efficiency due to insufficient coordination and complementarity with interventions by other donors are sufficiently avoided</p> <p>The project is taking the necessary steps to fully realise synergies within GIZ</p> <p>Economic losses due to insufficient coordination and complementarity within GIZ are sufficiently avoided</p> <p>The partner contributions are proportionate to the costs of the outputs of the project</p>		Project Offer, Efficiency matrix, Annual Action Plan	Interview with GIZ? REEEP office, local partners	Efficiency matrix based design, Secondary data, Qualitative collection method	Medium

## Sustainability

	Assessment dimension	Evaluation questions (pilot phase, work in progress)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
Sustainability	5.1 Prerequisite for ensuring the long-term success of the project: Results are anchored in (partner) structures  Max. 50 points	5.1.1 What has the project done to ensure that the results can be sustained in the medium to long term by the partners themselves?	List of REEEP actions ensuring sustainability of results	Technical reports of interventions, annual progress reports, project offer	Interviews with GIZ/REEEP office and local partners	Empirical design, Secondary data, Qualitative collection method	High
		5.1.2 In which way are advisory contents, approaches, methods or concepts of the project anchored/institutionalised in the (partner) system?	The REEEP has contributed to institutionalisation of project elements in the Bangladeshi system	Technical Reports of Interventions, Annual Progress Reports, project offer	Interviews with GIZ/REEEP office and local partners	Empirical design, Secondary data, Qualitative collection method	Medium
		5.1.3 To what extent are the results continuously used and/or further developed by the target group and/or implementing partners?	The REEEP results are used and further developed by the target groups and local partners	Technical reports of interventions, annual progress reports, project offer	Interviews with GIZ/ REEEP office and local partners and target groups	Empirical design, Secondary data, Qualitative collection method	Medium
		5.1.4 To what extent are resources and capacities at the individual, organisational or societal/political level in the partner country available (longer-term) to ensure the continuation of the results achieved?	Existence of proper resources in Bangladeshi institutions to ensure continuation	Technical Reports of Interventions, Annual Progress Reports, project offer	Interviews with GIZ/ REEEP office and local partners	Empirical design, Secondary data, Qualitative collection method	Medium
		5.1.5 What is the project's exit strategy? How are lessons learnt prepared and documented?	The REEEP exit strategy provisions	Exit Strategy report (if available)	Interview with GIZ/REEEP office	Empirical design, Secondary data, Qualitative collection method	High
	5.2 Forecast of durability: Results of the project are permanent, stable and long-term resilient.  Max. 50 points	5.2.1 To what extent are the results (outcome and impact) of the project durable, stable and resilient in the long-term under the given conditions?	Sustainability of the REEEP outcomes and impacts under current conditions	Technical Reports of Interventions, Annual Progress Reports	Interviews with GIZ/ REEEP office and local partners and target groups	Empirical design, Secondary data, Qualitative collection method	Medium

	Assessment dimension	Evaluation questions (pilot phase, work in progress)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
		5.2.2 What risks and potentials are emerging for the durability of the results (outcome and impact) and how likely are these factors to occur? What has the project done to reduce these risks?	The REEEP actions towards reducing risks related to durability of outcomes and impacts	Technical Reports of Interventions, Annual Progress Reports	Interviews with GIZ/REEEP office and local partners and target groups	Empirical design, Secondary data, Qualitative collection method	Medium

**Predecessor, other questions**

	Assessment dimension	Evaluation questions (pilot phase, only available in German so far)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
Predecessor and additional evaluation questions	6.1 Sustainability and impact of predecessor project	6.1.1 Overview of the effects of the project over time (predecessor)	The SED effects are identified at present	SREDA, MPEMR, GIZ/REEEP office reports and interviews	Statistics	Empirical design, Secondary data, Qualitative collection method	Medium
		6.1.2 a) What effects are still there, have been further developed on-site? b) Which effects have been integrated into the current phase?	The SED effects developed under the end of SED. The SED effects integrated to REEEP	SREDA, MPEMR, GIZ/REEEP office reports and interviews		Empirical design, Secondary data, Qualitative collection method	Medium
		6.1.3 Success / failure factors	Factors influencing SED effects evolution	SREDA, MPEMR, GIZ/REEEP office reports and interviews		Empirical design, Secondary data, Qualitative collection method	High
		6.1.4 How were results contributed to improvements in partner structure? (Sustainability)	Areas of partner infrastructure improvements due to SED results	SREDA, MPEMR, GIZ/REEEP interviews		Empirical design, Secondary data, Qualitative collection method	High

	Assessment dimension	Evaluation questions (pilot phase, only available in German so far)	Evaluation indicator	Available data sources	Additional data collection	Evaluation strategy (evaluation design, method, procedure)	Expected evidence strength (narrative)
	6.2 Follow-on project	6.2.1 How REEEP experience was considered in the design of REEEP 2	The REEEP 2 documents justify the REEEP experience considered	REEEP 2 Project Offer and supporting documents	Interviews with local partners and GIZ/ REEEP office	Empirical design, Secondary data, Qualitative collection method	High
		6.2.2 Are the interventions of REEEP 2 supporting the dissemination of the REEEP pilot technology developments?	List of REEEP 2 follow-on actions related to REEEP interventions	REEEP 2 project offer and supporting documents	Interviews with local partners and GIZ/ REEEP office	Empirical design, Secondary data, Qualitative collection method	High
		6.2.3 What changes in the roles of partners in REEEP 2 affecting sustainability and impact?	The REEEP 2 introduces changes in the roles of local partners affecting impact and sustainability	REEEP 2 project offer and supporting documents	Interviews with local partners and GIZ/REEEP office	Empirical design, Secondary data, Qualitative collection method	High
	6.3 Additional Questions						

## **Annex 2: List of resources**

### **Annual project progress reports**

GIZ/REEEP office. Final report on a TC module. April 2019.

GIZ/REEEP office. Progress report on a TC module. 2018.

GIZ/REEEP office. Progress report on a TZ measure – No 7. 2013-2014.

GIZ/REEEP office. Progress report on a TZ measure – No 8. 2014-2015.

GIZ/REEEP office. Progress report on a TZ measure – No 9. 2015-2016.

GIZ/REEEP office. Progress report on a TC module – No 10. 2017.

### **BMZ country strategy**

GIZ/REEEP office – KfW. Reporting on the Renewable Energy and Energy Efficiency Programme in Bangladesh. February 2018 – February 2019.

German Ministry for Economic Cooperation and Development. Country strategy on bilateral development cooperation with Bangladesh. July 2016

BMZ Country Strategy Presentation, Energy Sector. November 2017.

KfW – Program Proposal, Part A, Renewable Energy and Energy Efficiency, Bangladesh. January 2017.

KfW – GIZ/REEEP office. Target country strategy for the sector-log matrix.

KfW – KfW Organization's Guide, GIZ. January 2019.

### **Capacity development strategy**

Bangladesh Planning Commission, Government of the People's Republic of Bangladesh. 7th Five-year Plan FY2016-FY2020, Accelerating Growth, Empowering Citizens. December 2015.

GIZ/REEEP office. Capacity and Organisational Development (COD), Scheme of result chain.

GIZ/REEEP office. Scheme of SED strategy.

### **Framework context**

GIZ/REEEP office. PPR Report. February 2013.

GIZ/REEEP office. Agreed Minutes, Results of the Project Progress Review Mission. November 2012.

German Technical Cooperation (GTZ). Promotion of the Use of Renewable Energies (PURE).

### **Documents of partner strategy**

General Economics Division Planning Commission, Government of the People's Republic of Bangladesh. Perspective Plan of Bangladesh 2010-2021. April 2012.

General Economics Division, Government of the People's Republic of Bangladesh A Handbook Mapping of Ministries by Targets in the implementation of SDGs aligning with 7th Five-Year Plan (2016-20). September 2016.

Ministry of Planning, Government of the People's Republic of Bangladesh. National Sustainable Development Strategy (NSDS). May 2013.

Ministry of Finance, Government of the People's Republic of Bangladesh. Joint Cooperation Strategy, June 2010.

MUNPlanet Brand Advocate & Potterhead. SDG in Bangladesh.

Statistics & Informatics Division Government of the People's Republic of Bangladesh. Data and Statistics for Monitoring Development Plans in Bangladesh.

The World Bank. Bangladesh development Update. April 2016.

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The World Bank. Bangladesh development Update. April 2016.

United News of Bangladesh. 'Bangladesh on track to achieve SDGs', says govt. report. February 2019.

### **Evaluation reports**

GIZ/REEEP office. EE Component Outputs Template. October 2018.

GIZ/REEEP office. Outputs Template, GFA-RE. September 2018.

GIZ/REEEP office. Annex 1 Results matrix of module. December 2015.

GIZ/REEEP office. Monitoring and Evaluation Framework 2017.

GIZ/REEEP office. Methodology of calculation of the REEEP compliance to outcome indicators.

### **Gender analysis**

GIZ/REEEP office. Gender Action Plan for the Sustainable Energy for Development (SED) Program of GIZ Bangladesh. 2012.

GIZ/REEEP office. Study Report on Gender Analysis and Gender Action Plan of the Sustainable Energy for Development (SED) Program of GIZ Bangladesh. June 2016.

GIZ/REEEP office. Booklet of Positive Energy: Portraits of Change.

GIZ/REEEP office. Gender Action Plan of the SED/EnDev Programme of GIZ Bangladesh. June 2016.

GIZ/REEEP office. Gender Poster.

GIZ/REEEP office. Assessing the implementation of gender equality at GIZ. 2018.

GIZ/REEEP office. GIZ Gender Strategy. 2019.

UNEG United Nations Evaluation Group. Integrating Human Rights and Gender Equality in Evaluations. August 2014.

### **Peace and conflict matrix**

GIZ/REEEP office. Context analysis / PCA result matrix for the change proposal of the project 'Renewable Energy

and Energy Efficiency', Bangladesh.

### Plan of operations

GIZ/REEEP office. Documents of COD Operational Plans. 2015, 2016, 2017 (3 docs).

GIZ/REEEP office. Documents of EE Operational Plans. 2018, 2017, 2016, 2015 (4 docs).

GIZ/REEEP office. Documents of RE Operational Plans. 2018, 2017, 2016, 2015 (4 docs).

### Programme offer

GIZ/REEEP office. Program proposal, Part B, Renewable energy and energy efficiency In Bangladesh, PN: 2012.2097.9. 2013.

GIZ/REEEP office. Program Proposal, Part B, Renewable Energy and Energy Efficiency in Bangladesh, PN: 2012.2097.9, Offer Modification. 2015.

### REEEP 2

GIZ/REEEP office. Appendix 1: Effect matrix of the module REEEP II. August 2018.

GIZ/REEEP office. High Level Stakeholder Workshop, Project Appraisal Mission Results REEEP II. March 2018.

GIZ/REEEP office. Module proposal REEEP II.

### REEEP reports

#### ***Documents of Component-A (482 files)***

Documents of Commercial Biogas

Documents of Rooftop Solar

Documents of Slaughterhouse based Biogas

Documents of Solar Aquaculture

Documents of Solar Milk Chiller

Documents of Solar Pipe Light

Documents of Solar Powered Drinking Water Systems

Documents of Solar Water Heater

Documents of Urban Solar Pump

Documents of Waste-to-Energy

#### ***Documents of Component-B (72files)***

Documents of Biomass Briquettes

Documents of Efficiency Improvement of Irrigation Pumps in Barendra Region

Documents of Efficiency Improvement of Three Wheelers

Documents of Energy Efficiency in Composite Textile Industries

Documents of Energy Efficiency in Steel Industries

Documents of Improved Rice Parboiling System

Documents of Master Scheduler-an EE Device

Documents of Retained Heat Cooker

Documents of Waste Heat Recovery

***Documents of Component-C (64 files)***

Documents of Donor Coordination

Documents of Energy Audit Regulation

Documents of Energy Standard Labelling Regulation

Documents of SREDA Action Plan & Acquisition Strategy

Documents of Training Reports

Documents of Workshops, Minutes, Reports

***Documents of Evaluation-Final Event (3 files)***

***Documents of Evaluation-Gender and REEEP (5 files)***

***Documents of Gender (9 files)***

***Documents of M&E (182 files)***

***REEEP General Documents (9 files)***

***Documents of SDG (28 files)***

GIZ/REEEP office. Presentation of M&E and Knowledge Management.

GIZ/REEEP office. Outlining a few achievements of GIZ Technical Cooperation in Bangladesh's Energy Sector. 2019.

GIZ/REEEP office. REEEP II Media Coverage. December 2018.

GIZ/REEEP office. Report of costs until January 2019.

GIZ/REEEP office. Renewable Energy and Energy Efficiency Programme (REEEP) Organogram.

**Results model**

GIZ/REEEP office. Renewable Energy and Energy Efficiency Log matrix (Part B of PV). February 2015.

GIZ/REEEP office. Comparison of Logical Framework of REEEP.

GIZ/REEEP office. Renewable Energy and Energy Efficiency Log matrix (Part B of PV). March 2013.

**Sectoral documents**

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Center for Renewable Energy Services Ltd. (CRESL) – Centre for Energy Research. Net Metering Guidelines –

2018. November 2018.

Ministry of Law, Justice and Parliamentary Affairs, Government of the People's Republic of Bangladesh. The Sustainable and Renewable Energy Development Authority Act, 2012. December 2012.

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