Corporate Unit Evaluation Central Project Evaluation

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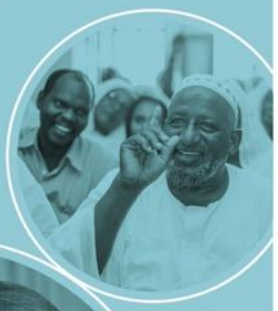

Central Project Evaluation

Supporting Institutional Structures to promote Renewable Energy and Energy Efficiency in the Caribbean Region, PN 2010.2262.3

Evaluation Report

On behalf of GIZ by Josef Seitz and Joseph Khan

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The Evaluation Unit commissioned external independent evaluators to conduct the evaluation. The evaluation report was written by these external evaluators. All opinions and assessments expressed in the report are those of the authors.

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Abbreviations and acronyms

BEEP	Building Energy Efficiency Project
BLP	Barbados Light and Power Utility
BMZ	German Federal Ministry for Economic Cooperation and Development
BREA	Barbados Renewable Energy Association
CARICOM	Caribbean Community
CAPE	Caribbean Advanced Proficiency Examination
CARILEC	Caribbean Electric Utility Services Corporation
CARPHA	Caribbean Public Health Agency
CCCCC	Caribbean Community Climate Change Centre
CCREEE	Caribbean Center of Renewable Energy and Energy Efficiency
CCS	Caribbean Community Secretariat
CDB	Caribbean Development Bank
CDF	Caribbean Development Fund
COTED	Council for Trade and Economic Development
CRAF	Credit Risk Abatement Facility
CROSQ	Caribbean Regional Organisation for Standards and Quality
C-SERMS	Caribbean Sustainable Energy Roadmap and Strategy
CXC	Caribbean Examination Council
DAC	Development Assistance Committee
ECLAC	UN Economic Commission for Latin America and the Caribbean's
EDF	European Development Fund
EE	Energy Efficiency
FOBE	Faculty of the Built Environment

GDP	Gross Domestic Product
GDPR	General Data Protection Regulation (EU)
GEA	Guyana Energy Agency
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
IUS	Integrated Utility Service
JICA	Japan International Cooperation Agency
JPS	Jamaican Public Service Company
MS	Monitoring System
MSc	Master of Science degree
OECD	Organisation for Economic Co-operation and Development
OECS	Organisation of Eastern Caribbean States
OOCUR	Organisation of Caribbean Utility Regulators
PPP	Public Private Partnership
PV	Photovoltaic
RE	Renewable Energy
REETA	Supporting Institutional Structures to Promote Renewable Energy and Energy Efficiency in the Caribbean Region
SDG	Sustainable Development Goal
SEEC	Sustainable Energy in the Eastern Caribbean (CDB programme)
SMART	Specific, Measurable, Achievable, Relevant, Time-bound
STEM	Scientific, Technological, Engineering and Mathematical
TAG	Technical Advisory Group
TAPSEC	Technical Assistance Programme for Sustainable Energy in the Caribbean
ToC	Theory of Change
UNDP	United Nations Development Programme
UTech	University of Technology
UWI	University of the West Indies

The Project at Glance

Caribbean Region: Supporting Institutional Structures to Promote Renewable Energy and Energy Efficiency in the Caribbean Region

Project number	2010.2262.3
CRS-Code(s) (Creditor Reporting System Code)	23110 – Energy policy and administrative management
Project objective	Regional and national stakeholders in the field of renewable energy and energy efficiency are prepared for the political, organisational and technical requirements of a growing energy market in the Caribbean region
Project term	01.07.2013 – 31.12.2018
Project volume	EUR 8,020,000
Commissioning party	Federal Ministry for Economic Cooperation and Development (BMZ)
Lead executing agency	Caribbean Community (CARICOM) Secretariat (CCS)
Implementing organisations (in the partner country)	Caribbean Development Bank (CDB) Caribbean Electric Utility Services Corporation (CARILEC) Caribbean Community Climate Change Centre (CCCCC) University of the West Indies (UWI) Caribbean Regional Organisation for Standards and Quality (CROSQ)
Other development organisations involved	n.a.
Target group(s)	Households, industry and commerce in the CARICOM region and the Dominican Republic, which benefit as energy consumers from a secure, price-stable and environmentally friendly power supply

Summary

Short description of the project

The project ‘Supporting Institutional Structures to Promote Renewable Energy and Energy Efficiency in the Caribbean Region (REETA)’ was a joint regional project between the Federal Republic of Germany and the Caribbean Community (CARICOM). It was funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and carried out by CARICOM in cooperation with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Its objective was to ensure that regional and national stakeholders in the field of renewable energy (RE) and energy efficiency (EE) are prepared for the political, organisational and technical requirements of a growing energy market in the Caribbean region. The project was active in the CARICOM region (Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago) and the Dominican Republic. The project’s target groups were staff of regional and national-level institutions as well as professionals and executives from national banks, energy companies, universities and vocational training institutions, and private suppliers of RE and RE products and services. Specifically, at least 20 partner organisations and associated personnel were key target groups of the project. The project focused on five outputs, namely: (1) Implementation of the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS); (2) Concepts for training and education programmes in the field of renewable energy and energy efficiency; (3) Improvement of capacities of suppliers of products and services in the field of renewable energy and energy efficiency; (4) Implementation of model projects in the field of renewable energy and energy efficiency; (5) Improvement of capacities of financial institutions in the field of renewable energy and energy efficiency. The project ended on 31 December 2018.

Evaluation design

The project was assessed on the basis of standardised evaluation criteria and questions based on the five evaluation criteria agreed by the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD), namely: relevance, efficiency, effectiveness, impact and sustainability. In addition, the contributions to Agenda 2030 and its principles (universality, integrative approach, Leave No One Behind (LNOB), multi-stakeholder partnerships) were also taken into account as well as cross-cutting issues such as gender, the environment, conflict sensitivity and human rights.

Assessment according to OECD/DAC criteria

Relevance

The two most relevant strategy documents identified for the REETA project are the CARICOM Regional Energy Policy (2013) and the CARICOM Strategic Plan for the Caribbean Community 2015-2019. Regarding the Energy Policy, the concept of the REETA project took up several of its objectives and was entirely in line with its vision and objectives, in particular by promoting renewable energy and energy efficiency and by focusing on capacity development of regional and national stakeholders. Moreover, the REETA project developed the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS) and by this made a significant contribution to fill a very relevant strategic gap of the energy sector in the region. Regarding the CARICOM Strategic Plan for the Caribbean Community 2015-2019, the concept of the REETA project was entirely in line with the regional development plan’s strategic objectives. Regarding the most relevant interactions of the project, climate change was identified as the most relevant sector, in particular mitigation of greenhouse gases. It was found that there is no regional approach on climate change in the CARICOM region and that the development and implementation of nationally determined contributions (NDC) is taking place at member states level only.

The REETA project has nevertheless included climate change mitigation aspects in its intervention concept. Moreover, the economic dimension of sustainable development was integrated as part of the project design and implementation and was directly addressed in three outputs (private sector, model projects and financial institutions). Additionally, the concept of the REETA project was entirely in line with the current BMZ strategies in the energy sector, climate sector and the region, in particular, the concept for development cooperation with Latin-American and Caribbean countries (Paper N° 161), the BMZ document on Sustainable Energy for Development (2014) and the BMZ climate policy.

The project mainly focused on Sustainable Development Goal (SDG) 7, but also considered SDG 8, SDG 9 and SDG 13. The project is considered being consistent with international standards and agreements, particularly the SDGs. Also, the REETA project took into account the Agenda 2030 principles by 'contributing to ensure security of energy supply and to stabilise energy prices, which is of particular relevance for poor households which are constrained to disburse a relevant share of their income for energy supply'. Moreover, the REETA project has set up model projects in disadvantaged areas (e.g. Hosororo hydropower plant in the hinterland area of Guyana) with direct positive benefit for poor people.

The project objective, the theory of change (ToC) and the corresponding results hypotheses were considered complete, adequate and realistic as it addressed lacking capacities at various levels (political, technical, organisational, economic) as core problems. As a regional project that included regional organisations with 15 CARICOM partner countries and the Dominican Republic, the system boundary of the REETA project was very complex and somewhat dynamic. The project addressed this challenge successfully through flexibility in implementing its activities and through a balanced set-up of instruments. Relevant strategic changes (e.g. the need identified to involve financial institutions) were appropriately addressed through modification proposals.

Effectiveness

The evaluation revealed that the project objective (outcome) and outcome indicators were relevant given the regional needs and demands for RE and EE. The five indicators defined in the project measure the regional and national stakeholders' increase in capacities at the levels of strategy, capacity building, private sector, financial sector and model projects. They are considered to be sufficient to measure the achievement of the project objective, except indicator 4, which has been adapted. The project achieved all indicators except indicator 4, which was not completely achieved.

A six-step contribution analysis was applied to two selected result hypotheses of the ToC (Hypothesis 1 for Output A and Hypothesis 2 for Output D). The analysis showed that Output A has made significant contributions to the national stakeholders' preparedness in the field of RE and EE for the political, organisational and technical requirements of a growing energy market in the Caribbean region. This has resulted in the achievement of the module objective, measured by the reality that national stakeholders have started using and implementing activities of C-SERMS (outcome indicator I1). Hypothesis 1 has therefore been fully confirmed. Output D has contributed by the implementation of relevant regional model projects with different RE & EE technologies.

Hypothesis 2 has also been fully confirmed. The project undertook and completed the planned activities in each of its components and nearly achieved the intended outputs. The project was also able to contribute to ensuring that regional/national companies that have participated in the project's capacity development activities can offer new technologies, consulting or financial services in the field of RE or EE (outcome indicator I3). Furthermore, the capacity of regional institutions to design and deliver RE and EE-related training programmes was developed through the project's support to conduct training workshops on curriculum development and exposure to emerging RE and EE issues and opportunities. Two of three model projects with different RE and EE technologies that have regional relevance were implemented in the region (outcome indicator I4). Also, the capacities of the Caribbean Development Bank (CDB), Caribbean Development Fund (CDF) and affiliated

financial institutions (national development banks, commercial banks) were improved to implement financial services for RE and EE. In conclusion, the activities and outputs of the project have contributed substantially to the achievement of the project objective (outcome), Furthermore, without the project, the regional RE and EE agenda would have been implemented at a slower rate, causing development opportunities to be lost.

Project risks and assumptions were appropriately identified during project design and revalidated and identified in an ad hoc manner during project implementation. While there was no formal nor institutionalised risk management approach, when risks were identified, appropriate risk response strategies were identified and subsequently implemented. However, there has not been a formal or deliberate mechanism to identify potential unintended results at the outcome level, and unintended positive results at the outcome level were not fully and formally monitored nor exploited by the project team.

Impact

The political, regulatory and institutional framework for investment in RE and EE in the Caribbean have considerably improved. The adoption of the C-SERMS (political level) and of the CARICOM Regional Energy Efficiency Building Code (regulatory level) are good examples of this. Moreover, national and regional institutions have improved their capacities in the RE/EE field and are now better prepared for new and innovative topics, such as e-mobility. However, several impacts in the RE/EE field strongly depend on the availability of financial resources for RE and EE technologies. During the evaluation, partner organisations confirmed that investments in RE/EE have increased in the last 5 years. Moreover, some CARICOM member countries have adopted low carbon strategies (e.g. Guyana) or even a very ambitious ‘zero carbon strategy’ (e.g. Barbados). Assuming that investments in RE/EE will continue to increase, it is plausible that environmental sustainability of energy supply increases and emissions of greenhouse gases decrease. Furthermore, it is likely that access to clean energy improves. According to a number of stakeholders of the REETA project, it is plausible that these impacts could be achieved by midterm. However, investments in RE/EE technologies require significant financial resources or structuring. It is therefore not clearly predictable/plausible that the cost of energy services for productive and consumptive purposes decreases. Some impacts predicted are based on very long hypotheses and effects will be seen only several years after investment and real implementation of RE/EE projects. These impacts comprise the increase in assured energy supply, improvement of environmental conditions, reduction of air pollution, improvement of economic conditions and reduction of poverty. According to various stakeholders interviewed during the evaluation, these impacts are not yet taking place.

The contribution analysis showed that the REETA project had significant impact on the improvement of the region’s institutional framework. However, at the educational level, its impact was good but less than expected. It showed, moreover, that the triggering of new investments in RE/EE technologies depend on the availability of additional financial resources without which the reproducibility and therefore the impact of the model projects remains limited. The impact of the model projects was good but less than expected. It also resulted in the project actively striving for more widespread results and experiences, which other stakeholders and/or countries have obtained, by organising workshops and thematic events. However, there was no clear upscaling strategy to ensure a sustainable use of the project results. No further positive or negative unintended results at impact level were observed. Potential synergies between the ecological, economic and social dimensions were already considered during the planning phase of the project, but the monitoring system did not take up these potential synergies, e.g. on health, employment opportunities or greenhouse gas emissions.

Efficiency

The project managed its resources according to the planned cost plan (cost lines) and no deviations from initially planned costs were stated. Moreover, stakeholders interviewed particularly appreciated the flexibility of resources use during implementation. Additionally, the analysis showed that there were nearly equal costs for Output A (regional strategy), Output C (private sector) and Output E (financial institutions). Output D (model projects) incurred the highest costs – for procurement of materials for the model projects. However, the costs for Output B (capacity building), addressed towards universities and training institutions, were higher than expected. Considering the lower impact of the results obtained in Output B, it is concluded that there was a potential to maximise the efficiency of the project by focusing less at university level.

The overarching costs of about 10% of the budget are lower than expected in a project with such a complex partner system and cultural and geographical diversity. Furthermore, the budget for implementing activities was completely spent several months prior to project completion date, largely because of additional activities beyond the scope of the project. This indicates that there was potential for maximisation of project resources by reducing project staff and increasing the operational budget. Although all output indicators were 100% achieved with the resources available, some inefficiencies were stated; for instance the financing of a feasibility study for a private company was never used. Finally, it was concluded that the project succeeded in covering activities in 16 countries in spite of the resulting higher overarching costs. Moreover, it was found that the project successfully managed to cover all three intervention areas (macro, meso, micro) and to cooperate with a very complex partner structure composed of regional and national institutions as well as private sector, universities and finance institutions. At outcome level, all indicators were also nearly 100% achieved with the resources available. Resources were adequately directed to the different outputs. Nevertheless, more effort should have been taken to ensure sustainability of the results. The project also successfully managed to leverage funds for additional projects.

Sustainability

The REETA project has strong synergies with the emerging Technical Assistance Programme for Sustainable Energy in the Caribbean (TAPSEC), funded by Germany and the EU. While TAPSEC can create a level of continuity, it also shows the reliance of partner organisations on funding from international development agencies to further accelerate RE and EE-related projects. It indicates that regional institutions are challenged in anchoring project results within their operating structures. Additionally, the REETA project could facilitate the development of capacities, strengthen management systems and develop stronger working relationships and networks in organisations such as the Caribbean Community Secretariat (CCS), Caribbean Regional Organisation for Standards and Quality (CROSQ), Caribbean Examination Council (CXC), University of Technology (UTech), University of the West Indies (UWI), Organisation of Eastern Caribbean States (OECS), Barbados Light and Power Utility (BLP), Guyana Energy Agency (GEA), CDB, CDF and Caribbean Center of Renewable Energy and Energy Efficiency (CCREEE). These organisations have institutionalised various RE and EE products and services. Institutions such as CDF and CDB have committed themselves to providing funding opportunities for organisations to undertake innovative RE and EE projects in the region. However, while capacities presently exist, human resources are insufficient and the issue of succession planning must be addressed to ensure project continuity and mitigate the risk of capacity losses within institutions. The forecast of the durability of results is quite heterogenous. Some results will certainly be durable (e.g. the use of C-SERMS) while others may have difficulties regarding replication and utility (e.g. model projects).

Overall rating

In summary, the REETA project was of high relevance and successful regarding its effectiveness. It was also successful in creating impact and in terms of efficiency. Regarding the sustainability of its outcome and

impacts, some weaknesses were identified, but it is still rather successful. Therefore, the project is rated successful (84 out of 100 points).

Criterion	Score	Rating
Relevance	96 of 100 points	Level 1 = very successful
Effectiveness	90 of 100 points	Level 2 = successful
Impact	83 of 100 points	Level 2 = successful
Efficiency	84 of 100 points	Level 2 = successful
Sustainability	68 of 100 points	Level 3 = rather successful
Overall score and rating for all criteria	84 of 100 points	Level 2 = successful

100-point-scale	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

Recommendations

- There is still a need in the CARICOM region to strengthen regulatory mechanisms and policy-making in the field of RE and EE to improve the enabling environment for economically sustainable investments in RE and EE technologies and services.
- The involvement of many diverse stakeholder groups, including regional organisations, national ministries, private sector companies, universities and financial institutions, was a conceptual strength of the REETA project but resulted in a very large partner system, which was a challenge for the project management.
- The regional approach allowed for issues relating to RE and EE to be addressed in 15 countries. Because these are relatively small concerns, they would probably not have had access to bilateral funding. Furthermore, the regional approach allowed for solutions to be developed for challenges that are almost identical across the countries. However, this approach also led to a 'dilution' of funds available for individual countries.
- Since knowledge is recognised as a key asset on projects, and there is a need to continue to transfer knowledge and build capacities in innovative ways, the Community of Practice (CoP) should be strengthened, e.g. through the Caribbean Energy Knowledge Hub in CCREEE.
- Technical and management staff of the various partner institutions should be given the opportunity to continue attending and possibly make presentations at regional and international conferences on RE and EE technologies.
- The project unit and the CCS Energy programme should consider the establishment of a formal local content policy. This policy should be developed and used for the acquisition of local consultants, service providers and technical/administrative support for RE/EE projects being implemented within rural communities.

1 Evaluation objectives and questions

1.1 Objectives of the evaluation

The project 'Supporting Institutional Structures to Promote Renewable Energy and Energy Efficiency in the Caribbean Region (REETA)' was a joint regional project between the Federal Republic of Germany and the Caribbean Community (CARICOM). It was funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and carried out by CARICOM in cooperation with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. The objective of the REETA project was to improve the institutional and the energy policy environment for the promotion of renewable energy (RE) and energy efficiency (EE) in the Caribbean. The project ended on 31 December 2018 and was selected by a random sample to be the subject of a final evaluation within the GIZ central project evaluations.

The main objective of the evaluation was to assess the success of the project according to the five evaluation criteria agreed by the Organisation for Economic Co-operation and Development / Development Assistance Committee (OECD/DAC). Moreover, the evaluation also examined the quality of the project's implementation. The basis for assessing quality was provided, in particular, by the success factors of the GIZ Capacity WORKS management model. By this, the evaluation aimed at three objectives: (1) support evidence-based decision-making, (2) promote transparency and accountability, and (3) facilitate organisational learning by contributing to effective knowledge management.

The main stakeholders of the evaluation were the project staff and its partner organisations, in particular the Caribbean Community (CARICOM) Secretariat (CCS) and its Energy Unit, but also other regional and national institutions. Moreover, private sector representatives as well as the GIZ country office and the GIZ Evaluation Unit were stakeholders of the evaluation. Although there is no follow-up phase to the project, the evaluation aimed at providing useful information for those stakeholders responsible for the planning and design of future projects relating to renewable energy and energy efficiency in the region.

The evaluation feasibility was mainly influenced by the complexity of the project which is characterised by more than 20 partner organisations and 16 partner countries using 4 different languages and more than 8 currencies. These challenges were addressed by selecting a representative sample of partner institutions and partner countries and by setting-up a multi-lingual evaluation team.

1.2 Evaluation questions

The project was assessed on the basis of standardised evaluation criteria and questions to ensure comparability by GIZ. This was 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. Aspects regarding coherence, complementarity and coordination were included in the other criteria. Specific evaluation dimensions and analytical questions were derived from this given framework by the GIZ. These evaluation dimensions and analytical questions are 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, LNOB, multi-stakeholder partnerships) were also taken into account as well as cross-cutting issues such as gender, the environment, conflict sensitivity and human rights. Also, aspects regarding the quality of implementation were included in all OECD/DAC criteria.

2 Object of the evaluation

2.1 Definition of the evaluation object

The object of the evaluation is the technical cooperation measure ‘Supporting Institutional Structures to Promote Renewable Energy and Energy Efficiency in the Caribbean Region (REETA)’, now referred to as ‘the project’.

Temporal and financial delineation

The project (PN 2010.2262.3) commenced in July 2013 and was completed in December 2018. During project implementation, two modifications to the conceptual design and budget were undertaken. In this regard, in April 2014, the original budget of EUR 4,500,000 was increased by EUR 520,000 to involve integrated experts in the project design. In 2015, an additional EUR 3 million was allocated to the project as a means to enhance the project activities to the finance sector, resulting in a final overall budget of EUR 8,020,000, all funded by BMZ without co-financing partners. The evaluation of the project examined its overall duration and total budget. (Ref_3).

Geographical delimitation

The project was active in the CARICOM region (Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago) and the Dominican Republic. The evaluation focused on all project regions. However, for logistical reasons and budget constraints, the field mission was concentrated on a selection of countries where the most relevant partner institutions are located. These countries included Guyana, Barbados, Saint Lucia and Jamaica.

Political and sectoral context and the framework conditions

The Caribbean countries who were represented in the project generally are heavily dependent on fossil fuels for energy production. At the beginning of the project, more than 90% of commercial energy consumption in the region was based on mineral oil products. In most countries, this led to a high debt ratio through mineral oil imports and comparatively high electricity-generation costs. In recent years, various programmes were implemented to promote sustainable energy systems in the region. Through these programmes progress has been made, in particular regarding the development of the political framework. Currently, most CARICOM member countries have developed national energy policies aiming to increase the share of renewable energies in the energy mix and to improve energy efficiency. However, regional and national players in renewable energy and energy efficiency have significant capacity gaps to meet the political, organisational and technical needs of a growing market. It is within this context that the project’s goal was to ensure that regional and national actors in the field of renewable energy and energy efficiency are able to meet the increasingly political, organisational and technical requirements of a growing market in the Caribbean.

(Ref_3).

Cross-cutting issues

The evaluation examined how essential cross-cutting issues such as gender, environment, conflict sensitivity and human rights were addressed during project design and implementation. As described in section 4.2, it resulted that the cross-cutting themes of gender, conflict sensitivity and human rights were not relevant for the

project, so the evaluation has not focused on them. In accordance with the project's Rio- and BMZ-marker, the evaluation also assessed the project contribution to participatory development and good governance, protection of the environment and natural resources, and mitigation of greenhouse gases.

Levels of intervention

The project supported the improvement of the regional political framework for renewable energy and energy efficiency at the macro level and strengthened the CCS Energy Unit with regard to its coordinating role. At the meso level, the technical and institutional capacities of regional institutions such as the Caribbean Community Secretariat (CCS), Caribbean Development Bank (CDB), Caribbean Development Fund (CDF), Caribbean Regional Organisation for Standards and Quality (CROSQ) and of national institutions such as the Guyana Energy Agency (GEA) were further strengthened and their networking promoted. In addition, the extension of training and education opportunities in the field of renewable energy and energy efficiency at universities and technical schools such as the University of Technology (UTech) and the University of the West Indies (UWI) were supported. At the micro level, model projects with high regional visibility and replicability, such as the Building Energy Efficiency Programme, were promoted and documented for further dissemination.

Position and role within the stakeholder structure

The project was embedded in the partner structure at the CARICOM Secretariat in Georgetown/Guyana. In order to achieve the project objectives, cooperation was established with a number of institutions at regional and national level, including CDB, CDF, GEA, CROSQ, the Organisation of Eastern Caribbean States (OECS) and Caribbean Electric Utility Services Corporation (CARILEC). Cooperation was also achieved with the private sector. Moreover, the project engaged in cooperation with a number of international development partners, specifically EU Delegation in Barbados, United Nations Development Programme (UNDP), UN Economic Commission for Latin America and the Caribbean, United States Agency for International Development (USAID), Japan International Cooperation Agency (JICA) and the Organization of American States and Inter-American Development Bank.

Target group of the project

The target groups of the project were staff of regional and national-level institutions as well as professionals and executives from national banks, energy companies, universities and vocational training institutions, and private suppliers of RE and RE products and services. Specifically, at least 20 partner organisations and associated personnel were key target groups of the project. The project's partner organisations were selected based on various criteria: representativity regarding RE and EE at regional or national level, competences for sectoral topics (education, standardisation, climate change), representativity for specific stakeholder groups (private sector, finance sector) or competences at implementation level (e.g. utilities). The partner organisations and associated personnel were as follows:

- The CARICOM Secretariat, Guyana
- 15 CARICOM member states and the Dominican Republic (ministries responsible for energy-related matters, national energy focal points and their respective agencies)
- CARICOM institutions such as CROSQ, CDB, CDF, Caribbean Community Climate Change Centre (CCCCC), Caribbean Examination Council (CXC) and Caribbean Public Health Agency (CARPHA)
- Other key regional institutions such as OECS, UWI, CARILEC and the Organisation of Caribbean Utility Regulators (OOCUR).

Additionally, the project's target groups include technology providers, national electricity utilities, national energy/electricity regulators, renewable energy associations, women's associations, green building councils, commercial banks, consultants and community organisations. The target groups received support at the policy, strategy and operational/technical levels through institutional capacity building; human capital development;

policy advice; knowledge exchange; public and private sector investment strategies; networking opportunities; and guidance on international best practice.

The project's final target group included 17 million citizens and industry and commerce in the CARICOM region and the Dominican Republic. Although the REETA project aims at improving the final target group's living conditions at the impact level, these long-term effects were not yet expected to be visible and, moreover, very difficult to verify. The evaluation has therefore not assessed the results and impact on the level of the final target group.

(Ref_2, Ref_3, Int_2 with GIZ, Int_6 with partner organisation)

2.2 Results model including hypotheses

The REETA project's development intention was to improve the institutional and the energy policy environment for the promotion of renewable energy and energy efficiency in the Caribbean. Its objective was to ensure that 'Regional and national stakeholders in the field of renewable energy and energy efficiency are prepared for the political, organisational and technical requirements of a growing energy market in the Caribbean region.' Upon close examination, the evaluation noted that the project is strategically aligned to the UNDP's SDG 7, which is that of ensuring affordable and clean energy. The project also intended to prepare stakeholders to address the present and emerging local, regional and global trends, needs, issues and technologies relating to renewable energy and energy efficiency.

The REETA project commenced in 2013, initially comprising four outputs and associated outcome indicators. These outputs were namely, Regional Strategy; Capacity Building; Private sector; and Model projects. However, in 2015, a change in the REETA project was agreed to in response to an opportunity of supporting the financing of EE and RE investments and building capacity in regional development banks, such as the Caribbean Development Bank (CDB), and other finance institutions. The change in the project design provided additional funding to implement activities within a fifth output, namely Financing institutions. The evaluation has recognised accordingly that the theory of change (ToC) is key for the expected theory-based evaluation approach used and it was essential that all five OECD/DAC criteria were assessed. In this regard, the subsequent statements provide a description of the ToC and include the central hypotheses from activities to intended outputs and outcome(s) up to intended impacts. The ToC is explained based on the results model below (Figure 1). Corresponding hypotheses and assumptions are narratively explained.

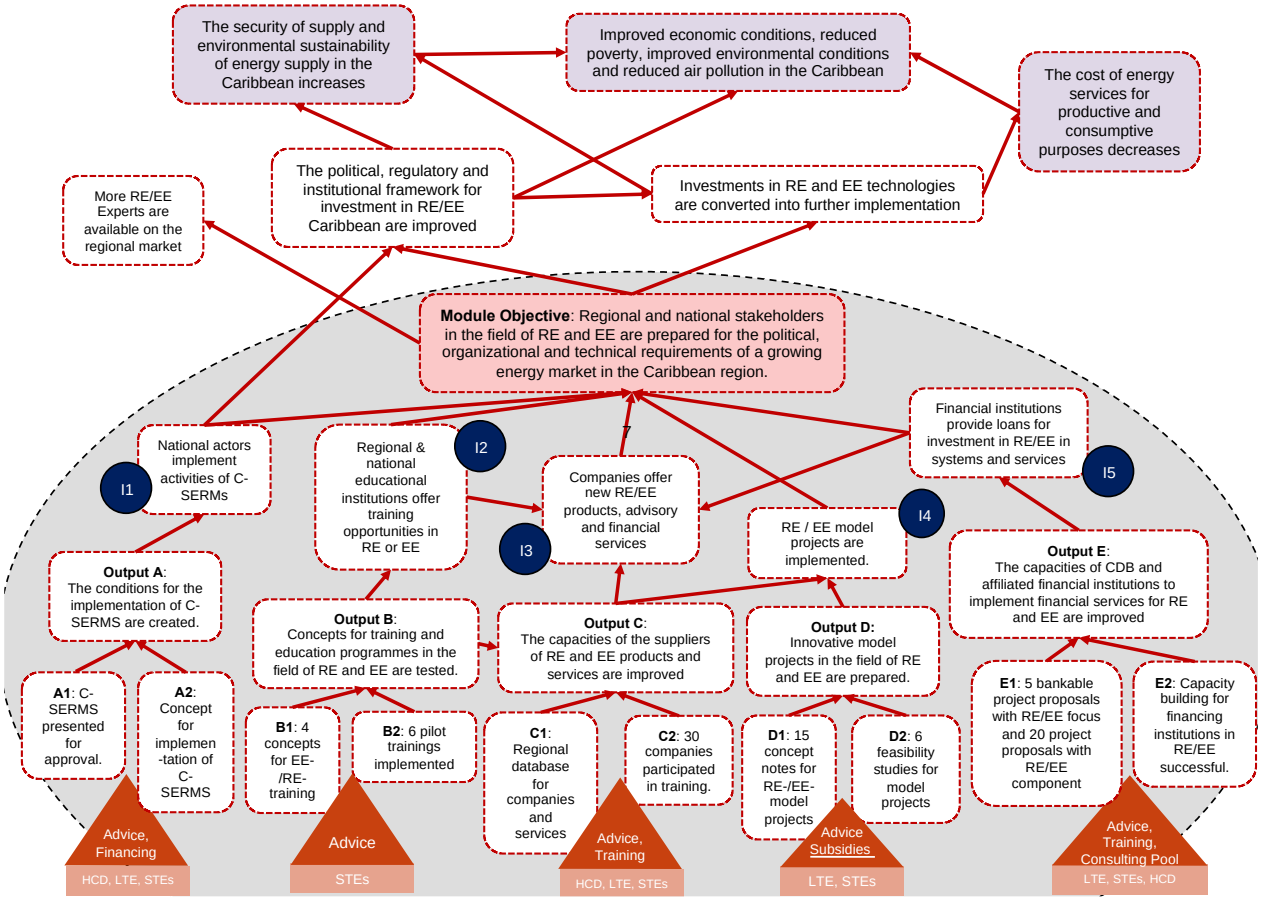

Figure 1: Results model of the REETA project

Output A (Regional strategy):

Output A was primarily concerned with ensuring that the preconditions are created for implementing the strategy for sustainable energy. This strategy is referred to as the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS). Output A involved activities relating to the provision of support to the CARICOM Energy Unit with the development of C-SERMS (result A1) leading to the completion, coordination and implementation of C-SERMS in the CARICOM member states (outcome indicator I1). The provision of support included technical assistance given by GIZ's experts in the field of RE and EE to the CARICOM Secretariat. Additionally, activities relating to the promotion of twinning activities between member states with advanced framework conditions for EE and RE development and less developed member states were carried out. Further development activities of regional advisory services for the integration of RE in national grids were required, together with the promotion of the integration of EE/RE in selected economic sectors (such as agriculture, fisheries and tourism) while supporting regional awareness building activities (e.g. CARICOM Energy Week). It was considered that these activities contributed to result A1, which is the existence of a Regionally Coordinated Strategy for Sustainable Energy (C-SERMS) inclusive of objectives, implementation mechanisms, mandates and responsibilities of key stakeholders. The regional coordinated strategy was presented to the CARICOM Council for Trade and Economic Development (COTED). Furthermore, a system to monitor the implementation of C-SERMS and a central knowledge management at CARICOM was established, and national energy information systems harmonised, creating result A2. Result A2 was the acquisition and existence of one concept note for monitoring the implementation of the regional strategy for sustainable energy (C-SERMS). The completion of these activities identified, and the achievement of the intended results noted to support the improvement of the political, regulatory and institutional framework for investment in RE and EE within the Caribbean (impact).

The hypothesis derived for Output A was as follows:

Hypothesis 1: The technical support provided to the Energy Unit of CARICOM and COTED and the conditions for the implementation of C-SERMS created for the national actors to incorporate the institutional arrangements to implement activities of C-SERMS have contributed to the improvement of the political, regulatory and institutional framework for investment in RE/EE within the Caribbean.

The assumptions regarding this Output and its associated results are that national actors accept the regional strategy and are capable of implementing the activities, and the aggregated capacities of national actors serve the growing market in the Caribbean.

Output B (Capacity building):

Output B was aimed at developing the capacity of regional institutions to design and deliver RE and EE-related training programmes. Output B addressed the development and testing of concepts for EE and RE training and education programmes. Output B consisted of activities to establish and further develop courses in EE and RE topics with universities in the region. Activities were also developed to elaborate and adjust curricula and training materials to address the emerging needs of RE and EE. The conduct of training of trainers'/lecturers' workshops and support to vocational training schools in introducing practical courses in RE and EE were also deployed. In order to create a level of sustainability, activities that created the promotion and establishment of cooperation agreements between universities were included. The first result from these activities is that of result B1. Result B1 is the existence of four additional concepts of regional educational institutions for training activities in the field of EE and RE (including curricula and dissemination strategy). The second result, result B2, is to ensure that regional educational institutions have implemented six pilot training courses in EE and RE-related topics.

The hypotheses derived for Output B are as follows:

Hypothesis 1: The promotion of RE and EE issues to regional and national educational institutions have led to the creation of high-level interest among universities to develop and offer relevant training programmes in RE and EE.

Hypothesis 2: The support provided by the REETA project to universities in the development of new educational programmes has allowed universities in the region to develop and offer relevant training programmes in RE and EE (outcome indicator I2). Consequently this creates a cadre of local experts in the field of RE and EE who can carry out the regional mandate of becoming less dependent of fossil fuel, reducing the carbon footprint, becoming more conscious of climate change mitigation and adaptation strategies and becoming more responsible for the effective management of the natural environment.

The completion of the activities and the achievement of the intended results of Output B are supposed to support the bridging of the gap between RE and EE industry needs and academia, thereby ensuring that technical capacities are available to national governments to achieve their RE and EE development agenda (impact).

The assumptions for Output B include sufficient students register and complete the available courses/training programmes; and a growing market creates a demand for more experts in RE/EE.

Output C (Private sector):

Output C dealt with the development of meaningful and sustainable relationships with the private sector. Output C was to improve the capacities of companies offering technology or services in the field of RE and EE in the CARICOM region. Activities undertaken to support this improvement included the engagement with the

private sector in the identification of selected pilot projects and the establishment of feasibility studies. Coupled with these activities are process support for project developers with the further development of pilot projects. There was an activity to develop new financial concepts for pilot projects incorporating a public private partnership (PPP) modality; also the documentation and distribution of the experiences around project planning and implementation, which was aimed at creating a knowledge repository for future project development. These activities were intended to lead towards results C1 and C2 respectively. Result C1 was the creation of and publicly accessible regional database with companies offering RE/EE technology or services; and C2 was to ensure that at least 30 companies in the field of EE and RE participated in training activities. The completion of Output C related activities, and the achievement of its intended results were expected to contribute to an increase of the offer of new RE/EE products, advisory and financial services (outcome indicator I3).

The hypotheses derived for Output C are as follows:

Hypothesis 1: The collaborative engagement with the private sector has improved the level of participation, interest and commitment among private sector entities to design and implement RE and EE projects.

Hypothesis 2: The increased level of participation and interest among private sector entities on RE and EE projects have contributed to an increase in private sector organisations offering RE and RE technologies and RE and EE products and services to regional markets.

Hypothesis 3: The supply of new RE/EE products, advisory and financial services by the private sector in the region has led to a reduction in the cost of energy services for productive and consumptive utilisation (impact).

The assumptions made for Output C were that more available regional experts can enable companies to develop and offer new products and services; that more available regional suppliers can enable companies to develop and offer new products and services; and that there would not be a growing market without new services and products.

Output D (Model projects):

Output D addressed the creation of model RE and EE projects. Output D dealt with the preparation of innovative model projects in the field of RE and EE and the development of appropriate financing mechanisms. The activities that support the realisation of Output D included the identification of projects with regional scaling-up potential, the elaboration of feasibility studies and the facilitation of project development of model projects. The result of these activities was to ensure the development of at least 15 concept notes for potential model projects in the field of EE and RE (result D1). And resulting from the identification and formulation of these, there was also a need for project activities to be aligned to financing. In this regard, activities were undertaken that related to the development of financing concepts for the model projects. Documentation and dissemination of experiences in the planning and implementation of projects was a key activity in building the institutional capacity in the region. The result of these activities was that at least six additional feasibility studies were finalised for model projects in four RE/EE specific topics (result D2). The completion of these activities and achievement of the results were intended to lead to the implementation of RE and/or EE model projects (outcome indicator I4), thereby enhancing the ability of regional and national stakeholders in the field of renewable energy and energy efficiency to increasingly meet the political, organisational and technical challenges of the growing energy market in the Caribbean region (outcome).

The hypotheses derived for Output D are as follows:

Hypothesis 1: Innovative model RE and EE projects are prepared and implemented by project developers in the development of new fields of application for EE and RE, and the emerging need in the regional market causes regional and national stakeholders in the field RE and EE to increasingly meet the political, organisational and technical challenges of the growing energy market in the Caribbean region. The availability of model projects would then contribute to increase the investments in renewable energy and energy efficiency technologies (impact).

For Output D several assumptions were stated. These assumptions include that additional capacities are needed to replicate RE/EE models; only economically and technical viable pilot projects lead to replication; and replication is a prerequisite for a growing market.

Output E (Financing institutions):

Output E targeted the RE and EE project implementation capacity of financial institutions in the region. Output E was framed to ensure that the capacities of the CDB and affiliated financial institutions (national development banks, commercial banks) to implement financial services for RE and EE were improved. The related activities in support of achieving Output E included undertaking capacity building and awareness raising of CDB and affiliated financial institutions staff. This capacity building was intended to be developed through workshops, on- the-job training and study tours. There was also the identification and development of bankable RE/EE projects supported by technical and economic evaluation of RE/EE project proposals. The improvement of the financial institutions also incorporated activities relating to giving support in mainstreaming of RE/EE issues across the CDB's operations; support in accessing available financing schemes (e.g. CIF, GCF); and the development of dedicated financing schemes for RE/EE (e.g. SEEC). As a result of these activities, project pipelines of CDB or other financial institutions included at least five bankable project proposals having a RE/EE focus, and at least 20 project proposals with a component in renewable energies and/or energy efficiency (result E1). Other key activities carried out relate to the strengthening and expansion of the energy professional network within the Caribbean Technological Consultancy Services Network, the development of innovative financing schemes, together with private sector (e.g. ESCOs, PPP), and the preparation of information and advisory services for potential borrowers. The result of these subsequent activities was a successful capacity building for specialists and executive employees of CDB and other financial institutions in RE/EE projects (result E2). The completion of these activities and achievement of the results were expected to incite financial institutions to provide loans for investments in the field of EE and RE (outcome indicator I5) which would ultimately contribute to an increase of investments in RE/EE technologies (impact) and facilitate an improvement in the economic and environmental conditions in the Caribbean (impact).

The hypotheses derived for Output E are as follows:

Hypothesis 1: The technical capacities of CDB and affiliated financial institutions to implement financial services for RE and EE projects are improved by the conduct and uptake of EE/RE-related capacity building and awareness activities with the staff of CDB and affiliated financial institutions

Hypothesis 2: The ability of CDB and affiliated financial institutions to identify, develop and implement bankable RE/EE projects are improved resulting from the support given in the mainstreaming of RE/EE issues across the CDB's operations and support in accessing available financing schemes.

Hypothesis 3: The implementation and financing of bankable RE and EE projects by CDB and affiliated financial institutions have led to an improvement in the economic and environmental conditions in the Caribbean.

The assumptions made for Output E include, only with a full RE/EE understanding will financial institutions be willing and capable to hand out loans; there is no growing market without financial instruments; to invest in RE/EE products finance is required; and skills are required.

(Ref_2, Ref_3, Int_1, 2 with GIZ, Int_6 with partner organisation)

3 Evaluability and evaluation process

3.1 Evaluability: data availability and quality

Basic documents

The evaluability of the project depended on the availability of basic documents and monitoring data (table 1).

Table 1: Availability and quality of basic documents

Basic document	Is available *(Yes/No)*	Estimation of actuality and quality	Relevant for OECD/ DAC criterion
Projects proposal and overarching programme/fonds proposal (etc.) and the 'Ergänzende Hinweise zur Durchführung' / additional information on implementation	Yes	Project proposal available Programme proposal not applicable 'Ergänzende Hinweise' not available	Relevance, Effectiveness, Impact, Sustainability
Modification offers where appropriate	Yes	Modification offers available	Relevance, Effectiveness, Impact, Sustainability
Contextual analyses, political-economic analyses or capacity assessments to illuminate the social context	No	Not applicable	Relevance, Effectiveness, Impact, Sustainability
Peace and Conflict Assessment (PCA Matrix), gender analyses, environmental and climate assessments, safeguard & gender etc.	No	Not applicable	Relevance, Effectiveness, Impact, Sustainability
Annual project progress reports and, if embedded, also programme reporting	Partly	Project progress reports 2014 to mid-2018 available Final report is in process	Relevance, Effectiveness, Impact, Efficiency, Sustainability
Evaluation reports	No	Not applicable	
Country strategy BMZ	Yes	BMZ: Konzept für die entwicklungspolitische Zusammenarbeit mit den Ländern Lateinamerikas und der Karibik	Relevance, Impact
National strategies	Partly	The regional strategy is an output of the project National strategies are not	Relevance, Impact, Sustainability

Basic document	Is available *(Yes/No)*	Estimation of actuality and quality	Relevant for OECD/ DAC criterion
		applicable	
Sectoral/technical documents (please specify)	Yes	Documents published on CARICOM website	Relevance, Effectiveness, Impact, Efficiency, Sustainability
Results matrix	Yes		Effectiveness
Results model(s), possibly with comments if no longer up to date	Yes	Result model has been updated.	Effectiveness, Impact, Sustainability
Data of the results-based monitoring system (WoM)	Partly	Monitoring system is accessible, but no products or deliverables are available	Relevance, Effectiveness, Impact, Efficiency, Sustainability
Map of actors	Yes		Relevance, Effectiveness, Impact, Sustainability
Capacity development strategy/overall strategy[2]	Yes	CD strategy exists, but does not give details	Relevance, Effectiveness, Impact, Efficiency, Sustainability
Steering structure	Yes	2 PowerPoint slides	Efficiency
Plan of operations	No		Effectiveness, Efficiency
Cost data (at least current cost commitment report / Kostenträger-Obligo Bericht). If available: cost data assigned to outputs	Yes	Date: 17/12/2018, details are lacking Cost data assigned to outputs not available	Efficiency
Excel-sheet assigning working-months of staff to outputs	Yes		Efficiency
Documents regarding predecessor project(s) (please specify if applicable)		Not applicable	
Documents regarding follow-on project (please specify if applicable)		Not applicable	

Conclusion: Most data required for the evaluation were available.

Baseline and monitoring data including partner data

In 2015, the REETA project established a web-based monitoring system using the Energypedia portal. The monitoring was based on the project result matrix and the corresponding indicators of the project proposal. At the outcome level, five indicators were defined to measure the achievement of the module objective. These indicators corresponded to the five outputs of the project. All module objective indicators were SMART (specific, measurable, achievable, relevant, time-bound), except indicator 4 ('At least one model project in three of diverging technologies, that have regional relevance in the field of RE and EE, are implemented in the region'), which was not very specific ('one model project in three diverging technologies'). The aspect 'that have regional relevance' was not really measurable, but was defined as being of relevance for more than one CARICOM country and the Dominican Republic. Each of the five outputs was measured by two indicators, which corresponded quite well to the SMART criteria. However, they did not always measure a change in the partner system, but rather described a product that had to be delivered by the project (e.g. 'concept exists'). Nevertheless, at the time of writing the project proposals (2012, 2014), product-based indicators were commonly used at output level.

The indicators also included clear baseline and target values as well as sources of verification for the monitoring data. The baseline data used were of low complexity and did not need further assessments.

The monitoring system used and followed up by the project team could not, however, be connected to a partner monitoring system as none was available. The monitoring system was not up to date at the time of the inception workshop and the evaluation mission. The final project report is still in process and so cannot be used. Moreover, the monitoring tool did not include any information at impact level.

(Ref_2, Ref_3)

Other and secondary data

Additionally, the evaluation is based on other documents, such as the C-SERMS Baseline Report and Assessment (2015), CIA Factsheets, World Bank country profiles and other studies, as well as on information accessible on internet (see Annex 2).

3.2 Evaluation process

Stakeholders of the evaluation

The evaluation of the REETA project has been based on a participatory approach by involving stakeholders during the inception phase and implementation phase. The partner organisation CARICOM has been involved during inception and implementation phase. Moreover, it was invited to comment on the inception report and propose additional evaluation questions. GIZ staff from GIZ headquarters, the Evaluation Unit, and country office in the Dominican Republic were also involved during both evaluation phases. A briefing meeting has been held with the Head of the Energy Programme of the CARICOM Secretariat in their premises. For the field visit, it was necessary to gather information from different sources and stakeholder groups. Due to time constraints for the field visit, a selection of countries had to be made to meet the widest range of and most relevant stakeholders for the project implementation. Therefore, it was necessary to meet CARICOM as the project partner organisation, as many regional public institutions as possible that were directly involved in the project, private sector companies, utilities, universities and donor organisations, in particular the EU-funded Technical Assistance Programme for Sustainable Energy in the Caribbean (TAPSEC). Additionally, the stakeholders had to be in countries sufficiently close by for short-time travel. Therefore, the following countries and stakeholders were selected:

1. *Guyana:* CARICOM Secretariat, Guyana Energy Agency, field visit to CARICOM model project for energy efficiency in buildings, Guyana Power and Light Utility, Ministry of Public Infrastructure

2. *Barbados:* Caribbean Development Bank (CDB), Ministry of Energy, field visit to the e-mobility model project, TAPSEC project, EU Delegation, Caribbean Regional Organisation for Standards and Quality (CROSQ), Fair Trading Commission, Barbados Light and Power Utility (BLP), Caribbean Development Fund (CDF), Barbados Renewable Energy Association (BREA)
3. *Saint Lucia:* Organisation of Eastern Caribbean States (OECS), Caribbean Public Health Agency (CARPHA), Caribbean Electric Utility Services Corporation (CARILEC)
4. *Jamaica:* University of West Indies, University of Technology, Jamaican Public Service Company (JPS), Caribbean Examination Council (CXC).

Due to limited budget and time constraints, there was no direct involvement of the final target groups in the evaluation. The stakeholders, who participated in the evaluation as interviewees during the field mission, are listed in table 2.

Participation of stakeholders, partners and target group(s) in the evaluation

The participation and responsiveness of stakeholders and partners in the evaluation was very good. They demonstrated a high degree of interest and commitment to the project in general and to the evaluation process in particular. Because the project ended in December 2018, the project manager was only available during the inception phase of the evaluation mission.

Evaluation design

The evaluation was carried out in the form of a field mission to the Caribbean region. However, the evaluation team used a remote evaluation design for specific stakeholders. This especially included interviews of former project staff and GIZ staff via phone, email or Skype.

Roles of international and regional evaluator

The evaluation team consisted of two members (one international and one regional evaluator). The international evaluator, Mr Josef Seitz, is an international expert in the field of environment, climate change, energy and sustainable economic development and has over 20 years' experience of designing, accompanying and evaluating international projects of varying size, scope and complexity. The regional evaluator, Dr Joseph Ishmael Khan, has been undertaking project evaluations for the last 10 years for the Inter-American Development Bank and worked on projects for the CARICOM Secretariat under the 9th and 10th EDF. During the evaluation exercise, the international evaluator functioned as the team leader while being supported by the regional evaluator. The team leader was ultimately responsible for ensuring proper evaluation preparation, implementation, quality assurance and backstopping as well as direct reporting to GIZ. The regional evaluator provided assistance on the evaluation with data collection and interpretation, supporting the preparation and implementation of the evaluation mission and contributing to the reports. For additional information, please refer to Annex 3 (Terms of Reference).

Table 2: List of stakeholders of the evaluation and selected interviewees

Organisation/company/target group (Please do not list persons or functions)	Overall no. of persons involved in evaluation (*gender disaggregation)	Envisaged particip-ation in interview (no. of persons)	Envisaged Particip-ation in FGDs (no. of persons)	Envisaged Particip-ation in workshops (no. of persons)	Envisaged Particip-ation in survey (no. of persons)
Donors	1	1			

Organisation/company/target group (Please do not list persons or functions)	Overall no. of persons involved in evaluation (*gender disaggregation)	Envisaged particip-ation in interview (no. of persons)	Envisaged Particip-ation in FGDs (no. of persons)	Envisaged Particip-ation in workshops (no. of persons)	Envisaged Particip-ation in survey (no. of persons)
EU Delegation in Barbados					
GIZ	5	5			
GIZ project team/ GIZ partner country staff					
GIZ headquarters Germany: FMB Energy, LMI					
GIZ country office in Dominican Republic					
Partner organisations (direct target group)	3	3			
CARICOM Secretariat					
Other stakeholders (public actors, other development projects, etc.)	15	15			
TAPSEC Programme (EU)					
Guyana Energy Agency					
Guyana Power and Light Utility					
Guyana Ministry of Public Infrastructure					
Caribbean Center of Renewable Energy and Energy Efficiency (CCREEE)					
Caribbean Development Bank (CDB)					
Barbados Ministry of Energy					
Caribbean Regional Organisation for Standards and Quality (CROSQ)					
Fair Trading Commission					
Organisation of Eastern Caribbean States (OECS)					
Caribbean Public Health Agency (CARPHA)					
CARICOM Development Fund (CDF)					
Caribbean Association of Electric Utilities (CARILEC)					
Barbados Light and Power Company (BLP Utility)					

Organisation/company/target group (Please do not list persons or functions)	Overall no. of persons involved in evaluation (*gender disaggregation)	Envisaged particip-ation in interview (no. of persons)	Envisaged Particip-ation in FGDs (no. of persons)	Envisaged Particip-ation in workshops (no. of persons)	Envisaged Particip-ation in survey (no. of persons)
Caribbean Examinations Council (CXC)					
Jamaican Public Service Company (JPS Utility)					
Civil society and private actors	3	3			
Barbados Renewable Energy Association (BREA)					
Operator of E-Mobility model project in Barbados					
Operator of Hosororo pico-hydro model project for rural electrification in Guyana					
Universities and think tanks	2	2			
University of West Indies					
University of Technology					
Final beneficiaries (indirect target groups)					
(Indirect) Target Group I (e.g. farmers in region X)	* Please disaggregate gender				
(Indirect) Target Group II (e.g. companies in the energy efficiency sector/in region X)	* Please disaggregate gender				

4 Assessment of the project according to OECD/DAC criteria

4.1 Long-term results of predecessor(s)

The REETA project was a stand-alone development measure which did not have predecessor projects. This section is therefore not applicable.

4.2 Relevance

Evaluation basis and design for assessing relevance

Evaluation basis:

The evaluation of the relevance criterion was based on the analysis of how much the project concept was consistent with the following four evaluation dimensions:

1. In line with the relevant strategic reference frameworks.
2. Matching the needs of the target group(s).
3. Adequately designed to achieve the chosen project objective.
4. Adapted to changes in line with requirements and readapted where applicable.

The target group of the project included decision-makers and technical staff of the CARICOM Secretariat and key regional institutions such as CDB, CROSQ, CCCCC, OECS, UWI, CARILEC, CDF, CXC and CARPHA. Additionally, the target group encompassed decision-makers and technical staff of technology providers, RE associations, women's associations, Green Building Councils, commercial banks, community-based organisations as well as consultants. The major core problem of the target group was the lack of preparedness for the political, organisational and technical requirements of the growing energy market in the region.

The final target group of the project comprised the population of the 15 CARICOM member states (Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago) representing a total population of just over 17 million people, plus the population of the Dominican Republic of about 10 million people. It was expected that, as energy consumers, the population would benefit from a secure, price-stable and environmentally friendly power supply. The economic situation of the population living in the CARICOM region is very heterogenous, which is shown by their GDP per capita ranging from USD 1,799 in Haiti to USD 32,654 in Trinidad and Tobago (2015 figures). Most CARICOM members have relatively high rates of electricity access. Seven states have universal or near-universal access, and 10 have access rates of 90% or higher. Significant exceptions include Belize, Guyana, Haiti and Suriname, which face enormous challenges related to rural electrification and/or energy poverty. In most CARICOM member states, energy consumption continues to outweigh primary energy production leading to a heavy reliance on fuel imports to meet energy needs. Even in primary energy-producing states (Barbados, Belize, Suriname, Trinidad and Tobago and soon Guyana) production is often insufficient to meet domestic demand. As a consequence, Caribbean electricity prices rank among the highest in the world (excepting Suriname and Trinidad and Tobago), largely because of high operating costs linked to rising fuel prices. The high electricity prices have a strong impact on the purchasing power of the population. Moreover, regional industries and commerce were target groups of the project.

It is underlined that the CARICOM member states exhibit a high degree of geographic, cultural and economic diversity comprising four languages (English, Dutch, French, Spanish) and over eight currencies.

(Ref_1, Ref_3)

Evaluation design:

For each of the evaluation dimensions, a number of evaluation questions and evaluation indicators were used to cover all relevant evaluation aspects. For further details, please refer to the evaluation matrix (Annex 1).

Empirical methods:

The data sources available included different websites, in particular of CARICOM, BMZ, donor organisations as well as project documents such as the project offers, results logic, results matrix, monitoring system and the Capacity WORKS self-assessment. The documents were assessed against the evaluation questions.

Additionally, opinions of key stakeholders and data were collected in the partner region during the evaluation mission by applying semi-structured interviews based on the evaluation questions. Data obtained by document analysis were then triangulated with opinions of key stakeholders in the partner region. Key stakeholders included representatives from regional and national partner institutions, private sector companies, donor organisations and project staff.

Analysis and assessment regarding relevance

Evaluation dimension 1: The project concept is in line with the relevant strategic reference frameworks

At first, the congruence of the project concept with relevant strategic frameworks was assessed based on the analysis of the extent to which the methodological approach was in line with the strategic orientation of CARICOM. The two most relevant strategy documents identified are the CARICOM Regional Energy Policy (2013) and the CARICOM Strategic Plan for the Caribbean Community 2015-2019.

CARICOM's Energy Policy goal/vision is: '*Fundamental transformation of the energy sectors of the Member States of the Community through the provision of secure and sustainable supplies of energy in a manner which minimises energy waste in all sectors, to ensure that all CARICOM citizens have access to modern, clean and reliable energy supplies at affordable and stable prices, and to facilitate the growth of internationally competitive regional industries towards achieving sustainable development of the Community*.'

The document identifies a number of objectives. For example, accelerated deployment of renewable and clean sources of energy supplies, increased energy efficiency and conservation in all sectors, including the transportation sub-sector; strengthening and enhancement of the human and institutional capacities in the Community energy sector; greater use of renewable energy for electricity generation as well as in the transportation, industrial and agricultural sectors; coordinated approach to exploring and establishing an institutional framework for leveraging financing mechanisms for the development of viable energy resources; and strengthened research, development and innovation efforts in the energy sector especially in areas of clean and renewable energy sources and technologies. By promoting renewable energy and energy efficiency and by focusing on capacity development of regional and national stakeholders, the concept of the REETA project took up several of these objectives and was entirely in line with the vision and the objectives of the energy policy.

(Ref_2, Ref_3, Ref_5)

Moreover, the Energy Policy mentions that '*a regional sustainable energy roadmap should be developed and implemented to guide, encourage and expedite the increased use of renewable energy and energy efficiency, as a key climate change mitigation strategy. The 3rd Joint Meeting of the Council for Trade and Economic Development (COTED) and the Council for Human and Social Development (COHSOD) held in September 2010 agreed that the "Roadmap" will be complemented by a "Strategy"*'. The REETA project answered to this particular demand by developing the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS) and by this made a significant contribution to fill a very relevant strategic gap of the energy sector in the region.

The CARICOM Strategic Plan for the Caribbean Community 2015-2019 was adopted in July 2014 and constitutes the development plan for the CARICOM region. The plan stipulates as one of its strategic objectives '*to increase the use of clean and renewable energy*'. Additionally, the plan aims at '*reducing the high cost of energy inputs (particularly in production) through enhanced functional cooperation, and development of alternative energy to meet CARICOM's target of 20% by 2017 for the contribution of renewable energy to the total electricity supply mix. Therefore, this strategy will address energy efficiency across all sectors, development and use of renewable energy, legislative and market reform to allow for access of renewable energy to the electricity network, building awareness and capacity within Member States, and facilitating public private partnership in energy development and build on the CARICOM Energy Policy adopted in 2013'*. The evaluation showed that by promoting RE/EE through strengthening capacities of different groups of stakeholders in the region, the concept of the REETA project was entirely in line with the regional development plan's strategic objectives. The high relevance of the project for the region at strategy level was also confirmed by numerous stakeholders.

(Ref_1, 2, 3, 5, 6, Int_2, 4, 6, 8, 9, 13, 16 with partner organisation, Int_4 with other stakeholder)

Second, it was assessed to what extent the interactions (synergies/trade-offs) of the intervention with other sectors were reflected in the project concept, also regarding the sustainability dimensions (ecological, economic and social). Here, the most relevant interactions of the project identified refer to climate change, in particular mitigation of greenhouse gases. Therefore, it was examined if the project considered the strategic dimensions of climate change and air pollution. It was found that there is no regional approach on climate change in the CARICOM region and that the development and implementation of nationally determined contributions (NDC) is taking place at member state level only. The REETA project has nevertheless included climate change mitigation aspects in its intervention concept as EE and RE inherently reduce greenhouse gas emissions compared to conventional energy systems, such as thermal power generation from imported fossil fuels in the Caribbean context. The economic dimension was integrated as part of the project design and implementation and directly addressed in Output B (private sector), Output D (model projects) and Output E (financial institutions).

(Ref_2, 3, 5, 6, 7)

Third, the evaluation assessed to which degree the project concept was in line with the BMZ strategies, in particular the concept for development cooperation with Latin-American and Caribbean countries (Paper N° 161), the BMZ document on Sustainable Energy for Development (2014) and the BMZ climate policy.

The concept for development cooperation with Latin-American and Caribbean countries mentions '*environment and climate protection*' as a major strategic focus for the BMZ in the region. BMZ aims to continue or increase interventions regarding, in particular, the protection of natural resources and the promotion of sustainable energies (renewable energies/energy efficiency). The relevance of RE/EE for the German government is also reflected in the BMZ documents 'Sustainable Energy for Development' and 'Climate Action in Practice'. The conclusion of the evaluation was that the concept of the REETA project was entirely in line with the current BMZ strategies in the energy sector, climate sector and the region.

(Ref_2, 3, 10, 11, 12, 13)

Fourth, the project concept was assessed against its consistency with international standards and agreements, particularly the Sustainable Development Goals (SDGs). According to the UN Economic Commission for Latin America and the Caribbean's (ECLAC) Sub-Regional Headquarters for the Caribbean, 12 of the 17 SDGs were identified as priorities for addressing the region's sustainable development needs. The evaluation showed that the REETA project mainly focused on SDG 7 (ensuring access to affordable, reliable, sustainable and modern energy for all), but also considered SDG 8 (promoting sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all), SDG 9 (building resilient infrastructure, promoting inclusive and sustainable industrialisation, and fostering innovation) and SDG 13 (taking urgent action to combat climate change and its impacts). The project is considered being consistent with international

standards and agreements, in particular the SDGs.

(Ref_2, 3, 16)

Finally, it was assessed to what extent the project concept was subsidiary to CARICOM efforts or efforts of other relevant organisations (subsidiary and complementarity). Various stakeholders confirmed during the evaluation that the project complemented the efforts and strategic activities of their respective institutions.

(Ref_2, 3, Int_1, 2, 4, 7, 11, 13, 16 with partner organisation, Int_1 with other stakeholder)

In summary, the concept of the REETA project was entirely in line with the vision and objectives of the CARICOM Energy Policy and the CARICOM Strategic Plan for the Caribbean Community 2015-2019. The interactions (synergies/trade-offs) regarding the sustainability dimensions were reflected in the project concept, in particular by including climate change mitigation aspects in its intervention concept and directly addressing the economic dimension in several outputs. The concept of the REETA project was also entirely in line with the current BMZ strategies in the energy sector, climate sector and the region, particularly the BMZ concept for development cooperation with Latin-American and Caribbean countries, the BMZ document on Sustainable Energy for Development and the BMZ climate policy. Moreover, the project is considered being consistent with international standards and agreements, particularly the SDGs. Various stakeholders also confirmed during the evaluation that the project complemented the efforts and strategic activities of their respective institutions. It was therefore concluded that the project concept was fully in line with the relevant strategic reference frameworks (30 out of 30 points).

Evaluation dimension 2: The project concept matches the needs of the target group(s)

The core problem of the target group, which includes decision-makers and technical staff of the CARICOM Secretariat and other institutions as well as other stakeholders, mainly consists of insufficient capacity to match the political, organisational and technical requirements of a growing market in the RE/EE field in the Caribbean region. The documents analysis shows that the REETA project directly focused its concept on strengthening these lacking capacities. Moreover, the relevance of the project for building up the target group's capacities has been confirmed by all stakeholders interviewed during the evaluation. As a consequence of the project results, it is expected that the 15 CARICOM member states and the Dominican Republic populations will benefit from secure, price-stable and environmentally friendly power supply. This result is, however, located at impact level. The extent to which the project concept matched the target groups' needs was therefore assessed on the basis of stakeholder interviews and current sector analyses, in particular the C-SERMS Baseline Report and Assessment (2015), CIA Factsheets, World Bank country profiles and other studies. The evaluation showed that access to energy is not homogenous across the CARICOM region. While most areas have excellent access to energy, some remote areas, such as the 'hinterland' in Guyana, still lack such access. REETA model projects for decentralised power supply (e.g. the Hosororo hydropower project) were therefore of particular relevance for these areas. Moreover, in the long term, RE/EE is expected to substitute imports of expensive fossil fuels, which will result in cost reduction and savings for the households. This point of particular relevance for the final target group and has been reflected in the concept of the REETA project.

(Ref_1, 2, 3, 5, 6, Int_1 – Int_16 with partner organisation, Int_4 with other stakeholder)

Second, it was assessed if the different perspectives, needs and concerns of women and men were represented in the REETA project concept. According to the project proposal document, the relevance of the REETA project regarding gender equity was negligible (GG-0). The evaluation team agreed with this categorisation. The corresponding evaluation question is therefore not applicable. (Ref_3)

Third, the evaluation assessed to what extent disadvantaged groups, in particular poor and vulnerable persons, were directly targeted by the project concept in order to address the Agenda 2030 principle 'Leave No One Behind' (LNOB). According to the project proposal, the project concept takes into account the Agenda 2030

principles by '*contributing to ensure security of energy supply and to stabilise energy prices, which is of particular relevance for poor households which are constraint to disburse a relevant share of their income for energy supply*'. Moreover, the REETA project has set up model projects in disadvantaged areas (e.g. Hosororo hydropower plant in hinterland area of Guyana) with direct positive benefit for poor people.

Furthermore, the evaluation addressed the question how risks and potentials for human rights were identified and included in the project concept. However, the analysis of the project documents showed that the question of risks and potentials regarding human rights has not been addressed in the project concept.

(Ref_2, 3, 13, Int_6, 13 with partner organisation)

To sum up, in its concept, the REETA project directly focused on insufficient capacities as the target group's core problem (decision-makers and technical staff of the CARICOM Secretariat and other institutions as well as other stakeholders). Moreover, it addressed the diverse access to energy in its intervention area as highly relevant for the poor population in remote areas. However, the question of risks and potentials regarding human rights has not been addressed in the project concept. It was concluded that the project concept nearly fully matched the needs of the target groups (28 out of 30 points).

Evaluation dimension 3: The project concept is adequately designed to achieve the chosen project objective

The adequacy of the project design to achieve the project objective was evaluated by assessing the underlying theory of change (ToC) against current GIZ quality criteria as defined in the document, 'The GIZ Results Model. A working aid.' The evaluation assessed in particular if the project objective was realistic and whether activities and outputs were adequately designed to achieve the objective. The project objective focused on increasingly enabling regional and national stakeholders in the field of RE/EE to meet the political, organisational and technical challenges of the growing energy market in the Caribbean region. The project objective was realistic and adequate as it addressed the lack of capacities at various levels (political, technical, organisational, economic) as the core problem. The outputs and activities addressed five different dimensions of needs in the partner system: (1) strategy level; (2) training and educational needs; (3) capacities of suppliers of RE and EE products and services; (4) model projects; and (5) finance institutions. The ToC and the corresponding results hypotheses are considered being complete, adequate and realistic. However, some output indicators did not really reflect results (use of products) in the partner system but rather activities (indicators A2, B1, C2, D2). At the time of writing the project proposal, activity-based indicators were nevertheless commonly used at output level within GIZ. (For more detailed information on the results model, please refer to section 4.3: Effectiveness). As a regional project that included regional organisations with varying member countries (CARICOM, OECS), the system boundary of the REETA project was very complex and somewhat dynamic. The project successfully addressed this challenge through flexibility in its implementation of activities. Furthermore, the REETA project actively involved other donor organisations (e.g. EU). Assumptions are reflected in the results matrix. Particularly political and financial risks are reflected in the project proposal, which are considered being adequately addressed.

(Ref_2, 3, 17, Int_1, 2 with GIZ, Int_4 with other stakeholder)

Additionally, the evaluation checked to what extent the project addressed changes of framework conditions in its strategic orientation. In this context, the evaluation carried out an analysis of project documents and questioned key stakeholders at the strategy level. The analysis of the project documents showed that relevant strategic changes (e.g. the need identified to involve financial institutions) were addressed through modification proposals. Moreover, the key stakeholders of each output confirmed that interventions were strategically focused. One stakeholder mentioned that the strategic orientation of the project could have been better aligned to CARICOM's strategic orientation. Moreover, mainly through document analysis and interviews, the evaluation assessed how the complexity of the project's framework conditions regarding its regional character and the diversity of the partner system was handled. The REETA project was characterised by more than 20 partner organisations and 15 CARICOM member states and the Dominican Republic using four different

languages and more than eight currencies. To address this complexity, project staff of six international and national/regional staff were distributed to different partner organisations in three countries in the region. Furthermore, a mix of instruments, consisting of international, national, integrated and short-term experts, was applied. The evaluation concluded that the high complexity of the project was adequately addressed through a balanced set-up of instruments. For more detailed information on instruments, please refer to section 4.5: Efficiency.

(Ref_1, 2, 3, 5, 6, 8, 17, Int_2, 4, 6, 10 with partner organisation, Int_2 with GIZ)

In summary, the project ToC – including project objective, outputs and activities, results hypotheses, assumptions and risks – was adequate and realistic except for some output indicators, which do not reflect results (use) in the partner system. Furthermore, most stakeholders confirmed that interventions were strategically focused. Moreover, the high complexity of the project was adequately addressed through a balanced set-up of instruments. In conclusion, the project concept is almost adequately designed to achieve the chosen project objective (18 out of 20 points).

Evaluation dimension 4: The project concept was adapted to changes in line with requirements and readapted where applicable

The responsiveness of the project to changes during its implementation (e.g. local, national, international or sectoral changes, including state of the art of sectoral know-how) was assessed by analysing project documents, in particular modification offers and information and data obtained from key stakeholders, especially at regional and strategy level. Most relevant changes in the energy sector include the increase of relevance of the e-mobility topic, which has been taken up by the REETA project. Moreover, the thematic of energy efficiency in the building sector has significantly gained in relevance during the project implementation. Strategically, the project enhanced its intervention fields by involving the highly relevant finance sector as stakeholder in the project (Output E). These changes were reflected in the modification offers. Furthermore, interviewed stakeholders expressed their satisfaction about the flexibility of the REETA project. The evaluation therefore concluded that the project concept was adequately adapted to changes in line with requirements and readapted where applicable (20 out of 20 points).

(Ref_1, 2, 3, 5, 6, Int_2, 4, 6, 10 with partner organisation, Int_4 with other stakeholder, Int_2 with GIZ)

Criterion	Assessment dimension	Score and rating
Relevance	The project concept* is in line with the relevant strategic reference frameworks.	30 of 30 points
	The project concept* matches the needs of the target group(s).	28 of 30 points
	The project concept* is adequately designed to achieve the chosen project objective.	18 of 20 points
	The project concept* was adapted to changes in line with requirements and readapted where applicable.	20 of 20 points
Overall score and rating		Score: 96 of 100 points Rating: Level 1 = very successful

4.3 Effectiveness

Evaluation basis and design for assessing effectiveness

Evaluation basis:

The evaluation of the effectiveness criterion was based on an analysis of the extent to which the project was implemented in accordance with the following three evaluation dimensions:

1. The project achieved the objective (outcome) on time in accordance with the project objective indicators.
2. The activities and outputs of the project contributed substantially to the project objective achievement (outcome).
3. No project-related negative results have occurred – and if any negative results occurred, the project responded adequately.

Evaluation design:

For each of the evaluation dimensions, a number of evaluation questions, evaluation indicators and a contribution analysis were used to cover all relevant evaluation aspects. For further details, please refer to the evaluation matrix (Annex 1).

Empirical methods:

The data sources available included: the monitoring system and other project documents, such as the project offers, results logic, results matrix, and the Capacity WORKS self-assessment. The documents were assessed against the evaluation questions. Additionally, the documents and deliverables corresponding to the sources of verification in the result matrix and monitoring system were collected, either through GIZ staff (Documentary Management System) or in the field during the evaluation mission. These comprised in particular:

- Documents regarding central activities of C-SERMS (module objective indicator 1)

- Documentation on education opportunities/modules (module objective indicator 2)
- Documentation on trainings and participants and documentation on new technologies/services (module objective indicator 3)
- Documentation on model projects (module objective indicator 4)
- Documentation on approved projects (module objective indicator 5)

Moreover, key stakeholders' opinions and data were collected in the partner regions during the evaluation mission by applying semi-structured interviews based on the evaluation questions. Furthermore, field visits on one model project at the CCS was carried out to verify if the model projects were set up in accordance with the documentation. Data obtained by document analysis were triangulated with opinions and data of key stakeholders in the partner region as well as from the field visit. Key stakeholders included representatives from regional and national partner institutions, private sector companies, donor organisations and project staff.

Analysis and assessment regarding effectiveness

Evaluation dimension 1: The project achieved the objective (outcome) on time in accordance with the project objective indicators

The module objective is defined as '*Regional and national stakeholders in the field of Renewable Energy and Energy Efficiency are prepared for the political, organisational and technical requirements of a growing energy market in the Caribbean region*.' The degree of achievement of the project objective (outcome) was assessed based on the analysis of the extent to which the project objective indicators have been fulfilled. In this regard, Table 2 summarises an assessment of the project objective indicators according to the SMART criteria (specific, measurable, achievable, relevant, time-bound.)[1]

[1] Taking into consideration that this is a final evaluation, the criterion 'time bound' corresponds to the end of the project, namely 31 December 2018.

Table 3: Assessment of the module objective indicators according to the SMART criteria

Project objective indicator according to the offer	Assessment according to SMART criteria	Adapted project objective indicator
Project objective indicator I1: The implementation of 40% of 20 central activities of the regionally agreed strategy for sustainable energy (C-SERMS) has started. **Baseline value**: 0% of the activities **Target value**: 40% of 20 central activities **Source**: Monitoring system of C-SERMS	The indicator focuses on the strategic and political aspects of the project objective. The indicator fully complies with the SMART criteria.	**Adapted objective indicator I1**: The strategy currently includes 24 instead of 20 activities. The indicator will therefore be adapted as follows: The implementation of 40% of 24 central activities of the regionally agreed strategy for sustainable energy (C-SERMS) has started. **Baseline value**: 0% of the activities **Target value**: 40% of 24 central activities **Source**: Monitoring system of C-SERMS It was assessed based on the latest data available in the monitoring system. Additionally, key stakeholders' opinions and data were collected during the evaluation mission and triangulated with the project documents.
Project objective indicator I2: Regional educational institutions (e.g. universities, vocational training centres) have included four additional education opportunities/modules in the field of RE and EE in their programmes. **Baseline value**: 2 **Target value**: 6 **Source**: Curricula and programmes of educational institutions	The indicator focuses on the educational aspects of the project objective. The indicator fully complies with the SMART criteria.	The indicator will be maintained. It was assessed based on the latest data available in the monitoring system. Additionally, key stakeholders' opinions and data were collected during the evaluation mission and triangulated with the project documents.
Project objective indicator I3: Three regional or national companies that have participated in the project's capacity development activities offer new technologies, consulting or financial services in the field of RE or EE. **Baseline value**: 0	The indicator focuses on the aspect of private sector capacities of the project objective. The indicator fully complies with the SMART criteria.	The indicator will be maintained. It was assessed based on the latest data available in the monitoring system. Additionally, key stakeholders' opinions and data were collected during the evaluation mission and triangulated with the project documents.

Target value: 3 **Source**: Analysis of supplier database with breakdown in terms of technologies and services, e.g. energy consulting, planning of RE and EE projects, sales and installation of equipment		
Project objective indicator I4: At least one model project in three of diverging technologies, that have regional relevance in the field of RE and EE, are implemented in the region. **Baseline value**: 0 **Target value**: 3 **Source**: Business and financing plans, commissioning protocols, monitoring reports of project developers	The indicator focuses on the aspect of model projects of the project objective. The indicator is measurable, achievable, relevant and time-bound. However, it is not very specific regarding the term 'one model project in three of diverging technologies'. The term 'regional relevance' is defined in the monitoring system as 'addressing a condition that exists in more than one CARICOM member state'. This definition is acceptable.	**Adapted objective indicator I4**: Three model projects with different RE/EE technologies that have regional relevance are implemented in the region. **Baseline value**: 0 **Target value**: 3 **Source**: Business and financing plans, commissioning protocols, monitoring reports of project developers The indicator was assessed based on the latest data available in the monitoring system. Additionally, key stakeholders' opinions and data were collected during the evaluation mission and triangulated with the project documents.
Project objective indicator I5: The Caribbean Development Bank (CDB) and other financing institutions (national development banks, commercial banks) have approved five additional projects (loans and grants) in the sectors RE and EE. **Baseline value**: 0 projects **Target value**: 5 additional projects with altogether USD 20 million in the RE and EE sectors from 2016 to 2018 **Source**: CDB yearly reports and from other banks. List of approved projects	The indicator focuses on the financial aspect of the project objective. The indicator fully complies with the SMART criteria.	The indicator will be maintained. It was assessed based on the latest data available in the monitoring system. Additionally, key stakeholders' opinions and data were collected during the evaluation mission and triangulated with the project documents.

Based on the evaluation of the extent to which the project achieved its objective (outcome) on time in accordance with the project objective indicators, the following information was highlighted:

Project objective indicator I1 was initially that implementation of 40% of 20 central activities of the regionally agreed strategy for sustainable energy (C-SERMS) has started. This indicator was adapted to the implementation of 40% of 24 central activities of the regionally agreed strategy for sustainable energy (C-SERMS) has started. In this regard**,** according to the information in the project monitoring system and feedback from project partners, the evaluation found that the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS) was developed and presented to the COTED, who subsequently approved it (Int_6 with partner organisation). Additionally, at the national level, stakeholders have started implementing 40% of the 24 central activities of the C-SERMS (module objective indicator I1) and have made substantial contributions to the preparedness of national public stakeholders in the field of RE and EE for the political and organisational requirements of a growing energy market in the Caribbean region.

(Ref_ 2, Int_, 2, 6 with partner organisation)

Project objective indicator I2 indicates that regional educational institutions (e.g. universities, vocational training centres) have included four additional education opportunities/modules for RE and EE in their programmes. This indicator was maintained and assessed based on the latest data available in the monitoring system in addition to feedback from key stakeholders and data collected during the evaluation mission, and triangulated with the project documents. The project monitoring system indicated that a total of five additional education opportunities were created. These opportunities include (1) IDB BRIDGE cooperation between University of the West Indies (UWI) Mona Campus in Jamaica, St Augustine Campus in Trinidad and Cave Hill Campus in Barbados; (2) Biogas Laboratory and RE course at the University of Belize; (3) Master of Science degree (MSc) in Sustainable Energy and Climate Change at the University of Technology (UTech) Jamaica; (4) CaribOOC Powering Agriculture online course; and (5) Caribbean Examination Council (CXC) Green Engineering module development and teacher training. In addressing project objective indicator I2, the University of Technology, Jamaica (UTech) developed the Master's degree programme in Sustainable Energy and Climate Change, and the Caribbean Examination Council (CXC) a Green Engineering course at the Caribbean Advanced Proficiency Examination (CAPE) level. These programmes are focused on sustainable energy, entrepreneurship and green business development, which are recognised as key thematic areas for development within the global economy. These programmes also support the CARICOM member states' sustainable development thrust on the greater use of renewable energy while becoming more energy efficient.

(Ref_ 2, Int_11 with partner organisation, Int_1 with other stakeholder)

Project objective indicator I3 indicates that three regional or national companies that have participated in the project's capacity development activities offer new technologies, consulting or financial services in the field of RE or EE. This indicator was maintained and assessed based on the latest data available in the monitoring system in addition to key stakeholders' feedback and data collected during the evaluation mission; this was triangulated with the project documents. In examining this indicator, the project monitoring system mentions three companies offering new products or services, namely: (1) Viking Engines set up a generator on a rice farm in Guyana; (2) procurement, installation and servicing of small-scale biogas digesters; and (3) Development Finance Corporation in Belize established a new line of credit in RE/EE. As a result of this indicator's achievements, the capacities of companies offering RE/EE technology or services in the CARICOM region have improved through specialised training programmes. As a result, a database on the CARICOM website has been established and includes 62 companies from 7 CARICOM member states. This indicator's success can also lead to financial and private sector institutions being able to provide RE/EE products, advisory and financial services with potential to contribute to a reduction in the cost of energy-related services.

(Ref_2, Int_2, 6 with partner organisation)

Project objective indicator I4 indicates that at least one model project in three of diverging technologies, having regional relevance for RE and EE, are implemented in the region. This indicator was adapted to three model projects, having different RE and EE technologies with regional relevance, are implemented in the region. The evaluation revealed that innovative model RE/EE projects have been developed and are being

used as reference projects for other stakeholders in the region. These projects include e-mobility in Barbados, Building Efficiency in the CCS and the OECS Secretariat Saint Lucia, and the Hydropower Plant in Guyana. The evaluation confirmed the achievement of two of these model projects; the third, the e-mobility project in Barbados, has not yet been implemented.

(Ref_ 2, Int_11 with partner organisation, Int_1 with other stakeholder)

Project objective indicator I5 indicates that the CDB and other financing institutions (national development banks, commercial banks) have approved five additional projects (loans and grants) in the RE and EE sectors. This indicator was maintained and assessed based on the latest data available in the monitoring system in addition to feedback from key stakeholders and data collected during the evaluation mission and triangulated with the project documents. The evaluation has highlighted that five projects were approved. These were (1) Barbados Water Authority Photovoltaic (PV) project; (2) EE integrated in upgrade of seven schools in Guyana; (3) Energy efficiency credit line in Belize; (4) Energy efficiency and solar PV project in Grenada; and (5) Street lighting and solar PV project in Saint Vincent. It was also indicated that the CDB and CDF participated in capacity building interventions that focused on the implementation of financial services for RE and EE projects. As a result, the CDB and CDF can now expand their project portfolio to accommodate greater numbers of RE/EE project proposals and subsequent RE/EE projects in member states.

(Ref_ 2, Int_4, 6, 10, 16, with partner organisation, Int_1 with other stakeholder)

In summary, the project objective (outcome) and outcome indicators were relevant given the regional needs and demands for RE and EE. The five indicators defined in the project proposal (latest modification) measure the increase of capacities of regional and national stakeholders at the levels of strategy, capacity building, private sector, financial sector and model projects. They are considered to be sufficient to measure the achievement of the project objective, except indicator 4, which has been adapted. It was therefore concluded that the project achieved its objective (outcome) on time in accordance with almost all project objective indicators (38 out of 40 points).

Evaluation dimension 2: The activities and outputs of the project contributed substantially to the project objective achievement (outcome)

The degree to which the project activities and outputs contributed to the achievement of its objective (outcome) were assessed through the evaluation by applying a theory of change-based approach. Essentially, the elements of the ToC anticipated changes at output, outcome and impact level and respective causal hypotheses were contrasted with evidence. The evaluation judgement was determined by the difference between the assumed vs the observed results and the underlying causal relations. Moreover, the evaluation design was based on a six-step contribution analysis, which was applied on two selected result hypotheses of the ToC. The two selected hypotheses were as follows:

- Hypothesis 1 (Output A):
  - The technical support provided to the Energy Unit of CARICOM and COTED resulted in the elaboration of the Regionally Coordinated Strategy for Sustainable Energy (C-SERMS) inclusive of objectives, implementation mechanisms, mandates and responsibilities of key stakeholders (Result A1).
  - The technical support provided to the Energy Unit of CARICOM and COTED resulted in the establishment of a system to monitor the implementation of C-SERMS and a central knowledge management at CARICOM (Result A2).
  - By achieving the results A1 and A2, the conditions for the implementation of C-SERMS were created (Output A).
  - Output A contributed to the preparedness of national stakeholders in the field of RE and EE for the political, organisational and technical requirements of a growing energy market in the Caribbean region (Module objective).

- The achievement of the module objective is measured by the fact that national stakeholders have started implementing activities of C-SERMS (module objective indicator I1).
- Through this, the political, regulatory and institutional framework for investment in RE/EE in the Caribbean region is improved (Impact).

This hypothesis was selected because of its strong strategic relevance for the RE/EE sector in the region.

➢ Hypothesis 2 (Output D)

- The technical support provided by the project in terms of identification of RE/EE projects with regional scaling-up potential resulted in the development of at least 15 concept notes for potential model projects in the field of EE and RE (Result D1).
- The technical support provided by the project resulted in the finalisation of at least six additional feasibility studies for model projects in four RE and EE specific topics (Result D2).
- By achieving the results D1 and D2, by facilitating the development of model projects and by developing financing concepts, innovative model projects in the RE and EE sectors are prepared (Output D).
- Output D contributed to the preparedness of national stakeholders in the field of RE and EE for the political, organisational and technical requirements of a growing energy market in the Caribbean region (module objective).
- The achievement of the module objective is measured by the fact that three model projects, with different RE/EE technologies having regional relevance, are implemented in the region (adapted module objective indicator 4).
- The model projects are used to showcase benefits of RE/EE technologies and lead to further investments in these technologies (Impact).

This hypothesis was selected because of the diversity of stakeholders involved (private, public).

With respect to **Output A**, the evaluation has confirmed that the technical support provided to the Energy Unit of CARICOM and COTED has resulted in the elaboration of the Regionally Coordinated Strategy for Sustainable Energy (C-SERMS) inclusive of objectives, implementation mechanisms, mandates and responsibilities of key stakeholders (Result A1). The technical support provided to the Energy Unit of CARICOM and COTED resulted in the establishment of a system to monitor the implementation of C-SERMS together with a technical advisory body and a central knowledge management at CARICOM (Result A2). In light of achieving Results A1 and A2, the conditions for the implementation of C-SERMS have been created (Output A). Specifically, Output A has made significant contributions to the preparedness of national public stakeholders in the field of RE and EE for the political and organisational requirements of a growing energy market in the Caribbean region. As a result, the achievement of the module objective can be measured by the reality that national stakeholders have started implementing 40% of 24 central activities of the C-SERMS (module objective indicator I1). According to interviews with project partners, the C-SERMS is currently being used as a guiding document for RE/EE-related policies in CARICOM members states. Some of these policies include the Sustainable Energy Framework for Barbados, Guyana's Low Carbon Development Strategy, and Jamaica's National Renewable Energy Policy 2009-2030. This demonstrates that the political, regulatory and institutional framework for investment in RE/EE in the Caribbean region is improved (impact). To this end, the evaluation has confirmed that Hypothesis 1 has been realised.

(Ref_2,28, 29, 30,31, Int 3, 6 with partner organisation)

The factors in this output's implementation, which have contributed to the achievement of Hypothesis 1, include the GIZ's overall management approach and CCS's Energy Programme. The technical expertise offered by GIZ was also very instrumental as was the support and consistent commitment by project partners. When asked during the interview process of the evaluation what would have happened without the project, stakeholders indicated that other sources of funding may have been pursued. However, given the need to have strategic and dedicated championing at the political and institutional levels, the C-SERMS might not have been developed or might have been developed at a relatively slower pace. In terms of how much risks and assumptions of the ToC have been addressed in the implementation and steering of the project, the project unit

indicated that, during planning and progress reporting meetings, risks and assumptions were sometimes revalidated. There have been no negative or positive unintended results produced by the project at the output and outcome level. The project generally followed its work programme and prudently managed its resources by not allowing unplanned activities into the project. Restrictions were also made on ad hoc requests by project partners for activities that were considered beyond the project's scope.

(Ref 2, Int_4, 6, 9, 16 with partner organisation)

In terms of **Output B**, the capacity of regional institutions to design and deliver RE/EE-related training programmes were developed with project support to conduct training workshops on curriculum development and exposure to emerging RE/EE issues and opportunities. As a consequence, UTech, through its Caribbean Sustainable Energy and Innovation Institute (CSEII) and the Faculty of the Built Environment (FOBE), developed and launched the multidisciplinary MSc in Sustainable Energy and Climate Change in 2017. The programme was developed in response to the identified need for tertiary-level training of specialists in the areas of sustainable energy and climate change. The programme has a strong focus on sustainable energy, entrepreneurship and green business development. These are critical areas that must be addressed for future development within the global economy, and for the creation of new jobs and innovative products and services in keeping with the Green Growth strategy of the Government of Jamaica, and sustainable development agendas of other CARICOM member states. The CXC also benefited from the REETA project through the development and testing of concepts for EE and RE training and education programmes. Specifically, educators from six Caribbean countries, undertook a week-long capacity building workshop intended to improve their delivery of the Caribbean Advanced Proficiency Examination (CAPE) Green Engineering syllabus. The syllabus was launched in Guyana in July 2016, and was first examined in 2017 (outcome indicator I2: Regional educational institutions – e.g. universities, vocational training centres – have included four additional education opportunities/modules in the field of RE and EE in their programmes.) The REETA project also supported training workshops at UWI where faculty and students were trained in various areas such as solar PV installation and entrepreneurship. Through the study of CAPE Green Engineering, students are now enabled to acquire the knowledge, skills, values and attitudes needed to sustain the natural environment. The course has also enabled students to apply Scientific, Technological, Engineering and Mathematical (STEM) principles to improve their environment at the local, regional and global levels.

(Ref_2, 23,26, Int_1 with other stakeholders, Int_2, 11 with partner organisation)

Output C of the project dealt with the development of meaningful and sustainable relationships with the private sector by improving the capacities of companies offering RE/EE technology or services in the CARICOM region. Activities undertaken to support this improvement included the engagement with the private sector in the identification of selected projects suitable for pilot studies and the establishment of feasibility studies. Coupled with these activities were process support for project developers with the further development of pilot projects. As a result of the various engagements associated with Output C, a regional database with companies offering RE and EE technology or services is publicly accessible. Output C finally led to the result that three regional or national companies that have participated in the project's capacity development activities offer new technologies, consulting or financial services in the field of RE or EE (outcome indicator I3).

(Int_1, 2, 6 with partner organisation)

In the case of **Output D**, this addressed the creation of model RE and EE projects. In specific terms, Output D focused on the preparation of innovative model projects in the field of RE and EE and the development of appropriate financing mechanisms. The activities that supported the realisation of Output D included the identification of projects with regional scaling-up potential, the elaboration of feasibility studies and the facilitation of project development of model projects. In this regard, the Guyana Energy Agency (GEA) undertook the Hosororo hydropower project, revised the design, updated the feasibility study and prepared tender-ready documents for the 300 kW Kato Hydropower Project while supporting the Hinterland

Electrification Company Inc. (HECI). Moreover, GEA designed and prepared a feasibility study for a proposed 1.5 MW hydropower plant at Kumu, Region 9, along with review of a proposed rehabilitation and upgrade of the Moco-Moco hydropower plant of 0.7 MW, which was pursued as a combined development.

(Ref 14, 32, Int_13 with partner organisation)

The Sustainable Energy Unit at the OECS, commenced a training programme in 'Zero Investment Energy Management.' The training involved two 2-day courses in Montserrat and Antigua. Attendees at these workshops came from both the public and private sectors, including representatives from the hotel sectors, architects and building officers. Participants at the energy management training received information on international best practices, proven management and monitoring techniques, in addition to practical training to introduce and maintain a simple but effective energy management programme. Experiences and lessons learnt were shared from the OECS Commission's successful energy management at its buildings in Saint Lucia. To date the Commission has realised electricity savings of around 15% in the first year with no investment in equipment or retrofits (42,000 kWh = Approx. EC$35,000 in savings). An important part of this Zero Investment Energy Management Training was the provision of various software tools and informative media that provided continued support to participants interested in introducing an energy management programme in their buildings. The CCS Energy programme also initiated its Regional Building Energy Efficiency Programme (BEEP) pilot project with its key objective to utilise energy more effectively by using less electricity, while maintaining the levels of activity and productivity in the Secretariat based on the international standard for energy management, ISO 50001. This project was implemented under the guidance of a project board that includes internal and external stakeholders. The evaluation has noted that the project served as a role model for similar management interventions throughout the region. The BEEP at the CCS also included specialised equipment, providing sub-metering to monitor the consumption of electricity by the major devices within the CCS headquarters building. The equipment enables the collection of detailed temperature, humidity and carbon dioxide data, which is necessary for the monitoring of indoor air quality and comfort.

(Ref 14, Int_2, 6, 10 with partner organisation)

In Barbados, the Government of Barbados through the Ministry of Energy has moved forward with its electric mobility policy and electric bus pilot project within its public transportation network. Through capacity building workshops funded by the REETA, project participants from the Ministry of Energy in Barbados were able to generate RE and EE project ideas that are presently being adapted by the Government of Barbados. However, the e-mobility model project has not yet been started. The contribution of these interventions goes towards the achievement of the Government of Barbados Carbon Neutrality Agenda by the year 2030.

(Ref 27, Int_2, 6 with other stakeholder)

Based on the contribution analysis performed on Output D, the evaluation has demonstrated that regarding Hypothesis 2 (Output D), the technical support provided by the project in terms of identification of RE/EE projects having regional scaling-up potential resulted in the development of at least 15 concept notes for possible model projects in the field of EE and RE (Result D1). The technical support provided by the project resulted in the finalisation of at least six additional feasibility studies for model projects in four RE and EE specific topics (Result D2). By achieving the results D1 and D2, by facilitating the development of model projects and by developing financing concepts, innovative RE/EE model projects were prepared (Output D). Output D has contributed to the preparedness of national stakeholders in RE and EE sector for the political, organisational and technical requirements of a growing energy market in the Caribbean region (outcome). The achievement of the module objective is measured by the fact that three model projects, with different RE/EE technologies having regional relevance, are implemented in the region (outcome indicator I4).

It is therefore concluded that Hypothesis 2 has been confirmed.

The factors in the implementation that have contributed to the achievement of outcome indicator I4, include the overall management approach of the GIZ and the CCS Energy Programme, and the technical expertise offered

by GIZ to partner institutions such as the GEA, OECS Secretariat and the CCS. The opportunity to participate at workshops also allowed the Ministry of Energy in Barbados to developed ideas towards the creation of the e-mobility project. During the evaluation's interview process, stakeholders indicated that without these RE and EE pilot projects, the project would not have been designed, implemented and championed in the manner and time frame given. Also, other sources of international development funding, in particular from the Inter-American Development Bank, may have been pursued. In terms of the extent to which risks and assumptions of the theory of change were addressed during the project's implementation and steering, the project unit indicated that during its planning meetings and progress reporting meetings, risks and assumptions were sometimes revalidated. There were no negative or positive unintended results produced by the project at the output and outcome level. The project generally followed its work programme and managed its boundaries and constraints. The project unit did not allow unplanned activities into the project.

(Int_2, 6, 7, 10, 13, 15 with partner organisation)

Output E targeted RE and EE project implementation capacity of financial institutions in the region. Output E was framed to ensure that the capacities of CDB, CDF and affiliated financial institutions (national development banks, commercial banks) were improved to implement financial services for RE and EE. The related activities in support of achieving Output E included undertaking capacity building and awareness raising of CDB, CDF and affiliated financial institutions staff. This capacity building was developed through the conduct of workshops, on-the-job training and study tours. This led to the identification and development of bankable RE/EE projects supported by technical and economic evaluation of RE/EE project proposals (Result E1). As a result of the REETA project, the CDB currently has RE as a major part of its strategic agenda and has been able to identify bankable projects for implementation. These projects include the replacement of Jamaica's approximately 105,000 high-pressure sodium and mercury vapour streetlights, with high-efficiency Light Emitting Diodes (LED) lights fitted with smart controllers, and a geothermal energy-drilling project in Saint Vincent and the Grenadines. In the case of the CDF, because of the high credit risk associated with project financing, a Credit Risk Abatement Facility (CRAF) was developed. This CRAF was designed to assist the CDF in undertaking detailed financial evaluation on RE and EE projects. The evaluation showed that as a direct result of Output E, financial institutions provide loans for investments in RE/EE systems and services (outcome indicator I5). In the case of the CDF, support has been given to alternative energy sources through the provision of concessionary finance to energy efficiency projects in the private sector. Additionally, the CDF has provided grants to the tourism (hotels), agriculture and manufacturing sectors in Grenada, Belize and Saint Kitts and Nevis as well as highly concessional finance to the transportation sector in Saint Vincent and the Grenadines.

(Ref_18, Int_2, 4, 16 with partner organisation)

In conclusion, the evaluation has acknowledged that the project undertook and completed the planned activities in each of its components and achieved the intended outputs. Given the utilisation of the various outputs it can be inferred that there is progress towards achieving the project's outcome. However, in order to facilitate the achievement of the project objective, more time and uptake are required from project partners and member states. The evaluation has also recognised that the level of achievement attained in the completion of activities and outputs can be significantly attributed to the project implementation approach used by the GIZ and CCS in addition to the commitment and participation of the members states and partner organisations.

The evaluation records that without the REETA project other sources of financial and technical assistance may have been sought by the CCS. Additionally, given the challenge to secure project champions and support at the policy and technical level in the region, components and activities of the project may not have been pursued. These include initiatives such as e-mobility proposal in the case of Barbados and pilot projects in Guyana's hinterland (Hosororo hydropower project). Furthermore, in many cases the capacity developed in the various participating institutions such as CROSQ, CXC, UTech, CDF, CDB and GEA would have not been

achieved. In succinct terms, without the project there would not have been this deliberate agenda and drive to ensure that there was an improvement in regional institutions and the energy policy environment for the promotion of renewable energy and energy efficiency in the Caribbean.

In summary, the evaluation has confirmed that the technical support provided to the Energy Unit of CARICOM and COTED has resulted in the elaboration of the Regionally Coordinated Strategy for Sustainable Energy (C-SERMS) (Result A1). The C-SERMS is currently being used as a guiding document for RE and EE-related policies in CARICOM members states. Additionally, the technical support provided to the Energy Unit of CARICOM and COTED resulted in the establishment of a system to monitor the implementation of C-SERMS through the technical advisory body and a central knowledge management at CARICOM (Result A2). The project was also able to contribute to ensuring that regional/national companies, which have participated in the project's capacity development activities, can offer new technologies, consulting or financial services in the RE or EE arena (outcome indicator I3). Furthermore, the capacity of regional institutions to design and deliver RE and EE-related training programmes were developed through project support to conduct training workshops on curriculum development and exposure to emerging RE and EE issues and opportunities. Two of three model projects with different RE/EE technologies that have regional relevance were implemented in the region (outcome indicator I4). Also, the capacities of CDB, CDF and affiliated financial institutions (national development banks, commercial banks) were improved to implement financial services for RE and EE. In conclusion, the activities and outputs of the project have contributed substantially to the achievement of the project objective (outcome). Furthermore, without the project, the regional RE and EE agenda would have been implemented at a slower rate, causing development opportunities to be lost. Although the project can be defined as inclusive in nature, not all intended beneficiaries had the opportunity to participate in the various components activities/training/funding of model projects (27 out of 30 points).

Evaluation dimension 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

A close examination of the extent to which negative and positive unintended results of the project have occurred at output and outcome level revealed that there were no noteworthy negative results being realised. Additionally, from a general perspective, risks relating to political, social, technological, operational and operational areas regarding unintended negative results at the output and outcome level were identified, documented and discussions were held with staff at the Energy Programme on appropriate risk response strategies. However, this risk management approach was done on an ad hoc basis throughout project implementation. In this regard, no formal mechanism to identify potential unintended results at the outcome level was institutionalised.

(Ref 2, Int_2, 6 with partner organisation)

In summary, project risks and assumptions were appropriately identified during project design and revalidated and identified in an ad hoc manner during project implementation. While there was no formal nor institutionalised risk management approach, when risks were identified, appropriate risk response strategies were identified and subsequently implemented. In conclusion, there has not been a formal or deliberate mechanism to identify potential unintended results at the outcome level, and unintended positive results at the outcome level were not fully and formally monitored nor exploited by the project team (25 out of 30 points).

Criterion	Assessment dimension	Score and rating

4.4 Impact

Evaluation basis and design for assessing impact

Effectiveness	The project achieved the objective (outcome) on time in accordance with the project objective indicators*	38 of 40 points
	The activities and outputs of the project contributed substantially to the project objective achievement (outcome)*	27 of 30 points
	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	25 of 30 points
Overall score and rating		Score: 90 of 100 points Rating: Level 2 = successful

Evaluation basis:

The evaluation of the impact criterion was based on the analysis as to what extent the project contributed to the achievement or non-achievement of its overarching development objectives. It examined the direct positive and negative changes and the unintended effects of the project. For this purpose, the evaluation of the impact criterion examined the following three evaluation dimensions:

1. The intended overarching development results have occurred or are foreseen.
2. The outcome of the project contributed to the occurred or foreseen overarching development results.
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.

Evaluation design:

For each of the evaluation dimensions, several evaluation questions and evaluation indicators and a contribution analysis were used to cover all relevant evaluation aspects. For further details, please refer to the evaluation matrix (Annex 1).

Empirical methods:

The data sources available to assess the project's impact included documentation such as the project proposal, progress reports, results presentations, the World Bank country analysis, C-SERMS and the Capacity WORKS self-assessment. Additionally, the monitoring system, CIA Factsheet and Energypedia knowledge hub were utilised. These project documents and monitoring systems were assessed against the evaluation questions. Furthermore, the collection of data and opinions from key stakeholders in the partner

region and desk review using internet sources and donor websites (World Bank, EU etc.), were used during the period of the evaluation mission. An interview schedule comprising semi-structured questions based on the evaluation dimensions was administered during the evaluation mission. Data obtained by documentation analysis were then triangulated with key stakeholders' opinions in the partner region. Key stakeholders included representatives from regional and national partner institutions, private sector companies, donor organisations and project staff.

Analysis and assessment regarding impact

Evaluation dimension 1: The intended overarching development results have occurred or are foreseen

First, the overarching development results, to which the project was supposed to contribute, were identified based on the project's design, in particular its results model and results matrix:

1. The political, regulatory and institutional framework for investment in RE/EE in the Caribbean are improved.
2. The security of energy supply increases.
3. Environmental sustainability of energy supply increases.
4. Economic conditions are improved and poverty is reduced.
5. Environmental conditions are improved and air pollution is reduced.
6. The cost of energy services for productive and consumptive purposes decreases.
7. The emission of greenhouse gases decreases.
8. Access to clean energy is improved.

These overarching development results are all very plausible. Nevertheless, their assessment is hindered by two factors:

a) The results are not located at the same impact level. For instance, the improvement of the political, regulatory and institutional framework for investment in RE/EE in the Caribbean is closer to the project outcome (and by this, the contribution of the project can be assessed with a higher degree of evidence) than poverty reduction, which actually represents a very long-term impact.
b) As the project focuses on the Caribbean region including 16 heterogeneous countries, the evaluation of the project's impact also has to be carried out at regional level. However, the data needed to assess the results (and the contribution of the project) exist at national level only. This data gap at regional level limits the evaluability of the impact level. Alternatively, evaluations could have been carried for all 16 partner countries, which would, however, have required significant additional resources.

As a consequence, it was decided (1) to categorise the overarching results in three groups depending on their distance from the project outcome; and (2) to base the evaluation on stakeholders' opinions rather than on verifiable data.

(Ref_2, 3, 8, 14)

- Overarching results to which the project is supposed to make a demonstrable contribution (category 1):

According to a number of stakeholders, the political, regulatory and institutional framework for investment in RE/EE in the Caribbean have already considerably improved. The adoption of the C-SERMS (political level) and of the CARICOM Regional Energy Efficiency Building Code (regulatory level) are good examples of this. Moreover, national and regional institutions have improved their capacities in the RE/EE field and are now better prepared for new and innovative topics, such as e-mobility.

(Ref_2, 3, 14, Int_2, 4, 6, 9, 16 with partner organisation, Int_4 with another stakeholder)

- Overarching results for which additionally financial resources and investments are necessary

(category 2):

Several impacts in the RE/EE field very much depend on the availability of financial resources for RE and EE technologies. During the evaluation, partner organisations confirmed that investments in RE/EE have increased in the last 5 years. Moreover, some CARICOM member countries have adopted low carbon strategies (e.g. Guyana) or even a very ambitious 'zero carbon strategy' (e.g. Barbados). Supposing that investments in RE/EE will continue to increase, it is plausible that environmental sustainability of energy supply increases and emission of greenhouse gases decreases. Furthermore, it is likely that access to clean energy improves. According to a number of stakeholders of the REETA project, it is plausible that these impacts will be achieved by the midterm.

However, investments in RE/EE technologies require significant financial resources. It is therefore not clearly predictable/plausible that the cost of energy services for productive and consumptive purposes decreases. Furthermore, this result is mostly based on the assumption that RE/EE will contribute to reduce the costs for import of fossil fuels. But importation of RE/EE technologies will also be costly depending on the tax policy of the individual countries.

(Ref_2, Int_2, 4, 5, 6, 9, 16 with partner organisation, Int_4 with other stakeholder)

- Overarching long-term results (category 3):

Some predicted impacts are based on very long hypotheses and will have tangible effects only several years after investment and real implementation of RE/EE projects. These impacts comprise the increase of the security of energy supply, improvement of environmental conditions, reduction of air pollution, improvement of economic conditions and reduction of poverty. According to various stakeholders interviewed during the evaluation, these impacts are not yet taking place. Second, it was assessed if there is evidence of results achieved at target group level/specific groups of population. Therefore, the question was analysed to what extent targeted marginalised groups (such as women, children, young people, indigenous peoples, refugees, IDPs and migrants, and the poorest of the poor) have been reached (Leave No One Behind). According to documents analysed and stakeholders interviewed, the project did not have a specific focus on marginalised groups but more on improving framework conditions and capacities of stakeholders. Nevertheless, some model projects (e.g. Hosororo hydropower project in Guyana) had direct benefits for local population and migrants from Venezuela living around the project site.

(Ref_2, 3, 8, 14, Int_2, 5, 6, 7, 13, 16 with partner organisation, Int_3, 4 with other stakeholder)

In summary, the political, regulatory and institutional framework for investment in RE/EE in the Caribbean have already considerably improved, e.g. through the C-SERMS (political level), the CARICOM Regional Energy Efficiency Building Code (regulatory level) or the improvement of capacities of national and regional-level institutions. It is plausible that overarching results, for which additional financial resources and investments are necessary, will be achieved by the midterm, while long-term results will only have tangible effects in several years. The evaluation has therefore concluded that the intended overarching development results have only partly occurred or are foreseen to occur with only limited probability (31 out of 40 points).

Evaluation dimension 2: The outcome of the project contributed to the occurred or foreseen overarching development results

First, contribution analysis based on the project's ToC was used to assess to what degree the project outcome contributed to the occurred or foreseen overarching development results. In this regard, the following hypotheses from the results model were first examined to explain the causal relationships between the project's outcome and impacts. The evaluation examined all impact hypotheses but was limited by time and budget constraints, in particular regarding the gathering of evidence and secondary data at impact level. It therefore relied on qualitative rather than quantitative methodologies, with a particular focus on the two selected hypotheses 1 and 4 (see section 4.3).

1. **Hypothesis 1**: The technical support provided by the REETA project has incited project stakeholders to start the implementation of central activities of C-SERMs (outcome indicator I1) and by this contributed to the improvement of the political, regulatory and institutional framework for investment in RE/EE in the Caribbean.

At the political level, the C-SERMS strategy, developed with assistance of REETA, has been adopted including 24 clusters of RE/EE activities (for more details, please refer to section 4.3: Effectiveness). According to the monitoring system, 15 out of the 24 clusters of activities have started being implemented by national and/or regional stakeholders. During the evaluation mission, the stakeholders interviewed confirmed the start of activities, which include for instance energy audits in the building sector at CARICOM, the development of innovative financing mechanisms for RE projects such as Integrated Utility Service (IUS) models or the development of targeted financing tools such as the Credit Risk Abatement Facility (CRAF). It has, moreover, been confirmed that the C-SERMS is used as a strategy reference document for national institutions. It is therefore concluded that the political framework for investment in RE/EE was improved as a direct impact of the REETA project.

At regulatory level, the REETA project has for instance contributed to developing the CARICOM Regional Energy Efficiency Building Code, which according to the stakeholders interviewed is the most relevant regulatory document regarding energy efficiency in the region's building sector. It can therefore be concluded that the regulatory framework for investment in RE/EE was also improved as a direct impact of the REETA project.

Regarding institutional framework, the REETA project has contributed to strengthening capacities of a number of national and regional institutions in the field of RE/EE. Stakeholders confirmed being now better prepared for new and innovative topics, such as e-mobility. The conclusion was that the REETA project also had significant impact on the improvement of regional and national-level institutional framework.

(Ref_1, 2, 3, Int_2, 4, 6, 9, 13, 16 with partner organisation, Int_4 with other stakeholder, Int_1 with GIZ)

2. **Hypothesis 2**: The support provided by the REETA project led regional educational institutions (e.g. universities, vocational training centres) to include four additional RE and EE education opportunities/modules in their programmes (outcome indicator I2). By this, they contribute to increase the offer of experts in the RE/EE field in the region.

The project monitoring system lists a total of five additional education opportunities: (1) IDB BRIDGE cooperation between UWI Mona Campus in Jamaica, St Augustine Campus in Trinidad and Cave Hill Campus in Barbados; (2) Biogas Laboratory and RE course at the University of Belize; (3) MSc in Sustainable Energy and Climate Change at the UTech in Jamaica; (4) CaribOOC Powering Agriculture online course; and (5) CXC Green Engineering module development and teacher training. During the evaluation mission, only one university representative could be interviewed. The evaluation demonstrated that the education module proposed was of high relevance for the educational institution. The course, however, reached only approximately 25 students per year, who moreover were mostly employees in existing companies and would therefore not increase the offer of experts in the region's RE/EE field. It was therefore concluded that the

impact at the educational level was good but less than expected.

(Ref_2, 3, Int_11 with partner organisation, Int_1 with other stakeholder)

3. **Hypothesis 3**: The offer of new RE/EE products, advisory and financial services by the region's private sector (outcome indicator I3) has led to an increase in the offer of RE/EE products and services and contributed to reduce the cost of energy services for productive and consumptive utilisation.

The project monitoring system mentions three companies offering new products or services: (1) contracting of a Viking Engines generator on a rice farm in Guyana; (2) procurement, installation and servicing of small-scale biogas digesters; and (3) setting-up of a new line of credit in RE/EE by Development Finance Corporation in Belize. During the evaluation mission, the accuracy of this information could not be directly confirmed. Nevertheless, as a result of the REETA project, a database on the CARICOM website has been set up including 62 companies from seven CARICOM member states. It can therefore be stated that the offer of RE/EE products, advisory and financial services by the private sector has definitely increased. Whether this increase will lead to a reduction in the cost of energy services for productive and consumptive utilisation, there is no evidence yet at the time of the evaluation. It is therefore concluded that the hypothesis is not entirely verifiable for the time being.

(Ref_2, 3, 14, Int_2, 4, 6, 8, 16 with partner organisation, Int_2 with GIZ)

4. **Hypothesis 4**: The development and implementation of innovative model RE and EE projects (outcome indicator I4) trigger new investments in RE and EE technologies in the Caribbean region.

According to the monitoring system, a number of model projects have been developed by the REETA project: (a) two Building Energy Efficiency Projects (BEEP) at CARICOM Secretariat and OECS Commission; (b) 11 small-scale biogas digesters installed in Grenada; (c) a joint-venture heat recovery (combined heat and power) plant; (d) a pico-hydro project for rural electrification in Hosororo, Guyana; and (e) e-mobility projects in Barbados, Saint Lucia, Grenada, Saint Vincent, and Antigua & Barbuda. The monitoring system states that all model projects have been finalised and are operational. During the evaluation mission, the stakeholders interviewed confirmed without exception the full operational capability of the model projects mentioned under (a), (d) and (e). The evaluation team could moreover visit the BEEP projects at CARICOM and had interviews regarding the Hosororo project in Guyana and the e-mobility project in Barbados. The results of the interviews are diverse. The Hosororo and BEEP projects were partly financed by the REETA project and can therefore be linked to the project outcome. The contribution of REETA to the e-mobility project in Barbados, however, consisted in financing the participation of a stakeholder in a workshop only and is therefore limited. The model projects are used as reference projects for other stakeholders in the region and have therefore a relevant impact as best practices. However, the triggering of new investments in RE/EE technologies depend on the availability of additional financial resources without which the reproducibility, and therefore the impact of the model projects, remains limited. It was therefore concluded that the impact of the model projects was good but less than expected.

(Ref_2, 3, Int_5, 6, 7, 10, 13, with partner organisation, Int_2 with other stakeholder, Int_1, 2 with GIZ)

5. **Hypothesis 5**: The implementation and financing of bankable RE and EE projects by CDB and affiliated financial institutions (outcome indicator I5) trigger new investments in RE and EE technologies in the Caribbean region.

The monitoring system states that the Caribbean Development Bank (CDB) and other financing institutions (national development banks, commercial banks) have approved five additional projects in the RE and EE sectors: (a) Barbados Water Authority PV project; (b) EE integrated in upgrade of seven schools in Guyana; (c) energy efficiency credit line in Belize; (d) energy efficiency and solar PV project in Grenada; and (e) street lighting and solar PV project in Saint Vincent. According to interviews of stakeholders, the support of the

REETA project has considerably strengthened the finance sector in the region and directly contributed to establishing RE/EE as a core business field. Moreover, the project has contributed to trigger additional investments in RE and EE. For instance, CDB has increased its annual RE/EE portfolio from approximately USD 5 million in 2014 to about USD 30 million in 2018. It is therefore concluded that the REETA project has significantly contributed to trigger new investments in the RE/EE sectors.

(Ref_2, 3, Int_2, 4, 16 with partner organisation, Int_4 with other stakeholder, Int_2 with GIZ)

Second, it was examined what alternative explanations and/or factors exist for the results observed, e.g. through the activities of other stakeholders. It was found that a number of donor organisations, such as IDB and World Bank, are active in the region's RE/EE arena. These financial institutions' activities have certainly contributed to facilitate investments in the sustainable energy field. It was, however, confirmed by a number of interviewees that REETA's activities in strengthening regional and national stakeholders' capacities relating to RE and EE was predominantly for facilitating investments. The results of other donor organisations can therefore be considered as complementary to the REETA project rather than as substitutional. It is therefore concluded that the contribution of the REETA project was key.

(Ref_2, 3, Int_4, 6, 16 with partner organisation, Int_3, 4 with other stakeholder)

Third, the question as to what would have happened without the project, was assessed. During the evaluation mission, this question was asked throughout all interviews. As a result, the following alternative scenario, describing what would have happened at impact level if the project had not been set up, was developed, based on the statements of the stakeholders:

a) The regional strategy C-SERMS and regulatory mechanisms such as the Regional Energy Efficiency Building Code would not have been finalised on time. As a consequence, regional and national institutions would not yet have the necessary basis for setting-up national policies and strategies.
b) Capacities in the regional and national institutions would not have been strong enough to promote RE and EE.
c) The regional and national institutions would not have gained as much credibility and visibility. As a consequence, decision-makers would not take these institutions as seriously as they do today.
d) Implementers of model projects would not have gained enough practical experience to showcase the feasibility of RE/EE projects.
e) The RE/EE portfolio in the Caribbean region would be much lower than it is today.
f) The awareness of private and public operators regarding the benefits of RE/EE would be much lower.
g) Universities would not have been able to offer RE/EE-related programmes.

The conclusion of these answers was that the REETA project was key in preparing the ground for RE/EE technologies.

(Int_1, 6, 7, 13, with partner organisation, Int_1, 4 with other stakeholder, Int_1 with GIZ)

Fourth, it was assessed to what extent the impact of the project was positively or negatively influenced by framework conditions, other policy areas, strategies or interests (German ministries, bilateral and multilateral development partners). It resulted that the REETA project was positively pushed by the international discussion on climate change and the visibility of climate change-related negative impacts in the region, such as cyclones.

(Ref_1, 18, Int_5, with partner organisation, Int_2 with GIZ)

Fifth, the evaluation examined the question to what extent the project has made an active and systematic contribution to widespread impact. It resulted that the project actively strived to widely disseminate results and experiences obtained to other stakeholders and/or countries by organising workshops and thematic events. Various stakeholders confirmed that they have been sensitised for and/or learnt about specific RE/EE topics through these events. Moreover, reports and documentation were published on the CARICOM website and thereby accessible to all stakeholders. Conversely, several stakeholders mentioned that wide-spreading would

have been necessary. Additionally, there was no clear upscaling strategy to ensure a sustainable use of the project results. It was therefore concluded that the project has undertaken considerable but not all possible efforts to promulgate the impact.

(Ref_2, 3, 14, 18, Int_2, 10, 12 with partner organisation, Int_4 with other stakeholder, Int_1 with GIZ)

To summarise, the REETA project had significant impact in strengthening capacities of national and regional institutions and on the improvement of institutional framework in the region. However, at the educational level, its impact was good but less than expected. The project also definitely contributed to increase the offer of RE/EE products, advisory and financial services by the private sector. Whether this increase will lead to a reduction in the cost of energy services is not verifiable at present. The model projects have a relevant impact as best practices in the region. Their reproducibility depends, however, on the availability of additional financial resources, where the impact of the model projects was good but less than expected. Regarding the support for financial institutions, the REETA project has significantly contributed to triggering new investments in the field of RE/EE. Therefore, it was concluded that the outcome of the project contributed partly to the occurred or foreseen overarching development results (24 out of 30 points).

Evaluation dimension 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

First, the evaluation examined which positive or negative unintended results at impact level can be observed and if there are negative trade-offs between the ecological, economic and social dimensions (according to the three dimensions of sustainability in the Agenda 2030). Moreover, it was examined if positive synergies between the three dimensions were exploited. It is seen that as a result of the project activities, new development projects, such as the EU-funded TAPSEC project, the German International Climate Initiative funded project or a JICA-funded project on RE/EE, stepped in and started RE/EE activities. No further impact-level positive or negative unintended results were observed. There are numerous trade-offs between the ecological, economic and social dimensions are numerous in the RE/EE arena. RE/EE contributes to reducing greenhouse gas emissions and air pollutants leading to positive effects regarding health and environment. Moreover, RE/EE can contribute to foster green jobs and to positively stimulate the economy. These trade-offs were, however, considered to be in evidence during the planning of the project and are reflected in the project documents. No negative trade-offs were identified.

(Ref_2, 3, 13, 18, Int_2, 6, 10, 13, with partner organisation, Int_2, 3, 4 with other stakeholder, Int_1, 2 with GIZ)

Second, the question as to what measures have been taken by the project to avoid and counteract the risks, negative results and/or trade-offs, was examined. The only major risk for the project impact identified is the recent discovery of oil and gas resources in Guyana. In this regard, it is not yet clearly predictable if Guyana will continue to invest in RE/EE or if fossil fuels will play a far more predominant role. A stakeholder insisted that the government's point of view on RE/EE has not changed, which would demonstrate the positive result of the REETA project. The evaluation, however, does not share this point of view. It was concluded that this risk has not been addressed by the project; but it is also beyond the project's sphere of influence. Moreover, it may affect only one of the project's sixteen partner countries. No negative trade-offs or negative unintended results at impact level were identified.

(Ref_2, 3, Int_2, 6, 7, 13, 15 with partner organisation, Int_3 with other stakeholder, Int_2 with GIZ)

Third, it was assessed to what extent potential unintended positive results and potential synergies between the ecological, economic and social dimensions were monitored and exploited. As stated above, potential synergies were already considered during the planning phase of the project and are reflected in the project

documents. However, the monitoring system did not take up these potential synergies, e.g. on health, employment opportunities or greenhouse gas emissions. It is stated positively that during its implementation the project has involved stakeholders (e.g. CCREEE) which were not initially foreseen and by this enlarged its outreach and visibility.

(Ref_2, 3, 9, 18, Int_2, 6, 12, with partner organisation, Int_1, 2 with GIZ)

In summary, the REETA project has triggered new development projects, while no further positive or negative unintended results were observed at impact level. The trade-offs between the ecological, economic and social dimensions were considered during the planning of the project, while no negative trade-offs were identified. However, the project has not addressed all relevant risks and did not take up all potential synergies (28 out of 30 points)

Criterion	Assessment dimension	Score and rating
Impact	The intended overarching development results have occurred or are foreseen*	31 of 40 points
	The outcome of the project contributed to the occurred or foreseen overarching development results*	24 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: 83 of 100 points Rating: Level 2 = successful

4.5 Efficiency

Evaluation basis and design for assessing efficiency

Evaluation basis:

The evaluation of the efficiency criterion was based on the analysis of whether the results of the REETA project were obtained in an efficient way. Therefore, the evaluation of the efficiency criterion examined the following two evaluation dimensions:

1. The project's use of resources was appropriate with regard to the outputs achieved (production efficiency).
2. The project's use of resources is appropriate with regard to achieving the project objective/outcome (allocation efficiency).

Evaluation design:

For each of the evaluation dimensions, several evaluation questions and evaluation indicators were used to cover all relevant evaluation aspects. Additionally, the Excel efficiency tool developed by the GIZ Evaluation Unit was applied for data collection, assigning costs to project outputs and analysing production efficiency. The tool applies a 'follow-the-money' analysis and demonstrates the use of resources for the respective outputs. For further details, please refer to the evaluation matrix (Annex 1).

Empirical methods:

To perform the analysis of production efficiency, the GIZ efficiency tool was used. Moreover, the tool analyses production efficiency against progress on the indicators associated to each output. The REETA project had already started in 2013, when project designing was not based on the expectation of output-related efficiency and consequently financial monitoring was not output specific. Therefore, a post-implementation analysis respecting the current GIZ guidelines was highly ambitious. Moreover, the project manager had left GIZ at the end of the project, resulting in limited access to information on distribution of costs to specific outputs and results. As a consequence, allocation of costs to outputs had to be based predominantly on estimations.

The data sources available included the project finance report ('Kostenträger-Obligo-Bericht'), progress reports, results presentations, monitoring system and Capacity WORKS self-assessment. The documents were assessed against the evaluation questions. Additionally, key stakeholders' opinions and data were collected in the partner region during the evaluation mission by applying semi-structured interviews based on the evaluation questions. Data obtained by document analysis was then triangulated with opinions of key stakeholders in the partner region. Key stakeholders included representatives from regional and national partner institutions, private sector companies, donor organisations and project staff.

Analysis and assessment regarding efficiency

Evaluation dimension 1 (Production efficiency): The project's use of resources was appropriate with regard to the outputs achieved (output level)

First, it was assessed to what extent there were deviations between the identified costs and the initial projection costs and, if possible, what reasons for the deviations could be identified. The analysis of the progress and finance reports demonstrated that the project managed its resources according to the planned cost plan (cost lines) and no deviations from initially planned costs were stated. Moreover, stakeholders interviewed particularly appreciated the flexibility of use of resources during implementation. One interview partner stated, however, that the budget for implementing activities was completely spent several months before the end of the project, due, among others, to additional activities beyond the scope of the project. This

indicates that there was potential for maximisation of staff resources.

(Ref_2, 3, 15, Int_2, 4, 16, with partner organisation, Int_2 with GIZ)

Second, the evaluation focused on the questions to what extent the outputs could have been maximised with the same amount of resources, under the same framework conditions and with the same or better quality (maximum principle). In order to answer this question, it was evaluated if the project managed its resources according to the planned costs for the agreed outputs. It resulted, however, that in accordance with valid procedures at the planning stage, the project was not designed based on output-specific costs. Therefore, the costs for staff resources were allocated to the different outputs based on information from the project manager. The other costs were allocated by estimations or equally allocated to all five outputs. The resulting costs per output are as follows:

Output A	15%
Output B	20%
Output C	14%
Output D	25%
Output E	17%
Overarching costs	10%

These figures indicate that there were nearly equal costs for Output A (regional strategy), Output C (private sector) and Output E (financial institutions), which corresponds to the nature of activities, mainly capacity development measures, carried out to achieve these outputs. The highest costs per output were at Output D (model projects), which can be explained by the additional costs for procurement of materials for the model projects such as the Hosororo hydropower project. The costs for Output B (capacity building), however, are higher than expected as the activities of this output are mainly addressed towards universities and training institutions. Moreover, the impact of the results obtained in Output B is also less than expected (see section 4.4). It is therefore concluded that there was a potential to maximise the efficiency of the project by focusing less on the university level. The overarching costs with about 10% are lower than expected in a project with such a complex partner system and cultural and geographical diversity.

Additionally, it was found that all output indicators were 100% achieved with the resources available. Nevertheless, some inefficiencies were stated, for instance the financing of a feasibility study for a private company, which was never used. Finally, it was assessed whether the project's overarching costs were reasonable in relation to the costs of the outputs. It was concluded that the project managed the challenge very well to cover activities in 16 countries in spite of the resulting higher overarching costs. However, it was also stated that no activities were carried out in the Dominican Republic.

(Ref_2, 3, 15, Int_2, 6, 10, with partner organisation, Int_3 with other stakeholder, Int_1, 2 with GIZ)

Third, it was evaluated to what extent outputs could have been maximised by reallocating resources between the outputs. The central point here is if the project managed its resources to achieve other outputs better or faster if outputs were already achieved or could not be reached. As already stated, it resulted that the project was not designed based on output-specific costs, but that all output indicators were 100% achieved with the resources available. However, as mentioned, the costs for Output B do not correspond to the expected result. Furthermore, in accordance with the statement that the budget for implementation of activities was completely spent several months before the end of the project, although project staff were available for activities, it was concluded that there was potential for maximisation of project resources, e.g. by reducing project staff and

increasing the operational budget.

(Ref_2, 3, 15, Int_2, 6, 10, with partner organisation, Int_1 with other stakeholder, Int_1, 2 with GIZ)

Fourth, it was assessed if output/resource ratio and alternatives were carefully considered during the design and implementation process – and if so, how? Here, the evaluation focused on the question whether the partner constellation proposed in the project proposal and the associated levels of intervention could be fully realised in terms of estimated costs in relation to the projected outputs of the project. It was found that the project successfully managed to cover all three intervention areas (macro, meso, micro) and to cooperate with a very complex partner structure composed of regional and national institutions as well as private sector, universities and finance institutions. Moreover, it was analysedwhether the different thematic topics proposed in the project proposal were well implemented in terms of estimated costs in relation to the expected project outputs. The results showed that the project managed to cover both topics (RE and EE) and included highly innovative topics such as e-mobility. Finally, it was assessed if the regional scope of the project described in the project proposal could be fully realised in terms of estimated costs in relation to the projected outputs of the project. Here, the evaluation concluded that the regional scope of the project, including 16 countries and four languages, was a big challenge in terms of project management and implementation of activities. The project 100% achieved all output indicators and successfully managed to cover activities in 16 countries within a regional context. Although, no relevant activities were carried out in the Dominican Republic.

(Ref_2, 3, 15, Int_2, 6, 10, with partner organisation, Int_1, 2 with GIZ)

In summary, the project managed its resources according to the planned costings (cost lines) and no deviations from initially planned costs were stated. Moreover, all output indicators were 100% achieved with the resources available despite the challenge to cover activities in 16 countries. However, no relevant activities were carried out in the Dominican Republic. Furthermore, the project successfully managed to cover all three intervention areas (macro, meso, micro) and to cooperate with a very complex partner structure. However, the budget for implementating the activities was completely spent several months before the end of the project due, among others, to additional activities beyond the scope of the project. It was therefore concluded that the project's use of resources was predominantly appropriate with regard to the outputs achieved (60 out of 70 points).

Evaluation dimension 2 (Allocation efficiency): The project's use of resources was appropriate with regard to achieving the project objective (outcome level)

The analysis of this evaluation dimension mainly followed the evaluation questions (Annex 1) and were only partly based on cost data.

First, the evaluation assessed, in particular, to what extent the outcome could have been maximised with the same amount of resources but maintain the same or better quality (maximum principle). In this regard, interviewed stakeholders clearly confirmed that the project has achieved its maximum outcome according to the indicators and within the allocated budget. All outcome indicators were achieved to nearly 100% with the resources available.

(Ref_2, 3, 15, Int_4, 6, 10, 11, 13, 16 with partner organisation, Int_3 with other stakeholder, Int_1, 2 with GIZ)

Second, it was assessed if and how the outcome-resources ratio and alternatives were carefully considered during the conception and implementation process. Therefore, the evaluators assessed the question whether the project managed its resources between the outputs so that the project achieved maximum results at outcome level. It resulted that all outcome indicators were achieved to 100% with the available resources. Resources were adequately directed to the different outputs. Nevertheless, more effort should have been made to ensure the sustainability of the results (for additional information, please refer to section 4.6). Moreover, it was analysed whether the partner constellation, which was defined in the project proposal, and the associated

levels of intervention could be fully realised in terms of estimated costs in relation to the project's expected outcome. It was concluded that to achieve the project outcome the project successfully managed to cover all three intervention areas (macro, meso, micro) and to cooperate with a very complex partner structure composed of regional and national institutions as well as private sector, universities and finance institutions. Next, it was assessed if the different thematic topics itemised in the project proposal were well implemented in terms of estimated costs in relation to the projected outcome. The evaluation concluded that the project managed well to cover RE and EE topics and included highly innovative topics such as e-mobility. Finally, the question was evaluated if the regional scope of the project described in the project proposal could be fully realised in terms of estimated costs in relation to the projected outcome of the project. As already described above, it was concluded that the regional scope of the project including 16 countries and four languages represented a big challenge in terms of project management and implementation of activities. The project achieved all outcome indicators to nearly 100%.

(Ref_2, 3, 15, Int_2, 4, 6, 10, 11, 13, 16 with partner organisation, Int_3 with other stakeholder, Int_2 with GIZ)

Third, it was analysed to what extent more results were achieved through synergies and/or leverage of more resources, with the help of other bilateral and multilateral donors and organisations; and if so, was the relationship between costs and results appropriate. The question of whether the project has taken the appropriate steps to fully create synergies with interventions of other donors could be answered positively. The project successfully managed to leverage funds for additional projects. For instance, in June 2018, a grant agreement was signed between JICA and the Government of the Republic of Guyana regarding a project on renewable energy and the improvement of power system (JICA, EU). Moreover, the project managed to leverage EU funds for a new 'Technical Assistance Programme for Sustainable Energy in the Caribbean (TAPSEC)'. For this leverage, however, the project has used significant project personal. Additionally, it was evaluated whether partner contributions were appropriate in relation to the costs of the project outputs: according to the project documents, partners contributed a total of EUR 400,000 to the project. Furthermore, partners also contributed their own funds to complement project activities, such as the Hosororo model project in Guyana or the e-mobility project in Barbados.

(Ref_2, 3, 15, Int_4, 6, 7, 10, 11, 13, 16 with partner organisation, Int_3,4 with other stakeholder, Int_1, 2 with GIZ)

To summarise, the project has achieved all outcome indicators to nearly 100% with the resources available. Furthermore, the project managed well to cover RE and EE topics and include highly innovative topics such as e-mobility. Moreover, it succeeded in leveraging funds for additional projects. Nevertheless, more effort should have been made to ensure the sustainability of the results. Therefore, it was concluded that the project's use of resources was appropriate with regard to achieving the project objective (24 out of 30 points).

Criterion	Assessment dimension	Score and rating
Efficiency	The project's use of resources is appropriate with regard to the outputs achieved. [Production efficiency]	60 of 70 points
	The project's use of resources is appropriate with regard to achieving the projects objective (outcome). [Allocation efficiency]	24 of 30 points
Overall score and rating		Score: 84 of 100 points Rating: Level 2 = successful

4.6 Sustainability

Evaluation basis and design for assessing sustainability

Evaluation basis:

The sustainability criterion evaluation was based on the analysis of whether the identified positive results within the scope of sustainability are institutionalised in CARICOM member states and partner countries, following the end of support by the donors. The evaluation of the sustainability criterion examined the following two evaluation dimensions:

1. Prerequisite for ensuring the long-term success of the project: results are anchored in (partner) structures.
2. Forecast of durability: results of the project are permanent, stable and long-term resilient.

Evaluation design:

Several evaluation questions, evaluation indicators and a contribution analysis were used to cover all relevant evaluation aspects for each of the evaluation dimensions. For further details, please refer to the evaluation matrix (Annex 1).

Empirical methods:

The available data sources included progress reports, results presentations, monitoring system and Capacity WORKS self-assessment. The completeness and quality of outputs from the project were examined. Moreover, additional data sets were collected using semi-structured interviews with key stakeholders during the evaluation mission. The data was then triangulated with opinions of key stakeholders in the partner region and a further desk review.

Analysis and assessment regarding sustainability

Evaluation dimension 1: Prerequisite for ensuring the long-term success of the project: results are anchored in (partner) structures

With respect to assessing the prerequisite for ensuring the long-term success of the project, which fundamentally examines how results are anchored in partner organisation's structures, several intended results of the REETA project were anticipated and assessed during the evaluation. These include the existence of a Regionally Coordinated Strategy for Sustainable Energy (C-SERMS), a regional database with companies offering RE and EE technology or services that can be publicly accessed, partnership models with the private sector, partnership agreements with universities to continue to offer RE/EE-related training programmes, the existence of a cadre of experts in the field of RE and EE, and a project pipeline in CDB or other financial institutions that include bankable project proposals having an RE/EE focus. In taking a closer look at issues regarding the sustainability of the project, while there has not been a clearly defined link, in principle the REETA project appears to have strong synergies with the emerging Technical Assistance Programme for Sustainable Energy in the Caribbean (TAPSEC). This project is currently being planned and will subsequently be operationalised through the CCS. This project is funded by the German Federal Ministry of Economic Cooperation and Development (BMZ) and the European Union (EU), under the 11th European Development Fund. TAPSEC is expected to focus on climate change, environment and sustainable energy, as well as addressing sustainable development needs of member states. By virtue of its design, TAPSEC intends to continue initiatives started by the REETA project; therefore a degree of continuity is expected. However, this reliance on project funding from international development agencies to further progress RE and EE-related projects indicates that regional institutions are challenged in grounding the REETA project results within their operating structures. The evaluation notes that this reliance on external sources of funding for future interventions demonstrates a low measure of sustainability for the REETA project.

(Ref_14,18, Int_ 2, 6,9,12 with partner organisation, Int_1 with GIZ)

Second, the REETA project has been able to facilitate the development of capacities, strengthened management systems and developed stronger working relationships and networks in organisations such as the CCS, CROSQ, CXC, UTech, UWI, OECS, BLP, GEA, CDB, CDF and CCREEE. These organisations have been able to institutionalise various RE and EE products and services, including: the Regional Energy Building Code; RE model projects in hydropower and solar energy; financial risk abatement assessment frameworks for RE projects; e-mobility in the Barbados' transportation sector; integrated energy utility models; and academic programmes at the secondary and university levels. Regarding the specific outputs of each project component, it should be noted that the C-SERMS is to be used as a critical input document for the development of future regional and national RE and EE policies, strategies and plans. Regional institutions such as UTech and CXC have indicated their commitment to continue offering advanced and post-graduate programmes relating to RE and EE. In the case of UTech, two intakes in 2017 and 2018 comprising a total of 28 students enrolled on the MSc course in Sustainability and Climate Change. Currently, there have been formal advertisements to enrol participants for a third intake to commence in 2019. Enrolled students are also required to pay a fee of approximately 1.6 million Jamaica dollars (approximately EUR 10,500) for the programme. These fees are used to remunerate faculty and address operating expenses for the programme. UTech also intends to offer 'stand-alone' public programmes based on the modules of the Master of Science and Climate Change programme. These programmes will also be offered at an affordable price to interested persons. In the case of CXC, in 2017 the CAPE Green Engineering course was offered in three territories (Saint Kitts, Saint Vincent, and Suriname) with 77 candidates. In 2018, Guyana was included as a new territory and a total of 87 students were enrolled. In 2019, the enrolment increased to 122 entries, including five additional schools in Jamaica. This programme has seen consistent growth and uptake which is expected to continue, thereby involving greater numbers of individuals in RE and EE technologies.

(Int_4, 9, 10, 11, 12, 13 with partner organisation and Int_1 with other stakeholder)

Institutions such as CDF and CDB have articulated that they are committed to achieving their mandate to lead in providing effective, efficient and sustainable solutions, which will address the challenges faced by disadvantaged countries, regions and sectors participating in the CARICOM Single Market and Economy (CSME). These institutions will seek to provide funding opportunities for organisations to undertake innovative RE and EE projects in the region. This commitment has been incorporated in the CDF's Strategic Plan (2015-2010) and the CDB's Energy Policy and Strategy 2015. Within the strategic framework and policy agenda, the technical capacity built within partner institutions is expected to be transferred among other private and public sector organisations to ensure a greater level of RE and EE uptake. This intent is also articulated with the CDB's Education and Training Policy and Strategy 2017 and the CDF Strategic Plan (2015-2020).

Furthermore, the results of these initiatives are fundamental to achieving regional objectives relating to the reduction in the carbon footprint and reliance on fossil fuels as their main energy source in CARICOM member states. In this context, the advisory contents, approaches, methods and concepts of the project is intended to be used by the various CARICOM member states and partners, which have the potential to increase the probability that they will be continuously used and further developed. Another aspect of the project's sustainability focused on the extent to which resources and capacities at the individual and organisational levels in the partner institutions are available in the longer-term to ensure that the continuation of the project results is achieved. In this regard, the evaluation has highlighted that the CCS has retained technical staff who have the capacity to transfer knowledge related to RE and EE topics and technologies and also manage RE and EE-related initiatives. Additionally, regional institutions have utilised its existing staff to design and plan RE and EE projects such as e-mobility, EE Building Code, hydropower plants and pilot solar farms. Although capacities presently exist, during the evaluation exercise, interviews with stakeholders have indicated that human resources are insufficient: the issue of succession planning must be addressed to ensure project continuity and mitigate the risk of capacity losses within institutions. The evaluation also recognised that significant efforts have been made in terms of sharing and documenting lessons learnt to ensure the project's sustainability, e.g. through project reporting, planning sessions, training workshops, conferences and the use of the Caribbean Community Energypedia wiki and results-based monitoring.[2] The evaluation notes that lessons learnt and best practices have been documented and shared through a combination of push and pull communication strategies employed by the project unit and the CCS Energy programme.

(Ref_19,20,23,24,25, Int_6,14, 16 with partner organisation)

In summary, the C-SERMS will probably be used as an essential input document for the development of future regional and national RE and EE policies, strategies and plans. Regional institutions such as UTech and CXC will probably continue to offer programmes related to RE and EE, and institutions such as the CDF and CDB will probably continue offering funding opportunities for organisations to undertake innovative RE and EE projects. With a certain degree of probability, the capacities built within the partner institutions will be used to transfer knowledge among other institutions to ensure greater level of RE and EE uptake. Moreover, in the context of knowledge management, lessons learnt and best practices have been documented and shared – through project reporting, planning sessions training opportunities, conferences and the use of Energypedia. However, there is no formal project exit strategy in place and, although the TAPSEC project is designed to have synergies with the REETA project, financial resources are not being utilised from the project partners. In this regard, there is still a significant reliance on external sources to finance the implementation of RE and EE projects. Additionally, while CCS staff were hired and retained to transfer knowledge relating to RE and EE topics and their management, regional institutions have utilised their existing staff to design and plan RE and EE projects such as e-mobility, EE Building Code, hydropower and solar farms. However, many project partners still lack the required human resources to progress the work undertaken in the REETA, therefore

[2] https://caribbean-community.energypedia.info/wiki/Main_Page including: calendar, publications database and companies' database; also for minutes of team meetings.

creating a high probability of institutional capacity loss. In conclusion, anchored results are not fully established and implemented in (partner) structures, whereby the prerequisite for ensuring the long-term success of the project is only partially given (35 out of 50 points).

Evaluation dimension 2: Forecast of durability: results of the project are permanent, stable and long-term resilient

The forecast of the durability of results is a key element of the sustainability criterion and refers to the results that have been identified under section 4.3: Effectiveness and the impact criterion. Through a participatory approach with project partners and key stakeholder groups, potential external and internal drivers, critical success factors, impediments and risks for sustainability were identified and discussed. These discussions allowed for the determination of reasonable assumptions regarding the stability and resilience of the achieved results.

In this regard, first, the sustainability of the strategy C-SERMS was examined and the extent to which national actors have the ability to implement activities of C-CERMS (outcome indicator I1). In exploring this aspect of the project's sustainability, the C-SERMS is considered to be a key planning mechanism and communication tool used to establish a link between priorities and renewable energy policy goals of CARICOM member states. The C-SERMS is also intended to guide, encourage and expedite implementation of the sustainable energy aspects of the CARICOM Energy Policy, by providing member states with joint regional sustainable energy targets and a common, coherent strategy for transitioning to sustainable energy systems. The evaluation indicates that forecast durability of the national actors' ability to implement C-CERMS activities is relatively strong. This ranking has resulted because C-SERMS provides an organisational framework for integrated planning among key actors including the development partner community, financial services sector, academic institutions, civil society, national and regional policy-makers, as well as institutions of the Community. Additionally, a technical advisory group (TAG) has been established to provide strategic oversight of the C-SERMS platform and comprises a mix of regional institutions with an energy-related mandate. These include the Caribbean Electric Utility Services Corporation (CARILEC), CCREEE, CDB and the UWI. The TAG also includes representation from regional civil society and the development partners that are mostly involved in the support of sustainable energy initiatives within the region. The TAG is expected to develop and manage processes for annual monitoring and identifying areas for quality improvement in the implementation of the respective actions, thereby tracking and assessing the effectiveness of programmes in supporting the C-SERMS objectives and targets. The realisation of these strategies can facilitate national actors to successfully implement C-CERMS activities (outcome indicator I1).

(Ref_18,19,20,22, Int_3, 6,12,16 with partner organisation)

Second, in examining how much regional and national educational institutions can continue to offer training opportunities in RE or EE (outcome indicator I2), UTech Jamaica and CXC were appraised. The evaluation first underscored that the capacity of regional institutions to design and deliver RE and EE-related training programmes has been strengthened, causing UTech Jamaica to develop and launch its multidisciplinary MSc course in Sustainable Energy and Climate Change in 2017; and CXC to create the Caribbean Advanced Proficiency Examination (CAPE) Green Engineering syllabus. The durability and continuity of these training opportunities can be defined as strong. This ranking is assigned as a result of UTech's mandate to become more financially self-sufficient, thus offering its MSc in Sustainable Energy and Climate Change to both public and private sector candidates at a fixed fee that will fund its operating expenses. Additionally, the CXC has a well-established policy and implementation plan for its new generation portfolio for CAPE, which includes Green Engineering. The deployment of the Green Engineering is consistent with CXC's commitment to its vision and its 2020 Strategic Goal to address the most significant education concerns faced by the region in order to improve equity and learning. Although, the current number of students is still quite low, there is a high probability that there will be an increase in the number of experts in the region's field of RE/EE. Nevertheless, one doubts whether this number of experts will be sufficient for the likely increasing regional demand.

(Ref_23,24,25,26, Int_11 with partner organisation, Int_1 with other stakeholder)

Third, the probability that companies will sustainably offer new RE/EE products, advisory and financial services was examined (outcome indicator I3). The evaluation results have shown that it is highly probable that the demand for RE/EE products and services will increase in the future, thereby stimulating the offer of corresponding products. However, the availability of financial resources needed for further investments in RE/EE products and services is not secured. Moreover, there are still regulatory barriers, such as the ban on installing solar panels on private roof tops in Barbados, which may hinder further development of RE/EE products and services. Therefore, there is only a limited probability that the project outcome will contribute to an increase in the security of supply and environmental sustainability of energy supply in the Caribbean, and to cost reduction in energy services for productive and consumptive utilisation.

(Ref 27, Int_2, 6, 11 with partner organisation)

Fourth, the sustainability of the model RE and EE projects and the corresponding financing mechanisms (outcome indicator I4) was analysed based on the evaluation conducted and the use of the project's monitoring system. The model projects included two Building Energy Efficiency Projects (BEEP) at CARICOM Secretariat and OECS Commission, 11 small-scale biogas digesters in Grenada, a joint-venture heat recovery (combined heat and power) plant, a pico-hydro project for rural electrification in Hosororo, Guyana and e-mobility projects in Barbados, Saint Lucia, Grenada, Saint Vincent, and Antigua & Barbuda. In critically assessing the durability of the results, although the project has triggered new investments in RE and EE technologies in the Caribbean region, the sustainability of these new investments requires additional financial and technical resources, which are, however, not readily available by either by project partners or the private sector. The project has not therefore developed a deliberate and pragmatic approach to ensure resource mobilisation and management. In this regard, replication and utility of the results obtained through the model projects can prove to be difficult, thus causing a slow roll-out rate of the experiences obtained through the model projects. This can ultimately affect the realisation of member states' RE and EE mandate and their ability to reduce the cost of energy services.

(Ref_ 14, Int_2, 4, 6, 9,10, 13 with partner organisation)

Fifth, the sustainability of financial institutions' strengthened capacity to implement financial services for RE and EE was assessed (outcome indicator I5). The evaluation demonstrated that, while the REETA project has significantly contributed to trigger new RE/EE investments by financial institutions such as the CDB and CDF, the required human resources to progress this agenda must be accessible within the institutions. However, in both organisations, during evaluation interviews, the stakeholders indicated that the required human resources were still insufficient. The durability of this result and its contribution to an increase of EE and RE projects being funded and implemented in the region, which would ultimately facilitate an improvement in the economic and environmental conditions in the Caribbean, is therefore not secured. The evaluation has also recorded several inherent risks that can negatively affect the durability of the project, thus ultimately affecting its sustainability. In this regard, the evaluation has recognised that there is the risk of member states having a lack of future capacity to progress RE and EE-related interventions. However, the new pool of regional experts developed to remotely support RE and EE projects and on a face-to-face basis might mitigate this risk, as well as short-terms consultancies that are funded by member states and the CCS. Additionally, for risks relating to the implementation of future projects, member states' funding through CDF and CDB can be utilised. In so doing, there may be an opportunity for capacity development of technical and management issues through appropriate knowledge transfer mechanisms. For political risks regarding change in national policies, continuous engagement with the specific Ministers of Energy and Energy-Related Affairs can be undertaken by the CCS Energy programme manager. Furthermore, COTED will be used as a forum to present RE and EE development issues, with the aim of achieving immediate resolutions, which would reduce project implementation bottlenecks.

(Int_2,4,16, with partner organisation)

In summary, there has been significant regional political and institutional support for the progress of RE and EE technologies. However, many project partner institutions have indicated that they do not have sufficient human and financial resources to undertake future RE and EE-related interventions. Project partners are utilising resources to pursue RE and EE objectives. However, utilising their own resources for these projects creates competition for scarce resources dedicated to operational activities. In conclusion, the results of the project are not yet fully permanent nor completely stable. As a consequence, the long-term resilience of the project is at risk (33 out 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.	35 of 50 points
	Forecast of durability: Results of the project are permanent, stable and long-term resilient.	33 of 50 points
Overall score and rating		Score: 68 of 100 points Rating: Level 3= rather successful

4.7 Key results and overall rating

Relevance

The two most relevant strategy documents identified are the CARICOM Regional Energy Policy (2013) and the CARICOM Strategic Plan for the Caribbean Community 2015-2019. Regarding the Energy Policy, the concept of the REETA project took up several of its objectives and was entirely in line with its vision and objectives, in particular by promoting renewable energy and energy efficiency and by focusing on the capacity development of regional and national stakeholders. Moreover, the REETA project developed the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS) and by this made a significant contribution to fill a very relevant strategic gap in the region's energy sector.In relation to the CARICOM Strategic Plan for the Caribbean Community 2015-2019, the concept of the REETA project was entirely in line with the strategic objectives of the regional development plan. Regarding the most relevant interactions of the project, climate change was identified as most relevant sector, in particular mitigation of greenhouse gases. It was found that there is no regional approach on climate change in the CARICOM region and that the development and implementation of nationally determined contributions (NDC) is taking place at member states level only. The REETA project has nevertheless included climate change mitigation aspects in its intervention concept. Moreover, the economic dimension of sustainable development was an integral part of the project design and implementation and was directly addressed in three outputs (private sector, model projects and financial institutions). Additionally, the concept of the REETA project was entirely in line with the current BMZ strategies in the energy sector, climate sector and for the region, particularly the concept for development cooperation with Latin-American and Caribbean countries (Paper N° 161), the BMZ document on Sustainable Energy for Development (2014) and the BMZ climate policy. The project mainly focused on SDG 7, but also considered SDGs 8, 9 and 13. The

project is considered being consistent with international standards and agreements, in particular the Sustainable Development Goals. Also, the REETA project took into account the Agenda 2030 principles by '*contributing to ensure security of energy supply and to stabilise energy prices, which is of particular relevance for poor households which are constraint to disburse a relevant share of their income for energy supply*'. Moreover, the REETA project has set up model projects in disadvantaged areas (e.g. Hosororo hydropower plant in hinterland area of Guyana) with direct positive benefit for poor people. The project objective, the ToC and the corresponding results hypotheses were considered complete, adequate and realistic as it addressed lacking capacities at various levels (political, technical, organisational, economic) as being a core problem. Because this is a regional project, including organisations from 15 CARICOM member countries and the Dominican Republic, the system boundary of the REETA project was very complex and somewhat dynamic. The project addressed this challenge successfully through flexibility in implementation of activities and through a balanced set-up of instruments. Relevant strategic changes (e.g. the need identified to involve financial institutions) were appropriately addressed through modification proposals.

Effectiveness

The evaluation revealed that the project's objective (outcome) and outcome indicators were relevant given the regional needs and demands for RE and EE. The five indicators defined in the project proposal (latest modification) measure the increase of capacities of regional and national stakeholders at the strategy, capacity building, private sector, financial sector and model projects levels. They are considered to be sufficient to measure the achievement of the project objective, except indicator 4, which has been adapted. The project achieved all indicators except indicator 4, which was not completely achieved. A six-step contribution analysis was applied on two selected result hypotheses of the ToC (Hypothesis 1 for Output A and Hypothesis 2 for Output D). The analysis showed that Output A has made significant contributions to the preparedness of national stakeholders in the RE and EE field for the political, organisational and technical requirements of a growing energy market in the Caribbean region. As a result, the module objective has been achieved, and measured by the reality that national stakeholders have started using and implementing activities of C-SERMS (outcome indicator I1). Hypothesis 1 has therefore been fully confirmed.

Output D has contributed by the fact that model projects with different RE/EE technologies having regional relevance were implemented in the region. Hypothesis 2 has also been fully confirmed. The project undertook and completed the planned activities in each of its components and nearly achieved the intended outputs. The evaluation confirmed that the technical support provided to the Energy Unit of CARICOM and COTED resulted in the elaboration of the Regionally Coordinated Strategy for Sustainable Energy (C-SERMS) (Result A1). The C-SERMS is currently being used as a guiding document for RE and EE-related policies in CARICOM member states. Additionally, the technical support provided to the Energy Unit of CARICOM and COTED resulted in the establishment of a system to monitor the implementation of C-SERMS through the technical advisory body (TAB) and a central knowledge management at CARICOM (Result A2). The project was also able to contribute to ensuring that regional/national companies that have participated in the project's capacity development activities can offer new technologies, and RE and EE consulting or financial services (outcome indicator I3). Furthermore, the capacity of regional institutions to design and deliver RE and EE-related training programmes were developed with project support to conduct training workshops on curriculum development and exposure to emerging RE and EE issues and opportunities. Two of three model projects with different RE & EE technologies that have regional relevance were implemented in the region (outcome indicator I4). Also, the capacities of CDB, CDF and affiliated financial institutions (national development banks, commercial banks) were improved to implement financial services for RE and EE. In conclusion, the project's activities and outputs have contributed substantially to the achievement of the project objective (outcome), Furthermore, without the project, the regional RE and EE agenda would have been implemented at a slower rate, causing development opportunities to be lost.

Project risks and assumptions were appropriately identified during project design and revalidated and identified in an ad hoc manner during project implementation. While there was no formal nor institutionalised risk management approach, when risks were identified, appropriate risk response strategies were identified and subsequently implemented. However, there has not been a formal or deliberate mechanism to identify potential unintended results at the outcome level and unintended positive results at the outcome level were not fully and formally monitored, nor exploited by the project team.

Impact

The political, regulatory and institutional framework for RE/EE investment in the Caribbean have considerably improved. The adoption of the C-SERMS (political level) and of the CARICOM Regional Energy Efficiency Building Code (regulatory level) are good examples of this. Moreover, institutions at national and regional level have improved their capacities in the RE/EE field and are now better prepared for new and innovative topics, such as e-mobility. However, several impacts in the RE/EE field strongly depend on the availability of financial resources for RE and EE technologies. During the evaluation, partner organisations confirmed that investments in RE/EE have increased over the last 5 years. Moreover, some CARICOM member countries have adopted low carbon strategies (e.g. Guyana) or even a very ambitious ‘zero carbon strategy’ (e.g. Barbados). Supposing that investments in RE/EE will continue to increase, it is plausible that environmental sustainability of energy supply increases and emission of greenhouse gases decreases. Furthermore, it is likely that access to clean energy improves. According to a number of REETA project stakeholders, these impacts could be achieved by the midterm. However, investments in RE/EE technologies require significant financial resources or structuring. It is therefore not clearly predictable/plausible that the cost of energy services for productive and consumptive purposes decreases. Some impacts predicted are based on very long hypotheses and will have tangible effects only several years after investment and real implementation of RE/EE-projects. These impacts comprise the increased security of energy supply, improvement of environmental conditions, reduction of air pollution, improvement of economic conditions, and reduction of poverty. According to various stakeholders interviewed during the evaluation, these impacts are not yet taking place.

The contribution analysis showed that the REETA project had significant impact on the improvement of the region’s institutional framework. However, at the educational level, its impact was good but less than expected. It showed, moreover, that the triggering of new investments in RE/EE technologies depend on the availability of additional financial resources without which the reproducibility and therefore the impact of the model projects remains limited. The impact of the model projects was good but less than expected. The project therefore actively strived to widely disseminate results and experiences obtained to other stakeholders and/or countries by organising workshops and thematic events. However, a clear upscaling strategy to ensure a sustainable use of the project results was lacking. No further positive or negative unintended results at impact level were observed. Potential synergies between the ecological, economic and social dimensions were already considered during the planning phase of the project, but the monitoring system did not take up these potential synergies, e.g. on health, employment opportunities or greenhouse gas emissions.

Efficiency

The project managed its resources according to the planned cost plan (cost lines) and no deviations from initially planned costs were stated. Moreover, stakeholders interviewed particularly appreciated the flexible use of resources during implementation. Additionally, the analysis showed that there were nearly equal costs for Output A (regional strategy), Output C (private sector) and Output E (financial institutions). The highest costs per output were at Output D (model projects) due to costs for procurement of materials for the model projects. However, the costs for Output B (capacity building), addressed towards universities and training institutions, were higher than expected. Considering the lower impact of the results obtained in Output B, it is concluded that there was potential to maximise the efficiency of the project by less focus on the university level. The overarching costs of about 10% of the budget are lower than expected in a project with such a complex partner

system and cultural and geographical diversity. Furthermore, the budget for implementing activities was completely spent several months before the end of the project owing to, among others, additional activities beyond the scope of the project. This indicates that there was potential for maximisation of project resources by reducing project staff and increasing the operational budget. Although all output indicators were 100% achieved with the resources available, some inefficiencies were stated; for instance, the financing of a feasibility study for a private company, which was never used. Finally, it was concluded that the project very well managed to cover activities in 16 countries in spite of the resulting higher overarching costs. Moreover, it was found that the project successfully managed to cover all three intervention areas (macro, meso, micro) and to cooperate with a very complex partner structure composed of regional and national institutions as well as private sector, universities and finance institutions. All outcome-level indicators were also achieved to nearly 100% with the resources available. Resources were adequately directed to the different outputs. Nevertheless, more effort should have been made to ensure the sustainability of the results. The project also managed to successfully leverage funds for additional projects.

Sustainability

The REETA project has strong synergies with the emerging TAPSEC project, funded by Germany and the EU. While TAPSEC can create a level of continuity, it also shows the reliance of partner organisations on funding from international development agencies to further accelerate RE and EE-related projects. It indicates that regional institutions are challenged in anchoring the results of REETA project within their operating structures. Additionally, the REETA project has been able to facilitate the development of capacities, strengthen management systems and develop stronger working relationships and networks in organisations such as the CCS, CROSQ, CXC, UTech, UWI, OECS, BLP, GEA, CDB, CDF and CCREEE. These organisations have institutionalised various RE and EE products and services. Institutions such as CDF and CDB have articulated their strong commitment to achieving their mandate to provide funding opportunities for organisations to undertake innovative RE and EE projects in the region. However, while capacities presently exist, human resources are insufficient and the issue of succession planning must be addressed to ensure project continuity and mitigate the risk of capacity losses within institutions. The forecast of the durability of results is quite heterogenous. Some results will certainly be durable (e.g. the use of C-SERMS) while others may have difficulties regarding replication and utility (e.g. model projects).

Overall rating

In summary, the REETA project was of high relevance and successful regarding its effectiveness. Additionally, it was successful in creating impact and in terms of efficiency. Regarding the sustainability of its outcome and impacts, some weaknesses were identified, but it is still rather successful. Therefore, the project is rated successful (84 out of 100 points).

Criterion	Score	Rating
Relevance	96 of 100 points	Level 1 = very successful
Effectiveness	90 of 100 points	Level 2 = successful
Impact	83 of 100 points	Level 2 = successful
Efficiency	84 of 100 points	Level 2 = successful
Sustainability	68 of 100 points	Level 3 = rather successful
Overall score and rating for all criteria	84 of 100 points	Level 2 = successful

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

The lessons learnt presented in this section cover the project's design and implementation phases. The compilation can serve as a key to strengthen the design, implementation and overall management of similar future projects. The key lessons learnt from the REETA project evaluation were as follows:

External factors

- Awareness of partners about risks and impact of climate change considerably contributed to a higher political willingness to promote RE and EE technologies.

Project design and management

- In order to achieve the intended results of regional projects that incorporate varying cultures, countries, languages, time zones and subject matter experts, significant amounts of time and resources must be dedicated to ensure an understanding of all stakeholders' expectations, objectives, interests and requirements.
- Project design should clearly assign sufficient financial and human resources for the significant management costs of a regional project such as the REETA project.
- The availability of integrated experts was very much appreciated by the partner organisations.
- There is the need to factor in some amount of lead time in project activities, since in some cases GIZ procedures may require significant review time to arrive at a final decision in relation to financial contributions on infrastructure projects.

Cooperation management (according to Capacity WORKS)

- Counterpart engagement, networking and meaningful collaboration are critical success factors for projects of this size, scope and complexity. There is a need to cultivate and maintain good relationships with project partners and regional institutions. These positive relationships can facilitate the forward movement of project activities and the timely delivery of project outputs.
- As regional project, steering activities represented a considerable challenge due to geographically scattered partner institutions. The REETA project managed this challenge by using regional events to parallel organise steering meetings.
- Activities in remote areas represented a challenge due to time and resource-consuming community-based approaches.
- Including local content and knowledge into regional projects, e.g. through unit staffing, the engagement of local and regional consultants and the inclusion of communities around project sites is an essential success factor. The inclusion of local content into projects fosters the development of capacity, the transfer of knowledge and contributes to the project's sustainability.
- Monitoring systems need to integrate monitoring at impact level in the early stages of project implementation.
- The project has put considerable efforts to foster learning and innovation, e.g. by organising a number of events which included presentations of experience from different stakeholders or publications on the CARICOM website, and by this triggered learning processes. However, additional potential of cross-learning effects between different project components, e.g. Building Energy Efficiency Projects and the Energy Efficiency Building Code, could have been used better.

Other lessons learnt

- When undertaking physical infrastructure development projects utilising an array of RE and EE technologies (such as the Hosororo hydropower plant), there must be sufficient knowledge on construction management-related issues such as methods, designs, models, best practices and challenges. This increase in construction management knowledge will allow for a reduction in implementation bottlenecks.
- Projects of an RE and EE nature that have significant infrastructure proportions must consider the requisite environmental and social management issues and safeguards. Additionally, project teams should not underestimate the requirements and processes necessary in obtaining approvals from the respective local and international Environmental Protection Agencies.
- The evaluation of the REETA project has recognised that project lessons learnt are the tangible results of an executed project, taking the project experience in whole or part, and breaking it down into actionable conclusions about what went right, what went wrong, and what could be done better. The management of the REETA project has therefore indicated that lessons would not amount to much if they are not properly integrated into an 'institutional body of knowledge' and used for continuous improvement.
- Stakeholders indicated that there should have been wider promulgation of the project; and a clear upscaling strategy to ensure a sustainable use of the project results should have been developed during project design.

5.2 Conclusions and recommendations

Based on the findings of the project evaluation exercise, several recommendations were identified. These recommendations are mainly based on the shortcomings uncovered during the evaluation exercise and lessons identified and discussed as a result of project design and implementation. The recommendations below should be viewed in the context of identifying suitable, feasible and cost-effective approaches to strengthen the overall management of similar projects in the future. The recommendations are as follows:

- There is still a need in the CARICOM region to strengthen regulatory mechanisms and policy-making in the field of RE and EE to improve the enabling environment for economically sustainable investments in RE and EE technologies and services.
- Limited resources of partner organisations present a real challenge for the sustainability of the REETA project. This is, however, the case in the majority of technical cooperation programmes.
- The involvement of a large variety of stakeholder groups, including regional organisations, national ministries, private sector companies, universities and financial institutions was a conceptual strength of the REETA project, but resulted in a very large partner system, which was a challenge for the project management.
- The regional approach allowed to address issues related to RE and EE in 15 countries, which, due to their small size, would probably not have had access to bilateral funding. Furthermore, it allowed to develop solutions for challenges which are mostly identical in most of the countries. However, the regional approach also led to a 'dilution' of funds available for individual countries.
- Since knowledge is recognised as a key asset on projects and there is a need to continue to transfer knowledge and build capacities in innovative ways, the Community of Practice (CoP) should be strengthened, e.g. through the Caribbean Energy Knowledge Hub in CCREEE. This CoP should include key stakeholders from all partner countries and institutions who were trained in Green Engineering technology and RE and RE-related topics and those who participated in the various aspects of the project design and implementation. This CoP should apply a mixed-method approach of face-to-face interactions and online collaboration. Consideration should also be given to the creation of blogs that can address RE and EE 'hot topics', e.g. as part of the CARICOM website.
- Technical and management staff of the various partner institutions should be given the opportunity to continue attending and possibly make presentations at regional and international conferences on RE and EE technologies. These opportunities should be exploited on a regular basis, perhaps yearly. The participation in these conferences can engender idea generation, facilitate networking and exploit

opportunities for project funding with development agencies. It can also allow participants to have a better understanding of new tools and techniques regarding RE technologies.

- The project unit and the CCS Energy programme should consider setting up a formal local content policy. This local content policy should be developed and used for the acquisition of local consultants, service providers and technical/administrative support for RE/EE projects being implemented within rural communities. The proposed local content policy would indicate to member states, project partners, local communities around infrastructure development sites and prospective funders, that local content matters not only for compliance reasons, but because it is in the CCS' long-term interests. Additionally, the local content policy for projects will highlight that local content contributes to a project's Social Licence-to-Operate (SLO). By achieving SLO means that communities around project's site and local service providers are more likely to support the project. With an active local participation, they can expect to receive direct and positive benefit in the form of jobs, economic development and access to opportunities while feeling informed and involved.

REETA – a successful regional energy project

The project ‘Supporting Institutional Structures to Promote Renewable Energy and Energy Efficiency in the Caribbean Region (REETA)’ was a joint regional project between the Federal Republic of Germany and the Caribbean Community (CARICOM). It was funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and carried out by CARICOM in cooperation with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Its objective was to ensure that regional and national stakeholders in the field of renewable energy (RE) and energy efficiency (EE) are prepared for the political, organisational and technical requirements of a growing energy market in the Caribbean region. The evaluation of the REETA project showed that it was of high relevance and successful regarding its effectiveness. Additionally, it was successful in creating impact and in terms of efficiency. Regarding the sustainability of its outcome and impacts, some weaknesses were identified, but it is still rather successful. Overall, the project is rated successful.

Figure 2: Caribbean Community Secretariat in Georgetown, Guyana

Annex

Annex 1: Evaluation matrix

	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	**RELEVANCE (max. 100 points)**						
	The project concept* is in line with the relevant strategic reference frameworks. Max. 30 points	Which strategic reference frameworks exist for the project? (e.g. regional strategies incl. regional implementation strategy for 2030 agenda, international strategies, sectoral, cross-sectoral change strategies, if bilateral project especially partner strategies, internal analysis frameworks e.g. safeguards and gender**)	Relevant policy/strategy frameworks in CARICOM exist for regional development, RE/EE.	Internet, CARICOM-website	Collection during interviews with key stakeholders in the partner region	Research of documents by internet; Semi-structured interviews with key stakeholders	The relevant strategy documents are available and allow contrasting
		To what extent is the project concept in line with the relevant strategic reference frameworks?	The project interventions and objectives are related to policy/strategy frameworks in CARICOM	Websites, CARICOM 5-year plan 2015-2019, CARICOM Energy policy,	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	Contrasting the methodological approach of the project against the respective strategy documents allows for a reliable judgment on the fit into relevant strategic framework
		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 and social)?	The project design reflects synergies and trade-offs with other sectors including the sustainability dimensions (ecological, economic and social)	Project offer, Monitoring system,	Additional data on climate change websites (UNFCCC, Worldbank)	Internet research on NDCs; analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	The project also takes into account the strategic dimensions of climate change and air pollution

		To what extent is the project concept in line with the BMZ country strategy and BMZ sectoral concepts?	The project concept is in line with the BMZ concept for development ccoperation with Latinamerican and Caribbean countries, the BMZ document on Sustainable Energy for Development (2014) and the BMZ climate policy.	BMZ concept for development ccoperation with Latinamerican and Caribbean countries (Paper N° 161)		Analysis of documents	The project concept is expected to be in line with the BMZ concept for development ccoperation with Latinamerican and Caribbean countries, the BMZ document on Sustainable Energy for Development (2014) and the BMZ climate policy.
		To what extend is the project concept in line with the (regional) objectives of the 2030 agenda? To which Sustainable Development Goals (SDG) is the project supposed to contribute?	The project contributes to at least one Sustainable Development Goal (SDG).	Internet, CARICOM-website, IISD website	Collection of data and opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	
		To what extent is the project concept subsidiary to partner efforts or efforts of other relevant organisatons (subsidiary and complementarity)?	The project concept is subsidiary and/or complementary to CARICOM's efforts.	Project offer, Monitoring system,	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	
	The project concept* matches the needs of the target group(s). Max. 30 points	To what extent is the chosen project concept geared to the core problems and needs of the target group(s)?	The core problem of the target groups addressed by the project is confirmed by the stakeholders. The core problem of the final target group is directly derivable from current sector analyses.	CIA Factsheet, Energypedia, Worldbank country analysis, project documents	Collection of data and opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	Stakeholders confirm that the project matches their needs. Existing data and studies deliver a clear picture of the core problems of the final target group. The analysis shows to which degree the project concepts corresponds to these core problems.
		How are the different perspectives, needs and concerns of women and men represented in the project concept?	The project is designed to address gender-specific challenges of the target group.	CIA Factsheet, Energypedia, Worldbank country analysis	Project gender assessment	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	The analysis shows to which degree the project concepts corresponds to gender-specific core problems.

	To what extent was the project concept designed to reach particularly disadvantaged groups (LNOB principle)? How were identified risks and potentials for human rights included into the project concept?	The project concept takes into account the needs of particularly disadvantaged groups (LNOB principle), in particular regarding access to clean energy.	Project offer, Monitoring system, CIA Factsheet, Energypedia, Worldbank country analysis	Collection of data and opinions of key stakeholders in the partner region, project peace and conflict assessment	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	The analysis shows to which degree the project takes into account the needs of particularly disadvantaged groups.
The project concept* is adequately designed to achieve the chosen project objective. Max. 20 points	Assessment of current results model and results hypotheses (theory of change, ToC) of actual project logic: - To what extend is the project objective realistic from todays perspective and the given resources (time, financial, partner capacities)? - To what extend are the activities and outputs adequately designed to achieve the project objective? - To what extend are the underlying results hypotheses of the project plausible? - To what extend 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 extend are the assumptions and risks for the project complete and plausibe?	The results logic obeys to current quality criteria of GIZ.	Project offer, results logic, results matrix, monitoring system, Capacity Works Self Assessment	Collection of data and opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	The analysis clearly shows to which degree the project concept was adequately designed to achieve the objective.
	To what extent does the strategic orientation of the project address changes in its framework conditions?	Key stakeholders of each output confirm that interventions were strategically focussed.	Project offer, results logic, results matrix, monitoring system, Capacity Works Self Assessment	Collection of data and opinions of key stakeholders in the partner region	Analysis of documents, in particular modification offers; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	The analysis determines to which degree the project concept took into account strategic developments within the partner system.
	How was the complexity of the framework conditions handled? How was any possible overloading dealt with and strategically focused?	Key stakeholders confirm that project instruments were adequately allocated to achieve the project objective	Project offer, results logic, results matrix, monitoring system, Capacity Works Self Assessment	Collection of data and opinions of key stakeholders in the partner region	Analysis of documents, in particular modification offers; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	The analysis gives a clear picture on how the project team handled the complexity of the intervention.
The project concept* was adapted to changes in line with requirements and re-adapted where applicable. Max. 20 points	What changes have occurred during project implementation? (e.g. local, national, international, sectoral, including state of the art of sectoral know-how)	Project modification offers describe regional and sectoral changes.	Project offer, results logic, results matrix, monitoring system, Capacity Works Self Assessment	Collection of data and opinions of key stakeholders in the partner region	Analysis of documents, in particular modification offers; Semi-structured interviews with key stakeholders; Triangulation with opinions of key	The analysis describes regional and sectoral changes.

						stakeholders in the partner region	
		How were the changes dealt with regarding the project concept?	Key stakeholders of each output confirm that modification offers corresponded to strategic changes.	Project offer, results logic, results matrix, monitoring system, Capacity Works Self Assessment	Collection of data and opinions of key stakeholders in the partner region	Analysis of documents, in particular modification offers; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	The analysis determines to which degree the project concept took into account regional and sectoral changes.
	*The 'project concept' encompasses project objective and theory of change (ToC***) 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 seperate checks.					
	*** Theory of Change = GIZ results model = graphic illustration and narrative results hypotheses						

	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)
	EFFECTIVENESS (max. 100 points)						
Effectiveness	The project achieved the objective (outcome) on time in accordance with the project objective indicators.* max. 40 points	To what extent has the agreed project objective (outcome) been achieved, measured against the objective indicators?	The 5 module objective indicators reflect the degree of achievement of the module objective.	Results matrix, progress reports, results presentations, monitoring system	A) Sources of verification: I1: Documents regarding central ativities of C-SERMS; I2: Documentation on education opportunities/modules; I3: Documentation on trainings and participants, Documentation on new technologies/services; I4: Documentation on model projects; I5: Documentation on approved projects; B) Collection of data and opinions of key stakeholders in the partner region	Analysis of monitoring system and cross-checking with documentation; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	The indicators and their degree of achievement are objectively verifiable.
		Are additional indicators needed to reflect the project objective adequately?	The indicators defined in the project offer are assessed regarding their SMARTness and sufficiency to measure the achievement of the project objective.	Results matrix, progress reports, results presentations, monitoring system		Assessment if module objective indicators are sufficient to measure increasing capacities of regional and national stakeholders in the field of Renewable Energy and Energy Efficiency to meet the political, organizational and technical challenges of the growing energy market in the Caribbean region	The 5 indicators defined in the project offer are expected to be sufficient to measure the achievement of the project objective.
	The activities and outputs of the project contributed substantially to the project objective achievement (outcome).* max. 30 points	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 2 indicators for each of the 5 outputs reflect the degree of achievement of the output.	Results matrix, progress reports, results presentations, monitoring system, Capacity-Works self assessment	A) Sources of verification for output indicators; B) Obtained products, deliverables and results of each output; C) Collection of data and opinions of key stakeholders in the partner region	Analysis of monitoring system and cross-checking with documentation; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	The output indicators and their degree of achievement are objectively verifiable.
		How does project contribute via activities, instruments and outputs to the achievement of the project objective (outcome)? (contribution-analysis approach)	A contribution story describes how the instruments, activities and outputs have contributed to achieve the project objective.	Project offer, results logic, results matrix, progress reports, monitoring system	Collection of data and opinions of key stakeholders in the partner region	Analysis of project documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	An exhaustive contribution story will be available

		Implementation strategy: Which factors in the implementation contribute successfully to or hinder the achievement of the project objective? (e.g. external factors, managerial setup of project and company, cooperation management)	The factors of the implementation strategy that contributed successfully to or hindered the achievement of the project objective are identified.	Results matrix, progress reports, results presentations, monitoring system, Capacity-Works self assessment	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	A description of the factors of the implementation strategy that contributed successfully to or hindered the achievement of the project objective is available.
		What other/alternative factors contributed to the fact that the objective was achieved or not achieved?	Other factors that contributed successfully to or hindered the achievement of the project objective are identified.	Progress reports	Collection of data and opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	A description of other factors that contributed successfully to or hindered the achievement of the project objective is available.
		What would have happened without the project?	An alternative scenario describes what would have happened if the project would not have been set up.		Collection of opinions of key stakeholders in the partner region	Semi-structured interviews with key stakeholders; Writing of an alternative scenario	An alternative scenario, describing what would have happened if the project would not have been set up, is available.
		To what extent have risks (see also Safeguards & Gender) and assumptions of the theory of change been addressed in the implementation and steering of the project?	An analysis describes the degree of addressing risks and assumptions of the ToC during project implementation and steering.	Project offer, results matrix, progress reports, results presentations, monitoring system, Capacity-Works self assessment	Internet research, Safeguards and gender assessments of the project, Collection of data and opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	An analysis to what extent risks and assumptions of the theory of change have been addressed in the implementation and steering of the project is available
	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	Which negative or positive unintended results did the project produce at output and outcome level and why?	Negative and positive unintended results of the project at output and outcome level as well as the reasons are identified.		Collection of data and opinions of key stakeholders in the partner region	Semi-structured interviews with key stakeholders	A description of negative and positive unintended results of the project at output and outcome level as well as the reasons is available.
		How were risks regarding unintended negative results at the output and outcome level assessed in the monitoring system?	The project monitoring system is assessed regarding the degree of addressing unintended risks and negative results at output and outcome level.	Monitoring system	Collection of data and opinions of key stakeholders in the partner region	Analysis of monitoring system; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	An assessment of the project monitoring system regarding the degree of addressing unintended risks and negative results at output and outcome level is available.
		What measures have been taken by the project to counteract the risks and (if applicable) occured negative results? To what extent were these measures adequate?	Project measures to counteract the risks and (if applicable) occured negative results at output and outcome level are identified.	Progress reports, results presentations, monitoring system, Capacity-Works self assessment	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	An assessment of project measures to counteract the risks and (if applicable) occured negative results at output and outcome level is available.
		To what extent were potential unintended positive results at outcome level monitored and exploited?	Project measures to exploit potential positive results are identified.	Progress reports, results presentations, monitoring system, Capacity-Works self assessment	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	An assessment of project measures to exploit potential positive results is available.
	* 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.						

	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)
	IMPACT (max. 100 points)						
Impact	The intended overarching development results have occurred or are foreseen.* Max. 40 points	To which overarching development results is the project supposed to contribute? Which of these intended results at the level of overarching results can be observed or are plausible to be achieved?	1) The political, regulatory and institutional framework for investment in RE/EE in the Caribbean are improved. 2) The security of energy supply increases. 3) Environmental sustainability of energy supply increases. 4) Economic conditions are improved and poverty is reduced. 5) Environmental conditions are improved and air pollution is reduced. 6) The cost of energy services for productive and consumptive purposes decreases. 7) The emission of greenhouse gases decreases. 8) Access to clean energy is improved.	Project offer, progress reports, results presentations, monitoring system, CIA Factsheet, Energypedia, Worldbank country analysis, "Situation analysis for energy in the Caribbean" (by Mr. Gery Jackson)	Internet research, Collection of data and opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region. As the project focuses on the Caribbean region including 16 heterogenous countries, the evaluation of the project's impact also has to be carried out at regional level. The data needed to assess the results (and the contribution of the project) exist at national level only. This data gap at regional level limits the evaluability of the impact level.	The overarching development results, to which the project is supposed to contribute, are identified.
		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, indigenous peoples, refugees, IDPs and migrants, and the poorest of the poor) been reached?	The project results at target group level are identified.	Project offer, progress reports, results presentations, monitoring system	Internet research, Collection of data and opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region; Quantification of results	The project results at target group level are identified and (when possible) quantified.
	The outcome of the project contributed to the occured or forseen overarching development results.* Max. 30 points	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)	A contribution-analysis based assessment describes to what extent the results of the project on outcome level contributed or will contribute to the overarching results.	Project offer, progress reports, results presentations, monitoring system, CIA Factsheet, Energypedia, Worldbank country analysis, "Situation analysis for energy in the Caribbean" (by Mr. Gerry Jackson?)	Internet research, Collection of data and opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region; Quantification of results	The contribution of the project results at outcome level to overarching development results is demonstrated.
		What are the alternative explanations/factors for the results observed? (e.g. the activities of other stakeholders, other policies)	Alternative explanations/ factors for the overarching results (e.g. the activities of other stakeholders, other policies) are identified.		Internet research, in particular of donor websites (Worldbank, EU, etc.), Collection of data and opinions of key stakeholders in the partner region	Analysis of documents and websites; Semi-structured interviews with key stakeholders; Quantification of results	An assessment of the influence of alternative explanations/ factors on the overarching results is available.
		What would have happened without the project?	An alternative scenario describes what would have happened at impact level if the project would not have been set up.		Collection of opinions of key stakeholders in the partner region	Semi-structured interviews with key stakeholders; Writing of an alternative scenario	An alternative scenario, describing what would have happened at impact level if the project would not have been set up, is available.

		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)?	Positive or negative influences by framework conditions (e.g. policies, strategies or interests of German ministries, bilateral and multilateral development partners, etc.) are identified.		Internet research, in particular of donor websites (BMZ, Worldbank, EU, etc.), Collection of data and opinions of key stakeholders in the partner region	Analysis of documents and websites; Semi-structured interviews with key stakeholders; Quantification of results	An assessment of positive or negative influences by framework condition is available.
		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?	The project's approach to widespread impact is assessed.	Progress reports, results presentations, monitoring system, Capacity-Works self assessment	Collection of data and opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	An assessment of the project's approach to widespread impact is available.
	No project-related negative results at impact level have occured – and if any negative results occured 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	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?	Negative and positive unintended results of the project at impact level as well as the reasons are identified.		Collection of data and opinions of key stakeholders in the partner region	Semi-structured interviews with key stakeholders	A description of negative and positive unintended results of the project at impact level as well as the reasons is available.
		To what extent were risks of unintended results at the impact level assessed in the monitoring system?	The project monitoring system is assessed regarding the degree of addressing unintended risks and negative results at impact level.	Monitoring system	Collection of data and opinions of key stakeholders in the partner region	Analysis of monitoring system; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	An assessment of the project monitoring system regarding the degree of addressing unintended risks and negative results at impact level is available.
		What measures have been taken by the project to avoid and counteract the risks/negative results/trade-offs**?	Project measures to counteract the risks and (if applicable) occured negative results at impact level are identified.	Progress reports, results presentations, monitoring system, Capacity-Works self assessment	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	An assessment of project measures to counteract the risks and (if applicable) occured negative results at impact level is available.
		To what extent have the framework conditions for the negative results played a role? How did the project react to this?	Framework conditions that contributed to the negative results and the project's reactions are identified.	Progress reports, results presentations, monitoring system, Capacity-Works self assessment	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	An assessment of framework conditions that contributed to the negative results and the project's reactions is available.
		To what extent were potential unintended positive results and potential synergies between the ecological, economic and social dimensions monitored and exploited?	Project measures to exploit potential unintended positive results and potential synergies between the ecological, economic and social dimensions are identified.	Progress reports, results presentations, monitoring system, Capacity-Works self assessment	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	An assessment of project measures to exploit potential unintended positive results and potential synergies between the ecological, economic and social dimensions is available.

* 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.

	Assessment Dimension	Evaluation questions (pilot-phase, work in progress)	Evaluation indicators (pilot phase, only available in german so far)
	EFFICIENCY (max. 100 points)		
Efficiency	The project's use of resources is appropriate with regard to the outputs achieved. [Production efficiency: Resources/Outputs] Max. 70 points	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 with comprehensible justification deviations from the cost plan were carried out.
		To what extent could the outputs could 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 manages its resources according to the planned costs for the agreed outputs. Only with comprehensible justification deviations from the cost plan were carried out.
			The overarching costs of the project stand in a reasonable relation to the costs of the outputs.
		To what extent could outputs have been maximised by reallocating resources between the outputs? (methodological minimum standard: Follow-the-money approach)	The project manages its resources to achieve other outputs better or faster if outputs were achieved or if they can not be reached.
		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 partner constellation proposed in the project proposal and the associated levels of intervention could be well realized in terms of estimated costs in relation to the projected outputs of the project.
			The different thematic topics proposed in the project proposal were well implemented in terms of estimated costs in relation to the projected outputs of the project.
			The regional scope of the project described in the project proposal could be fully realized in terms of estimated costs in relation to the projected outputs of the project.
	The project's use of resources is appropriate with regard to achieving the projects objective (outcome). [Allocation efficiency: Resources/Outcome] Max. 30 points	To what extent could the outcome have been maximised with the same amount of resources and the same or better quality (maximum principle)?	Stakeholders confirm that the project has achieved its maximum outcome according to the indicators and within the allocated budget.
		Were the outcome-resources ratio and alternatives carefully considered during the conception and implementation process – and if so, how?	The project manages its resources between the outputs so that the project achieved maximum results at outcome level.
			The partner constellation proposed in the project proposal and the associated levels of intervention could be well realized in terms of estimated costs in relation to the projected outcome of the project.
			The different thematic topics proposed in the project proposal were well implemented in terms of estimated costs in relation to the projected outcome of the project.
			The regional scope of the project described in the project proposal could be fully realized in terms of estimated costs in relation to the projected outcome of the project.
		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?	The project has taken the appropriate steps to fully create synergies with interventions of other donors.
			Partner contributions are appropriate in relation to the costs of the project outputs.

	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)
	SUSTAINABLILITY						
Sustainability	Prerequisite for ensuring the long-term success of the project: Results are anchored in (partner) structures. Max. 50 points	What has the project done to ensure that the results can be sustained in the medium to long term by the partners themselves? What is the project's exit strategy?	An exist strategy is elaborated in cooperation with CARICOM Secretariat.	Progress reports, results presentations, monitoring system, Capacity-Works self assessment	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	An exist strategy, elaborated in cooperation with CARICOM Secretariat, is available.
		In which way are advisory contents, approaches, methods or concepts of the project anchored/institutionalised or continously used or further developed in the (partner) system?	A) Partner organisations confirm that C-SERMS is continued to be implemented. B) Regional educational institutions continue offering the additional education opportunities/modules. C) At least 3 regional or national companies continue offering new technologies, consulting or financial services in the field of RE and EE. D) The model projects implemented with different RE & EE technology are still operational. E) The Caribbean Development Bank (CDB) and other financing institutions still offer credit lines for RE and EE projects.	Progress reports, results presentations, monitoring system	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	Partner institutions (regional and national) continously use or further develop advisory contents, approaches, methods or concepts of the project.
		To what extent are resources and capacities at the individual, organisational or societal/political level in the partner institution available (longer-term) to ensure the continuation of the results achieved?	CARICOM Secretariat has hired additional staff to to ensure the continuation of the results achieved.	Progress reports, results presentations, monitoring system, Capacity-Works self assessment	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	CARICOM Secretariat has enough capacities to continue the project's ctivities.
		How are lessons learnt prepared and documented?	Lessons learnt were presented to the partner organizations.	Progress reports, results presentations, monitoring system, Capacity-Works self assessment	Collection of opinions of key stakeholders in the partner region	Analysis of documents; Semi-structured interviews with key stakeholders; Triangulation with opinions of key stakeholders in the partner region	A documentation of lessons learnt is available.
	Forecast of durability: Results of the project are permanent, stable and long-term resilient. Max. 50 points	To what extent are the results (outcome and impact) of the project durable, stable and resilient in the long-term under the given conditions?	The degree of durability, stability and resilience of the project outcome and impact is estimated.		Collection of opinions of key stakeholders in the partner region	Semi-structured interviews with key stakeholders; Triangulation of opinions of key stakeholders in the partner region	An assessment of the degree of durability, stability and resilience of the project outcome and impact is available.
		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 risks and potentials for the durability of the project outcome and impact are identified.		Collection of opinions of key stakeholders in the partner region	Semi-structured interviews with key stakeholders; Triangulation of opinions of key stakeholders in the partner region	An assessment of the risks and potentials for the durability of the project outcome and impact is available.

Annex 2: List of resources

Ref_1	Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS)
Ref_2	REETA Monitoring System (energypedia.info)
Ref_3	Modified project proposal of REETA project (29.07.2015)
Ref_4	Quinones, D. (2016): Road Map for Efficient Energy Use in Buildings; The Development, Implementation and Enforcement of Regulations and Codes for within CARICOM States; GIZ REETA Project (2016)
Ref_5	CARICOM Energy Policy (2013)
Ref_6	CARICOM (2014): Strategic Plan for the Caribbean Community 2015-2019; Turkeyen, Guyana
Ref_7	Cornland, D., Pembleton, P. (2017): Policy Brief on NDC mitigation targets of the CARICOM member states
Ref_8	ECLAC (2016): Sustainable Energy for All in the Caribbean; in Focus, Issue 2 (April-June 2016)
Ref_9	TAPSEC Project document
Ref_10	BMZ: Konzept für die entwicklungspolitische Zusmmenarbeit mit den Ländern Lateinamerikas und der Karibik; BMZ Konzepte 161
Ref_11	BMZ (2014): Sustainable Energy for Development
Ref_12	BMZ: Climate action in practice: The contribution of German development policy
Ref_13	BMZ: Climate change: Time to act; climate policy in the context of the 2030 Agenda
Ref_14	CARICOM project website (https://caribbean-community.energypedia.info/wiki/Main_Page)
Ref_15	GIZ: Cost data report of REETA Project (17.12.2018)
Ref_16	https://sustainabledevelopment.un.org
Ref_17	GIZ (2015): The GIZ results model. A working aid; Eschborn, Germany
Ref_18	CARICOM Website (https://caricom.org)
Ref_19	CARICOM Development Fund Strategic Plan (2015-2010)
Ref_20	Caribbean Development Bank's Energy Sector Policy and Strategy 2015
Ref_21	Caribbean Development Bank's Education and Training Policy 2017
Ref_22	Caribbean Development Bank's Lending Policy 2016
Ref_23	CXC Annual Report 2018
Ref_24	CXC Annual Report 2017
Ref_25	CXC Annual Report 2016
Ref_26	UTech Jamaica Website: http://www.utech.edu.jm/about-utech
Ref_27	Government of Barbados Website: http://www.energy.gov.bb/

Ref_28	National Energy Policy for Barbados 2017-2037
Ref_29	Jamaica's National Renewable Energy Policy 2009-2030
Ref_30	Guyana's Low Carbon Development Strategy (LCDS)
Ref_31	Vision 2030 Jamaica National Development Plan
Ref_32	Guyana Energy Agency Website: https://gea.gov.gy/

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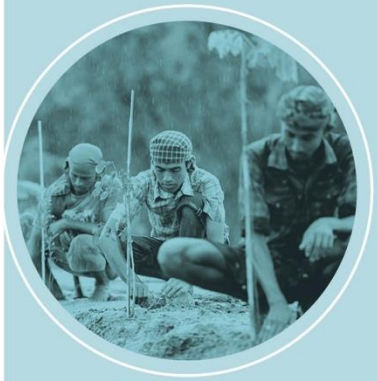

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