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EVALUATION REPORT OF THE BUILDING REGIONAL CLIMATE CAPACITY IN THE CARIBBEAN (BRCCC) PROJECT

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LIST OF ACRONYMS

ACRONYM	MEANING
AWS	Automatic Weather Station
BRCCC	Building Regional Climate Capacity in the Caribbean
CARDI	Caribbean Agriculture Research and Development Institute
CARICOF	Caribbean Climate Outlook Forum
CARICOM	Caribbean Community
CARISAM	Caribbean Society for Agro-Meteorology
CAROGEN	Caribbean Climate Outlook Forum Generator
CARPHA	Caribbean Public Health Agency
CCCAP	Climate Change Adaptation Program (CCCAP)
CCREEE	Centre for Renewable Energy and Energy Efficiency
CDB	Caribbean Development Bank (CDB)
CDEMA	Caribbean Disaster Emergency Management Agency
CIMH	Caribbean Institute for Meteorology and Hydrology
COTED	Council for Trade and Economic Development
CTO	Caribbean Tourism Organisation
CWWA	Caribbean Water and Waste Water Association
DRR	Disaster Risk Reduction
EWISACTS	Early Warning Information Systems Across Climate Timescales
GFCs	Global Framework for Climate Services
LOA	Letter of Agreement
NCOF	National Climate Outlook Forum
NMHS	National Meteorology and Hydrology Services
PPCR	Pilot Program for Climate Resilience (PPCR) Caribbean
RCC	Regional Climate Centre
USAID	United States Agency for International Development
USAID OFDA	USAID Office of U.S. Foreign Disaster Assistance (OFDA)
WMO	World Meteorological Organisation

EXECUTIVE SUMMARY

The Building Regional Climate Capacity in the Caribbean (BRCCC) Project was established to strengthen the capability of the CIMH to deliver its programmes and to facilitate the development of the World Meteorological Organization's Regional Climate Centre (RCC) for the Caribbean to be housed at the Caribbean Institute for Meteorology and Hydrology (CIMH). To achieve this, funding at the amount of US\$5,085,000 was provided by the United States Agency for International Development (USAID) and was executed by the World Meteorological Organisation (WMO) and implemented by CIMH.

The overall objectives of this evaluation were to assess the (i) project's relevance, performance, and management arrangements; (ii) sustainability of CIMH as the WMO RCC; and (iii) sustainability of achieved project results, including the contribution to capacity building in the Caribbean.

The overall approach used was mixed-methods to provide in-depth information to inform a more comprehensive and richer analysis of the findings, which strengthened the reliability of the data, validity of the findings and usefulness of the recommendations. Data collection utilized a combination of primary and secondary data sources. Primary data was collected through interviews and two online surveys using purposeful sampling techniques. A total of 48 interviews were successfully completed (76% of the targeted stakeholders). Survey 1 (Level of Awareness, Satisfaction and Use of Climate Products and Services) targeted 223 persons and approximately 64 (29%) responded. Survey 2 (Evaluation of BRCCC Training and Workshops) targeted 238 persons and approximately 52 (22%) of the persons responded. These are small sample sizes and as such, the findings are all triangulated with literature, where possible, to increase the validity of the findings of this evaluation. **The overall rating for the performance of the project in terms of relevance, effectiveness, sustainability, impact, efficiency, management arrangements and capacity building was satisfactory.**

In terms of relevance, the evaluation found this criteria to be satisfactory given that the BRCCC was highly relevant to the key beneficiaries (CIMH, national Met Services, and national and regional partners from water, health, agriculture, disaster risk reduction and tourism sectors), the executing agency (WMO) and the donor (USAID). Also, the design of the BRCCC was suitable to achieve the intended outcomes and impact of the project. Notable is that although the equipment installed in the countries are relevant, there is need for better consultations with countries prior to the purchasing of equipment to promote better ownership and interoperability at the national level. Also, it was not conclusive whether an extensive participatory process was used in the initial design of the project; but there is strong evidence of adaptive management through the life cycle of the project to ensure that the climate products and services are relevant to the users' needs.

In terms of effectiveness, the evaluation found this criteria to be satisfactory given that the close examination of the achievement rate of the BRCCC in the context of targets established indicates that the three outcomes¹ of the BRCCC were exceptionally, very satisfactorily and satisfactorily achieved, respectively. The RCC designation (outcome 1) is the most notable achievement and CIMH surpassed the mandatory functions and went on to achieve some of the recommended functions of an RCC. The quality of each output was not confirmed by the evaluation but there is evidence to suggest that the outputs that were successfully completed were done at an acceptable standard. For the marketing and visibility component, the findings suggests that the degree of visibility of the project achievements is limited since emphasis was given to the climate products and services (Outcome 1); but these visibility products are of good quality since the press releases and product sheets were noted to be very useful among majority of the respondents. The CIMH bulletins, CIMH newsletter and BRCCC sponsored workshops such as EWISACTS and CariCOF were reportedly useful sources of information and promoted awareness of the climate products and services that were developed by the BRCCC. The communications strategy was not completed at the time of the evaluation and it may be the case, from a cursory look at the objectives of the communications strategy that users' needs and feedback, may not receive adequate attention. Awareness of the climate products and services were also examined and it was found that there is a high level of awareness of most of the climate services and products developed by the BRCCC. The more popular ones include the Caribbean Drought Bulletin, CariCOF Caribbean Climate Outlook Newsletter, CariCOF Drought Outlook, CariCOF Precipitation Outlook, CariCOF Temperature Outlook, CariCOF Seasonal Climate Outlook and CariCOF Wet Days/Wet Spells Outlook. This is similar to what was found during the Baseline of User Needs for Climate Services in the Caribbean, which was completed in October 2015. The consistency in findings would suggest that the findings from this evaluation are reliable and valid. A key achievement unearthed from the evaluation is that almost all of the climate products and services (except CCCES) are being reported by users to inform decision-making in several sectors, which include water, health, agriculture and disaster risk reduction.

In terms of sustainability, the evaluation found this criteria to be satisfactory since there is confirmed funding at the tune of US\$4 Million from a combination of sources² that will span the next 5 years. However, there are mixed levels of leadership, ownership and capacities across the beneficiary countries to sustain the results of the BRCCC at the national level and there is not adequate capacities across all the regional agencies (human and financial resources) to sustain all the roles and expectation of the partnership mechanism. However, the capacities at CIMH are high and they have already

¹ Outcome 1: Development of the Regional Climate Centre (RCC); Outcome 2: Ability of CIMH to continue to meet its mandate is expanded and enhanced; Outcome 3: The project is delivered efficiently and effectively

² Pilot Program for Climate Resilience (PPCR) Caribbean (US\$975,000); Climate Change Adaptation Program (CCCAP) (Approximately US\$ 1M); Caribbean Development Bank (CDB) (US\$ 1.3 M); and USAID Office of U.S. Foreign Disaster Assistance (OFDA) (750, 000 US\$)

made organizational changes to ensure that the RCC functions (outcome 1 of the BRCCC) will be sustained within the agency. A key area not advanced is that the HR and procurement positions have not yet been endorsed for the organizational structure and whilst there is some planned backstopping to hire consultants to fill the HR role in particular in the interim, sustainability is not guaranteed. These two areas were part of the initial reasons for the BRCCC project and are critical outcomes of the project.

In terms of efficiency, the evaluation found this criteria to be highly satisfactory as good procurement policies were utilized. The evaluation could not compare the costs for each output with the value of the results achieved given the nature of the results; but efforts were made to determine whether the costs were justified and all the interviewees indicated that the costs were justified and none of the documents reviewed indicates otherwise. Further, in instances where the cheapest option was not sourced, the cost effectiveness provided by the options advanced, such as weather equipment, were justified.

In terms of impact, the evaluation found this criteria to be satisfactory. A noted limitation is that due to the timing of this final evaluation, this criteria could not be comprehensively explored since it is highly unlikely that impacts can be measured at this stage given the project focuses heavily on capacity building which will take some time for the impact level changes to be realized (least 3-5 years after). However, anecdotes shared by interviewees indicates that the outcomes of the project can definitely make a contribution to reduced losses although it is still early to quantify the extent of the reduced losses and to what extent it is attributable to the BRCCC. Other early changes being observed/reported include clearer understanding of the nexus between climate and its effects on sectors such as health, agriculture and tourism; improved capacity to apply climate information at the community level; increase in demand for climate information; greater value attached to the work of CIMH and recognition of their role as a premier climate service and innovation agency and increased ability of CIMH to attract and mobilize funding. There are notable unplanned effects, particularly related to the work done in sectors such as strengthened partnerships with the media and other regional partners working in the GFCS priority sectors through the CariCOF and the establishment of the EWISACTS governance mechanism; the PICSA pilot programme in Guyana and surpassing the achievement of the mandatory functions of the RCC.

In terms of management arrangements, the evaluation found this criteria to be moderately satisfactory. The procurement policies were operationalized and they are considered to satisfy the relevance, efficiency and effectiveness criteria. However, the Institute's HR related outputs of the BRCCC were not endorsed or operationalized in full at the time of this evaluation and therefore its relevance, efficiency and effectiveness could not be evaluated. In terms of the BRCCC project management, the governance mechanisms such as the Project Steering Committee and the EWISATCS were suitable/relevant, effective and efficient to a large extent although it was noted by a few interviewees that the PSC membership could have benefited from a country representative at the level of the Met

Office. The project management and technical staff hired significantly contributed to the effectiveness and efficiency of the project and the use of renowned institutions to provide and deliver high quality products promoted effectiveness of the outputs and was justified from a cost perspective. The key limitation is that the monitoring and evaluation (M&E) system for the project was not fully developed and implemented, which could have improved effectiveness and efficiency through better adaptive management mechanisms being in place.

In terms of capacity building (workshops, internships and attachments), the evaluation found this criteria to be satisfactory. Majority of the workshops received positive feedback in terms of being 'extremely useful' and 'very useful' for enhancing their knowledge and awareness of the subject matter and for supporting decision-making. This is particularly true for the CariCOF meetings. Testimonials received from interviewees indicates that (i) there is enhanced national capacities for generating and interpreting seasonal forecasts and supporting planning in sectors; (ii) beneficiaries are more confident and can better interpret information to apply to their work, including the dissemination of information and (iii) media personnel have improved their ability to communicate climate information to the public. All three of these area are foundational for promoting the use of climate information and products and illustrates that the capacity building programmes were overall very effective and the costs were justified. The attachment programs are reported to be effective in terms of expanding knowledge in areas not previously explored in the Caribbean (particularly as it related to outcome 1) but some of the research/publications were not finalized at the time of the evaluation. Overall the internships supported by the BRCCC were effective and the investments are justified since the outputs included useful research papers and support for the development of some of the RCC tools such as the CARISAM and CAROGEN platforms.

A notable observation, outside of the evaluation questions, is that there is the **need for concerted efforts to adequately brand the roles, functions and benefits of having a WMO RCC designated in the Caribbean region** since it can be easily confused with the roles and functions of the Caribbean Community Climate Change Centre.

Overall, the evaluation was able to collect data to inform an analysis of most of the evaluation criteria and the key evaluation questions although the management arrangements for the CIMH that were supported by the project could not be comprehensively evaluated since the draft products have not been endorsed and rolled-out at the time of this evaluation. There were also some noted limitations experienced during the evaluation that include time constraint, availability of secondary sources and the timing of the evaluation.

1. PROJECT CONTEXT

The Building Regional Climate Capacity in the Caribbean (BRCCC) Project was established to strengthen the capability of the CIMH to deliver its programmes and to facilitate the development of the World Meteorological Organization's Regional Climate Centre (RCC) for the Caribbean to be housed at the Caribbean Institute for Meteorology and Hydrology (CIMH) through (i) Infrastructure development, (ii) Increasing the range of products and services delivered to stakeholders, (iii) Enhancement of human and technical capacities at CIMH and in National Meteorological and Hydrological Services in the Caribbean, and (iv) Improvement of service delivery mechanisms to national, regional and international stakeholders. The intended outputs of BRCCC were:

1. Enhanced capacity at the CIMH and across the Caribbean to effectively convert climate data to products and services to better inform decision-making in key critical climate sensitive sectors;
2. Enhancement of CIMH climate monitoring and forecasting, feeding into early-warning systems, and improvement of data acquisition networks across the Caribbean;
3. Establishment of the Caribbean Environmental and Climate Computational Centre to provide CIMH staff and regional scientists with the necessary resources to simulate regional environmental and climate processes to better inform regional decision making in areas of disaster risk reduction, water resources management and adaptation to climate change and increasing climate variability;
4. Enhancement of the infrastructure at CIMH to enable it to sustain its core activities as well as the activities envisioned as an RCC under the Global Framework for Climate Services (GFCS);
5. Initiating of a "greening" program at CIMH.

The project commenced in January 2014 and concluded in July 2017. Funding at the amount of US\$5,085,000 was provided by the United States Agency for International Development (USAID) and was executed by the World Meteorological Organisation (WMO) and implemented by CIMH.

The **Results Chain** for the BRCCC Programme is at **Annex I**.

2. EVALUATION CONTEXT

The full Terms of Reference for the evaluation is detailed at **Annex II**. The evaluation commenced on 1st June 2017 and lasted approximately 3.5 months.

2.1 Evaluation Objectives

The overall objectives of this evaluation were to assess the:

1. Project’s relevance, performance, and management arrangements;
2. Sustainability of CIMH as the WMO RCC;
3. Sustainability of achieved project results, including the contribution to capacity building in the Caribbean

2.2 Key Evaluation Questions:

1. Has the project enabled CIMH to become a sustainable RCC for the Caribbean?
2. How have decision makers used the climate products and services generated under this project for decision making? What key decisions have been influenced by these products? What is the perceived impact and how can it be measured?
3. What was the rationale for choosing the specific countries to benefit from equipment and/or training?

There were several other questions are raised in different parts of the Terms of Reference, as attached, some were duplicated, stand-alone and/or needed further clarification. The Evaluator sought to consolidate and streamline the questions into a comprehensive list of evaluation criteria and the supporting key evaluation questions and sub-questions, which is detailed in the Table 1 below.

Table 1: Key Evaluation Questions and Sub-questions

Evaluation Criteria	Evaluation Questions
Relevance	<ol style="list-style-type: none"> 1. To what extent are the BRCCC objectives and activities aligned to the priorities and policies of CIMH, National Meteorology and Hydrology Services (NMHS) sectoral partners and donors? 2. Are the activities and outputs of the program consistent with the intended objectives and/or impacts? 3. Sub-question: Is the rationale justified for choosing the specific countries that benefited from the equipment and/or training components of the BRCCC?
Effectiveness	<ol style="list-style-type: none"> 4. To what extent were the primary objectives of the BRCCC program achieved and what were the factors influencing achievement or non-achievement? <ol style="list-style-type: none"> 4.1. Sub-Question: Are the infrastructure repairs and upgrades supporting CIMH to continue to meet its mandate, including sustaining its role as an RCC 5. How have decision makers used the climate products and services

Evaluation Criteria	Evaluation Questions
	generated under this project for decision-making? 6. What is the degree and quality of visibility of climate products and services generated under this project?
Sustainability	7. To what extent will the benefits of BRCCC continue after donor funding has ceased, in particular the sustainability of CIMH as a WMO RCC?
Efficiency	8. Was the programme or project implemented in the most efficient way? 9. Was the estimated cost of implementation similar to what was the planned cost of implementation? 10. Were key outputs and objectives achieved on time?
Impact	11. To what degree is the project perceived to have an impact on reduced losses from hydro-meteorological hazard events and climate variability and change on beneficiary countries?
Management Arrangements	12. What is the relevance, efficiency, effectiveness and sustainability of management arrangements as it relates to (a) management and administrative processes and functions created at CIMH and (b) the project's management arrangements made for the implementation of the project at CIMH.
Capacity Building	13. To what extent are the capacity building activities supported through this project (workshops, attachments, internships etc.) relevant, effective, efficient and sustainable? 14. Sub-Question: How useful have the capacity building activities been for participants from countries covered under the project (training evaluations)?

2.3 Evaluation Design and Methodology

The overall approach to this evaluation was **mixed-methods** to provide in-depth information to inform a more comprehensive and richer analysis of the findings, which strengthened the reliability of the data, validity of the findings and usefulness of the recommendations. Data collection utilized a combination of **primary and secondary data sources**.

2.3.1 Primary Data

Primary data was collected through **interviews and two online surveys** using **purposeful sampling**³ techniques.

³ "The logic and power of purposeful sampling lie in selecting information- rich cases for study in depth [...] which one can learn a great deal about issues of central importance to the purpose of the inquiry" (Patton in Suri, 2011: 65)

2.3.1.1 Interviews

The target audience for interviews were mainly key stakeholders that have benefited and/or supported the implementation of the project such as the CIMH staff, NMHS staff, national agencies that were closely involved in the roll-out of the project or benefited from training (e.g. national water, disaster management, health and agriculture agencies), regional Sector Partners engaged on the Early Warning Information Systems Across Climate Timescales (EWISACTS) Consortium, the Project Steering Committee members and Donors.

A pre-defined interview protocol was developed to allow retrieval of rich data whilst promoting standardization of the data collection process since there was a list of specific questions and dimensions to cover. See **Annex III** for the Interview Guide, which also includes summary finding per question. Note in the interview guide there are ratings and/or rankings included in questions, where possible; this facilitated easier aggregation and presentation of information related to the seven criteria that were assessed by this evaluation. **Anonymity of interviewees is promoted in the discussion of the findings in this report.**

A total of 63 interviewees were contacted via email to arrange interviews and 48 were successfully completed (76%) via skype and in-country visits. Among this 48 interviewees, 48% were national stakeholders and the remaining percentage (52%) comprised CIMH staff and regional agencies. This is a very good response rate for a qualitative analysis and also noting that the theoretical saturation point was met during the interviews. See **Annex IV** for the list of interviewees that were contacted and status of completion of interviews.

2.3.1.2 Online Surveys

The two online surveys were:

- ✘ **Survey 1 (Level of Awareness, Satisfaction and Use of Climate Products and Services)** which was used to assess effectiveness of the BRCCC by closely examining the (i) level of awareness, satisfaction and use of climate products and services that were enhanced through the support provided by BRCCC, and (ii) level of awareness and satisfaction with the key visibility and marketing products that were developed
- ✘ **Survey 2 (Evaluation of BRCCC Training and Workshops)** which was used to assess the relevance, effectiveness and efficiency of the training and workshop, including the upgrade to the training facilities, which were all supported by BRCCC.

Specifically, criterion⁴ and convenience⁵ sampling was applied in a two-stage process. For online survey 1, stakeholders that benefited from the training and meetings that would

⁴ Criterion sampling is “reviewing and studying all cases that meet some predetermined criterion of importance” (Patton in Suri, 2011: 69)

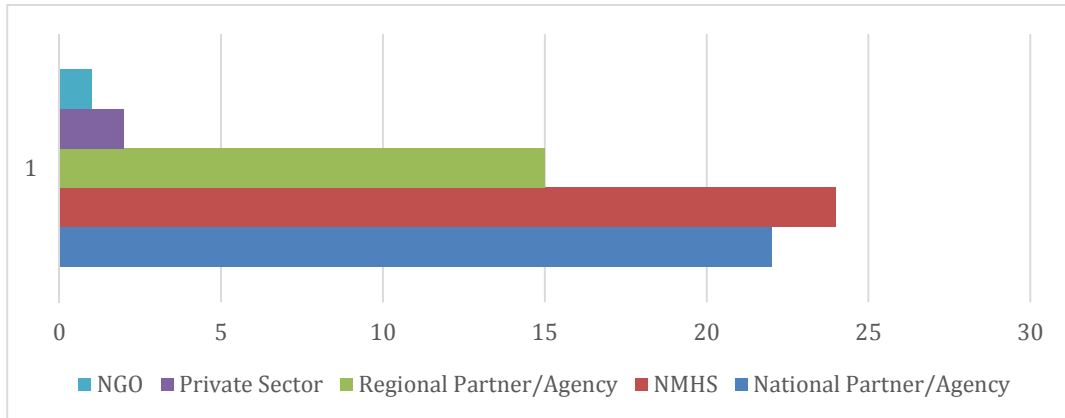
⁵ Convenience sampling looks at cases and reports that are easy to access and do not necessarily meet a criterion (Suri, 2011).

have exposed them to the climate products and tools such as CariCOF, EWISACTS were sent this survey. For online survey 2, beneficiaries of all the workshops convened by the BRCCC (CariCOF, EWISACTS, e-SIAC, f-SIAC, Climate Monitoring GIS, Drought Training etc.) were sent the survey. Therefore, there was an overlap for some individuals that would have received both surveys. The surveys were designed to be short: online survey 1 and 2 had 10 and 13 question, respectively. See **Annex V** for the two online surveys and the summary findings per question. It was expected that a plethora of stakeholders would be eligible to participate in the online surveys; therefore, invitations were sent to all stakeholders that met the criteria noted above, with the expectation that those individuals that are readily available and willing (convenient), will complete the survey.

A total of 223 and 238 persons were targeted and approximately 64 (29%) and 52 (22%) of the persons responded to survey 1 and 2, respectively. The Evaluator is not too concerned with this response rate for the following reasons:

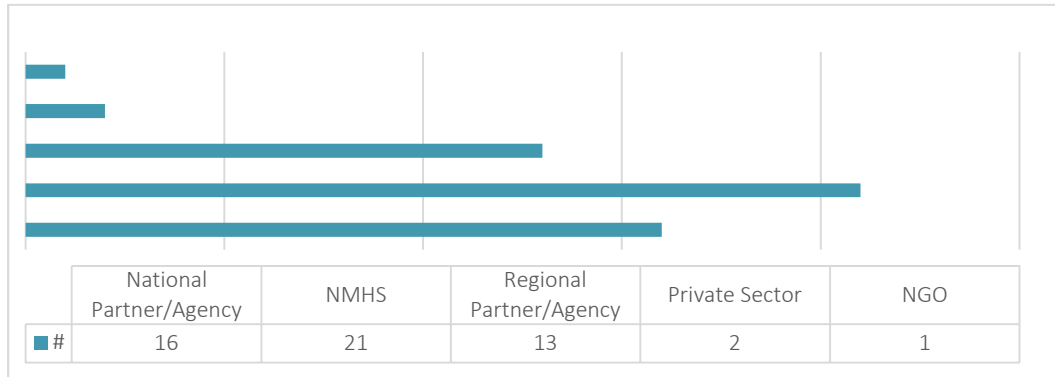
- ✂ The results do not show many outliers for the various questions as majority of the responses converge around 1-2 available options.
- ✂ The respondents were a good balance of national and regional stakeholders (See Graph 1 and Graph 2)
- ✂ Findings are being triangulated with information from interviews (which has a very satisfactory sample size) and literature (secondary sources)

Graph 1: Category of Respondents for Online Survey 1



Source: Online Survey 1

Graph 2: Category of Respondents for Online Survey 2



Source: Online Survey 2

2.3.2 Secondary data

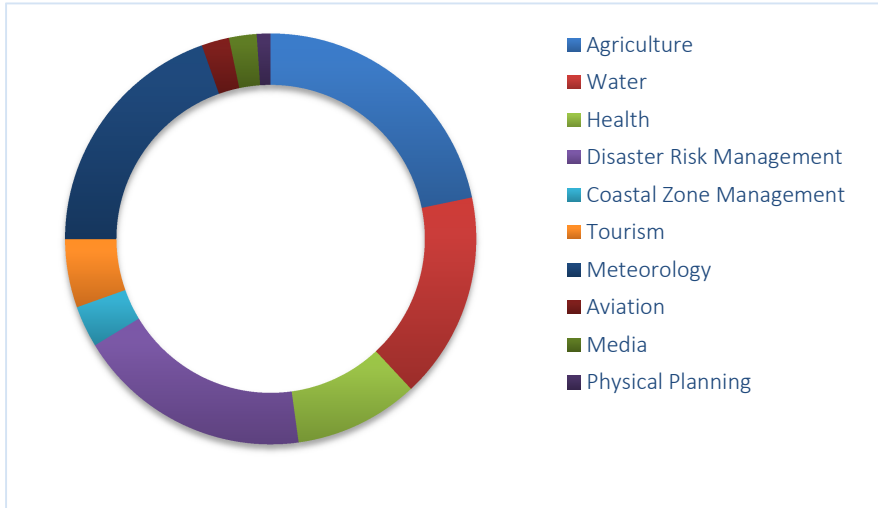
Secondary data was collected through desk reviews to verify findings from interviews and online surveys. This was an important part of the evaluation since stakeholder’s perceptions alone can reduce the validity of the findings. Further, a disputed disadvantage of qualitative methods is that bias/subjectivity can be introduced by the interviewees and researcher (Sumner and Tribe, 2004). Therefore, key messages coming out of interviews were triangulated with the use of secondary data to ensure the evaluation process is rigorous and unbiased. The documents reviewed are listed at **Annex VI**.

2.4 Data Storage and Analysis

Microsoft Excel was utilized to store the data collected from the interviews and online surveys. All quantitative data in excel format were analyzed and presented using appropriate frequency tables and graphics to demonstrate trends. Open-ended questions were analyzed using qualitative data analysis.

2.5 Limitations

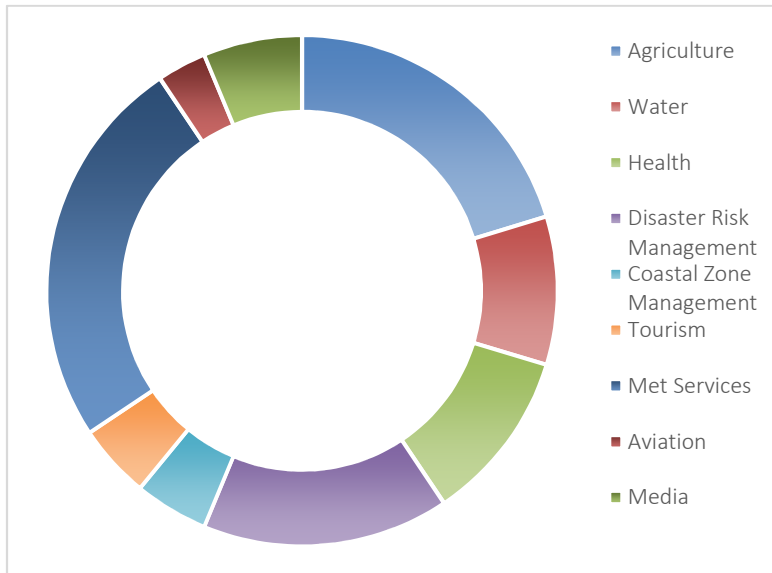
1. A disadvantage with convenient sampling is that selection bias and sampling errors are easily introduced into the evaluation. For instance; whilst there was a good representation of national and regional stakeholders for both the online surveys a closer look at the sectors that the respondents represent show that some sectors were not adequately represented (See Graph 3 and Graph 4). This has implications on the findings because the climate products and services supported by the BRCCC have a sector focus. As a result, all of the findings could not be generalized.



Graph 3: Sector Distribution of Survey 1 Respondents

Source: Online Survey 1

Graph 4: Sector Distribution of Survey 2 Respondents



Source: Online Survey 2

2. Another limitation on selection bias is that the online surveys were completed primarily by the more 'traditional' partners of CIMH. Therefore, all the findings cannot be generalized to reflect the views of the 'general public'. This limitation is more applicable to Online Survey 1, particularly for examining the level of awareness of climate products and services.

3. The evaluation had a very tight implementation timeframe and with only one Evaluator assigned to conduct all the processes; a firm cut off time for data collection was applied to ensure that the final report was submitted within an acceptable timeframe
4. Online surveys reduce opportunities for the Evaluator to persuade individuals to participate and although up to 2-3 email reminders were sent; the response rate was still somewhat low. As noted earlier, this limitation was addressed through triangulation of information from other sources
5. The timing of the evaluation was during the summer holidays and many public officials and working professionals across the Caribbean schedule their vacation. As a result, skype meeting were utilized for some national interviewees since they were not available during the country visits.
6. The timing of the evaluation was also during the peak season for travel in the Caribbean due to the convergence of summer holiday and carnival season across many of the island states. The costs for many of the tickets were above what was budgeted; therefore the contingency lines were utilized and in few instances, skype had to be used with national representatives because they were not available during the country missions or during the timeframe assigned for country missions and follow up missions could not be convened. Fortunately, the skype sessions worked very well.
7. One of the evaluation criteria was impact, and again, due to the timing of this final evaluation, this criteria could not be comprehensively explored since it is highly unlikely that impacts can be measured at this stage given the project focuses heavily on capacity building which will take some time for the impact level changes to be realized (least 3-5 years after). Furthermore, the impact statement for the project - evidence of reduced losses – is one that is being advanced by several projects and regional development agendas and as such, without an adequate M&E system in place from the inception of the project, more resources and time, attribution to the BRCCC could not be determined. In this regard the evaluation targeted the ‘perceived impact’ of the project through interviews etc.
8. The relevance, efficiency, effectiveness and sustainability of management arrangements proposed for CIMH, specifically the organizational structure and HR policy, could not be comprehensively evaluated because they were only in draft format and not endorsed to date by the CIMH Board of Governors⁶ at the time of this evaluation. Assessing the relevance (suitability for delivering on the core functions of CIMH), effectiveness (enhancing the delivery of work and attainment of objectives of the Institute) and efficiency (justified use of resources for functions of the staffing positions) would require the organizational structure and HR policy be adopted and in place for some time for informed feedback on these criteria.

⁶ The Board of Governors meeting is generally scheduled for November 2017 and include the Ministers or Permanent Secretary Level representation from CMO member countries.

9. Not all documentation were accessible to undertake triangulation. These included the draft communications strategy, the outputs of the HR specialist, national work plans, internship reports and some regional agencies' work plans.

3. EVALUATION FINDINGS

The findings from the interviewees, online surveys and secondary sources are presented in the context of the seven evaluation criteria and their associated key evaluation questions and sub-questions. The summary findings are presented in Table 2 below. Now that the summary findings per question are detailed in Annexes III and V.

Table 2: Overall Ratings by the Evaluator

Evaluation Criteria	Evaluator's Summary Comments	Evaluator's Rating ⁷
RELEVANCE	The overall rating will not be higher than the lowest rating given the importance of this criteria	S
Alignment of the BRCCC with the priorities of key beneficiaries	98% of the interviewees indicated that the BRCCC objectives and outputs are a priority for their agency	HS
Suitability of activities and outputs for achieving the intended outcomes and impacts	94% of the interviewees consider the activities and outputs as suitable and relevant for achieving the three primary outcomes of the BRCCC	HS
Design of the BRCCC following a participatory process	A participatory process was utilized through the life-cycle of the project; however, the expansiveness of the consultation beyond the traditional partners were limited at the beginning of the project	S
Selection criteria for the installation of equipment	BRCCC funding was only intended to support the eight countries targeted by the USAID/Barbados and Eastern Caribbean program for Global Climate Change adaptation	S
EFFECTIVENESS	The overall rating will not be higher than the lowest rating given the importance of this criteria	S
Achievement of Outcome 1	The achievements of the targets for the various outputs ranged between very satisfactory to exceptional. All the key outputs were of high quality – CAROGEN, CariCOF, EWISACTS, innovative research	HS
Achievement of Outcome 2	The achievements of the targets for the various outputs ranged between poor to exceptional. All the interviewees that have seen the recently renovated buildings are either 'very satisfied' or 'somewhat satisfied'. The feedback on the video-conferencing facility was limited since it has not been used extensively.	S

⁷ **Highly Satisfactory (HS):** The project had no shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Satisfactory (S): The project had minor shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Moderately Satisfactory (MS): The project had moderate shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Moderately Unsatisfactory (MU): The project had significant shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Unsatisfactory (U): The project had major shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Highly Unsatisfactory (HU): The project had severe shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Evaluation Criteria	Evaluator's Summary Comments	Evaluator's Rating ⁷
Marketing and visibility of climate products and services	Users' needs and feedback, may not receive adequate attention in the current communications strategy. The degree of visibility of the BRCCC achievements is limited since emphasis was given to the climate products and services (Outcome 1); but these visibility products are of good quality since the press releases and product sheets were noted to be very useful among majority of the respondent. Overall, a good level of performance as it relates to promoting awareness of the climate products and services	S
Changes in planning and decision-making in climate sensitive sectors	Almost all of the climate products and services (except CCCES) are being reported by users to inform decision-making in key climate sensitive sectors for the Caribbean	S
SUSTAINABILITY	The overall rating will not be higher than the lowest rating given the importance of this criteria	S
Funding options post BRCCC	There is confirmed funding at the tune of US\$4 Million from multiple sources ⁸ that will span the next 5 years	HS
National leadership, ownership and capacities to sustain results	There are mixed levels of leadership, ownership and capacities across the 8 countries hence, the ability of the countries to sustain the results of the BRCCC will vary from country-to-country	S
Regional partners' leadership, ownership and capacities to sustain results	There is strong leadership and ownership among five of the six key regional partners (CCREEE not established fully). But there is not adequate capacities across all the regional agencies (human and financial resources) to sustain all the roles and expectation of the partnership mechanism.	S
CIMH capacities to sustain results	A resounding yes that the CIMH has enhanced capacity (technical, infrastructural and to some extent financial)	HS
Status of implementation of key sustainability strategies	Most of the sustainability strategies are well advanced except for the fact that the HR and procurement positions are not officially endorsed as core positions. Consultants will be used in the interim with core and project funding	S
Other Risks to Sustainability	There are three scenarios ⁹ that can pose to be moderate risks to the sustainability of the BRCCC results	MR ¹⁰
EFFICIENCY	The overall rating will not be higher than the lowest rating given the importance of this criteria	HS
Procurement policies	WMO's procurement policies promote value for money	HS
Were costs justified	All the interviewees indicated that the costs were justified and none of the documents reviewed indicates that monies were inappropriately	HS

⁸ Pilot Program for Climate Resilience (PPCR) Caribbean (US\$975,000); Climate Change Adaptation Program (CCCAP) (Approximately US\$ 1M); Caribbean Development Bank (CDB) (US\$ 1.3 M); and USAID Office of U.S. Foreign Disaster Assistance (OFDA) (750, 000 US\$)

⁹ staff turnover, cultural norms in the agriculture sector and change in development partner's support for climate variability and change

¹⁰ Moderate Risks

Evaluation Criteria	Evaluator's Summary Comments	Evaluator's Rating ⁷
	utilized. Also, whilst the level of support to country (from costs perspective) is not equal; given that there are clear and fair reasoning for the variations, the investments in the countries are justified.	
IMPACT	The overall rating will not be higher than the lowest rating given the importance of this criteria	S
Contribution to reduced losses	Anecdotes shared by interviewees indicates that the outcomes of the project can definitely make a contribution to reduced losses although it is still early to quantify the extent of the reduced losses and to what extent it is attributable to the BRCCC	S
Perceptions of the real difference the BRCCC made on beneficiaries	There are significant 'real differences' reported for countries, regional agencies, CIMH and the community level.	S
Unplanned results	Mostly positive unplanned results. There are two negative unplanned results reported about users taking the information at face value and the need for more awareness and education and some of the radar sensors for the water level equipment do not give the best results under extreme flooding situations. The latter will be remedied in the short term at no additional costs.	S
MANAGEMENT ARRANGEMENTS	The overall rating will not be higher than the lowest rating given the importance of this criteria	MS
CIMH organizational management arrangements	The procurement policies are considered to satisfy the relevance, efficiency and effectiveness criteria but the sustainability of the procurement function is not satisfactory at this time. The HR function is the main result area of the project that could not be comprehensively evaluated but the RCC staffing, which will be part of the proposed organizational structure, has been reported to be recently put in place and their work is considered to be efficient, effective and will also be sustained	MS
BRCCC project management arrangements	Governance mechanisms, project management and technical staff were suitable/relevant, effective and efficient. M&E system for the project was not fully developed and implemented	MS
CAPACITY BUILDING	The overall rating will not be higher than the lowest rating given the importance of this criteria	S
Workshop relevance	Majority of the respondents for Online Survey 2 indicated that the workshops were 'extremely relevant' and 'very relevant' to their work and the work of their agency	HS
Workshop effectiveness/usefulness	Majority of the workshops received positive feedback in terms of being 'extremely useful' and 'very useful' for enhancing their knowledge and awareness of the subject matter and for supporting decision-making	HS
Workshop sustainability	Critical workshops have been reported to have funding secured for the next year at least – such as the CariCOF and EWISACTS meetings	S
Attachment Program	Attachment programs are reported to be effective in terms of expanding knowledge in areas not previously explored in the Caribbean but some of the research/publications were not finalized at	S

Evaluation Criteria	Evaluator's Summary Comments	Evaluator's Rating ⁷
	the time of the evaluation. The investment is considered to be justified.	
Internships	Overall the internships supported by the BRCCC were effective and the investments are justified And the ability for CIMH to sustain the internship program is high.	S
OVERALL RATING	The BRCCC performed well for all the evaluation criteria. There is only the CIMH organisational management arrangements that need to be streamlined.	S

Source: Evaluator

Key recommendations are documented at the end of the discussion on each evaluation criteria to be able to inform future projects with similar objectives (as requested in the TOR). Where possible, recommendations for CIMH are also included particularly where gaps are reported, although this was not a requirement of this evaluation.

3.1 RELEVANCE

The key evaluation questions related to the relevance criteria were:

1. To what extent are the BRCCC objectives and activities aligned to the priorities and policies of CIMH, NMHS, sectoral partners and donors?
2. Are the activities and outputs of the program consistent with the intended objectives and/or impacts?
3. Is the rationale justified for choosing the specific countries that benefited from the equipment and/or training components of the BRCCC?

3.1.1 Summary Findings for Relevance

- ✘ The BRCCC was highly relevant to the key beneficiaries (CIMH, national Met Services, and national and regional partners from water, health, agriculture, disaster risk reduction and tourism sectors), the executing agency (WMO) and the donor (USAID).
- ✘ The design of the BRCCC was suitable to achieve the intended outcomes and impact of the project.
- ✘ The countries that benefited from the installation of equipment were aligned to the provisions of the funding agreement between WMO and USAID and not through a selection process
- ✘ The equipment installed in countries are relevant however, there is need for better consultations with countries prior to the purchasing of equipment to promote better ownership and interoperability at the national level
- ✘ It is not conclusive whether an extensive participatory process was used in the initial design of the project; but there is strong evidence of adaptive management through the life cycle of the project to ensure that the climate products and services are relevant to the users' needs.

3.1.2 Detailed Analysis of Relevance

3.1.2.1 Alignment of the BRCCC with the Priorities of Key Beneficiaries

As seen in Table 3, 98% of the interviewees indicated that the BRCCC objectives and outputs are a priority for their agency, and therefore relevant to them.

Table 3: Respondents View of the Objectives of BRCCC

Are the objectives and outputs of the BRCCC a priority for your agency?		
Response:	#	%
Yes	47	98%
No	0	0%
Unsure	1	2%
Total Respondents	48	100%

Source: Multiple Interviewees

National Perspectives— country representatives expressed that the areas supported under the BRCCC such as the **climate products and services and capacity building activities enabled the national met offices to better meet the Global Framework for Climate Services (GFCS)**¹¹. For instance climatological demands and gaps within Met agencies were addressed through the statistical training, Caribbean Climate Outlook Forum (CariCOF) and the CariCOF Generator (CAROGEN). Interviewees also commented that the **project was timely given the impact that climate hazards such as drought was having on the Caribbean** and the need for a more scientific approach to inform planning and decision-making.

Further, the priority sectors of the GFCS are agriculture, disaster risk reduction (DRR), Energy, Health and Water – all of which, except the energy sector, there are now improved climate tools and products developed or enhanced by the BRCCC to inform planning and decision-making at the national and regional levels. These include the Caribbean Society for Agro-Meteorology (CARISAM) as well as the health and agriculture sectors’ bulletin. Work was also advanced in the tourism sector via the tourism sector bulletin, which is not a priority sector for the GFCS, but is a priority for many Caribbean countries since it is a key development sector. Testimonials from national sector representatives that demonstrates the relevance of the project to their agency and sector is detailed in Box 1.

¹¹ The Global Framework for Climate Services (GFCS) is a UN-led initiative spearheaded by WMO and was established to guide the development and application of science-based climate information and services in support of decision-making in climate sensitive sectors. (<http://www.wmo.int/gfcs/overview>).

Box 1: National Interviewees Testimonials on the Relevance of some the BRCCC Outputs to their Sectors

- ✂ **Agriculture Sector** - the equipment installed such as the soil probe, water sensor and weather station all collect very useful data on parameters of high importance and relevance to the agriculture sector. The combined information is particularly useful during the drought season and for countries with farmers that are dependent on irrigation systems (Interviewee 020).
- ✂ **Health Sector** - the BRCCC examined non-traditional hazards such as heat (extreme heat) that has implications not only for agriculture and tourism sectors, but also for the health sector. This area previously had limited research and information in the Caribbean context to inform planning and decision-making (Interviewee 017, 018).

Source: Multiple Interviewees

Regional Perspective – interviewees from specialized regional agencies indicated that the outputs, particularly those related to **Outcome 1 (Development of the RCC), were aligned to their agency’s strategies**. For instance, it was noted that the climate products and tools and research funded by the BRCCC would support the CARICOM Comprehensive Disaster Management Strategy (2014-2024), specifically the result area related to knowledge management and fact based decision-making and the integration of scientific knowledge in the Caribbean. The Council for Trade and Economic Development (COTED) at their 53rd special meeting “*endorsed the GFCS as a key initiative that supports the Region’s adaptation to increasing climate variability and long-term climate change*” (Mahon et al., 2017: 11). Therefore, **in the context of regional programming priorities, the BRCCC is relevant and timely**. Also, the key regional agencies [Caribbean Disaster Emergency Management Agency (CDEMA), Caribbean Water and Waste Water Association (CWWA), Caribbean Tourism Organisation (CTO), Caribbean Public Health Agency (CARPHA), Caribbean Agriculture Research and Development Institute (CARDI)] that were engaged through the BRCCC cover the priority sectors of the GFCS and the climate products and services that were developed were confirmed via interviews to be relevant to and will strengthen the work of these regional agencies.

Implementing Agency Perspective - the project was deemed to be very relevant to CIMH since the Institute was able to enhance their existing functions and expand on their capabilities by being successfully designated as a WMO Regional Climate Centre (RCC)¹². Table 4 demonstrates the linkages between the outputs of BRCCC and the core functions of CIMH, including its recent RCC designation.

¹² Centres of excellence that create regional products including long-range forecasts that support regional and national climate activities (particularly those of National Climate Centres) and thereby strengthen capacity of WMO Members in a given region to deliver better climate services to national users (Trotman, 2017)

Table 4: BRCCC Linkages with the Core Functions (including RCC designation) of CIMH

Specific Functions of CIMH	Outputs of the BRCCC
World Meteorological Organisation Regional Training Centre (RTC)	Outputs 2.2, 2.6, 2.4
Centre for research in Meteorology, Hydrology, Climatology and Associated Sciences	Outputs 1.1, 1.2, 1.3, 1.4, 1.5, 2.5
Regional Climate and Hydrological Data Centre	Outputs 2.3, 2.7
Regional Instrument Centre	Output 2.3
Regional Centre of Excellence for Training in Satellite Meteorology	Output 2.2, 1.4
WMO RCC Mandatory Functions	Outputs 1.1, 1.2, 1.3, 1.4, 1.5
CIMH general operations	Outputs 2.1, 2.5, 2.8, 3.1

Source: Evaluator

Executing Agency Perspective – the BRCCC has highly relevance to the work of the WMO since it supports their world climate programme, which aims at enhancing climate services with adequate focus on user interaction, to facilitate evermore useful applications of climate information to derive optimal socio-economic benefits and thereby underpins the GFCS (WMO, 2017). Designating WMO RCCs around the works is one of the key mechanisms for promoting this programme.

Donor – at the time of conceptualization and endorsement of the BRCCC project, it was aligned to USAID's 2010-2014 strategy. The focus on this strategy was on climate change and particularly regional specialized agencies working in this area. The United States Caribbean 2020 strategy does not explicitly speak to climate change; however, there are priorities related to sustainable tourism and strengthening resilience to health that would be supported through some elements of the BRCCC outputs (US State Gov, n.d.).

3.1.2.2 Suitability of Activities and Outputs for Achieving Intended Outcomes and Impact

94% of the interviewees (see Table 5) consider the activities and outputs as suitable and relevant for achieving the three primary outcomes of the BRCCC¹³. Notable feedback from interviewees include:

- ✂ Outcome 1 - the general consensus is that the activities that were the focus of the project had to be appropriate since the Institute was successful in achieving WMO RCC designation.
- ✂ Outcome 2 – the strong linkages between the outputs of the BRCCC and all the specific function of CIMH including RCC designation suggests that the activities were suitable.

¹³ (i) CIMH achieving WMO RCC designation (ii) the ability of CIMH to continue to meet its mandate is expanded and enhanced and (iii) project is delivered efficiently and effectively.

- ✂ Outcome 3 – activities that were targeted for enhancing the operational and management structures at CIMH was relevant given that it was primarily based on recommendations from an internal evaluation of CIMH’s capacity, which was undertaken by USAID.

Table 5: Suitability of Activities of the BRCCC for Achieving the Outcomes and Impact

Q6: Are the activities and outputs suitable to achieve the intended outcomes and impact?		
	#	%
Yes	33	94%
No	0	0%
Unsure	2	6%
Total Respondents	35	100%

Source: Multiple Interviewees

Interviewees are strongly of the view that the senior team at CIMH are fully aware of the climate services landscape and what are the needs and suitable activities to address the gaps:

“Mr. Trotman is very insightful and has the zeal. He has been in the sector for so long that he knows what countries need, better than they do” (Interviewee 007)

“Mr. Trotman understands what the sectors need and had the vision to see the utility of PICSA for Guyana’s Agriculture Sector” (Interviewee 008)

“Dr. Farrell and Mr. Trotman have a good vision of what is needed for the region and they are committed” (Interviewee 017)

3.1.2.3 Design of the BRCCC following a Participatory Process

The findings in Table 6 do **not provide adequate evidence to confirm whether the initial design and conceptualization of the BRCCC followed a participatory process.** 50% of the respondents that selected ‘Yes’ and 64% that selected ‘Unsure’ were from the NMHS. In the case of those NMHS interviewees being ‘unsure’ it was either due to the fact that the BRCCC predated their employment at the Met Service or they do not attend CIMH Director of Met Services meetings where information on planned projects are shared for commenting and feedback. This would suggest that information may not be filtering down within national Met Services. **Recommendation: there is need for a mechanism to include commenting and feedback on projects from the wider Met Offices and even national agencies, particularly for projects like BRCCC with components having a multi-sectoral emphasis.**

Table 6: Interviewees Feedback on the Design of the BRCCC

Q4: Do you know if the design of the BRCCC was

informed by a participatory process?		
Response:	#	%
Yes	12	52%
No	0	0%
Unsure	11	48%
Total Respondents	23	100%

Source: Multiple Interviewees

Useful findings related to this evaluation question are:

- ✘ The BRCCC project was first conceptualized to address the internal deficiencies at CIMH, which were highlighted via the assessment conducted by USAID. To this end, **most of the initial consultations targeted head of sections within CIMH.**
- ✘ With the agreement to expand the project to achieve RCC designation for CIMH, it was noted that flexibility was built into the project to include findings from the user needs and provider capacity assessments that were slated to be funded by the BRCCC. CIMH staff members that were interviewed confirmed that **recommendations were included as it pertains to these assessments:** for instance the design of the sector tailored products (bulletins) and sector specific models (vector proliferation) were all informed by findings of user needs assessments. This is corroborated by a review of one of the early assessments (preliminary results of the baseline user needs for climate services in the Caribbean in October 2015) that specifically included as a research question - users perceptions of the BRCCC's proposed climate products and services for sectors.
- ✘ Several interviewees also indicated **that feedback from the CariCOF and EWISACTS meetings were incorporated into the shaping of the sectoral products to be relevant to the users.** This is corroborated by Mahon et al., (2017) that estimated that 14 testing exercises were conducted to finalize the health (6 exercises), agriculture (4 exercises) and the tourism (4 exercises) climatic bulletins (Mahon et al., 2017)

The foregoing suggest that **a participatory process was utilized through the life-cycle of the project; however, the expansiveness of the consultation beyond the traditional partners were limited at the beginning of the project.**

3.1.2.4 Selection Criteria for Beneficiaries for the Installation of Equipment

Interviewees from CIMH and USAID confirmed that the **BRCCC funding was only intended to support the eight countries targeted by the USAID/Barbados and Eastern Caribbean program for Global Climate Change adaptation**, which include: *Antigua and Barbuda, Barbados, Dominica, Grenada, Guyana, St. Kitts and Nevis and St. Vincent and the Grenadines*. The rationale was related to the high costs associated with the procurement and installation of the weather stations. However, **flexibility was given to support training for other countries since they add value to the discussions** particularly the CariCOF meetings that are more beneficial with a wider audience to input in the development of

the outlooks. More details on the selection criteria used for supporting countries for training activities is at Section 3.7.1.1.

During the interviews almost all of the national **Met Offices expanded on the question to note that they were also not engaged in the equipment selection process** – they were just informed what will be installed. For some Met Services this was not necessarily problematic as **the equipment installed best-suited national needs since the stations have sensors and data is accessible in real time, which reduces time needed in the field to collect data**. However for some countries **the absence of prior consultation was not well received given compatibility issues** with other stations in their national networks may arise and the importance of consultations to promote better ownership.

3.1.3 Recommendations for Enhancing Relevance of Similar Projects

Incorporate social sciences research to strengthen adaptive management during the lifecycle of a project. A key lesson learned coming out of this project is the value-added of information from social science research in shaping the climate products and tools to be generated by an RCC. Specifically, the BRCCC supported provider capacity and user needs assessment, which was reported to be helpful in clarifying where the gaps are and how the climate products and services can be enhanced to be more relevant and useful to the users. This is critical for promoting demand for and use of the climate products and services.

Consult with relevant Ministries, Department and Agencies (MDAs) outside of the Met Service on matters related to project conceptualization and planning. This is particularly important since there are varying governance structures and mandates assigned to Met Services across the Caribbean. For instance, in the case of St. Vincent and Grenada, the national ministries responsible for water and/or agriculture might need to play a greater supporting role since their national Met Services are mandated to provide aviation services only and may not have the required staffing numbers and skill sets to sustain the level of effort

Identify a central repository (e.g. website) to archive and provide regular updates on the progress of the project as well as mechanisms for information sharing with relevant national and regional stakeholders. This is important not only for maintaining visibility of the project but will also help to bridge the knowledge gap in instances of staff-turn over at key national and regional institutions that are important partners for the roll-out of the project.

Convene special sensitization and consultation meetings with ‘new’ players. Achieving RCC status and fully embracing the GFCS goals brings with it a plethora of new users. This means newly established WMO RCCs, such as the CIMH, would have to expand their traditional networks. To facilitate a smooth transition process for both the agencies designated to house the WMO RCC and the new players, targeted meetings should be

planned and budgeted for to ensure that (i) expectations, (ii) rules of engagement and collaboration and (iii) strategies for driving and sustaining the collaboration are adequately discussed.

3.2 EFFECTIVENESS

The key evaluation questions related to the effectiveness criteria were:

1. To what extent were the primary objectives of the BRCCC program achieved and what were the factors influencing achievement or non-achievement?
 - a. Sub-Question: Are the infrastructure repairs and upgrades supporting CIMH to continue to meet its mandate, including sustaining its role as an RCC
2. What is the degree and quality of visibility of climate products and services generated under this project?
3. How have decision makers used the climate products and services generated under this project for planning and decision-making?

3.2.1 Summary Findings for Effectiveness

Achievement Rate

- ✘ Stakeholders are generally of the opinion that there was a high achievement rate of the objectives of the BRCCC. A close examination of the achievement rate of the BRCCC in the context of targets established indicates that the three outcomes of the BRCCC were exceptionally, very satisfactorily and satisfactorily achieved, respectively. Therefore the average achievement rate for the overall BRCCC project is 'very satisfactory'. The RCC designation (outcome 1) is the most notable achievement and CIMH surpassed the mandatory functions and went on to achieve some of the recommended functions of an RCC.
- ✘ The quality of each output was not confirmed by the evaluation but there is evidence to suggest that the outputs that were successfully completed were done at an acceptable standard.
- ✘ The upgrades to the buildings are supporting CIMH to meet their mandate
- ✘ The key outputs that were not fully achieved by the BRCCC include (i) finalization and/or endorsement of the drought management plans and TORs for national drought management committees (ii) advancing work in the energy sector such as securing partnership with CCREEE and developing sector specific early warning systems for this sector, (iii) finalization of research papers (both peer and non-peer reviewed) (iv) promoting the use of the video conferencing facilities for online courses (v) adoption of the human resources policy for CIMH (vi) finalization of the communications strategy and (vii) endorsement of the HR and procurement specialist positions as part of the core positions at CIMH.

Marketing and Visibility

- ✘ The BRCCC Newsletter, which was intended to promote greater visibility of the project, was distributed in July 2017 at the launch of the RCC. Prior to this, progress related to the BRCCC was documented in CIMH Press Releases, which focused more on the RCC related results (Outcome 1 of BRCCC). This suggests that the degree of visibility of the project achievements is limited since emphasis was given to the climate products and services (Outcome 1); but these visibility products are of good quality since the press releases and product sheets were noted to be very useful among majority of the respondents
- ✘ The CIMH bulletins, CIMH newsletter and BRCCC sponsored workshops such as EWISACTS and CariCOF were reportedly useful sources of information and promoted awareness of the climate products and services that were developed by the BRCCC
- ✘ The communications strategy was not completed at the time of the evaluation. However, it may be the case, from a cursory look at the objectives of the communications strategy that users' needs and feedback, may not receive adequate attention
- ✘ Majority of the respondents are fully aware of the Caribbean Drought Bulletin, CariCOF Caribbean Climate Outlook Newsletter, CariCOF Drought Outlook, CariCOF Precipitation Outlook, CariCOF Temperature Outlook, CariCOF Seasonal Climate Outlook and CariCOF Wet Days/Wet Spells Outlook. This is similar to what was found during the Baseline of User Needs for Climate Services in the Caribbean, which was completed in October 2015. The consistency in findings would suggest that the findings from this evaluation are reliable and valid
- ✘ There is evidence of a good level of performance as it relates to promoting awareness of the climate products and services that were made available through the BRCCC.
- ✘ Findings from this evaluation suggests a positive change in awareness of the DEWETRA and CID platforms among users between 2015 (baseline) and the time of the evaluation.

Decision Making

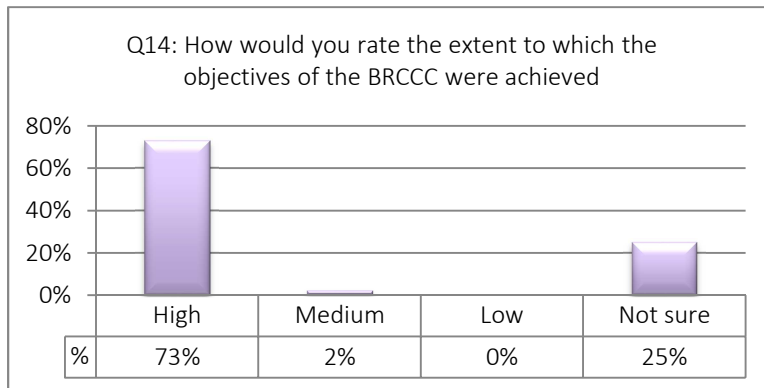
- ✘ Almost all of the climate products and services (except CCCES) are being reported by users to inform decision-making
- ✘ Climate outlooks are among the main products and services supporting decision-making. However, there are still quite a number of climate products and services that are not being extensively utilized; but testimonials illustrate the scope for applying the information from the climate products and services into planning and decision-making processes across most of the key climate sensitive sectors

3.2.2 Detailed Analysis of Effectiveness

3.2.2.1 Achievement of the Primary Objectives/Outcomes of BRCCC

Graph 5 illustrates that **73% of the interviewees indicated that the objectives of the BRCCC were highly achieved**¹⁴. Individuals that reported ‘unsure’ were mostly national representatives from key sector agencies and were engaged primarily through the CariCOF platform and did not have knowledge of the comprehensive scope of the project.

Graph 5: Achievement Level of BRCCC Objectives



Source: Multiple Interviewees

The general perspective of the interviewees is corroborated to a large extent by evidence from literature reviewed. Table 7 presents a snap shot of the achievement rate in the context of targets that were established for the BRCCC. It can be seen that **the three outcomes were respectively exceptionally, very satisfactorily and satisfactorily achieved which would average at ‘very satisfactory’**¹⁵.

Table 7: Achievement of BRCCC Targets

Score	Achievement Rate and Meaning
1	Exceptional Achievement above set target
2	Good Achievement equal to target
3	Very Satisfactory Achievement near set target
4	Satisfactory Achievement moderately below set target
5	Poor Achievement significantly below set target

¹⁴

High means that all the objectives were close to fully achieved
 Medium means that all the objectives were somewhat achieved
 Low means that all the objectives were hardly achieved

¹⁵ [(1+3+4)/3 = 3]

Result Area	Targets	Achievement Rate
Outcome 1: Development of the Regional Climate Centre	<i>Designated RCC</i>	
Output 1.1: Support for Enhanced Regional Climate Monitoring	<i>8 countries with climate monitoring equipment that provide continuous and reliable information; 60 stakeholders trained in climate monitoring; 3 countries have developed drought management plans and SOPs</i>	
Output 1.2: Sustained CARICOFs as a mechanism to support national climate services	<i>6 CariCOF meetings convened; 150 persons trained in seasonal forecasting</i>	
Output 1.3: Development of Capabilities for the use of climate products and services for decision making among sectoral stakeholders	<i>EWISACTS established and sector products developed; 30 stakeholders training in the use of climate information for sectoral decision making; 16 comms products developed</i>	
Output 1.4: Access to and use of Remote Sensing Data for Climatological Process	<i>Stakeholders trained in remote sensing (TBD); 2 climate products integrating satellite information</i>	
Output 1.5: Development of the Statistical Capabilities of CIMH	<i>40 persons trained in statistical analysis; 4 research papers completed</i>	
Outcome 2: Ability of CIMH to continue to meet its mandate is expanded and enhanced	<i>50% of staff and 50% of students very satisfied with the facilities,</i>	
Output 2.1: Upgrades/repairs to building and select offices	<i>4 CIMH buildings are upgraded</i>	
Output 2.2: Upgrades to Training Classrooms and Associated Facilities	<i>11 CIMH staff using the technologies installed in the classrooms</i>	
Output 2.3: Strengthening Instrument calibration facilities and climate databases	<i>Centralized met database exists; 20 person trained in the use of the database; 25 person trained in calibration maintenance.</i>	
Output 2.4: Upgrading of Video-conferencing facilities at CIMH	<i>60 meetings held using the video-conferencing facility; 10 virtual courses convened</i>	
Output 2.5: Communications & Marketing	<i>Communications and marketing strategy adopted by CIMH; 23 communications products developed</i>	
Output 2.6: Support of Student Interns	<i>26 student interns supported; 18 outputs coming out of the internship program</i>	
Output 2.7: Development of Regional Climate and Environmental Computation Platform	<i>6 outputs from the regional climate and environmental computational platform</i>	
Output 2.8: Greening Activities	<i>40% reduction in CIMH energy use from billing data</i>	
Outcome 3: The project is delivered efficiently and effectively	<i>HR and procurement policies adopted by CIMH</i>	
Output 3.1: Operational and Management Structure	<i>Procurement and HR positions transition into CIMH core positions</i>	
Output 3.2: Programme Management	<i>9 progress reports</i>	

Source: BRCCC Progress Reports

The key activities/outputs that were not fully achieved by the BRCCC include:

- (i) Finalization and/or endorsement of the drought management plans and TORs for national drought management committees in 3 countries – *part of output 1.1*
- (ii) Advancing work in the energy sector such as securing partnership with Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE) and developing sector specific early warning systems for this sector – *part of output 1.3*
- (iii) Finalization of several research papers (both peer and non-peer reviewed) - *part of outputs 1.3 and 1.5*
- (iv) Promoting the use of the video conferencing facilities for online courses – *main element of output 2.4 and hence why this output performed poorly*
- (v) Finalization and endorsement of the communications strategy – *part of output 2.5*
- (vi) Endorsement and operationalization of the human resources policy for CIMH by the Board - *part of output 3.1*
- (vii) Endorsement of the HR and procurement specialist positions as part of the core positions at CIMH - *part of output 3.1*

A notable trend in the assessment of the achievement of the targets is that **all outputs with training targets were exceptionally achieved**. The **quality of all the outputs was not confirmed by the evaluation**. However, insights into key achievements, stories and/or stakeholders perceptions for some of the key outputs are presented in the ensuing section. **Evidence suggests that the outputs that were successfully completed were done at an acceptable standard.**

Notable Achievements of the BRCCC

Outcome 1

Literature reviewed, confirms that CIMH entered the Demonstration Phase of being a WMP RCC in April 2013, which is prior to the launch of the BRCCC. However, several interviewees noted that **without the BRCCC, CIMH would not have been able to fulfill all the requirements within the timeframe (April 2013 – November 2016) to achieve RCC status**. CIMH was granted WMO RCC designation in November 2016, with official designation granted in May 2017. This means that **CIMH has the capacity to develop regional products including long-range forecasts that can support National Climate Centres to deliver better climate services to national users**. Further, **CIMH surpassed the requirements to fulfill the mandatory functions of an RCC** and was able to start fulfilling some of the recommended functions such as those outlined in Box 2.

Box 2: Some of the Recommended Functions of the RCC Achieved by CIMH

- ✂ **Climate predictions to support adaptation** – capacity development related to drought alert outlooks, coral reef bulletin, extreme rainfall, heat wave
- ✂ **Perform verification on consensus statements for forecasts** – capacity development related to forecast verification
- ✂ **Non-operational Data Services** – climate archives, light version of customised database,
- ✂ **Generate indices from data** – SPI, SPEI.
- ✂ **Assist NMHSs in user liaison** - Sector Engagement, Drought monitoring and management workshops
- ✂ **Assist NMHSs in the training of users** - CariCOF, Drought monitoring and management workshops, media training; PICSA in Guyana
- ✂ **Technical capacity building on NMHS** – software, instruments, light version of database
- ✂ **Professional training of climate experts for generating user-targeted products** – monitoring products, drought alerts, coral reef bulletin, tourism bulletin, health bulletin, extreme rainfall, heat wave (prototype developed)
- ✂ **Studies of regional climate variability and change, predictability and impact**– Caribbean rainfall and ENSO, drought early warning and impacts (including Caribbean chapter in Drought and Water Crises 2 –intern and post doc support) impacts
- ✂ **Promote application research, and assist in the specification and development of sector specific products** – EWISACTS health consultancy, heat products, three sector bulletins

Source: Adopted from Trotman, 2017

Output 1.1

National and regional interviewees have reported that the CAROGEN is a key output that will ensure effective regional and national climate monitoring. **CAROGEN promotes effectiveness and efficiency and allows for the work to continue in a sustainable way** – that is, the automation of the forecast/outlooks helps this process. A very significant feedback from the Climatologist at CIMH, Dr. Cedric Van Meerbeeck, is in Box 3.

The installation of weather equipment in countries is another key activity related to output 1.1. **The type of equipment installed was of high quality and that installation work itself was reported to be fine quality to withstand the environmental elements (longevity), theft and/or vandalism.** For some countries, **data is now being collected from sites that were never collected before, such as in Guyana and Dominica.** Also, the addition of automatic weather stations with data acquisition console allows data to come straight to CIMH for archiving and analysis, which **reduces the time between manual downloads in countries and then upload to CIMH** for data analysis. There is also time saving on the side of CIMH as they do not have to prompt and follow-up with countries every time they want information from a station. Interviewee #019 indicated, *“Prior to the sensors the staff members would have to physically travel to the location to collect data. The terrain [...] is a little uneven and more risky. Takes some time to access the dam via driving. So the*

equipment installed saves time for the officers that are responsible for data collection. The data is also available in real time, which is something very new for the office". **The real-time feature of the weather stations also make them early warning systems for flooding, drought and other events.** CIMH noted that they can also do landslide analysis based on the current rainfall rates and/or forecast forest fires based on drought events and share this information immediately via the DEWETRA platform to inform national response and planning processes.

Output 1.2

The CariCOF received positive reviews from all of the interviewees: Guyana thinks that the CariCOF is of high quality and exemplary and was the stimulus for the Guyana Met Service to start hosting the National Climate Outlook Forum (NCOF) twice per year. Antigua and Barbuda on the other hand is now seriously considering launching their NCOFs to start bringing their stakeholders together¹⁶. Grenada on the other hand applied the multi-stakeholder model to select those agencies to be presented on their national drought management committee. Also, having the met services and other national sectors in the same room **helped to build relationships at the national level**; for instance, several countries reported that for the first time the disaster among other national representatives really sat with the Met Services and understand what they do¹⁷. Other notable feedback about the CariCOF is that the **format is very interactive and encourages feedback from users** in the shaping of the outlooks. Also, **data is presented in dynamic, digestible bites with technical terms demystified to better fit the needs of various end users**. The latter was reported as a significant area of change since the launch of the BRCCC. Dr. Simon Mason, a renowned Chief Climate Scientist at IRI has also corroborated the high quality of the regional climate monitoring capacities at CIMH and the CariCOF platform through a video testimonial available at: <https://www.youtube.com/watch?v=kTVM2Tdt0c>

¹⁶ "Having participated in the last two CariCOF meetings I am convinced of the need to bring all the relevant stakeholders in Antigua and Barbuda to begin a NCOF in the years to come" (Respondent to Online Survey 2)

¹⁷ "Wet/ Dry COF are amazing. They allow for interaction with stakeholders to better understand the needs of my own people and suggest ways in how the products we produce can be more tailored to fit these needs" (Respondent to Online Survey 2)

Box 3: Value-Added of CAROGEN

CAROGEN Promotes Effectiveness and Efficiency

At regional level (CIMH) - if one considers only the routine work for the products that were already available before CAROGEN, then a good estimate would be that, instead of spending around 40 man hours, the work load has been reduced to around 12 hours (plus 4 hours of work by IT staff). However, several people have been involved to streamline the process both before and after CAROGEN came into use. So a more realistic estimate, given the role division amongst a team at CIMH would be from around 60 man hours to around 20 man hours (plus 4 hours of work by IT staff). So the ***efficiency has risen more or less 2.5 fold, or a reduction in work load by 60%***. This reduction in work load was then utilised to produce more outlook products, including certain specific products and related workloads that cannot be automated. Including all CariCOF outlook products coming out of CIMH, the total work load for the entire team is around 40 man hours. ***This proves that the main purpose of automation for CIMH staff (i.e. increasing efficiency in producing CariCOF outlooks by automation to free up time to generate more products) is well served by CAROGEN.***

At the national met services - the matter is hardly possible to generalise. There is a number of reasons for that:

1. The time spent by forecasters in Met Services was never measured by CIMH. In fact, a number of forecasters had to do their work on the climate outlooks on their own time.
2. Another major difference is that, for the national met services, practical tools to map outlooks based on several forecast experiments in CPT each (without spending much time and effort on such activities) were not made available before CAROGEN.
3. Some Met Services do not utilise a climate database management system, meaning they would have to manually copy and send data in different formats to different recipients (incl. at CIMH) before CAROGEN.
4. Finally, on a very technical note: before CAROGEN, the recommended methodology for producing national forecast experiments that would feed into the CariCOF regional climate outlook products could not be adhered to by all met services. CAROGEN changed that, by ensuring that all experiments at national level are run in exactly the same way and are consistent with the regional forecast experiments run at CIMH. Simply put: ***CAROGEN assured a common quality standard for climate outlooks across the Caribbean, which is a first for any RCOF around the world, as far as I know, and contributes to the scientific robustness and authority of the CariCOF outlooks as well as of the outlooks of its participating countries.***

In this sense, ***at the national level, CAROGEN served both to reduce the work load of met service personnel as well as to enable them to deliver work they feel more confident about (methodologically speaking), have better peer group support for (since everybody is running the system and producing climate outlook maps the same way), and produce a broader set of climate outlooks. If I must put a ball park figure on it, the automation of the generation of the same outlook products that met services were already generating before CAROGEN has reduced work load per met service by at least 60-80%.***

Source: Dr. Cedric Van Meerbeeck

Output 1.3

The EWISACTS consortium that was established to institutionalize the co-design, co-development and co-delivery of climate services throughout the Caribbean region is **reportedly a model to the scientific body of climate services globally that will contribute to the implementation of the five pillars of the GFCS**. Progress has been made with the agriculture, water, health, disaster risk reduction and tourism sectors, which include – signed Letter of Agreements with regional institutions such as CDEMA, CWWA, CTO, CHTA, CARDI and CARPHA; co-development of CARISAM, tourism, agriculture and tourism climatic bulletins, the piloting of the Participatory Integrated Climate Services For Agriculture (PICSA) programme (more details in Section 3.5.2.3) and research on vector proliferation in health sector. Also notable is that **by strengthening alliances with these regional agencies; the network for information dissemination of climate information and products have increased**. For instance:

- ✘ CTO shares the health sector bulletin on their website and via emails to approximately 600 agencies.
- ✘ CWWA send climate outlook information to their membership that include water utility companies (service), water resources companies (management of the product) and even private companies
- ✘ CARDI shares the agriculture bulletins on their sites, their offices across the region and their network, which include Ministries of Agriculture and their associated departments that vary from country to country. They also collaborate with some farmers directly such as the Rural Agricultural Development Authority (RADA) in Jamaica

Output 1.4 and 1.5

CIMH and the region were exposed to cutting edge research and development work with highly reputable institutions such as International Research Institute for Climate and Society (IRI) Columbia University, SUNY University, University of Reading, University of Nebraska and University of Arizona. These collaborations produced high quality outputs for CAROGEN such as the heat early warning, dry spell outlooks and drought prediction research. More details on the effectiveness of the research and development activities are detailed at Section 3.7.2.4.

Outcome 2

Outputs 2.1 - 2.4 and 2.8.

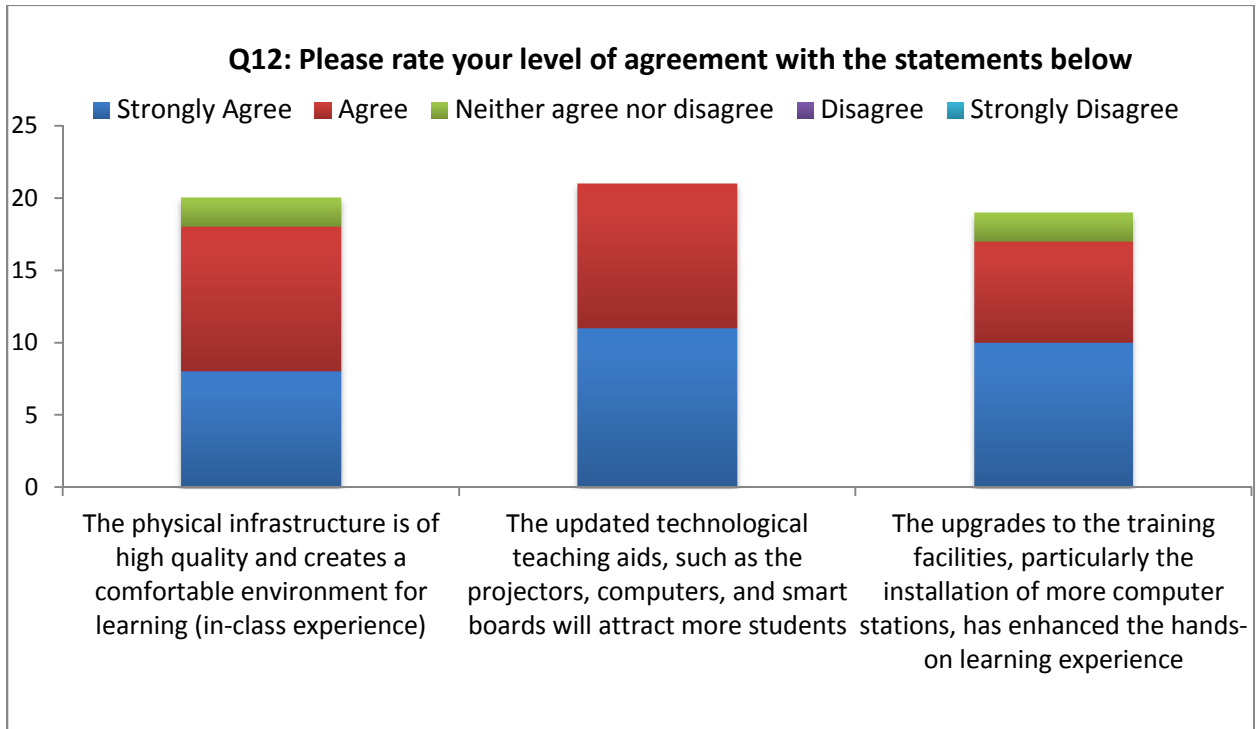
These outputs focused on upgrades to buildings, including selected offices, training classrooms and associated training facilities, instrument calibration facilities, climate databases, video conferencing facilitates and the greening activities, respectively.

Training Facilities

Graph 6 depicts the views of approximately 20 out of 52 of the respondents that participated in online survey 2. Approximately 32 respondents selected ‘not applicable’ (which is not included in the graph below) because they have not seen the upgraded infrastructure at CIMH. The graph shows that **majority of the respondents either ‘strongly**

agree’ or ‘agree’ with the three key statements related to the quality and effectiveness of the upgrades to the training facilities as it relates to promoting a comfortable, attractive and better quality hand-on training experience. Anecdotes from interviewees about the training facilities prior to upgrades are in Box 4.

Graph 6: Quality and Effectiveness of the Upgrades to the Training Facilities



Source: Online Survey 2

Box 4: Anecdotes about CIMH Facilities

- ✘ Some of the national interviewees were also past students at CIMH and indicated that the training facilities were outdated and not conducive for learning. One interviewees shared that when he was enrolled in the institute some years ago, a ceiling fan fell on the desk in front of him and the electrical wires were hanging over his shoulders (Interviewee 042).
- ✘ Another interesting story was from a student from the year 1981. This particular student had a cartoon representation of himself on the wall and he noticed up to 1999, the caricature was still on the wall, which suggests no painting was done to the infrastructure during the 18-year time span (Interviewee 022).
- ✘ A few of the Directors of Met Services reported that the conditions of the buildings have been raised at several board meetings given the state they were in but funding was never secured for the restoration works until the BRCCC came along (Interviewee 016, 022).

Source: Multiple Interviewees

These findings are corroborated by the findings from the evaluation forms that are administered by CIMH at the end of training courses. See Table 8 below for the summary findings from repeat students from 2014 (prior to the rehabilitation work) and 2017 (after the rehabilitation work).

Table 8: Feedback from Repeat Students on CIMH's Facilities

Room	2014 Average Score	2017 Average Score
<u>Classrooms</u>	<u>3</u>	<u>4</u>
<u>Lab room</u>	<u>3</u>	<u>4</u>
Technical facilities (computers)	3	3
Library	3	3
Recreational facilities	3	2
Overall average	3	3.2
<u>Scoring Criteria:</u>		
1. <i>Very short of the standard I would have expected.</i>		
2. <i>Some improvement needed to reach the standard I would have expected.</i>		
3. <i>Reached the standard I would have expected.</i>		
4. <i>Exceeded the standard I would have expected</i>		

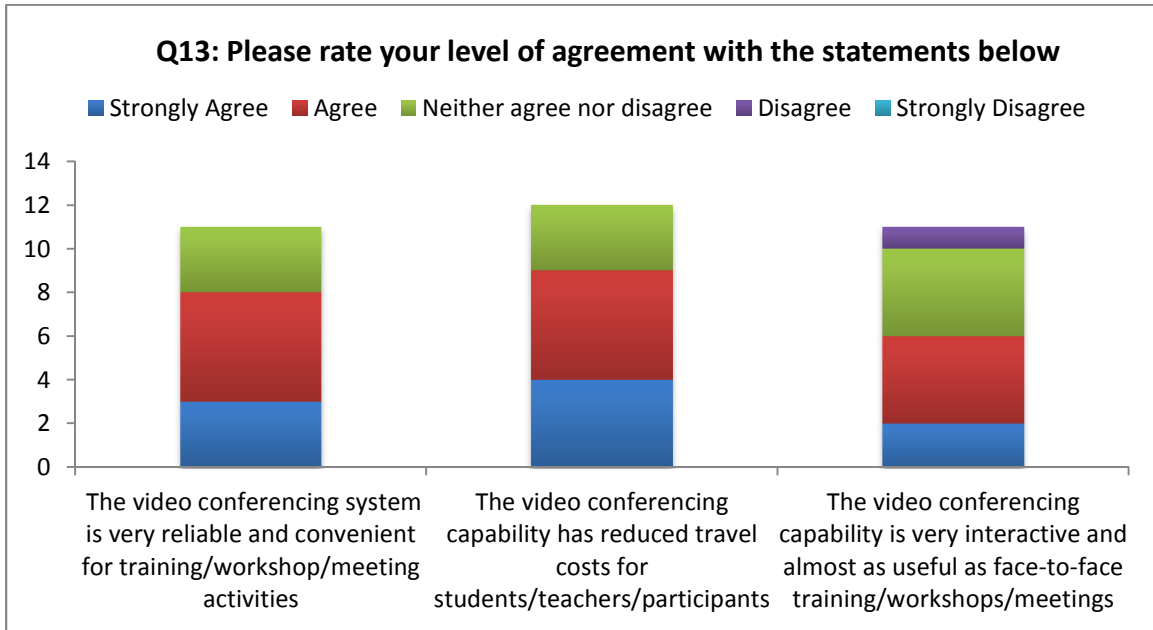
Source: Caesar, 2017

There is a **shift from 3 (reaching an expected standard) to 4 (exceeding expected standard)**, which is the maximum score attainable, for the classrooms and lab room. However, on average there is a marginal change in the average score.

Video Conferencing Facilities

Graph 7 depicts the views of approximately 11 out of 52 of the respondents that participated in the online survey 2. Approximately 41 respondents selected 'not applicable' (which is not included in the graph below) because they have not utilized the video conferencing facilities at CIMH. Whilst 11 is a small sample size, the fact that they have had direct interaction with the video-conferencing facilities deems their feedback valid and still useful for the analysis. Further, this small sample size could be attributed to the fact that the video conferencing capability has not been extensively used to date for the online course component offered by CIMH to test these features. **Majority of the respondents either 'strongly agree' or 'agree' that the video conferencing is proving to be useful for convening virtual meetings/workshops and reducing travel costs.** However, it is not confirmed whether the video conferencing capability is very interactive and almost as useful as face-to-face training/workshop/meetings. Recommendation: the satisfaction levels of users (students and professionals) of the video-conferencing facilities should be continuously monitored. Can be included in the evaluation forms of online courses, if this is not already planned.

Graph 7: Quality and Effectiveness of the Upgrades to the Video-Conferencing Capabilities

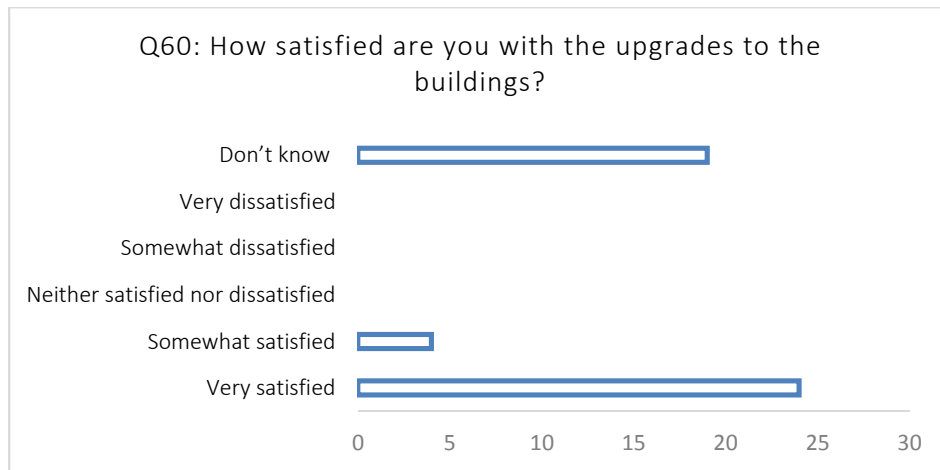


Source: Online Survey 2

General Upgrades to Buildings

In addition to the online survey, the interview protocol included questions as it relates to the level of satisfaction with the upgrades made to all the selected buildings and facilities at CIMH. Graph 8 indicates that all the interviewees that have seen the recently renovated buildings are either **‘very satisfied’** or **‘somewhat satisfied’** with the restoration work done to date. The CIMH staff have reported that the **calibration facilities now have more redundancy to improve the efficiency in the services offered** to countries.

Graph 8: Level of Satisfaction with the Upgrades to the Buildings



Source: Multiple Interviewees

Greening Facilities

The feedback from CIMH staff were that the **greening technologies¹⁸ installed were good quality and have been extremely effective in terms of having environmental benefits and promoting sustainability of the operations** at CIMH via cost savings. The reported average monthly savings for CIMH from the installation of the 95KWh solar photovoltaic system is approximately \$6000 Barbados Dollars, which is approximately one-third of the current bill. It was reported that this cost saving will be directed to support and sustain key activities of the BRCCC project such as RCC functions.

The foregoing suggests that the **upgrades to the buildings are supporting CIMH to meet their mandate**: the calibration facilities now have more redundancy to improve the efficiency in the services offered; the training facilities are a more conducive environment for learning; the potential of the video-conferencing facility still needs to be fully exploited but it is reported to be reliable and convenient for meetings; and cost savings from the greening activities can be reallocated in the core budget to support other key areas such as RCC functions.

Outcome 3

More details on outcome 3, which is related to the management arrangements, is available at Section 3.6 of this report.

3.2.2.2 Marketing and Visibility of Climate Products and Services

A key evaluation question was related to the degree and quality of visibility of climate products and services generated under the BRCCC.

One mechanism to promote visibility in a targeted way was through the hiring of a Communications Specialist by the BRCCC. Stakeholders' feedback on the level of usefulness of the various mediums that was developed with support from the Communications Specialist to promote visibility and awareness of the BRCCC outputs is depicted in Graph 9 below.

Apart from the visibility products featured in the Figure below, the Communications Specialist was also responsible for developing a communications strategy. According to the project document, the communications strategy should aim to strengthen communications between suppliers of climate products and users of such products, which is critical for the growth and sustainability of the RCC. It was envisaged that the communications strategy would be important for:

¹⁸ Through support provided by the BRCCC, the Institute was able to replace all interior lights with LED lights, replace three air cooling units, install occupancy sensors in classrooms, improve energy efficiency of ICT equipment for the computational centre and install a 95KWh solar photovoltaic system

1. Informing stakeholders of the benefits of climate services to reduce risks associated with executing their activities;
2. Soliciting information from stakeholders about their needs;
3. Informing stakeholders about the availability of products and services and reduce risks in activities;
4. Soliciting feedback from stakeholders about the quality and usefulness of the products and services received from the RCC to inform quality control and assurance

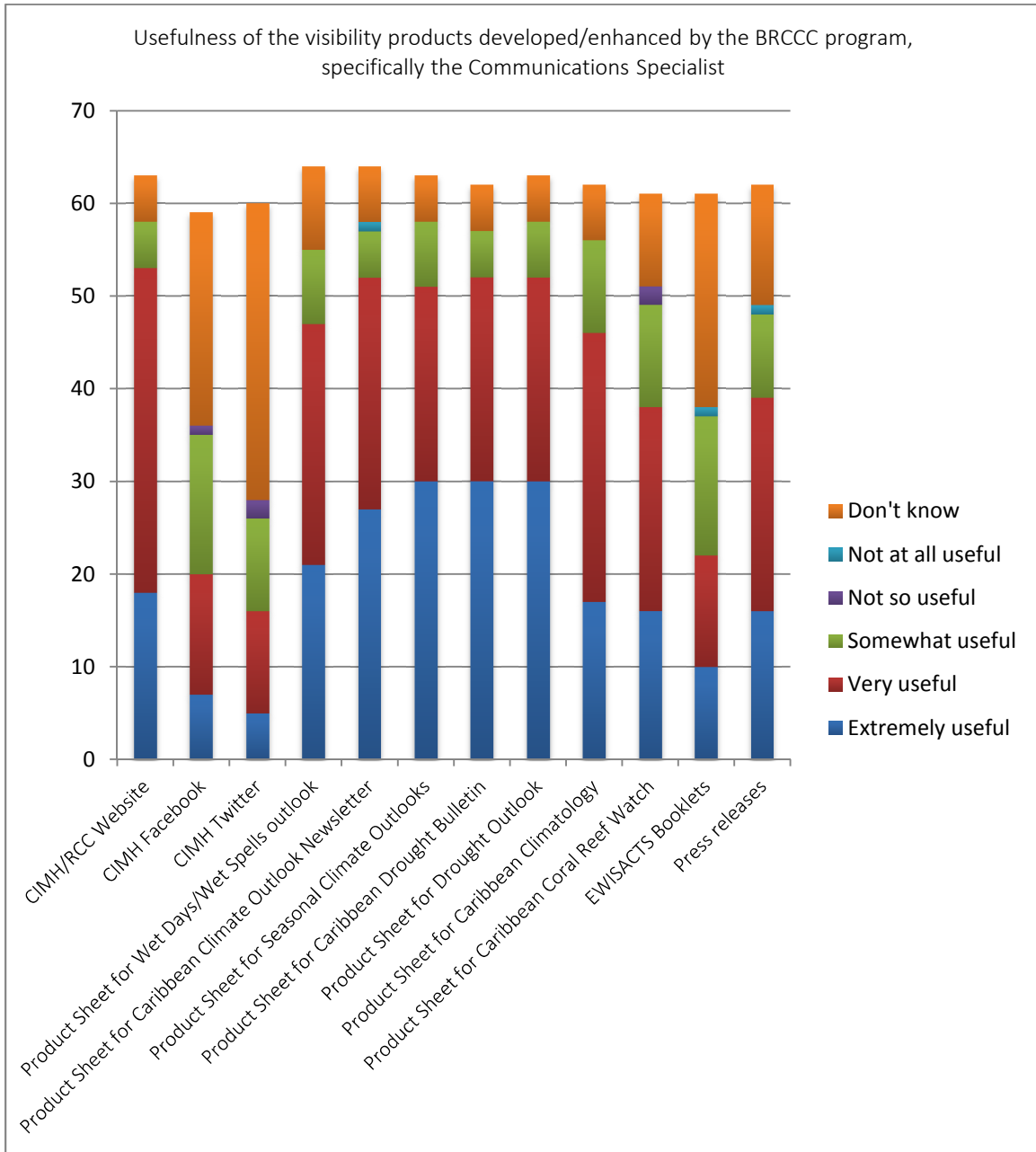
At the time of this evaluation the Communications Strategy was still being developed but it was reported that the objectives of the communications strategy would be to:

1. Position CIMH as a leading authority on weather, climate and water issues in the Caribbean that is committed to sustainable development in the region
2. Highlight CIMH's expanded efforts to help the region build resilience to extreme weather and climate events
3. Raise awareness of regional weather, climate and water issues among key stakeholders with varying levels of knowledge and interest
4. Announce and promote CIMH's current areas of focus and future goals/objectives
5. Increase interest/enrollment in CIMH's training/educational programmes
6. Engage staff to increase their knowledge and understanding of CIMH accomplishments

Extrapolating from only the objectives of the document, it appears that objectives #1 and #3, as stated in the project document, would be addressed; however, objectives #2 and #4 that relates to **users' needs and feedback, may not receive adequate attention in the current communications strategy. If this is the case, then a key recommendation is that the communications strategy should strategize how to obtain feedback from the users for quality control and sustainability purposes.** A key ingredient in promoting the sustainability of the RCC is to ensure that user's needs and feedback is constantly solicited to maintain relevance and demand for the climate products and services

Graph 9: Perception of Usefulness of the Visibility Products

Ref.: ZZZ16/2018-1.0 DRA/PCU



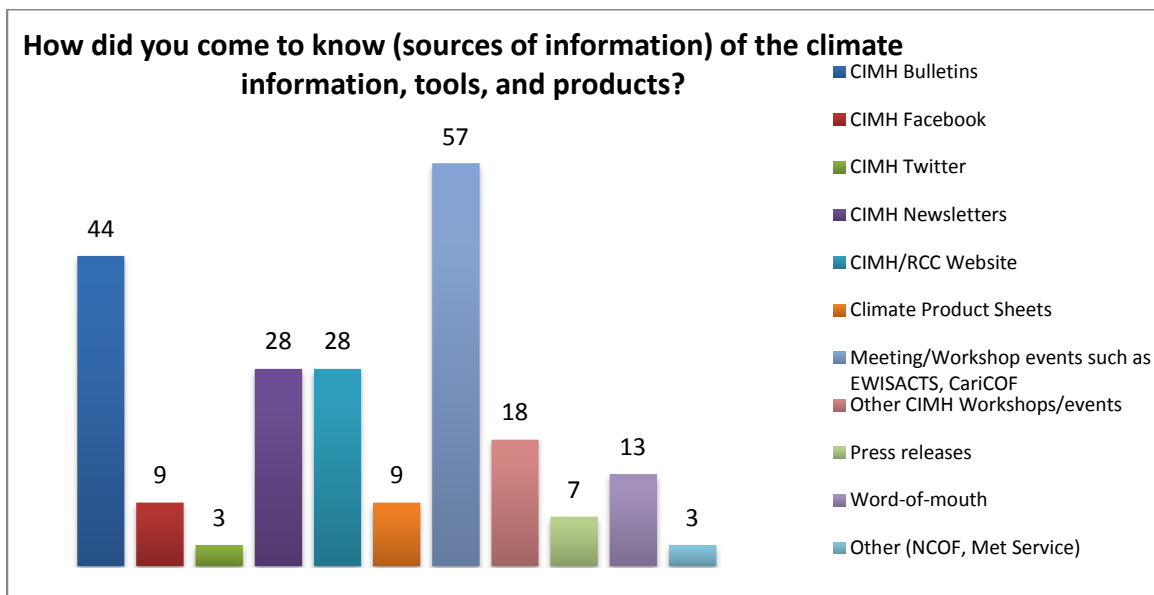
Source: Online Survey 1

The feedback signals that the **RCC website, product sheets, and press releases** were well developed and received by users since majority of the respondents reported these products to be 'extremely useful' or 'very useful'.

The option ‘don’t know’ was included in this question for those respondents that were not aware of a medium and therefore not in a position to feedback on its usefulness. Using this assumption would suggest that many of the respondents are not aware of the CIMH Facebook and Twitter accounts and the EWISACTS booklet. This is corroborated to some extent by Graph 10 below, which shows that CIMH Facebook and Twitter accounts among the less popular sources of information for climate information, tools and products. However, CIMH Communications Specialist indicated that “since June 2015, there have been an increase of over 500 Twitter followers (from approximately 200 to over 700 followers) and over 1,400 Facebook followers (from approximately 1,100 to over 2,500 followers)”. The variation could be attributed to the fact that social media sites are more utilized by the general public; and this stakeholder grouping was not well represented in the respondents of the online surveys. This limitation was noted in Section 2.5 of this report.

Graph 10 also illustrates that other mechanisms such as **CIMH bulletins (drought, tourism and health), CIMH newsletter (CariCOF Newsletter etc.) and CIMH workshops such as EWISACTS, CariCOF and others meetings** were reportedly useful sources of information and promoted awareness of the climate products and services developed by the BRCCC. An interesting finding comparing Graph 9 and 10 is that **although product sheets and press releases were reported to be useful among 73% and 63% of the respondents, respectively; they are among the less popular sources of information on climate and the products and services available.** A follow up research would be required to explore the reason for this.

Graph 10: Information Sources about Climate Information and Tools



Source: Online Survey 1

Notable is that **one product that did not take off the ground as planned was the BRCCC Newsletter**. It was reported that this was due to an extensive feedback and approval process between the implementing, executing and donor agencies that took approximately two months, which was verified by email records. The BRCCC Newsletter was finalized in June 2017 and distributed at the launch of the RCC in July 2017 and therefore the quality of this product could not be evaluated. The intention of the BRCCC Newsletter was to promote greater visibility of the project and USAID's contribution to the region. However, it was confirmed through literature and interviews that the key outputs and progress related to the BRCCC was documented in CIMH Press Releases, which included reference to the BRCCC Project and the generous support of the American People through the USAID Office. However, the press releases focused more on the RCC related results and not those results related to outcome 2 and 3 of the project. The latter two result areas were included in the BRCCC Newsletter. The evidence suggests that **the degree of visibility of the project achievements is limited since emphasis was given to the climate products and services (Outcome 1); but these visibility products are of good quality since the press releases and product sheets were noted to be very useful among majority of the respondents.**

Level of Awareness of the Climate Products and Services

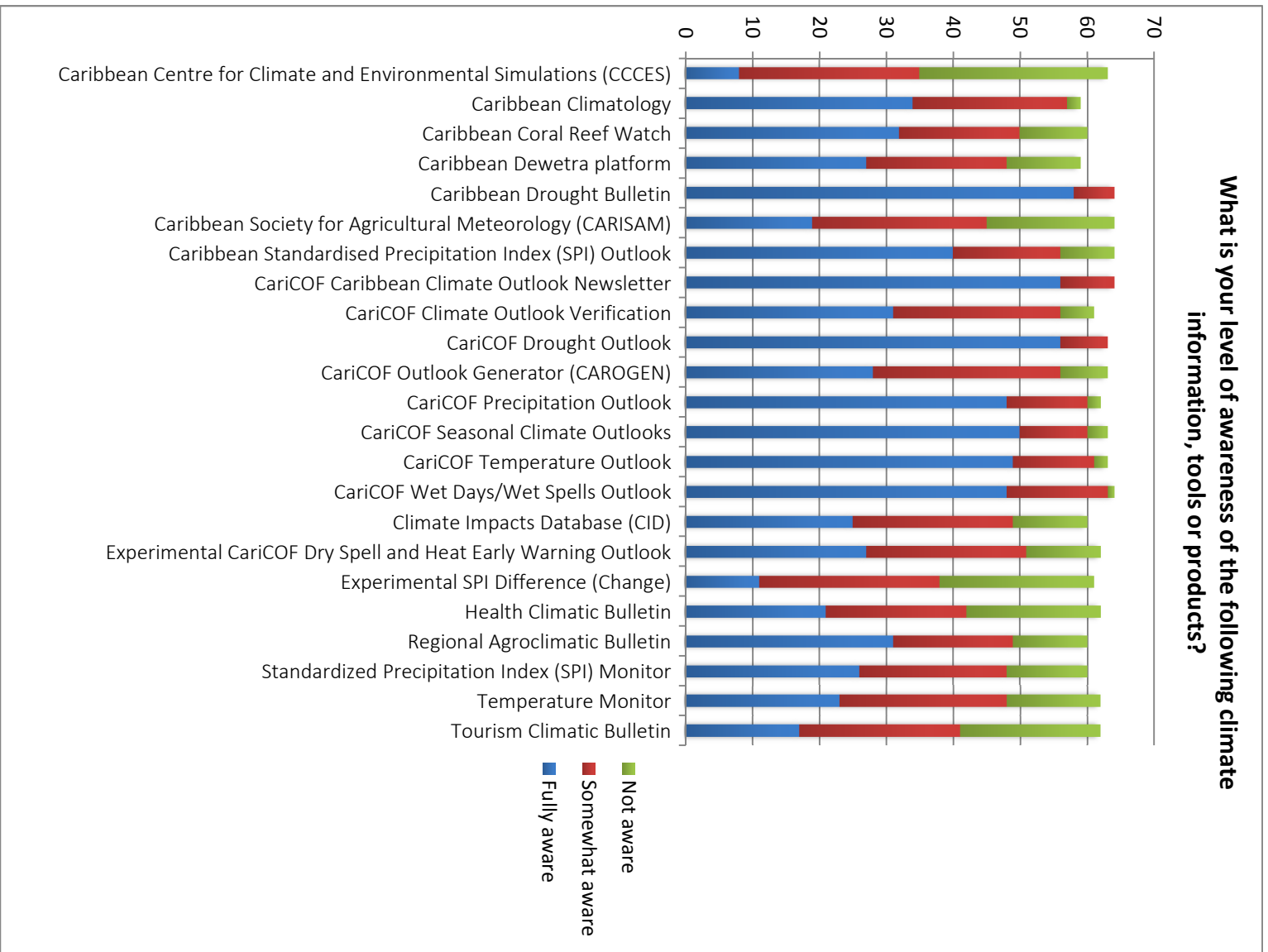
The application of the marketing tools developed by the marketing specialist and other information dissemination channels such as CIMH bulletins, CIMH newsletter and workshop/meeting forums including word-of-mouth, among others, culminate in the level of awareness of climate products and tools as detailed in Graph 11.

Majority of the respondents (45 and above) are **fully aware of the Caribbean Drought Bulletin, CariCOF Caribbean Climate Outlook Newsletter, CariCOF Drought Outlook, CariCOF Precipitation Outlook, CariCOF Temperature Outlook, CariCOF Seasonal Climate Outlook and CariCOF Wet Days/Wet Spells Outlook.**

Climate products that majority of the respondents are **between fully aware to somewhat aware (45 and above) include: the Caribbean Climatology, Caribbean Coral Reef Watch, DEWETRA platform, CariCOF Outlook Verification, CAROGEN, CARISAM, SPI, CID, Experimental CariCOF dry spell and heat early warning, regional agro-climatic bulletin, standardized SPI monitor and the temperature monitor.** Quite a few of these products are still relatively new (CAROGEN, CARISAM, CariCOF Outlook Verification, Coral Reef Watch, Experimental dry spell and heat early warning) and therefore the level of awareness is still commendable.

Climate tools and products that users are less aware of include **CCCES, Experimental SPI difference, health climatic bulletin and tourism climatic bulletin.** The level of awareness reported for the health and tourism climatic bulletins could be attributed to the fact that only 9 and 5 of the respondents, respectively, work in these two sectors. Graph 3 details the sector distribution of the respondents for Online Survey 1, noting that respondents have multi-sectoral backgrounds.

Graph 1.1: Level of Awareness of the Climate Information, Products and Services



Source: Online Survey 1

Some of these findings are **similar to what was found during the Baseline of User Needs for Climate Services in the Caribbean, which was completed in October 2015**. For instance, the drought bulletin and the outlooks were among the climate products that majority users were aware of. **The consistency in findings would suggest that the findings from this evaluation are reliable and valid**. What is interesting to note is that the DEWETRA platform, CID and regional agro-climatic bulletins were the climate products that majority of users were not aware of in 2015. **The findings from this evaluation suggests a positive change in awareness of the DEWETRA and CID platforms among users between 2015 and 2017**. Unfortunately level of attribution to the BRCCC could not be determined by this evaluation due to the limitations noted in Section 2.5. However, given the scope of the project and the level of effort that was required to accelerate the various components, **overall this is a good level of performance as it relates to promoting awareness of the climate products and services that were made available through the BRCCC**.

3.2.2.3 Changes in Planning and Decision-Making In Climate Sensitive Sectors

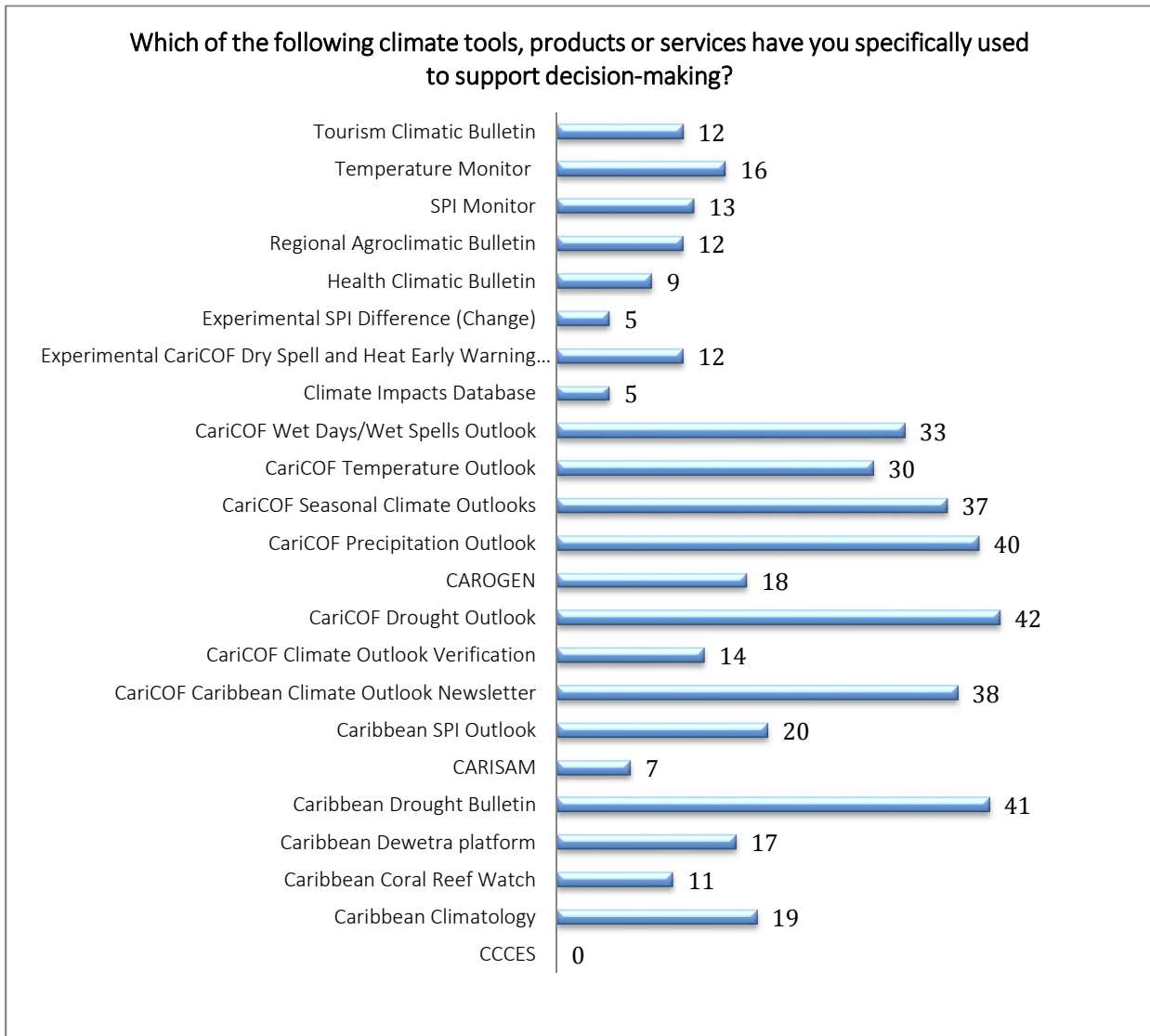
Another key evaluation question that is related to the effectiveness of the BRCCC project was investigating whether climate products and services are informing planning and decision-making, particularly in the key climate sensitive sectors.

Graph 12 below shows respondent's feedback regarding which climate products and services developed under the BRCCC have been used to support decision-making.

What is important to note is that **almost all of the climate products and services (except CCCES) are being reported by users to inform decision-making**. There is of course varying popularity across the various climate products and tools for supporting decision-making. It is no surprise that the various **climate outlooks are among the main products and services supporting decision-making**. **A number of the newer climate products and services that are not being extensively utilized** at this time to inform planning and decision-making. A noted limitation of the evaluation is that it might be too early to evaluate some of the intended effects of the project particularly changes in behaviors and practices. Testimonials regarding how the climate products and services are being utilized to inform planning and decision-making are detailed in Box 5, and they serve to illustrate the scope for applying the information into planning and decision-making.

Graph 12: Use of Climate Products and Services for Decision-Making

Ref.: ZZZ16/2018-1.0 DRA/PCU



Source: Online Survey 1

Water

- ✘ Used outlooks do determine TV reports ahead of the drought 2016 in Trinidad for example: <https://youtu.be/TxGes7NYT0Y> (Respondent #17)
- ✘ The dry season and precipitation outlooks are used to make decision on the inter connectivity of pipe network, e.g. whether to increase storage capacity and/or reroute pipes from vulnerable areas to those less vulnerable (Respondent #62)
- ✘ The information help to formulate the messages used in communication and influencing the formation and reactivation of the national drought risk management committee (Respondent #5)

Coral Reef

- ✘ Coral Reef Watch and Drought watch are being used to decide when to increase coral reef monitoring (Respondent #9)
- ✘ CZMU monitors reef temperatures on-site so forecasts of bleaching may assist with planning (Respondent #47)

Public Works

- ✘ Wet days/wet spells forecast assist the local Public Works Department in scheduling work program e.g. (i) the drain/culvert cleaning programs (ii) scheduling of new road works and paving (Respondent #18)

Health

- ✘ Informing asthmatic and allergic medical responses (Respondent #19)
- ✘ The CariCof wet days/wet spells outlook has been used in the monitoring vector activities especially mosquito and the possibility of an increase in breeding (Respondent #12)
- ✘ Climate products have been used to support evidence-based decisions as regards programming for health and climate activities and livelihoods-based projects.
- ✘ Based on the normal to above normal May to December 2017 wet season and the above normal temperature predictions, the health impacts have been identified and health care worker and the general public are made aware of these through presentations and discussions.

Agriculture

- ✘ Inform the development of the agriculture strategic plan of action in Dominica (Respondent #15)
- ✘ Inform planning of agricultural activities such as land preparation and planting before cropping and scheduling of field operations such as irrigation and pesticide spraying during the crop (Respondent #26)
- ✘ Showed members of a farmers group how they can use the information to make decision and the type of crops they should be planting (Respondent #30)
- ✘ Information used by farmers especially those cultivating short-term crops (Respondent #45).
- ✘ The drought bulletin plays an important role in planning for a cropping cycle (Respondent #53).

Disaster Management

- ✘ Dewetra is used as a guidance tool for flood watches/warnings (Respondent #49).
- ✘ Issuing early warnings to the public for expected conditions during coming season (dry/wet) (Respondent #61)
- ✘ Media involvement in dissemination of Early Warning Information from the National Disaster Management Agency/Met Service; Rapid response now than ever thus enhancing the preparedness before, during and after disasters, which contributes positively to risk reduction, disaster management (Respondent #33).

Multi-Sectoral

- ✘ The CIMH's BRCC outputs have been featured in the recently prepared 2015 State of the Jamaican Climate report and the ongoing preparation of the State of the Caribbean Climate report. Both reports serve as primary sources of regional and local climate information for decision-makers (Respondent #13).
- ✘ Information used as reference to look for coherence with Outlooks for Mesoamerican region (Respondent #41)
- ✘ The information has been and is being used in the preparation of project proposals and to guide decisions about training activities (Respondent #46).
- ✘ Information built climate resilience in vulnerable communities in Grenada (St. Andrews, St. Marks, St. Patricks etc.) through participatory approaches; RWH technologies, training and resources to combat impacts of climate change, flood- prone areas, water storage, increased drip irrigation technology ((Respondent #33)

Box 5: Testimonials on the Use of Climate Products and Services for Decision Making

3.2.3 Recommendations for Enhancing Effectiveness of Similar Projects

Recognize the importance of dedicated marketing and visibility functions to promote awareness and use of climate products and services

Donor's feedback on time sensitive materials such as media-related information needs to be prioritized given the nature of the work of the media sector and the importance of timely information.

Have staff with strong regional experience and technical expertise at the implementing agency to be recognized as the premier body for producing climate products and services. This strengthens confidence among beneficiaries of projects and is an important element for strengthening relationships between the implementing agency and key beneficiaries.

Rotate CariCOF meetings across countries to promote national awareness and sensitization of the climate products and tools available and also to demonstrate the value added of having multi-sectoral users and providers of climate information in the same room. 89% of the respondents to online survey 1 indicated that they came to know of the climate products and services at CariCOF meetings. It was also reported that the CariCOF meetings strengthened the working relationships among national agencies.

Keep users' needs at the center of the design and development of tangible and pragmatic climate products and services to promote buy-in and demand.

Ensure hands-on experience in the development of the climate products to the best extent possible to allow participants to be brought up to date on matters that would personally affect them. This in turn will promote greater buy-in, demand and use of the climate information and products.

Establish a dense network for the dissemination of climate information, products and services. CIMH collaborates with national Met Offices and regional partners, who would then they would interact with their counter parts. For instance, CTO shares the tourism bulletin with approximately 600 agencies within their network and it is also promoted on their website.

Include budget to support routine maintenance and calibration of the weather stations installed in countries. Need at least 30% of the budget for equipment to support maintenance for up to 5 years. Most of the stations, without maintenance, cannot work fully after 2 years and experience has shown that majority of the countries cannot afford to fund the maintenance of the stations. Further, all sites need to be visited at least once a year by trained CIMH staff to ensure that the quality of the data meets WMO standards, which is critical for maintaining high quality data.

In-country site reconnaissance should be done prior to the purchase of equipment for to optimize data quality, effectiveness and efficiency (time of personnel). It was reported by an interviewee from CIMH that one of the sites in Grenada would have benefitted from another type of equipment to collect a specific type of data. The one that was pre-bought is not the most optimal for the environment, as a result they are receiving erroneous data and then require staff to go reset the machine in the field often.

3.3 SUSTAINABILITY

The key evaluation question related to the sustainability criteria was:

1. To what extent will the benefits of BRCCC continue after donor funding has ceased, in particular the sustainability of CIMH as a WMO RCC?

3.3.1 Summary Findings for Sustainability

- ✘ The evaluation of various dimensions of sustainability indicates that there is strong evidence to suggest that the benefits of the BRCCC are highly likely to continue after the BRCCC project has closed.
- ✘ There are currently no revenues being generated by CIMH through the sale of climate information, products and services developed by the BRCCC; however, there is scope to generate revenues through discussions with the energy, tourism, and other private and financial sectors
- ✘ There is also scope to generate revenue in the future, as CIMH starts to achieve more comprehensive data from the 8 countries that benefited from the weather stations
- ✘ There is confirmed funding at the tune of US\$4 Million from multiple sources¹⁹ that will span the next 5 years
- ✘ The BRCCC project in itself was a sustainability intervention for CIMH
- ✘ There are mixed levels of leadership, ownership and capacities across the 8 countries to sustain the results of the BRCCC at the national level
- ✘ Strong leadership and ownership exists among the key regional partners but there is not adequate capacities across all the regional agencies (human and financial resources) to sustain all the roles and expectation of the partnership mechanism.
- ✘ There is a resounding yes that the CIMH has enhanced capacity (technical, infrastructural and to some extent financial). Also, CIMH has made organizational changes and budgeting decisions that will sustain the key outcomes of the BRCCC project. Specifically, the RCC staff have been put in place and their salaries are being funded from core budget funding.
- ✘ Sustainability strategies for the BRCCC that were identified in the project document were well advanced, particularly the transition of staff at CIMH into

¹⁹ Pilot Program for Climate Resilience (PPCR) Caribbean; Climate Change Adaptation Program (CCCAP); Caribbean Development Bank (CDB) and USAID Office of U.S. Foreign Disaster Assistance (OFDA)

core RCC functions. The communications strategy still needs to be finalized but CIMH interviewees have confirmed that the staff and infrastructure to support the communications functions are being put in place and funded by CIMH. The key area not advanced is the HR and procurement positions, which have not yet been endorsed for the organizational structure.

- ✂ Majority of the potential risks to sustainability of the BRCCC results that were identified are considered to be negligible risks²⁰. There are three scenarios that can pose to be moderate risks to the sustainability of the BRCCC results – staff turnover, cultural norms in the agriculture sector and change in development partner’s support for climate variability and change. These can be mitigated through continuous capacity building, awareness programmes and diversifying the funding sources at CIMH. The latter is likely given the expansion in the number of climate products and services available and the continually expanding climate network across countries.

3.3.2 Detailed Analysis of Sustainability

3.3.2.1 Funding Options Post BRCCC

Table 9 below shows the funding that have been confirmed or in the pipeline for CIMH and that will directly support sustainability of various result areas of the BRCCC.

Table 9: Funding Options for CIMH Post BRCCC

Funding Option (Project or Source)	Status ²¹	Details (Amount, Objectives)
Pilot Program for Climate Resilience (PPCR) Caribbean	Confirmed	US\$975,000 for CIMH to implement 4 components: stations and networks in the PPCR countries to expand on climate monitoring (RCC function), training in met services and climate services delivery. The social sciences person and CariCOF interventions will come from this component. Increasing accessibility and security of the climate dataset stored by CIMH.
Climate Change Adaptation Program (CCCAP)	Confirmed	Approximately US\$ 1M identified equipment needs for countries to expand the climate monitoring and EWS network. CIMH will also manage the climate data coming from this. Second component looking at rainfall stations in watersheds to provide community early warning support. Will also further expand the computational capabilities at CIMH.
Caribbean Development Bank (CDB)	Confirmed	US\$ 1.3 M to go towards expanding some of the BRCCC activities particularly CariCOF and EWISACTs. Will cover dry season this year and EWISACTs 2018. Also support expanding the capabilities of the computational centre. Will also develop and deliver climate modeling training for 15 people in the Caribbean and elements related to DEWETRA etc.
USAID Office of U.S. Foreign Disaster Assistance (OFDA)	Confirmed	Already being implemented. Valued at 750,000 US\$. Weather ready nations being piloted in nations. Want to be climate and weather ready. A key part is interfacing between DRM and Met Services.

²⁰ See Table 11 for the definition of the levels of risks

²¹ Confirmed or still being negotiated

Funding Option (Project or Source)	Status ²¹	Details (Amount, Objectives)
ACP-EU	Still Being Negotiated	7M Euro ear-marked for the Caribbean to strengthen climate services in the Caribbean. Envisaged that EWISACTs, CariCOF and the building of the next generation of sectoral climate products and services will be advanced. The proposal preparation in being done with a Consultant that the ACP-EU sent. Expect to receive all funding.
Green Climate Fund (GCF)	Still Being Negotiated	CIMH was requested to submit a proposal. This is a US\$10 M entry point. Might have to go through CDB or CCCCC (regional accredited organisations). Areas to be covered in the proposal will include the development of a climate service and innovation hub. Have the technical sub-group at CIMH that focuses on innovation and develop next generation products.
World Bank – Global Facility for Disaster Reduction and Recovery (GFDRR)	Still Being Negotiated	CRUZ. US\$1.5M already secured for the regional component. Writing proposals to define scope. Key implementing agencies will be CDEMA and CIMH with more activities aligned to CIMH strengths.
REACH Project	Still Being Negotiated	Agriculture sector focus. Done with FAO and CDEMA. CIMH will only be providing technical support with some small amount of monies coming in.

Source: Interviewee #043

The confirmed funding is approximately US\$4 Million and is expected to span the next 5 years. The funding in the pipeline is another US\$19.5 Million, and even with a modest estimation of only 50% being confirmed, **there is strong evidence to suggest that there are financing options available to sustain the results achieved by the BRCCC project, particularly the RCC functions.** Furthermore, interviewees have noted that **these funding opportunities have been possible because of the work advanced through the BRCCC;** specifically, acquiring RCC designation, upgrading the facilities to strengthen the image and brand of CIMH, strengthening partnerships with national and regional sector partners, better understanding the users' needs through social science research and enhancing the operational environment at CIMH such as the procurement policies that meet international standards.

The evaluation also concluded that **there are currently no revenues being generated by CIMH through the sale of climate information, products and services developed by the BRCCC.** This is primarily because the products supported by the BRCCC are public sector focused **but it was noted that there is scope to generate revenues through further discussions with the energy, tourism, and other private and financial sectors.** For instance, CIMH has started discussions with the Caribbean Poultry Association to see how the outputs from the heat wave outlook can support their work.

Notable is that CIMH sells data it has archived over years, but this is not directly linked to the BRCCC project outputs. The exact amount of revenues was not confirmed by this evaluation but this would suggest that **through the expansion of the computational platforms and database at CIMH and the climate network in 8 countries by the BRCCC, the**

CIMH will be in a position to generate more revenues, in the near future, from the sale of archived data.

3.3.2.2 National Leadership, Ownership and Capacities to Sustain Results

The key emerging finding from the interviews is **that there are mixed levels of leadership, ownership and capacities across the 8 countries** that primarily benefited from the BRCCC and therefore **the ability of the countries to sustain the results of the BRCCC will vary from country-to-country.**

The following findings from the interviews are notable:

- ✘ Guyana is expanding rapidly and there is an apparent change in their capacities in the area of climatological services;
- ✘ The Easter Caribbean islands such as Grenada, Saint Lucia, Antigua and Barbuda and Dominica appear to have most of the challenges particularly as it relates to human capacity deficits (staffing number and skills). There is a call for more capacity building in maintenance of equipment, development of climate products and services, data acquisition and analysis;
- ✘ Institutional challenges for some countries stem from the organization mandate of the Met Service. For instance, Dominica, St. Vincent and the Grenadines, Saint Lucia and Grenada noted that their work is more aligned to support the aviation sector and as such, the internal organizational structure is not well designed to support planning and decision-making in key sectors
- ✘ Whilst capacity deficits exists, **national ownership for the climate products and services is strong.** For instance, in St. Vincent and the Grenadines, the Water Agency has taken out insurance for all the equipment installed under the BRCCC. They pay the premium themselves and is a true reflection of ownership. Also, in Dominica, the Heath Agency is a strong supporter and leader for the research commissioned by CIMH with support from SUNY University as it relates to Climate and vector borne diseases; Aedes Aegypti proliferation.

3.3.2.3 Regional Partners' Leadership, Ownership and Capacities to Sustain Results

Regional partners have been engaged primarily through the EWISACTS consortium, which, as stated earlier, has been formalized with Letter of Agreements. Literature and interviewees suggest that **strong leadership and ownership exists among five of the six key regional partners** – CARPHA, CTO, CDEMA, CWWA and CARDI. As noted earlier, the partnership with CCREEE has been stymied due to the delay in the full operationalization of this new regional entity. Evidence of the strong leadership and ownership for sustaining the work of the consortium are detailed in Box 6. The interviewees also revealed that **there is not adequate capacities across all the regional agencies (human and financial resources) to sustain all the roles and expectation of the partnership mechanism.** This is particularly the reality for CWWA and CARDI.

Box 6: Evidence of Leadership and Ownership among Sector Partners

- ✘ CTO securing 460,000 euros to advance a climate smart programme for the tourism sector that will include a feasibility study and model framework to advance the work started with CIMH through the EWISACTS (Interviewee 040).
- ✘ The CDEMA corporate plan (2017-2020) for the first time has included the idea of climate services as part of the programming for CDEMA (Interviewee 015).
- ✘ CARPHA’s Environmental Health and Sustainable Development Unit plan has now included work to further develop the EWS for vector-borne diseases as it relates to heat variations, humidity and support for the development and dissemination of the health climate bulletin (Interviewee 017. 018)

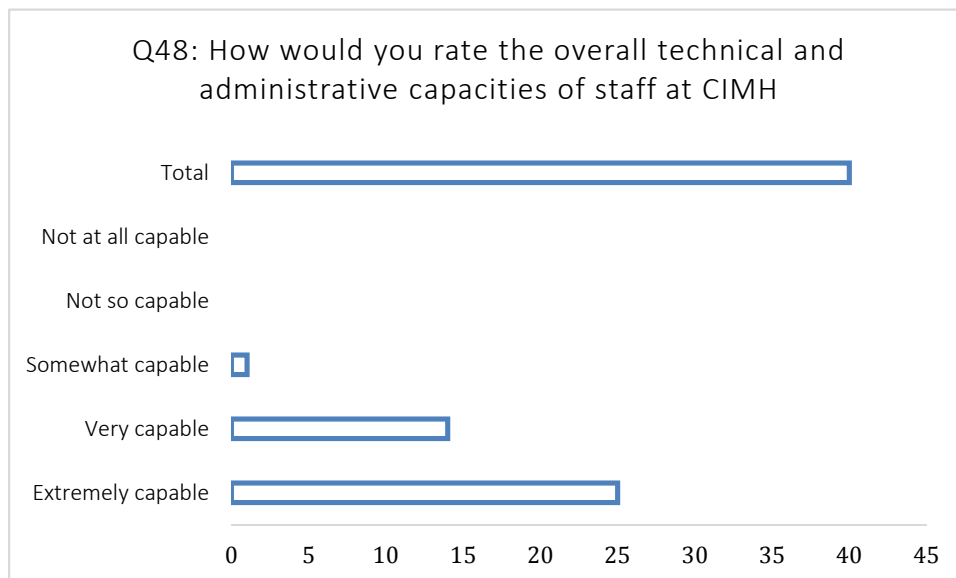
Source: Multiple Regional Agency Interviewees

3.3.2.4 CIMH Capacity to Sustain Results

All of the interviewees that responded to this question (36 in total) indicated a **resounding yes that the CIMH has enhanced capacity (technical, infrastructural and to some extent financial)** to effectively convert climate data to products and services to better inform decision-making in the climate sensitive sectors targeted by BRCCC.

In terms of technical capabilities, approximately **98% of the interviewees indicated that CIMH’s is technically and administratively extremely and very capable**. See Graph 13. Feedback on technical competence referred to capacities to develop and produce climate tools and information for decision making, undertake research, maintain and calibrate climate equipment. For instance, CIMH was able to surpass the requirements of fulfill the mandatory functions of an RCC and was able to start fulfilling some of the recommended functions such as those outlined in Box 2 above. Feedback on administrative competence was mainly regarding organization and hosting of meetings/workshops.

Graph 13: Rating of CIMH's Capacities



Source: Multiple Interviewees

Ref.: ZZZ16/2018-1.0 DRA/PCU

The status of implementation of key strategies for sustainability of the RCC beyond the program that were identified in the project document are outlined in Table 10. It shows that **most of the sustainability strategies are well advanced except for the HR and procurement positions officially endorsed as core positions**; but there are contingencies in place to make the HR position a reality in the interim. This confirms that **CIMH has made organizational changes and budgeting decisions that will sustain some of the key outcomes of the BRCCC project, which include the RCC operations**. However, whilst the communications infrastructure is being well organized, it is important to ensure that the users’ needs and feedback receive adequate attention in the current communications strategy (which was noted earlier).

Table 10: Achievement of the Planned Sustainability Strategies

Planned Sustainability Strategies	Status
<p>a. Communications strategy will be incorporated into the core operating budget of CIMH. Funding from revenue generated from sale of products and funding from donor community will be used to sustain the communications program.</p>	<p>The Communications strategy is still being finalized and was discussed in Section 3.2.2.2. CIMH has contracted the Communications Officer beyond the life of the BRCCC through core budget funding. Then Board of Governors meeting will decide next step. One building will be retrofitted to be a communications centre/multi media lab at CIMH. The cost for this is being borne by the Institute. Also bought hardware and software to support communications through BRCCC but the upgrade to this facility will be through the agency’s budget. The medium term objective of CIMH is to have a Communications Specialist as part of the organisational structure whether through part-time or full-time (to be decided at Board). Some elements of sustaining the roll out of the communications strategy, when finalized, will be through the funding sources that have been confirmed since all projects will need some level of visibility.</p>
<p>b. HR and Procurement Specialist positions to be absorbed in the core operating budget for the Institute</p>	<p>The Board of Governors needs to agree to this which is scheduled for the next meeting, which should be convened in November 2017. The cost estimates to meet the proposed organizational structure, which includes these two positions among others is approximately 10% increase in their existing operating budget. CIMH will look at multiple avenues to implement this until the core positions are approved. For instance, a consultancy on HR into the next year to operationalize the outputs which is enshrined in a work plan. This will be funded from the core budget and the funding that has been mobilized.</p>
<p>c. Core budget will support core staff for RCC including</p>	<p>This is achieved. A group that was in house has been moved into the RCC. There are a few positions in the group that will be</p>

Planned Sustainability Strategies	Status
telecommunications, office accommodations, electricity and use of facilities	maintained such as the social scientist. PPCR funding will support one social scientist at the graduate level and CIMH will support the existing social scientist. Internships might be used to complement this.
d. Maintenance of infrastructure restored by BRCCC will come from the core operating budget and revenues generated	The renewable energy system is saving them monies already and this will go towards the maintenance of infrastructure, which should not be significant in the short to medium term.

Source: CIMH Interviewees

3.3.2.5 Other Risks to Sustainability

Sustainability is multi-dimensional: financial, social, political, environmental and institutional. All dimensions are critical and were discussed with interviewees. The final list is detailed in Table 11.

Majority of the potential risks that were identified, are considered to be negligible, meaning that the likelihood of occurrence is low and therefore poses negligible risks to sustainability. There are three scenarios that can pose to be moderate risks to the sustainability of the BRCCC results – staff turnover, cultural norms in the agriculture sector and change in development partner’s support for climate variability and change.

To this end, the following recommendations are critical:

- ✘ **Ensure there is continuous training and capacity building to include the traditional and non-traditional stakeholders**
- ✘ **Ensure there is continuous public awareness of the climate information, products and services availability and its application at the sector level**
- ✘ **Ensure to diversity funding sources: need to urgently prioritize engaging the private sector in generating revenues for CIMH**

Table 11: Risks to Sustainability

Risk Ratings for Measuring Sustainability		
Rating	Meaning	Details
1	Negligible risks	Negligible risks to sustainability, with key outcomes expected to continue into the foreseeable future.
2	Moderate risks	Moderate risks, but expectations that at least some outcomes will be sustained
3	Substantial risk	Substantial risk that key outcomes will not carry on after project closure, although some outputs and activities should carry on.
4	Severe risk	Severe risk that project outcomes as well as key outputs will not be sustained.

Sustainability Dimension	Rating
Social and Political Risks	
Development partners change in priority – example US political directorate not fully supporting the climate variability and change agenda and the European funding being diverted to migrant crisis	Yellow
Vandalism of weather stations in remote areas in countries	Green
Institutional and Governance Risks	
Farming is not approached as a science or business. It is more cultural, handed down from generation to generation. It is a way of life. When you try to introduce something new – PICSA, there might be push back	Yellow
Staff turnover at national and regional levels	Yellow
Funding availability to sustain the meetings e.g. CariCOF and EWISACTS. Approximately US\$25,000 to convene a regional type meeting.	Green
Extent to which regional institutions will embrace the climate services functions within their medium term programming.	Green
Change of governments and economic situation across CIMH member countries and ability to maintain annual subscriptions to CIMH	Green
Environmental Risks	
Extreme weather conditions that can affect CIMH (infrastructure damage) and the weather stations installed in the 8 countries	Green

Source: Multiple Interviewees

3.3 Recommendations for Enhancing Sustainability of Similar Projects

Scaling up the technical capacities in-house for regional agencies is strategic for promoting sustainability across the region.

Build up the capacity of the national stakeholders (providers of information) so that they can stand on their own. This way the CIMH will not be required to do so much heavy lifting.

Include budget and project activities to enhance the capacity of regional partners outside of training support. The strength of what CIMH is doing is also reliant on the strengths on the regional partnerships – CARDI, CWWA, CDEMA and others. Not all the regional partners have the capacities in-house (human, technical, and financial) to support the development of the sector specific climate information and products. This will also promote sustainability of the partnership and the results of the BRCCC.

Formalizing partnership with regional agencies is important first step for securing buy-in and commitment in the longer term. Specifically the EWISACTS can be replicated in other regions with RCCs designated.

Weather stations need to consider environmental risks and also be fortified with security measures and supported with community awareness programs to reduce theft and vandalism of the equipment (social risks). It was noted that through community awareness programs the community members then serve as a surveillance eye.

Insurance for weather stations/equipment is a good mechanism for recuperating losses associated with social and/or environmental risks.

Ownership and maintenance of weather stations should be formalized with countries. If the equipment goes automatically into CIMH's ownership and they normally lead the maintenance process; it should still be formalized in writing so that there is clarification of roles and responsibilities.

Greening activities are a worthwhile investment for cost saving in the future so that limited funding can be re-directed to sustain other critical operations.

Investments in video conferencing capabilities have the potential to reduce operational costs so that limited funding can be re-directed to sustain other critical operations.

Focus on having tangible tools available – ICT based, video information etc. to get the early buy-in of the sectors and be more effective in promoting sensitization of mainstreaming climate information into the planning in key sectors.

3.4 EFFICIENCY

The key evaluation questions related to the efficiency criteria were:

1. Was the programme or project implemented in the most efficient way?
2. Was the estimated cost of implementation similar to what was the planned cost of implementation?
3. Were key outputs and objectives achieved on time?

3.4.1 Summary Findings for Efficiency

- ✘ The procurement policies that were utilized (initially WMO then CIMH new procurement policies) promoted the use of service providers with the most economical quotes or those offering the most service for the amount that was estimated
- ✘ The evaluation could not compare the costs for each output with the value of the results achieved given the nature of the results; but efforts were made to determine whether the costs were justified.
- ✘ All the interviewees indicated that the costs were justified and none of the documents reviewed indicates otherwise

- ✘ In terms of equipment purchased, the cheapest option was not sourced albeit the most expensive was not sourced either. Instead the most cost effective equipment were purchased that allows for better warranty and trouble shooting and customer support. Further, the type of equipment selected promote homogeneity in the climate instruments network which strengthens interoperability and reduces the need for more training. In this regard, the investment in the equipment is justified
- ✘ Countries did not benefit equally, from a cost perspective, as it relates to the installation of equipment and the attachment programme. In the first case it is primarily due to variations in country needs and geographic characteristics and in the second case it is due to consideration of candidates' existing competencies and the assessment results from the e-SIAC and f-SIAC courses. Therefore, whilst the level of support to country (from costs perspective) is not equal; given that there are clear and fair reasoning for the variations, the investments in the countries as it relates to training and equipment are justified.

3.4.2 Detailed Analysis of Efficiency

3.4.2.1 Procurement Policies

WMO's policies and procedures were utilized in the first instance and then CIMH's procurement policies were utilized which were developed by the procurement specialist that was supported by the BRCCC project. WMO's procurement policies promote the value for money, meaning the purchase that offers the best value at the lowest price possible.

It was noted that for all workshops/ attachments/training/meetings, the most economical airfares and catering services were utilized. However, **in terms of equipment purchased, the cheapest was not sourced albeit the most expensive was not sourced either.** This is because the cheaper sources for equipment cannot match the warranty and customer service support of the SUTRON team. Further, CIMH has a network dominated by SUTRON equipment which is beneficial from the perspective of equipment maintenance; interoperability of equipment; reducing training needs and they can also use parts from older ones for the newer equipment. Considering these **additional factors makes the investment more cost effective and justifiable.**

3.4.2.2 Were Costs Justified?

The evaluation did not compare the costs of each output with the value of the results achieved, since it was not practical to attach a value to most of the outputs and outcomes since many are developmental concepts that are hard to quantify; hence efforts were made to determine whether the costs were justified.

All the interviewees indicated that the costs were justified and none of the documents reviewed indicates that monies were inappropriately utilized. Some of the key points

raised by interviewees and evidence noted by the evaluator which signals that spending was justified are included in Box 7.

Box 7: Costs versus Results

- ✘ There is a strong multiplier effect of the benefits in view of the costs since all the beneficiary countries are SIDS and the climate models and tools being developed are applicable across the Caribbean (Interviewee 001)
- ✘ The investment in the PICSA training in Guyana will yield benefits and lessons that can be applied across the Caribbean. Further, there are now regional trainers in PICSA (at least 6 persons trained in Guyana and at CIMH) that would limit the need for University of Reading in future projects (Interviewee 008)
- ✘ The solar PV system cost approximately BDS\$539,000 to implement and CIMH is already saving approximately BDS\$6000 per month, not to mention the value of the environmental benefits (Interviewee 031)
- ✘ Equipment installed in countries (rain gauges, soil moisture, water level sensors) are well justified given the early warning function they provide and being able to collect data on areas/locations that was never achieved before. In addition, over time the archived data will be invaluable to support modeling and research to inform better planning and decision-making for climate variability and change and the data set can potentially generate revenue (Interviewee 031, 039, 042)
- ✘ Although one of the weather stations were vandalized and one was lost due to extreme weather conditions, these occurred early in the project and lessons were learned. As such, the remaining installations were cautious to select sites with reduced risks of damage, reinforcing the infrastructure and promoting stakeholder consultation with the nearby communities to promote ownership. By strategically reducing/mitigating risks, this justified the investments in the remaining AWS.
- ✘ The specialists employed were also good investments. For instance, the Procurement Specialist was able to expend 90% of the procurement budget from May 2015 to December 2016. The GIS and IT Specialist were able to upgrade and automate systems that were previously done manually. (Interviewee 031) The benefits of the Communications Specialists are noted in Section 3.2.2.2
- ✘ The investment in the marketing and visibility products are justified given the level of awareness reported for the climate products and services, including the newer ones that have been developed. See Section 3.2.2.2

The investment in the climate products and services are justified since findings illustrate that there is scope for applying the information into planning and decision-making processes across most of the key climate sensitive sectors (see Box 5 and

- ✘ Graph 12)
- ✘ The infrastructure works are justified given the feedback noted earlier with respect to satisfaction levels of students and other stakeholders See Section 3.2.2.1
- ✘ Although the CariCOF meetings are costly; the fact that the forum contributes to awareness raising, informs planning and decision making through hands on engagement in the development of outlooks, strengthens collaboration among national and regional partners and is twinned to include the EWISACTS Consortium meeting strongly justifies the

Source: Multiple Interviewees

Ref.: ZZZ16/2018-1.0 DRA/PCU

Justification of costs associated with the BRCCC was also examined in the context of the distribution of the monies across beneficiary countries. It was determined from interviewees and literature reviewed that **all countries benefited from the same workshop and cost variations are primarily attributed to the ticket prices**. However, evidence suggests that **countries did not benefit equally, from a cost perspective, as it relates to the installation of equipment**, which is primarily due to variations in country needs and geographic characteristics. For instance Antigua and Barbuda and Grenada did not receive AWS because they indicated that they did not need it. Guyana received a larger investment because of the size of the country and therefore the need for more AWS. Other cost factors were also higher for Guyana due to the landscape: two missions were required to complete reconnaissance and installation and the missions were also longer than other countries.

Another area where **countries did not benefit equally is through the attachment programme**. The attachment program of the BRCCC was intended primarily for the CIMH staff but there are 3 instances where national reps were involved: (i) Saint Lucia and Antigua benefited from attachments at IRI focused on heat and health, (ii & iii) GUYANA benefitted from PISCA training and University of Reading statistical training. These selections were driven primarily by candidates' existing competencies and the assessment results from the e-SIAC and f-SIAC courses that were supported by the project in the first year. Also, the statistical training was linked to the PISCA programme, which Guyana is the beneficiary.

The foregoing demonstrates that **whilst the level of support to country (from costs perspective) is not equal; given that there are clear and fair reasoning for the variations, the investments in the countries are justified**.

3.4.3 Recommendations for Enhancing Efficiency of Similar Projects

Utilize national training instead of regional training if you need to build critical mass that will really impact on the capacity level in countries.

Utilize regional level training if you are targeting selected skill sets in countries that only a few individuals possess.

Cost effectiveness over cost efficiency. Efficiency is an economic term which signifies that the aid uses the least costly resources possible in order to achieve the desired results. But the cheapest option is not always the best long term investment. Cost effectiveness is focused more on the quality of the outputs, bearing in mind that costs should be reasonable.

3.5 IMPACT

The key evaluation question related to the impact criteria was:

1. To what degree is the project perceived to have an impact on reduced losses from hydro-meteorological hazard events and climate variability and change on beneficiary countries?

3.5.1 Summary Findings for Impact

- ✘ Anecdotes shared by interviewees indicates that the outcomes of the project can definitely make a contribution to reduced losses although it is still early to quantify the extent of the reduced losses and to what extent it is attributable to the BRCCC.
- ✘ Other early changes being observed/reported as a result of the BRCCC include – clearer understanding of the nexus between climate and effects on sectors such as health, agriculture and tourism; improved capacity to apply climate information at the community level; increase in demand for climate information; greater value attached to the work of CIMH and recognition of their role as a premier climate service and innovation agency and increased ability of CIMH to attract and mobilize funding
- ✘ There are notable unplanned results, particularly related to the work done in sectors such as strengthened partnerships with the media and other regional partners working in the GFCS priority sectors through the CariCOF and the establishment of the EWISACTS governance mechanism; the PICSA pilot programme in Guyana and surpassing the achievement of the mandatory functions of the RCC.
- ✘ Negative unplanned results reported is that with the rise in climate products and information, people in the public are taking the information at face value and some of the radar sensors for the water level equipment do not give the best results under extreme flooding situations

3.5.2 Detailed Analysis of Impact

3.5.2.1 Contribution to Reduced Losses

The planned impact of the BRCCC was to make a contribution to reduce losses from hydro meteorological hazard events and the effects of climate variability and change in SIDS. **Anecdotes shared by interviewees indicates that the outcomes of the project can definitely make a contribution to reduced losses although it is still early to quantify the extent of the reduced losses and to what extent it is attributable to the BRCCC.** Notable anecdotes that illustrate how losses are being reduced are in Box 8.

Box 8: Anecdotes of Reduced Losses in Countries

- ✘ **Dominica** - the weather station that was installed in 'wet patch' in Dominica was timely with respect to the Erika event. The station was installed in July and Erika happened in August and provided ample warning of flood risks to the areas such as Dennery, La Caye, Deliade and Pois Joli. Unfortunately, one other station was damaged by the Erika event. (Interviewee 032)
- ✘ **Saint Lucia** - a radar water level station was installed at Alba Bridge in November 2015 which was key to informing the evacuation of the population affected in this area during TS Matthew in September 2016 (Interviewee 032)
- ✘ **St. Kitts and Nevis** - almost lost the Basseterre aquifer, which contributes 60% of potable water for St. Kitts, from the recent drought season (2014-2016). The drought outlook was available well in advance and they started to ration water early and were able to protect the integrity of the aquifer (Interviewee 040)
- ✘ **Multi-island** - a recurring example is a comparison of the 2009-2010 and the 2014-2016 drought across the Caribbean. It was noted that the second drought, which was longer and therefore more serious actually resulted in less outcry and effects due to the early warning provided by the drought outlook (Interviewees 001, 002, 008, 012, 015, 016, 017, 021, 023, 032, 034, and 040). This is corroborated by some of the anecdotes shared in earlier; for instance the YouTube video of drought planning in Trinidad in 2016 that explicitly demonstrates the use of the CariCOF outlooks in the planning for the drought season.

Source: Multiple Interviewees

3.5.2.2 Perceptions of The Real Difference the BRCCC made on Beneficiaries

The reported real difference that the BRCCC has made on beneficiaries include:

- ✘ **Regional agencies now have strengthened understanding of nexus between climate data and the work of their sectors.** This is having a domino effect as regional agencies are now updating their corporate plans to include objectives related to mainstreaming climate information into planning through more research and product development.
- ✘ **Highlighted the need for the use of climate information in decision making not only at the policy and technical levels but also at the community levels.** This is the ultimate impact of investing in the training and scientific research.
- ✘ **There is evidence of an increase in the demand for climate information that could be attributed to the increase in tailor made climate products and information, investments in better awareness activities and expanding the stakeholder base (CariCOF and EWISACTS) through the BRCCC.** For instance, Guyana, Grenada, Saint Lucia and CIMH have reported an increase in the request for information over the past 2-3 years
- ✘ **Increased the capacities of NMHS and their ability to meet the GCFS goals.** For instance, Guyana reported that they are now capable of producing their own forecasts – something we were unable to produce independently for decades

- ✂ Promoted CIMH to be recognized as a premier agency among the regional CARICOM agencies as well as their international peers in the area of climate services and innovation.
- ✂ Strengthened the sustainability prospects for CIMH with the potential to further scale up climate services across the Caribbean. Recalling that CIMH has now mobilized approximately US\$4 million (confirmed) with the potential to access approximately US\$20 million more. *“Before BRCCC, if CIMH could find US\$3 million they would need to celebrate”* (Interviewee #043).

3.5.2.3 Unplanned Results/Effects

The EWISACTS is a positive unplanned result of the project. It is a *“formalized sectoral mechanism in which regional sectoral partners are supported by CIMH to drive the development and implementation of sectoral EWISACTS. It fosters sectoral ownership of this agenda, but also lays the foundation for the sustainability of sectoral EWISACTS long after the completion of the BRCCC programme”* (CIMH et al., 2016). The benefits of the sectoral partnerships have already been discussed in Section 3.2.2.1 of this report; but it should be noted that the outputs from the collaborations are also unplanned results.

There is strengthened relationships with the media and there is evidence that the media is also more aware of the products and how to interpret information. See Box 9 for some of the testimonials from media personnel as it relates to the use of the knowledge gained from the BRCCC funded media training for improving their work.

The Participatory Integrated Climate Services for Agriculture (PICSA) programme that is being piloted in Guyana, Belize and Jamaica is also proving to be a positive unplanned result. The Guyana feasibility study and training in PICSA were funded by BRCCC and interviewees from Guyana have reported that one of the individuals that received the training in PICSA is now incorporating some of its concepts into the agriculture certificate and diploma courses at the Guyana School of Agriculture (GSA). Further, the PICSA programme has been a useful platform that supports the objectives of the recently established NCOF in Guyana since sector partners can see how the climate information can be applied to planning and decision making in a sector.

Surpassing the mandatory functions of an RCC was not envisaged by CIMH during the project conceptualization stages.

A negative unplanned result that has been reported is that with the rise in climate products and information, people in the public are taking the information at face value; but there is need for more education to better interpret and translate the climate information that is being released.

Another negative unplanned result is that some of the radar sensors for the water level equipment do not give the best results under extreme flooding situations; for instance, when there is turbulence in the river. CIMH is currently working with the manufacturers to re-program the radar and/or have the sensors at the cost of the manufacturer (SUTRON)

3.6 MANAGEMENT ARRANGEMENTS

The key evaluation question related to the management arrangements criteria was:

1. What is the relevance, efficiency, effectiveness and sustainability of management arrangements as it relates to (a) management and administrative processes and functions created at CIMH and (b) the project's management arrangements made for the implementation of the project at CIMH.

3.6.1 Summary Findings for Management Arrangements

Management and administrative functions supported/created at CIMH

- ✘ The BRCCC has delivered the following key products/reports and it relates to enhancing the HR functions: Human Resources Policy and Procedures Manual, proposed organizational structure with comprehensive job descriptions, a performance management system, student services manual. The procurement function now has a Procurement Policy. However, not all have been endorsed by the Board of Governors and operationalized to date.
 - Only the procurement policies were operationalized and they are considered to satisfy the relevance (suitable for meeting donor requirements), efficiency (promoting the fair and justified use of funds) and effectiveness (promoting transparency and accountability for accessing donor function) criteria.
 - The sustainability of the procurement policies is supposed to be championed by the Procurement Officer, which has not been formalized for the institute and no interim back-stopping was reported. Therefore the sustainability of the procurement function is not satisfactory at this time
 - For the Institute's HR related outputs, none of these were endorsed by the Board of Governors or operationalized in full at the time of this evaluation and therefore its relevance (suitability for delivering on the core functions of CIMH), effectiveness (enhancing the delivery of work and attainment of objectives of the Institute) and efficiency (justified use of resources for functions of the staffing positions) could not be determined
- ✘ The RCC staffing, which will be part of the proposed organizational structure, has been reported to be recently put in place, hence sustainability of the RCC operations or Outcome 1 of the BRCCC is strengthened.

BRCCC Project Management

- ✘ The BRCCC project management arrangements as it relates to the procedures used for procurement of services and equipment were efficient and effective.
- ✘ The BRCCC governance mechanisms such as the Project Steering Committee were suitable/relevant, effective and efficient to a large extent although it was noted by a few interviewees that the PSC membership could have benefited from a country representative at the level of the Met Office.
- ✘ Another governance type mechanism that was institutionalized as a result of the BRCCC was the EWISACTS Consortium which was very relevant and effective for achieving outcome 1 of the project and also promoting sustainability of Outcome 1 beyond the years of the BRCCC. This mechanism was also implemented in an efficient manner since it would 'piggy back' on the CariCOF meetings.
- ✘ The project management and technical staff hired significantly contributed to the effectiveness and efficiency of the project as evident by the reports on the achievements made in Sections 3.2.2.1 and 3.4.2.2.
- ✘ The use of renowned institutions to provide and deliver high quality products promoted effectiveness of the outputs and was justified from a cost perspective
- ✘ Sustainability was promoted given that all subject matter experts that were hired had to conduct training and capacity building in house and CIMH worked closely with the external renowned institutions in the conduct of research and development of products and services.
- ✘ The monitoring and evaluation (M&E) system for the project was not fully developed and implemented, which could have improved effectiveness and efficiency through better adaptive management mechanisms being in place.

3.6.2 Detailed Analysis of Management Arrangements

3.6.2.1 CIMH Organisational Management Arrangements

The initial raison d'être for the BRCCC was to support CIMH in enhancing two administrative areas that a USAID Assessment identified as weak – (i) Human Resource Management and Organisational Structure and (ii) procurement systems and procedures to enable the Institute to enhance their level of accountability and transparency required for accessing funding from the international donor agency. Such funding would enhance the sustainability of the RCC and other critical functions at the Institute.

BRCCC progress reports and feedback from interviewees confirms that the BRCCC has delivered the following key products: Human Resources Policy and Procedures Manual, proposed organizational structure with comprehensive job descriptions, a performance management system, student services manual and Procurement Policy.

At the time of this evaluation, only the procurement policies were operationalized and it is reported to be of good quality and meeting international best practices. As noted earlier, the BRCCC project adopted the procurement policies since they promoted

accountability and transparent. Therefore the **procurement policies are considered to satisfy the relevance (suitable for meeting donor requirements), efficiency (promoting the fair and justified use of funds) and effectiveness (promoting transparency and accountability for accessing donor function) criteria**. Sustaining the implementation of the procurement policies is supposed to be championed by the Procurement Officer post that is reported to be included in the proposed organizational structure (and therefore proposed for inclusion in the core operating budget of the Institute). As noted in Table 10, the Board of Governors is still to meet to discuss (November 2017) and sign off on the proposed organizational structure of CIMH; therefore the **sustainability of the procurement function is not satisfactory at this time**.

In terms of the HR related outputs, none of these were endorsed or operationalized in full at the time of this evaluation and therefore its relevance (suitability for delivering on the core functions of CIMH), effectiveness (enhancing the delivery of work and attainment of objectives of the Institute) and efficiency (justified use of resources for functions of the staffing positions) could not be determined. **This is the main result area of the project that could not be comprehensively evaluated**. Notable is that the **RCC staffing, which will be part of the proposed organizational structure, has been reported to be recently put in place** (see details at Table 10) **and their work is considered to be efficient and effective** given the key achievement discussed earlier in this report as it relates to the CAROGEN system, CariCOF meeting and the feedback on the enhancement in capabilities for use of the climate products, remote sensing and statistics (See section 3.2.2.3 and 3.7.2.4). The RCC function will also be sustained since CIMH has secured funding at the sum of US4 million that will span the next 5 years (See Table 9).

It was noted that a consultancy on HR will be launched into the next year to operationalize the outputs through funding from the core budget and the funding that has been mobilized.

3.6.2.2 BRCCC Project Management Arrangements

The consolidated feedback from interviewees suggests that the **management arrangements for the BRCCC as it relates to the procedures used for procurement of services and equipment were efficient, effective and sustainable**, which was already alluded to in Section 3.4.2.1.

The **governance mechanisms such as the Project Steering Committee and the EWISACTS were suitable/relevant, effective and efficient**. The key limitation was that the PSC membership did not include a country representative from the level of the Met Office; instead a Permanent Secretary level representative from the Chairman of the CIMH Board of Governors was included. Given that the BRCCC looked at many operational elements of climate services; the Met Office level would have been useful to have country perspective in the decision making at the PSC level (maintaining relevance). The benefits gained from the EWISACTS are noted in Section 3.2.2.1 of this report where it is

clearly demonstrate that **the EWISACTS consortium is very relevant, effective and efficient** (piggy back on the CariCOF meetings). Having WMO as the executing agency was also relevant and contributed to effectiveness and efficiency in the program delivery given their in-house expertise and how it aligns with the primary objectives of the BRCCC.

In terms of **project management and technical staff contracted through the project** (project manager, HR specialist, Procurement Specialist, Communications Specialist, IT Specialist, GIS Specialist), this **significantly contributed to the effectiveness and efficiency of the project**. For other areas that CIMH lacked the expertise and regional experts could not be identified, they **utilized renowned institutions to provide and deliver high quality products** (See Table 12), **which increased effectiveness** of the outputs and solid justification for the investment (efficiency). The fact that there was always a **training component for CIMH and/or countries when experts were engaged or a collaborative approach between CIMH and/or countries with the renowned institutions, this increased the sustainability** element of the areas that were supported by external experts/institutions. A noted limitation is that there was need for more administrative support and an internal backstopping mechanism. This could have improved the overall effectiveness of project.

The **M&E system for the project was not fully developed and implemented** – baselines were not fully elaborated; some targets were missing in the results framework; there were project indicators and USAID performance indicators that were reported on separately and added some level of confusion; and there was not dedicated budget to do surveys for example to track use of climate information and products for planning and decision making. These are all key element to have a highly functioning M&E system that would identify lessons for informing adaptive management; and collecting useful information over time to allow for a more advanced impact evaluation. Hence, the **M&E function was not effective or relevant**.

3.6.3 Lessons for Enhancing Management Arrangement of Similar Projects

Ensure to design and budget for dedicated project management staff for projects that are sizeable (over US\$ million) and complex: engagement multi-stakeholders, offer benefits to multiple beneficiaries that are national and regional in nature and spans various units within an organization and therefore the need for coordination and oversight is paramount.

There is need for internal backstopping for projects even if a project manager is hired.

Initiate the recruitment process of technical experts early since some of these positions can be highly technical and hard to fill. Official hiring does not have to take place until the monies are disbursed. This will reduce implementation delays.

Engage WMO as an executing agency to keep the project focused on the critical requirements particularly for WMO RCC designation.

Establish a broad based project steering committee membership to maintain relevance of the project design, promote buy-in and create champions for the project among wider stakeholders

Projects that have capacity building and user products need a well-developed M&E system and budget that allows for workshop evaluations and satisfaction surveys to be routinely administered.

3.7 CAPACITY BUILDING

The key evaluation question related to the capacity building criteria were:

2. To what extent are the capacity building activities supported through this project (workshops, attachments, internships etc.) relevant, effective, efficient and sustainable?
 - a. Sub-Question: How useful have the capacity building activities been for participants from countries covered under the project (training evaluations)?

3.7.1 Summary Findings for Capacity Building

Workshops

- ✘ Majority of the respondents for Online Survey 2 indicated that the workshops were ‘extremely relevant’ and ‘very relevant’ to their work and the work of their agency
- ✘ There was no established selection criteria for selecting countries outside of the 8 target countries that should benefit from trainings sessions. Generally, in instances the Government of Canada could not fund a representative from Jamaica, Belize or Trinidad, the BRCCC would seek official approval from USAID to fund representatives from these countries. This was valid given the regional relevant of the climate products and tool developed by the BRCCC, and the exposure these countries would gain would contribute to awareness building, demand for and use of the climate information, products and services across the region.
- ✘ Majority of the workshops received positive feedback in terms of being ‘extremely useful’ and ‘very useful’ for enhancing their knowledge and awareness of the subject matter and for supporting decision-making. This is particularly true for the CariCOF meetings. Testimonials received from interviewees indicates that (i) there is enhanced national capacities for generating and interpreting seasonal forecasts and supporting planning in sectors; (ii) beneficiaries are more confident and can better interpret information to apply to their work, including the dissemination of information and (iii) media personnel have improved their ability

to communicate climate information to the public. All three of these areas are foundational for promoting the use of climate information and products and illustrates that the capacity building programmes were overall very effective and the costs were justified.

Attachment Program

- ✘ The attachment programs are reported to be effective in terms of expanding knowledge in areas not previously explored in the Caribbean (particularly as it related to outcome 1) but some of the research/publications were not finalized at the time of the evaluation.
- ✘ The attachments are considered to be relevant since only CIMH and country representatives with the relevant background and skill sets were short-listed and relevance to their area of work was a priority. This also promoted sustainability since there is now a cadre of advanced (building on existing expertise and training) regional experts working in the various thematic areas covered by the attachments (statistics, climate monitoring, drought planning etc.).
- ✘ The investments in the attachments are considered to be justified in light of the fact that they produced cutting edge research, strengthened the capacity of a cadre of regional experts and was the main backstopping option because regional experts could not be hired/contracted in some instances

Internships

- ✘ The internship reports verify that the objectives of the internships were aligned to the Interns' course of study/area of interest and therefore relevant.
- ✘ Overall the internships supported by the BRCCC were effective and the investments are justified since the outputs included useful research papers and support for the development of some of the RCC tools such as the CARISAM and CAROGEN platforms
- ✘ The ability for CIMH to sustain the internship program is high given that the stipends paid to students are manageable and they also have a culture of hosting students.

3.7.2 Detailed Analysis of Capacity Building

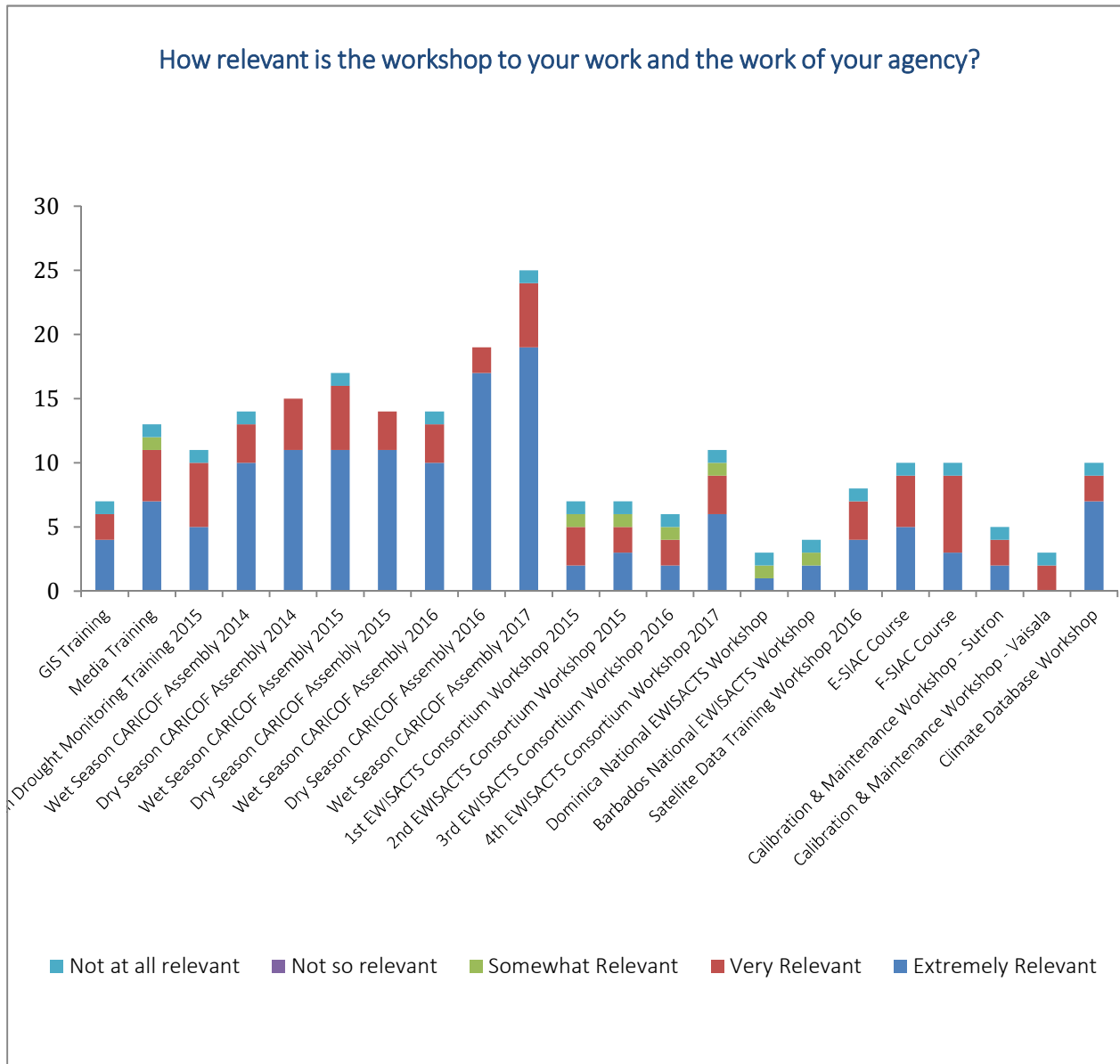
3.7.2.1 Training/Workshop Relevance

Graph 14 shows that **majority of the respondents for Online Survey 2 indicated that the workshops were 'extremely relevant' and 'very relevant' to their work and the work of their agency**, which strongly signals that the scope of the training/workshops were relevant to the beneficiaries.

A key aspect of the evaluation was to look at what selection criteria was used for selecting countries to benefit from training since the grant agreement noted that training

of nationals of other countries (outside the 8 beneficiary countries) requires advance approval from USAID. It was noted that in most instances funding from Environment Canada was utilized to support beneficiaries from outside of BRCCC’s eight target countries to benefit from workshops/meeting funded by BRCCC. In instances where Environment Canada was not able to provide assistance, then official requests were sent to USAID and WMO to support representatives from Jamaica, Trinidad and Belize. **No criteria was established by the project team, except to say that given the regional benefit of the outputs of the BRCCC, the exposure of other countries to the climate products and tools is considered to be justified** since this will contribute to awareness building, demand for and use of the climate information, products and services.

Graph 14: Relevance of Workshops



Source: Online Survey 2

3.7.2.2 Training/Workshop Effectiveness/Usefulness

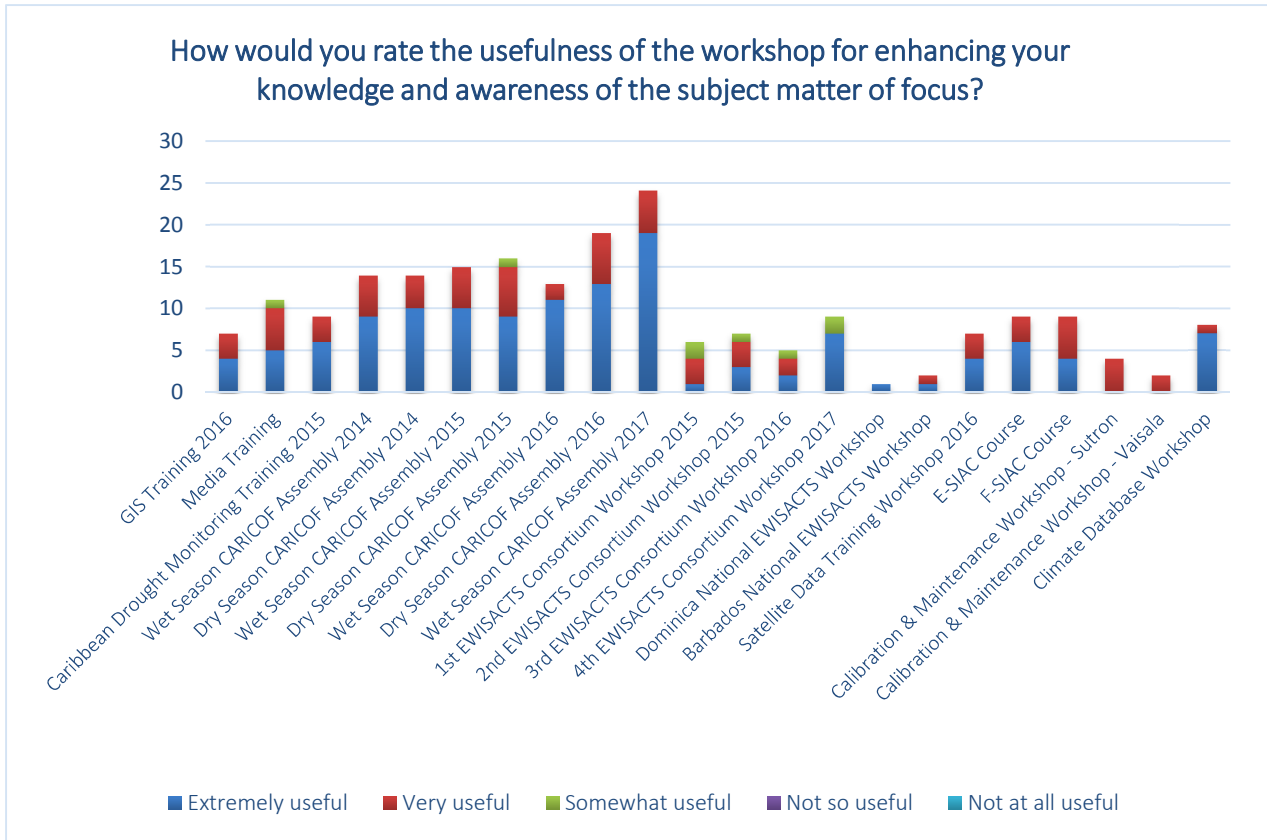
Online survey 2 explored usefulness from two dimensions: for enhancing knowledge and awareness and for supporting decision-making within the agency. Graph 15 and Graph 16 shows that **majority of the workshops received positive feedback in terms of being ‘extremely useful’ and ‘very useful’ for enhancing their knowledge and awareness of the subject matter and for supporting decision-making.** This is particularly true for the CariCOF meetings, which was also confirmed earlier in the report at Graph 12: Use of Climate Products and Services for Decision-Making

Notable is that some workshops had an extremely small number of respondents – EWISACTS Consortium, Dominica and Barbados National workshops and the two calibration and maintenance courses. Therefore, **the usefulness of these workshops could not be confirmed by the online survey.** However, earlier discussions in this report have confirmed that the EWISACTS consortium is very effective and even a model to be replicated by RCCs around the world. Fortunately, the training report for the calibration and maintenance workshops noted its effectiveness:

“Since the completion of the training the CIMH Instruments section has seen a decrease in the amount of technical assistance requests from our technical instruments peers operating the devices supplied by the BRCCC project. This can no doubt be related to the exposure of the attendees to the concepts and practicals which they took part in during the live exercises during the course. The Technicians at CIMH were also able based on the experienced gained from this train to facilitate on their own another Instruments Calibration and Maintenance sponsored by WMO for several relevant NMHS personnel from CMO member states” (Prescod and Fernandez, 2016: 4).

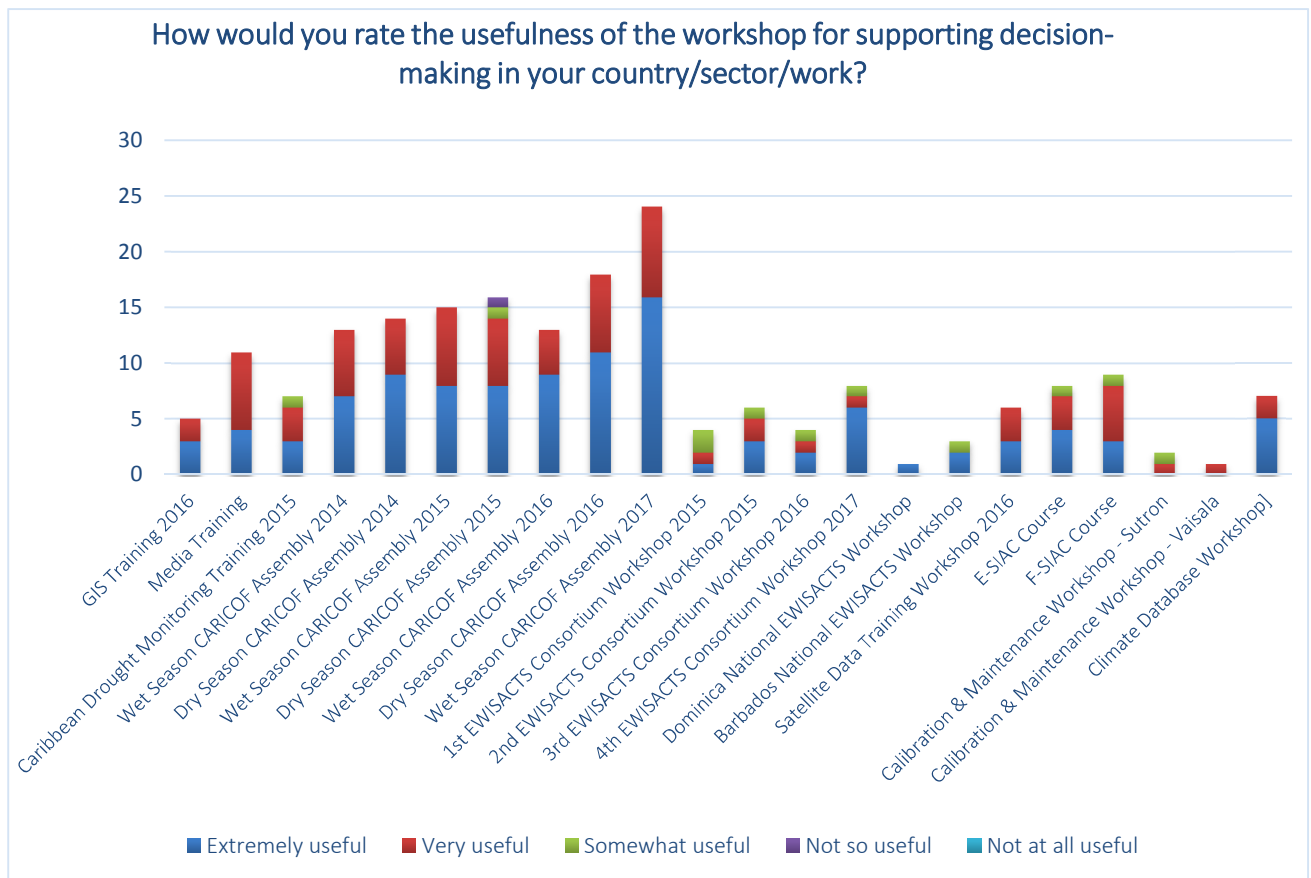
Unfortunately the Dominica and Barbados National EWISACTS Workshops did not include an evaluation component.

Graph 15: Usefulness of Workshops for Enhancing Knowledge and Awareness



Source: Online Survey 2

Graph 16: Usefulness of Workshop for Supporting Decision-Making



Source: Online Survey 2

Testimonials of the application of the knowledge and skills from workshops to enhance job functions and/or to better inform decision-making are detailed in Box 9.

Approximately 36 out of 54 respondents (67%) provided testimonials that converge around the following key areas:

1. There is enhanced national capacities for generating and interpreting seasonal forecasts and supporting planning in sectors
2. Beneficiaries are more confident and can better interpret information to apply to their work, including the dissemination of information
3. Media personnel have improved their ability to communicate climate information to the public

All three of these area are foundational for promoting the use of climate information and products and illustrates that **the capacity building programmes were overall very effective and the costs were justified.**

National capacity improved for generating and interpreting seasonal forecasts and supporting planning in sectors

- ✘ When I joined the service in 2010, I had no knowledge of meteorology. The E-SAIC course helped me to gain an understanding of Climate and the use of Stats in Climate. After the course I was able to look at the climate data and make some important inferences from it (Respondent #4).
- ✘ The training on the use of the climate predictability tool and CAROGEN seasonal forecast generator were extremely useful because now I can use these tools to create national climate outlooks for the country (Respondent #12).
- ✘ The knowledge gained and the software taught helps me to provide the best scientific outcomes to the public especially agricultural sector which influence when certain crops are planted (Respondent #23).

Better interpretation of information prior to its dissemination and/or use

- ✘ At farmers meeting and other sessions I am confident enough to share climatic information. I recently conducted a lecture to college students on the impact of climate change on the economic sectors of the country. The Ministry of Agriculture has appointed me as a focal point on a climate change project (Respondent #15)
- ✘ Training has helped me enhance my local newsletter (Respondent #40).
- ✘ Extremely useful because in my country we just read the weather report as presented from met office. Now I understand it is most effective if a trained weather forecaster does the presentation on TV and Radio (Respondent #45).
- ✘ I am better able to interrupt climate sensitive data and apply it to my Job (Respondent #51)
- ✘ Making use of the SPI during the 2015 wet season, which had low rainfall figures, there was a better understanding of expected condition during the 2016 dry season. Stakeholders were informed and were better prepared (Respondent #48).
- ✘ The seasonal forecast workshop increase my knowledge of drought, temperature and rainfall on the agriculture sector (Respondent #35).
- ✘ Through the workshop, participants were able to know sources of data and how to use the McIDAS-V 1.5 to make them useful information for your work (Respondent #34).

Media Personnel Communication Capacities Enhanced

- ✘ Media training helped me to relate climate services to human impacts that shape weather coverage on TV and online. I presented my experiences in media at Trinidad Tobago COF (Respondent #17): <https://youtu.be/2dC4tCFdUbwand>
Also helped with Heat Alert on TV news reports:
https://youtu.be/1lLuWhhqU68?list=PLyWR44_Vv0_hyP3mxxFmkVgHcrl5pilEG
- ✘ The media training I've applied the tips suggested to a better approach on how I interact with the public to produce a more satisfied customer (Respondent #49).
- ✘ The media training have taught me how to properly get the message across to stakeholders which in turn leads to a general understanding and proper decision making (Respondent #30).

Box 9: Quotes of the Application of Knowledge and Skills Gained from Workshops

Source: Multiple Respondents, Online Survey 2

3.7.2.3 Training/Workshop Sustainability

Sustainability of all the capacity building activities was not discussed in detail during interviews. However, the critical workshops have been reported to have funding secured for the next year at least – such as the CariCOF and EWISACTS meetings.

3.7.2.4 Internships/Attachment Programmes

Attachment Program

The key outputs from the attachments are detailed in Table 12, which shows that the attachments were key for supporting the achievement of outcome 1 of the project and they were noted to be of high quality given that they were co-developed with the support of renowned institutions working in the various specialized areas – statistics, drought management, climate monitoring etc. **The attachment programs are reported to be effective in terms of expanding knowledge in areas not previously explored in the Caribbean but some of the research/publications were not finalized at the time of the evaluation.** The full list of research papers are at Annex VII.

All the **attachments are considered to be relevant** from the perspective of the beneficiaries, which were primarily CIMH staff working in the relevant departments that are aligned to the outputs of the project. In terms of country beneficiaries, it was noted that the highly specialized nature of the attachments meant that only country representatives with the relevant background and skill sets were short-listed and relevance to their area of work was a priority. This also **promotes sustainability since there is now a cadre of advanced (building on existing expertise and training) regional experts in the various thematic areas supported through the attachment programs to sustain the outputs of the RCC.** For some of the reasons noted above (cutting edge research and building a cadre of regional experts) and also considering the fact that some of the attachments were organized because regional experts could not be identified, **the investment is considered to be justified.**

Table 12: Achievement of the Attachment Program

Organisation	# of Individuals Supported	Key Outputs/Achievements	Alignment with BRCC outputs and objectives
University of Nebraska	5	1. Draft drought management policy and procedure for: <ol style="list-style-type: none"> i. Antigua and Barbuda ii. St. Kitts and Nevis iii. Grenada iv. St. Lucia 	1.1 – Climate Monitoring
IRI Columbia	4	1. Development heat early warning information	1.2-

University		<p>products:</p> <ol style="list-style-type: none"> i. Climate data preparation ii. Research on relevant and practical heat indices for heat wave forecasts iii. Seasonal predictability of heat waves <ol style="list-style-type: none"> 2. Development of dry spell products - seasonal predictability of dry spells 3. Drought prediction research – verification of the quality of forecasts utilised in CariCOF drought outlooks 	CariCOF
University of Arizona	5	<ol style="list-style-type: none"> 1. Research Papers - ‘Built for Purpose?: Visioning National Climate Centres’ 2. Draft manuscript of the Caribbean NMHS Capacity Assessment paper entitled “Built for Purpose: Assessing the capacity of National Climate Centers in Caribbean Small Island Developing States” 3. Draft manuscript entitled “Barriers and Enablers to the use of climate information in the Caribbean” 4. Developing strategies and actions for communicating with the public and key stakeholders with audio visual media 5. The assignment of UA Research Associate status to 3 CIMH researchers 	1.3 - EWISACTS
Colorado State University	4	<ol style="list-style-type: none"> 1. Enhanced understanding in the management of satellite data for climate research, analysis and monitoring 2. Exposure to the McIDAS-V Open-Source Platform 	1.4- Remote Sensing
University of Reading	8	<ol style="list-style-type: none"> 1. Research papers for publication 2. Conducting and building capacity for statistical analysis for climate data for the agriculture sector in Guyana (PICSA) 3. Developing strategies and actions for communicating with the public and key stakeholders with audio visual media 	1.5 – Statistical Capabilities

Sources: Attachment Reports and Interviewees

Internships

Table 13 details the outputs and progress reported from a sample of internships based on internship reports that were available. From the feedback column it can be seen that **the objectives of the internships were aligned to the Interns’ course of study/area of interest and therefore relevant**. It was noted that interns were sourced primarily from the University of the West Indies (Masters and Undergraduate Levels) and it was corroborated from interviewees that Interns would have to fit the criteria for the area of work before they were shortlisted for interviews. For instance, those that supported the work of EWISACTS would have needed social sciences background and others that supported the IT team would need to have IT background. It is also evident that all the

interns supported key outputs of the BRCCC project. It was reported that only one intern was handpicked because he had previous experience with CIMH and had the relevant skill set and was trained at CIMH.

Table 13: Achievements of the Internship Program

Name	Feedback on Internship Program	Key Outputs/Achievements	Alignment with BRCCC outputs and objectives
1. Theron Lumsden	Fulfilling internship both professionally and socially. From learning the ins and outs of producing climate information and communicating the information to stakeholder to meeting experts in the field of climate science from varying backgrounds. it has given me renewed confidence as an aspiring climate scientist	1. Investigate and analyze predictor sets for optimal seasonal rainfall forecasting within the Caribbean region	1.2- CariCOF 2.6 – Support for student interns
2. Branden W. Spooner	I was able to gain valuable work experience along with an opportunity to practice and refine the skill which I learned at university. This opportunity gave me the chance to interact and learn from a great diversity of people from different professional fields which taught me a great deal about the world of work, team skills and a drew to my attention a list of interesting and fulfilling careers and opportunities	1. A functional version of CariSAM, includes updated interface, additional functionality and features; 2. A fully functional computer lab with all necessary configurations and software installed;	1.1 – Climate Monitoring 2.6 – Support for student interns
3. Michael Mayers	The internship has provided me with many opportunities - an introduction to the Content Management System (CMS) called Joomla. - Exposure to troubleshooting computer hardware problems and installing hardware components. - Ability to learn about the weather. By working on CAROGEN and the different types of datasets, I have been able to get a better understanding of the world that I	1. Graphical interface for CAROGEN 2. Graphical user interface for CARISAM 3. Graphical user interface for BRCCC Inventory 4. Graphical user interface for Training Centre 5. Quality assured CAROGEN 6. Logo for CARISAM 7. Draft logos for CAROGEN 8. Incremental backups of the development of CAROGEN v1,	1.1 – climate monitoring 2.2. – upgrades to the training centre 2.6 – Support for student interns

	<p>live in.</p> <p>- The ability to hone my previous skills. My programming skills were really tested with the vast amount of problems presented.</p> <p>ability to practice my networking skills</p>	CAROGEN v2, BRCCC Inventory, Training Centre	
4. Keiann O. R Payne	<p>I have matured a lot as a young professional and personally. For the first few weeks of the internship, duties were task driven, dates were assigned and I was allowed to manage myself. Therefore, I acquired great time management skills and a greater sense of responsibility for the work I was doing. My team skills also improved as I had to work with several personality types, and work place etiquette refined. Overall, the internship fulfilled my expectations.</p>	<ol style="list-style-type: none"> 1. A draft report on the relationship between climate and sectoral outcomes in the Caribbean 2. An electronic reference library and compendium of grey and scientific literature related to the relationship between climate and sectoral outcomes in the Disaster Risk Management, Health and Agriculture sectors 	<p>1.3 – capabilities for decision making in sectors</p> <p>2.6 – Support for student interns</p>
5. Sheldon Grant	NA	<ol style="list-style-type: none"> 1. Published paper titled the El Niño Southern Oscillation (ENSO) phase and Tropical North Atlantic Sea Surface Temperature Anomalies on wet season onset dates (WSOD) in the Eastern Caribbean 	<p>1.1 – climate monitoring</p> <p>2.6 – Support for student interns</p>
6. Trisha Miller	<p>This internship brought to light the need for more scholarly papers on weather related impacts on the agriculture sector in the Caribbean. Also, having done the CarICOF training, my desire to pursue further studies has increased, with my interest now shifted from General Meteorology to Applied Meteorology and Climate Change and Agriculture.</p>	<ol style="list-style-type: none"> 1. Research paper on Weather Related Impacts on the Agriculture Sector in the Caribbean 	<p>1.1 – Climate Monitoring</p> <p>1.3 - capabilities for decision making in sectors</p> <p>2.6 – Support for student interns</p>

Source: Internship Reports

A few CIMH interviewees noted that the internship program is seen as a mechanism to expose aspiring climate scientists (among others disciplines) to the work of the Institute and complement their studies with hands on experience. Overall, the internship

experience is intended to motivate them and stimulate interest in the field for succession planning.

A look at the key outputs of the interns shows that useful research papers and even support for some of the RCC tools development such as the CARISAM and CAROGEN platforms were promoted. The Interns also supported some of the work related to the EWISACTS Consortium. All of the internships were technical and did not focus primarily on administrative related tasks – which is important for promoting a nourishing experience to build capacities for succession planning. It was reported that **overall the internships supported by the BRCCC were effective and the investments are justified**. The ability for CIMH to sustain the internship program is high given that the stipends paid to students are manageable and they also have a culture of hosting students.

3.7.3 Recommendations for Enhancing Workshops, Internships and Attachment Programs

Training/Workshops

Utilize standardized evaluation forms for workshops/training particularly for project with large investments in capacity building.

Consider if there is need for follow-up activities pending the feedback from workshop evaluations.

Avoid working overtime and include hands on session for better impact on the learning experience including the use of dummy data-sets

Training should include practical sessions (media, calibration of equipment)

Investment in courses/lectures online can enhance capacities so participants can work at their own pace and reduce costs for travel

Internships

Weekly meeting with supervisors are important to provide official status updates to supervisors and track progress.

Longer and more detailed overview of the programme, specifically how individual parts add to and complement the entire project will promote solid context setting and clear expectations

Incorporate a review and evaluation session at the end of the internship period for intern and supervisors.

4. OTHER OBSERVATIONS

When an independent evaluator is launched into the field there are always useful observations that emerge, particularly during the interview process. The most notable observations include:

- ✘ There is the **need for concerted efforts to adequately brand the roles, functions and benefits of having a WMO RCC designated in the Caribbean region**. The title “Regional Climate Centre” is very broad and without adequate context and understanding of the climate services discipline, it can be easily confused with the roles and functions of the Caribbean Community Climate Change Centre. Hence, adequate awareness and branding is needed to reduce this confusion, which already seems to be emerging based on feedback from a few interviewees.
- ✘ At the CIMH **there is need for a change management process** to be launched since the outputs of the BRCCC have been very impactful primarily on the climatology department and in so doing, might have over shadowed the other departments at CIMH. There is need to let the wider staff know how they will benefit. Further, with the HR related items still ‘unofficial’ there should be some sensitization so that any changes endorsed by the Board of Governors will not come to be a surprise.
- ✘ CIMH needs to have **clear dialogue with their member countries in term of access to and ownership of the climate dataset** that comes in from the weather stations that are installed. There is confusion on how to access data (passwords, process, and contact person in CIMH etc.) and who has ownership over the data.

5. CONCLUSIONS

The overall objectives of this evaluation were to assess the (i) project’s relevance, performance, and management arrangements; (ii) sustainability of CIMH as the WMO RCC; and (iii) sustainability of achieved project results, including the contribution to capacity building in the Caribbean.

The evaluation was successful in assessing the relevance of the overall project to the beneficiaries, which included countries, regional partners, CIMH, the executing agency (WMO) and Donor (USAID). Whilst the project was found to be relevant, it is not conclusive whether an extensive participatory process was used in the initial design of the project.

The performance level or the effectiveness of the project was also evaluated from the lens of the achievement of targets and the project performed very satisfactorily with the most notable achievement being the attainment of RCC designation and even surpassing the mandatory functions to also achieve some of the recommended functions. The key

limitation was that most the HR outputs (organizational structure, HR policy etc.) were not endorsed at the time of the evaluation and this is actually a result area that was part of the original impetus for the BRCCC project. Effectiveness was also examined from the lens of the stakeholder's perceptions of the quality of the key outputs and there is strong evidence to suggest that the outputs that were successfully completed were done at an acceptable standard and are satisfactorily. The most notable is that the evaluation was able to determine that almost all of the climate products and services (except CCCES) are being reported by users to inform decision-making, which is a positive feedback of the project, specifically outcome 1.

A key evaluation question was whether the project enabled CIMH to become a sustainable RCC for the Caribbean. Findings from all the criteria suggest that this is true; meaning that the project did enable CIMH to become a sustainable RCC. For instance, CIMH has secured funding (confirmed) at the tune of US\$ 4 million that will span the next five years and it was noted that the BRCCC was a key driver in securing this funding since the Project enabled CIMH to focus resources to achieve the RCC designation and raise the profile of CIMH among its regional and international peers. Further, although the new organizational structure has not been officially endorsed by the CIMH Board of Governors, the Institute has already transitioned key staff at CIMH into the RCC functions. Many of these staff members benefited from capacity building and are now in a better position to deliver on the RCC requirements. Another notable achievement of the BRCCC project that will enable CIMH to become a sustainable RCC for the region is the support provided for the establishment of the EWISACTS consortium, which is formalized with LOAs and there are also strong evidence of leadership among these regional partners to lead the process, although there may be the need for CIMH to provide more support for a selected few of the regional agencies such as CWWA and CARDI. And finally, one of the most significant output of the BRCCC that will enable CIMH to sustain the RCC operations is the CAROGEN platform which was confirmed to increase CIMH's efficiency in producing CariCOF outlooks by automation to free up time (of the RCC staff) to generate more products.

In terms of the last objective, the evaluation was able to determine that there is strong evidence to suggest that the benefits of the BRCCC are highly likely to continue after the BRCCC project has closed. Not only is this likely because of the funding that has been mobilized, but there is also scope for the CIMH to generate revenue from the sale of climate products and achieved data; majority of the known social, governance, environmental risks are relatively negligible; there is leadership at the regional and even national levels, although the capacity levels are mixed, and most importantly, CIMH is considered to have the required capacities to sustain the results including capacity building in the Caribbean.

6. REFERENCES

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ANNEXES

Annex I – BRCCC Results Chain

Ref.: ZZZ16/2018-1.0 DRA/PCU

IMPACT	Reduced losses from hydrometeorological hazard events and the effects of climate change and climate variability in the Caribbean Small Island Developing States (of Antigua & Barbuda, Barbados, Dominica, Grenada, Guyana, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines)		
OUTCOMES	OUTCOME 1/PART 1 Development of the Regional Climate Centre	OUTCOME 2/PART 2 Ability of CIMH to continue to meet its mandate is expanded and enhanced	OUTCOME 3/PART 3 The project is delivered efficiently and effectively
OUTPUTS	<p>Output/Activity 1.1 Support for Enhanced Regional Climate Monitoring</p> <p>Output/Activity 1.2 Sustained CARICOFs as a mechanism to support national climate services</p> <p>Output/Activity 1.3 Development of Capabilities for the use of climate products and services for decision making among sectoral stakeholders</p> <p>Output/Activity 1.4 Access to and use of Remote Sensing Data for Climatological Process</p> <p>Output/Activity 1.5 Development of the Statistical Capabilities of CIMH</p>	<p>Output/Activity 2.1 Upgrades/repairs to building and select offices</p> <p>Output/Activity 2.2 Upgrades to Training Classrooms and Associated Facilities</p> <p>Output/Activity 2.3 Strengthening Instrument Calibration facilities and climate databases</p> <p>Output/Activity 2.4 Upgrading of Video-conferencing facilities at CIMH</p> <p>Output/Activity 2.5 Communications & Marketing</p> <p>Output/Activity 2.6 Support of Student Interns</p> <p>Output/Activity 2.7 Development of Regional Climate and Environmental Computation Platform</p> <p>Output/Activity 2.8 Greening Activities</p>	<p>Output/Activity 3.1 Operational and Management Structure</p> <p>Output/Activity 3.2 Programme Management</p>

Annex II – Evaluator’s TOR

Title of project:	Building Regional Climate Capacity in the Caribbean
Project duration:	January 2014 – July 2017
Donor:	U.S. Agency for International development (USAID)
Total Project Budget:	USD 5,085,000
Grantee/Recipient:	World Meteorological Organization (WMO)
Executing Entity:	Caribbean Institute for Meteorology and Hydrology (CIMH)

1. Project description

The project is to enhance already existing programs of CIMH and facilitate the development of new sustainable user- and sector-driven programs in the Caribbean region in the area of climate services and products. Project outputs are to be seamlessly integrated into other on-going and planned initiatives in the Caribbean region. Within this context, the project is to facilitate the development of the Regional Center for the Caribbean (WMO RCC) to be housed at CIMH through the following intervention areas:

- i. Infrastructure development/improvement;
- ii. Increasing the range of products and services delivered to CIMH stakeholders;
- iii. Enhancement of human and technical capacities at CIMH and in National Meteorological and Hydrological Services in Caribbean Small Island Developing States;
- iv. Improvement of service delivery mechanisms to national, regional and international stakeholders.

1.1. Project Outputs and Outcomes

1.1.1. Project Outputs:

- Through adequate training and capacity building initiatives (type and number), enhanced capacity created at the CIMH and across the Caribbean to effectively convert climate data to products and services to better inform decision-making in key critical climate sensitive sectors;
- Through adequate training and capacity building initiatives (type and number) enhancement of CIMH climate monitoring and forecasting results, which feed into early-warning systems;
- Through adequate data acquisition networks (description of networks to assess adequacy) across the Caribbean, enhancement of CIMH climate monitoring and forecasting results;
- Establishment of the Caribbean Centre for Climate and Environmental Simulations to provide CIMH staff and regional scientists with the necessary resources to simulate regional environmental and climate processes to better inform regional decision making in areas of disaster risk reduction, water resources management and adaptation to climate change and increasing climate variability;

- Enhancement of the infrastructure at CIMH enabling CIMH to sustain its core activities as well as the activities envisioned as an RCC under the Global Framework for Climate Services;
- A greening programme initiated at CIMH focusing on environmental friendly operations of CIMH.

1.1.2. Project Outcomes

- A sustainable Regional Climate Center (RCC) for the Caribbean housed at the CIMH has been established;
- The RCC is capable of developing and distributing suites of sector-driven and user-driven climate and weather products and services to support:
 - i. Adaptation to climate change and increasing climate variability at varying spatial and temporal scales across the Caribbean;
 - ii. Enhanced disaster risk reduction capabilities;
 - iii. Enhanced capacity at the CIMH and across the Caribbean to effectively convert climate data to products and services to better inform decision-making in key critical climate sensitive sectors;
 - iv. Enhancement of CIMH climate monitoring and forecasting, feeding into early-warning systems, and improvement of data acquisition networks across the Caribbean.

The overall project impact is to have contributed to the sustainable development of Caribbean SIDS by supporting the region's initiatives related to *(a) adaptation to climate change and increasing climate variability; and (b) disaster risk reduction.*

2. Project components areas

2.1. Capacity building at CIMH

The project covers premises rehabilitation/renovation/repair at CIMH as well establishment of management and administrative functions and staff capacity development to carry out the functions of a revamped CIMH with adequate human resources and procurement procedures.

2.2. Infrastructure improvements at CIMH

The project covers hard ware and software installation/upgrading at CIMH

2.3. Equipment and installation in Caribbean countries

The project covers purchase and installation of equipment and provision of climate services and products generated through the project for the following **8 countries**: Antigua and Barbuda, Barbados, St. Kitts and Nevis, Dominica, Saint Lucia, St. Vincent and the Grenadines and Grenada, Guyana,. These are

all Members of the Caribbean Meteorological Organization (CMO)²², of which CIMH is the technical Organ.

2.4. Regional Training/capacity building/attachments (for countries as approved by USAID)

Training activities under the project focuses on strengthening the capacity of individuals and organizations in the countries: Antigua and Barbuda, Barbados, Dominica, Grenada, Guyana, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadine (all under the USAID/Barbados and Eastern Caribbean program for Global Climate Change adaptation). Training for the remaining three independent CMO Member States is considered on request.

2.5. Regional Training/capacity building/attachments (for countries as approved by USAID)

Training activities under the project focuses on strengthening the capacity of individuals and organizations in the countries: Antigua and Barbuda, Barbados, Dominica, Grenada, Guyana, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadine (all under the USAID/Barbados and Eastern Caribbean program for Global Climate Change adaptation).

2.3. Key Project Investment Areas (project budget of CIMH)

Investment amounts and percentages are stated in the table. Through the evaluation, it is expected to have a more accurate overview of investments as some investments were increased/decreased over the project implementation period (e.g. Project Manager, extension of staff, etc.). Additionally, the investment areas and related percentage of investment is an indicator for under/over-funding and an analysis will help to develop more accurate investment budgets for similar future projects.

Categories (data collected by CIMH)	Revised Budget (as provided by CIMH) (USD)	Investment percentage (%) of total budget
Human resources	1,434,000	32.67

²² Members of the Caribbean Meteorological Organization: **16 countries:** Antigua and Barbuda, Anguilla, Barbados, St. Kitts and Nevis, Montserrat, The British Virgin Islands, Dominica, Saint Lucia, St. Vincent and the Grenadines, Grenada, Trinidad and Tobago, Guyana, Belize, Jamaica, The Cayman Islands and The Turks and Caicos Islands.

Workshops/courses	905,500	20.63
Attachments/exchanges	273,000	6.22
Equipment/infrastructure (at CIMH and in-country)	1,500,000	34.17
Residual	187,500	4.27
Oversight/administration	90,000	2.05
BRCCC CIMH Program Total	4,390,000	100.00

3. Purpose of the Evaluation

The evaluation is intended to assess:

- ✓ Project relevance, performance, and management arrangements;
- ✓ Sustainability of CIMH as the WMO RCC;
- ✓ Sustainability of achieved project results, including the contribution to capacity building in the Caribbean.

4. Scope of Evaluation

4.1. Key evaluation questions

The evaluation is expected to answer the following key questions. Answers to these questions will provide insight into the effectiveness, efficiency and sustainability of the intervention achievements:

- Has the project enabled CIMH to become a sustainable Regional Climate Center (RCC) for the Caribbean?
- How have decision makers used the climate products and services generated under this project for decision making? What key decisions have been influenced by these products? What is the perceived impact and how can it be measured?
- What was the rationale for choosing the specific countries to benefit from equipment and/or training (note: out of 16 Members of CMO, 8 countries benefitted, plus three countries on request for training)?

4.2. Project Components

In the process, the evaluation is expected to cover/review/analyze project achievements under the following project components:

- Relevance, effectiveness and efficiency in developing climate services delivery and decision making capacities in the countries covered by the project; What is the performance of the project in terms of effectiveness, efficiency and timeliness of producing the specified outputs?
- Assess the efficiency and effectiveness and sustainability of management and administrative processes and functions created at CIMH; Assess relevance of the project’s management arrangements made for the implementation of the project at CIMH.
- Relevance, effectiveness and efficiency of capacity building activities offered within this project (workshops, attachments, etc.). How useful have the capacity building activities been for participants from countries covered under the project (training evaluations)?
- Sustainability of CIMH as an RCC beyond the project (through revenues from the sales of climate products and services enabled through the project).
- Assess degree and quality of visibility of project achievements amongst stakeholders (a communication specialist has been employed in the project for this purpose).

4.3. Countries covered

The evaluation covers all Caribbean countries that have/are benefiting from the project either/and/or through capacity building, infrastructure, equipment purchase and installation.

In particular, field visits are to be carried out to the following countries:

4.3.1. The 8 beneficiary countries stated which all had climate monitoring equipment installed under the BRCCC Project:

1. Antigua and Barbuda
2. Barbados
3. Dominica
4. Grenada
5. Guyana
6. St. Kitts and Nevis
7. St. Lucia
8. St. Vincent and Grenadines

4.3.2. In addition the 8 countries which received equipment, there are also 3 countries that received training under the BRCCC project, as approved by the donor:

1. Jamaica
2. Trinidad & Tobago
3. Belize

4.4. Evaluation Principles

4.4.1. The evaluation will be guided by the principles of effectiveness and efficiency related to the project activities and results. Further, the

evaluation will be guided by the following questions that are to trigger answers and provide insight into the effectiveness, efficiency and sustainability of the intervention achievements:

- Have decision makers used the climate products and services generated under this project for decision making?
- How useful have the capacity building activities been for participants from countries covered under the project (training evaluations)?
- Assess relevance of the project's management arrangements made for the implementation of the project at CIMH. What is the performance of the project in terms of:
 - a. effectiveness;
 - b. efficiency;
 - c. and timeliness of producing the specified results.

5. Deliverables

The output of the evaluation will be the Evaluation Report (maximum 50 pages, excluding annexes).

The report should:

- Contain an executive summary;
- Be analytical in nature (both quantitative and qualitative);
- Outline used methodology and highlight limitations;
- Be structured around project outputs and outcomes;
- Separate sections focusing on findings, observations, conclusions and recommendations with a view to informing future projects with similar objectives;
- Annexes should include instruments used in data collection and analysis.

6. Timing and Duration of the Evaluation

The total duration of the evaluation will be 40 days within the period of end May to end July 2017.

The working time for the evaluation includes home-based work.

Description of work and breakdown of estimated days for work		
Evaluation stage	Description	Days
Preparation	Home-based Collecting all documents, reports, etc. from CIMH and WMO; acquaintance with the all project documentation	3
Design/preparation evaluation plan	Home-based Writing detailed evaluation plan, including time line, country visits and methodology for data collection and analysis	5
Adjustments, if any, to Evaluation plan	Home-based Integrating change suggestions/requests, etc.	2
Evaluation plan implementation	Project sites <ul style="list-style-type: none"> - Project site visits to CIMH and countries who have received equipment under the project; - Seeking feedback from (key) capacity building training participants assess what the capacity building has resulted in, e.g. usage of skills and knowledge for climate adaptation and/or disaster risk reduction purposes in any kind. 	23
Evaluation Report writing	Home-based <ul style="list-style-type: none"> - Writing of the draft evaluation report; - Presentation of the draft report for comments and suggestions to WMO; - Presentation of the refined draft report to WMO; - Incorporation of comments and additional findings into draft report; - Submission of the final evaluation report to WMO. 	7
Total		40

7. Payment schedule

Payment schedule

Deliverable	% of payment of total remuneration
Acceptance of evaluation plan	30%
Upon evaluation plan implementation	30%
Upon acceptance of final evaluation report	40%

8. Qualification requirements for the Evaluator/Contractor

- Has profound and extensive experience in evaluating capacity building projects (6-8 years);
- Has experience in using quantitative and qualitative evaluation methodologies to obtain answers and data giving insights into the evaluated areas;
- Has working experience in the Caribbean is familiar with the specific climate change challenges the region is facing;
- Has profound knowledge and experience in climate change/adaptation and disaster risk management issues as well as related policy issues;
- Has excellent understanding of sustainability requirements to assess the prospects of project benefits becoming sustainable;
- Has knowledge of relevant climate products and services as well as is familiar of user needs (e.g. sectorial users; policy making users; end-users);

Contract type

The assignment will be contracted through a consultancy agreement by WMO. Daily remuneration will depend on the level and degree of expertise the chosen consultant has, in line with UN consultancy rates.

The contract will be concluded between the Consultant and WMO and will contain the above stated deliverables. Payment of consultancy services will be made upon satisfactory delivery of services.

Supervision

- Supervision will be provided by the Project Coordination Unit of the Regional Development and Activities Department in WMO HQ, in Geneva.

Travel to project countries:

For project site visits, the consultant will be responsible for all associated costs with travel arrangements, making appointments with stakeholders, etc. The costs shall be part of the overall consultancy remuneration.

Support provision

CIMH will assist the Consultant through providing contact details of concerned individuals and prior to arrival of the Consultant in a project country, inform those counterparts accordingly to ensure that the Consultant gets to meet them.

Annex III – Interview Guide and Summary Findings

Dear Participant,

Thank you for agreeing to participate in the final evaluation of the Programme for Building Regional Climate Capacity in the Caribbean (BRCCC). The information you provide will be confidential and as such, no names are required.

The BRCCC was established to strengthen the capability of the CIMH to deliver its programmes and to facilitate the development of the World Meteorological Organization's Regional Climate Centre (RCC) for the Caribbean to be housed at the Caribbean Institute for Meteorology and Hydrology (CIMH) through (i) Infrastructure development, (ii) Increasing the range of products and services delivered to stakeholders, (iii) Enhancement of human and technical capacities at CIMH and in National Meteorological and Hydrological Services in the Caribbean, and (iv) Improvement of service delivery mechanisms to national, regional and international stakeholders. Some of the activities of BRCCC were to enhance - *regional climate monitoring, CariCOF, CAROGEN, CARISAM, EWISACTS, statistical capacities, remote sensing data for climatology, instrument calibration, climate databases, student interns, regional climate and environmental computation platform, and GIS capabilities* to note a few.

The intended outputs of BRCCC were:

1. Enhanced capacity at the CIMH and across the Caribbean to effectively convert climate data to products and services to better inform decision-making in key critical climate sensitive sectors;
2. Enhancement of CIMH climate monitoring and forecasting, feeding into early-warning systems, and improvement of data acquisition networks across the Caribbean;
3. Establishment of the Caribbean Environmental and Climate Computational Centre to provide CIMH staff and regional scientists with the necessary resources to simulate regional environmental and climate processes to better inform regional decision making in areas of disaster risk reduction, water resources management and adaptation to climate change and increasing climate variability;
4. Enhancement of the infrastructure at CIMH to enable it to sustain its core activities as well as the activities envisioned as an RCC under the GFCS;
5. Initiating of a "greening" program at CIMH.

The overall objectives of this final evaluation are to assess the:

1. Project's relevance, performance, and management arrangements;
2. Sustainability of CIMH as the WMO RCC;
3. Sustainability of achieved project results, including the contribution to capacity building in the Caribbean

Should you have any questions please email the Evaluator, Ms. Saudia Rahat, at saudia_rahata@yahoo.com

Questionnaire ID#:

Category of Interviewee:

- CIMH
- NMHS
- National Agency
- Other regional agency
- Donor
- Executing Agency

Category of Interviewee	#	%
CIMH	8	17%
NMHS	17	35%
National Agency	14	29%
Other regional agency	6	13%
Donor	2	4%
Executing Agency	1	2%
Total	48	100%

National Agency Composition	#	%
Met Service	19	61%
Water	4	13%
Agriculture	3	10%
Health	1	3%
Disaster Office	4	13%
Total	31	100%

INTRODUCTION

1. Name of agency that you work for –
2. Brief description of your job functions -

RELEVANCE

3. Are the objectives and outputs of BRCCC a priority for your agency? Please explain your choice of answer.

- Yes
- No
- Unsure

	#	%
Yes	47	98%
No	0	0%
Unsure	1	2%
Total Respondents	48	100%

4. Do you know if the design of the BRCCC project was informed by a participatory process?

- Yes
- No
- Unsure

	#	%
Yes	12	52%
No	0	0%
Unsure	11	48%
Total Respondents	23	100%

5. Were you or another representative of your agency engaged in the participatory process? Please give any details.

- Yes
- No
- Unsure

	#	%
Yes	10	67%
No	0	0%
Unsure	5	33%
Total Respondents	15	100%

6. Do you think all the activities and outputs that were the focus of this project were suitable to achieve the intended outcomes and impacts? Please explain your answer

- Yes
- No
- Unsure

	#	%
Yes	33	94%
No	0	0%
Unsure	2	6%
Total Respondents	35	100%

7. Do you know what selection processes/criteria were used, if any, to select countries to benefit from the installation of equipment? Please explain

of respondents = 13 (27%)

Almost all of the interviewees (country and regional agencies) are not aware of what selection process was used. Confirmed by donors that - the idea was to focus the equipment installation for those countries that were under the remit of USAID given the costs of equipment. Flexibility was given to support training for other countries since they add value to the discussions. This was also the key report of CIMH staff members.

8. Were there any key lessons learned that can be applied to future projects with similar objectives so as to enhance its relevance to key beneficiaries?

of respondents = 11 (23%)

- Site reconnaissance should be done prior to the purchase of equipment (interviewee 034, 037, 039)
- The strength of CIMH’s work is reliant on the strengths of the national and regional partners. Need to support capacity building for regional partners as well (interviewee 012, 030)
- Convene special sensitization meeting with new players (interviewee 015)
- Incorporate social science research to identify the gaps and address through adaptive management (interviewee 001)

- To better promote ownership – need for closer consultation with countries in the selection of the equipment. Issues with interoperability can arise with the national network (interviewee 006)
- Included the rain gauges to maximize the benefits of the stations installed (interviewee 032)
- There are challenges to get satellite information for the region (interviewee 033)
- Need to formalize ownership of the equipment (Interviewee 048)

9. Do you have any other comments you would like to raise pertaining to the relevance/suitability of the BRCCC project?

of respondents = 4 (8%)

- Satisfied with the process since countries are consulted in decision-making process (interviewee 002)
- Discussion online for the seasonal forecast data (interviewee 004)
- Other Ministries, Departments or Agencies (outside of the Met Service) need to be more fully engaged (interviewee 009)
- Need for good M&E system in place for the project (interviewee 048)

EFFECTIVENESS

10. What are the concrete contributions of the project in facilitating the establishment of the Caribbean RCC and expanding the core functions of CIMH?

of respondents = 20 (42%)

- EWISACTS consortium is one of the main contributions to the scientific body of climate services globally (interviewee 001, 0300)
- Training offered that enabled CIMH and countries to do seasonal forecasts (interviewee 003, 047)
- The long-range forecast is more detailed (interviewee 007, 008)
- More tailored products for sectors (interviewee 008, 012, 030)
- CariCOF meetings (interviewee 011)
- RCC met the mandatory functions and even surpassed the recommended functions (interviewee 012, 015)
- Could not achieve RCC status without BRCCC project (interviewee 036, 048)
- Better engagement of the user community (interviewee 012)
- CAROGEN allows for the work to continue in a sustainable way – that is, the automation of the forecast/outlooks helps this process (interviewee 014, 022, 023)
- Better understand the nexus between climate variability and change and the work of the sectors (interviewee 018)
- The equipment were useful for countries (interviewee 022)
- Strengthened interaction among national offices (e.g. Met and health, disaster management) (interviewee 017)
- Highlighted the relevance of the work of CIMH (interviewee 009)
- Upgrades to the CIMH facilities (interviewee 002, 008, 015, 016)
- Greening activities were good from environmental and financial lens (interviewee 001, 047)

11. Is there evidence of enhanced capacity at **CIMH** to effectively convert climate data to products and services to better inform decision-making in climate sensitive sectors such as Disaster Risk Reduction, Water, Health, Agriculture, and Tourism? Please provide details/examples.

of respondents = 35 (73%)

- All interviewees indicated yes or variations of yes such as absolutely, definitely
- Climate predictions enhanced through the automation of CAROGEN and development of more products (interviewee 001, 002, 004, 007, 012, 016, 036, 040)
- Cutting edge research launched (interviewee 001)
- EWISACTS set up (interviewee 001)
- CariCOF meetings promote awareness and build capacity (interviewee 003, 007, 010, 011)
- CIMH capacities enhanced and can now offer more training to the region (interviewee 006, 008)
- More user-friendly products and user feedback is incorporated. This better supports decision-making (interviewee 009, 013, 021, 029, 030, 037)
- Enhanced early-warning capabilities which is useful for DRR sector (interviewee 015)
- Having a better instrument calibration and maintenance facilities is important and will promote good data quality (interviewee 016)
- Strong technical capacities reside within CIMH (interviewee 018, 023)

12. Do you think there is evidence of enhanced planning and decision-making in **key climate sensitive sectors** (at regional and national levels) such as disaster risk reduction, water, health, tourism and tourism, as a result of the work advanced through the BRCCC? For instance, through the work of the EWISACTS, and convening of the CariCOF, CAROGEN, CARISAM platforms. Please provide details/examples.

of respondents = 34 (71%)

- Using the rainfall and drought outlook to plan how they are managing water distribution - interviewee 002, 046
- In Guyana, Region 9 in including monies in their budget (regional development budget for submitted to the GoG) to roll-out PISCA in the Rupununi – interviewee 007
- Part time lecturer and including the PISCA materials in course in Guyana – interviewee 008
- in Grenada the information is supporting farmers, health sector and used in Cabinet briefs
- Grenada modeled the drought committee based on the CariCOF sector representation – interviewee 010, 011
- In Saint Lucia the drought outlook informed water conservation during 2014-2015 – interviewee 014
- A big difference between 2009-2010 drought response and the 2015-2016 drought event – interviewee 011, 015, 045
- Antigua and Barbuda has recognized the importance of having an NCOF to better promote the climate products now available - interviewees 023, 024
- Bulletins inform planning (interviewee 025, 027)
- Disseminating information for use by farmers - interviewee 026, 028, 036, 042, 047
- Dominica using the heat wave to inform planning in the health sector - interviewee 029
- Use the information for drought planning in St. Vincent - interviewee 001, 037

- In St. Kitts more sectors are requesting information on a monthly basis - interviewee 040
13. A user needs assessment of climate services was completed by CIMH in October 2015; do you know if any of the key findings were incorporated into the implementation strategy for the remaining of Year 2 and Year 3 of the BRCCC project to enhance effectiveness? Please share specific details/examples.

of respondents = 9 (19%)

- Definitely applied. For instance the sector tailored products (bulletins) and sector specific models (Interviewee 001, 012)
the comments that are coming out at the CariCOF are being incorporated into the tools. For instance, the technical terms are now more simplified (Interviewee 009, 010, 044)
- not sure how it was incorporated (Interviewee 015, 022, 023, 048)

14. In view of your responses to the questions above, how would you rate the extent to which the objectives of the BRCCC were achieved?

- High – all objectives were very close to fully achieved
- Medium – objectives were only some-what achieved
- Low – objectives were hardly achieved

	Responses	%
High	35	73%
Medium	1	2%
Low	0	0%
Not sure	12	25%
Total	48	100%

15. In your opinion, what factors or processes were crucial for the achievement or failure to achieve the project objectives?

of respondents = 28 (58%)

- PICSA was seen as a useful platform to support the work of NFOCs to see how sectors in a county could benefit from the seasonal forecasts – interviewee 007, 008
- Guyana thinks that the CariCOF is highly important and seeing how it was operationalized and the usefulness of it, pushed Guyana to establish and host the NCOF twice per year – interviewee 008
- Staff at CIMH really understand the sector and the needs of the countries – interviewee 008, 017, 028, 048
- Human resources provided by the BRCCC was necessary – interviewee 012
- Having users present and engaged in the development of tangible tools and products (outlooks, bulletins)– interviewee 014, 021, 040, 041, 044
- Timing of the project was good; recent drought period – interviewee 016
- Good planning framework – interviewee 018, 047
- Data from CariCOF is dynamic and not dull. Meets the needs of users. Format of the CariCOF is interactive and demystify terms (interviewee 021, 046)
- Strong partnership mechanisms – interview 029, 030
- Good PSC membership (governance_ - interview 036)
- St. Vincent insured the equipment installed with a local insurance company. They pay the premium themselves which shows ownership of the products (interviewee 037)

- Country needs to access information from weather station (Interviewee 038)
- The experts hired were very critical to the process and having dedicated project manager -interviewee 043, 048

Implementation of Sustainability Strategies

16. Please indicate the extent to which the following planned sustainability strategies have been achieved. Only tick one per statement/strategy.

of respondents = 1 (A key informant)

Planned Sustainability Strategy	Achieved (1)	Still being discussed, but will more than likely be achieved(2)	Will not be achieved (3) (after project)	Don't know (4)
e. Communications strategy will be incorporated into the core operating budget of CIMH. Funding from revenue generated from sale of products and funding from donor community will be use to sustain the communications program.	CIMH has contracted the Communications Officer beyond the life of the BRCCC through core budget funding. bought hardware and software to support communications through BRCCC	Being finalized	upgrade to this facility will be through the agency's budget	
f. HR and Procurement Specialist positions to be absorbed in the core operating budget for the Institute			The Board of Governors needs to agree to this which is scheduled for the next meeting, which should be convened in November 2017	
g. Core budget will support core staff for RCC including telecommunications, office accommodations, electricity and use of facilities	This is achieved. A group that was in house has been moved into the RCC		PPCR funding will support one social scientist at the graduate level and CIMH will support the existing social scientist	
h. Maintenance of	The renewable energy			

<p>infrastructure restored by BRCCC will come from the core operating budget and revenues generated</p>	<p>system is saving them monies already and this will go towards the maintenance of infrastructure, which should not be significant in the short to medium term</p>			
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Marketing and Visibility (Questions for Communications Specialist and CIMH staff)

17. Were stakeholders engaged or stakeholder feedback promoted in the development of visibility products related to promoting and marketing the climate services and other outputs supported by BRCCC? Were the key findings from the 2015 user needs assessment considered in the visibility and marketing strategies?

of respondents = 7 (15%)

- Product sheets were developed using sectoral partners at the CariCOF and EWISACTS meetings – interviewee 005, 008, 012, 015
- Sector partners supported the development of the sector bulletins – interviewee 017, 018

18. How many and what type of mediums (paper, website, you tube channel, social media etc.) were utilized to promote the various climate services and other outputs supported by BRCCC? Is there evidence to suggest that these mediums were well received (e.g. website hits, website downloads etc.)?

of respondents = 1 (A key informant was targeted)

- i. Press release
- ii. Product sheets
- iii. Pod Cast focused on the key announcements at CariCOF meetings. 1 episode was recorded. To be launched online, hopefully before the close of the project.
- iv. RCC website
- v. Tourism, Health and Agriculture bulletins.
- vi. BRCCC newsletter was done but the approval process was approximately 2 months.

19. Do you think that there has been an increase in awareness of the climate services and products available since the launch of the visibility materials? Has this contributed to the change in revenue earned from the sale of climate products and services? Please give specific examples.

of respondents = 24 (50%)

- Yes there is evidence of awareness at national and regional levels- 009, 010, 012, 013, 015, 021, 022, 023, 024, 025, 026, 027, 028, 036, 042, 045
- The CariCOF is really promoting awareness – interviewee 001, 010, 016,
- Having CariCOF in different countries promotes awareness in countries - interviewee 013, 016, 046
- Grenada has witnessed an increase in the request for information in the past 3 years – interviewee 011

- The demand for information in Saint Lucia is now more than the office’s capacity – interviewee 014
- Can’t say for sure there is need for better monitoring of this – interviewee 030
- Still room for improvement – interviewee 040, 023

20. Was a communications strategy developed to guide the interactions with the users of the climate products and services, decision-makers and the donor and financial institutions?

of respondents = 1 (A Key Informant was targeted)

The communication strategy will focus on various areas of communication (i) Staff – internal communication (ii) Online communication and (iii) Media relation

21. Were there any key lessons learned related to marketing and visibility that can be applied to future projects with similar objectives so as to enhance effectiveness in its delivery?

of respondents = 1 (1 key informant targeted)

The approval process between the implementing agency and the donors needs to be more streamlined

22. Do you have any other comments you would like to raise pertaining to the effectiveness of the BRCCC project?

of respondents = 7 (15%)

- One thing that is overlooked is the maintenance of the station – need at least 30% of the budget for equipment to support maintenance for up to 5 years. Most of the stations, without maintenance, cannot work fully after 2 years – interviewee 032
- Need for some branding of CIMH as the RCC. For instance, everyone is aware of the climate change centre – interviewee 030
- Projects of this nature need highly skilled specific skills to advance some of the deliverables – interviewee 030
- Start the recruitment process early – interviewee 030
- Dedicated finance/admin needed – interviewee 030
- Need for more interaction and planning and decision-making with the countries – particularly with the installation of equipment– interviewee 030
- Station was burglarized in Dominica – needed to reinforce the structure and sensitize the nearby community so that they can provide monitoring and security for the equipment - interviewee 032
- Guyana was expensive because of the remote locations of the 7 stations. They are one of the bigger countries and that is the rationale for the 7 stations - interviewee 032

SUSTAINABILITY

23. Are there other financing options available to sustain the requirements of CIMH as the Caribbean RCC and to maintain the other core functions that have been expanded and enhanced through the BRCCC project? For each funding option, please specify whether it is confirmed, still being negotiated and/or challenges.

of respondents – 1 key informant targeted (Interviewee 043)

Funding Option	Confirmed	Still Being Negotiated
Pilot Program for Climate	Confirm	US\$975,000 for CIMH to implement 4 components:

Resilience (PPCR) Caribbean	ed	stations and networks in the PPCR countries to expand on climate monitoring (RCC function), training in met services and climate services delivery. The social sciences person and CariCOF interventions will come from this component. Increasing accessibility and security of the climate dataset stored by CIMH.
Climate Change Adaptation Program (CCCAP)	Confirmed	Approximately US\$ 1M identified equipment needs for countries to expand the climate monitoring and EWS network. CIMH will also manage the climate data coming from this. Second component looking at rainfall stations in watersheds to provide community early warning support. Will also further expand the computational capabilities at CIMH.
Caribbean Development Bank (CDB)	Confirmed	US\$ 1.3 M to go towards expanding some of the BRCCC activities particularly CariCOF and EWISACTs. Will cover dry season this year and EWISACTs 2018. Also support expanding the capabilities of the computational centre. Will also develop and deliver climate modeling training for 15 people in the Caribbean and elements related to DEWETRA etc.
USAID Office of U.S. Foreign Disaster Assistance (OFDA)	Confirmed	Already being implemented. Valued at 750,000 US\$. Weather ready nations being piloted in nations. Want to be climate and weather ready. A key part is interfacing between DRM and Met Services.
ACP-EU	Still Being Negotiated	7M Euro ear-marked for the Caribbean to strengthen climate services in the Caribbean. Envisaged that EWISACTs, CariCOF and the building of the next generation of sectoral climate products and services will be advanced. The proposal preparation in being done with a Consultant that the ACP-EU sent. Expect to receive all funding.
Green Climate Fund (GCF)	Still Being Negotiated	CIMH was requested to submit a proposal. This is a US\$10 M entry point. Might have to go through CDB or CCCCC (regional accredited organisations). Areas to be covered in the proposal will include the development of a climate service and innovation hub. Have the technical sub-group at CIMH that focuses on innovation and develop next generation products.
World Bank – Global Facility for Disaster Reduction and Recovery (GFDRR)	Still Being Negotiated	CRUZ. US\$1.5M already secured for the regional component. Writing proposals to define scope. Key implementing agencies will be CDEMA and CIMH with more activities aligned to CIMH strengths.
REACH Project	Still Being Negotiated	Agriculture sector focus. Done with FAO and CDEMA. CIMH will only be providing technical support with some small amount of monies coming in.

24. How much revenues have been gained from sale of the climate products and services? Please share details, such as percentage of operational costs to be covered, particularly as it relates to RCC operations.

of respondents = 3 key informants (6%)

- Product and services developed under the project were strictly public goods – interviewee 001, 012,
- There is need for more discussions with the private, financial energy and tourism – interviewee 012, 045
- Started discussions with the Caribbean Poultry Association – interviewee 012
- CIMH does sell data it has archived over years to sell. But this is not directly linked to the BRCCC project – interviewee 012

25. Do you think there are adequate leadership, ownership²³ and capacities at the **national level** to sustain the benefits made at the national level, if any? For instance, calibration and maintenance of instruments installed, and utilizing the climate products and services (Caricof, CAROGEN, CARISAM etc.) to inform better decision-making in the country and critical sectors

of respondents – 30 (63%)

- Mixed capacities – 016, 013, 014, 034, 037, 045
- The Easter Caribbean islands such as Grenada, Saint Lucia, Antigua and Barbuda and Dominica appear to have most of the challenges particularly as it relates to human capacity deficits (staffing number and skills) – interviewee 001, 009, 011, 012, 013, 014, 022, 023, 024, 025, 028
- Guyana is expanding rapidly and there is an apparent change in their capacities in the area of climatological services – interviewee 001, 012 There is a call for more capacity building in maintenance of equipment, development of climate products and services, data acquisition and analysis – interviewee 032, 037
- Institutional challenges for some countries stem from the organization mandate of the Met Service. For instance, Dominica, St. Vincent and the Grenadines, Saint Lucia and Grenada noted that their work is more aligned to support the aviation sector and as such, the internal organizational structure is not well designed to support planning and decision-making in key sectors – interviewee 026,
- National ownership for the climate products and services is strong – interviewee 008, 013, 014, 028, 029, 040, 045

26. Do you think there are currently adequate leadership, ownership and capacities among the **regional partners** to sustain the regional level products/processes built, such as the EWISACTS mechanism and CARISAM among others, to inform better decision-making across the region?

of respondents – 18 (38%)

- Letter of agreements signed with CTO/CHTA, CDEMA, CARPHA, CARDI and CWWA which demonstrates leadership – interviewee 001, 010, 012, 025, 031, 036, 043
- LOAs promote sustainability of the process after the BRCCC – interviewee 001
- CIMH shows commitment to the work of the sectors – interviewee 007, 037, 043

²³ They see themselves as having a key role and stake in the success of the outputs/deliverables/intervention

- Under the CDEMA corporate plan for 2017-2020 for the first time have included the idea of climate services as part of the programming for CDEMA. The question is whether the other institute – interviewee 015
 - Limited funding and capacities (human resources) within some of the regional institutions – interviewee 016, 025, 030, 036, 043
 - CARPHA’s Environmental Health and Sustainable Development Unit plan has now included work to further develop the EWS for vector-borne diseases – interviewee 017, 018
 - EWISACTS is a useful mode – interviewee 022, 043
 - Need to identify mechanisms to sustain this Consortium – interviewee 043
 - Progress in the energy sector has been limited due to delays with the setup of CCREEE (interviewee 043)
27. Is there evidence of enhanced capacity (technical and infrastructural) at CIMH, through the support provided by the BRCCC project, to deliver on the mandatory functions of a WMO Regional Coordination Centre (RCC)? Please provide details per mandatory function:
- a. Operational activities for LRF
 - b. Operational activities for Climate Monitoring
 - c. Operational Data Services, to support operational LRF and climate monitoring
 - d. Training in the use of operational RCC products and services

This response was skipped since many respondents spoke extensively to the capacity at CIMH at #11

Dimensions of Sustainability

Sustainability is multi-dimensional: financial, social, political, environmental and institutional. All dimensions are critical and need to be examined. Please list the key risks, according to the relevant category, in the table below and indicate the likelihood of its occurrence (see rating scale below).

Risk Ratings for Measuring Sustainability		
Rating	Meaning	Details
1	Negligible risks	Negligible risks to sustainability, with key outcomes expected to continue into the foreseeable future
2	Moderate risks	Moderate risks, but expectations that at least some outcomes will be sustained
3	Substantial risk	Substantial risk that key outcomes will not carry on after project closure although some outputs and activities should carry on
4	Severe risk	Severe risk that project outcomes as well as key outputs will not be sustained.

28. Key social or political risks that can affect the sustainability of benefits achieved ²⁴ by BRCCC -	Rating (select one, ONLY)
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²⁴ infrastructure at CIMH to enable it to sustain its core activities as well as the activities envisioned as an RCC, capacities at CIMH and in NMHS to convert climate data to products and services to better inform decision-making in key critical climate sensitive sectors, better climate monitoring and forecasting capacities for early-warning systems and planning

Development partners change in priority – example US political directorate not fully supporting the climate variability and change agenda and the European funding being diverted to migrant crisis (interviewee 017)	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
Vandalism of weather stations in remote areas in countries (interviewee 034, 040, 042, 048)	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
29. Key institutional and governance risks that can affect the sustainability of continued benefits after the project ends²⁵	Rating (select one, ONLY)
Farming is not approached as a science or business. It is more cultural, handed down from generation to generation. It is a way of life. When you try to introduce something new – PICSA, there might be push back (interviewee 008,)	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
Staff turnover at national and regional levels (interviewee 043, 010)	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
Funding availability to sustain the meetings e.g. CariCOF and EWISACTS. Approximately US\$25,000 to convene a regional type meeting (interviewee 014)	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
Extent to which regional institutions will embrace the climate services functions within their medium term programming (interviewee 015)	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
Change of governments and economic situation across CIMH member countries and ability to maintain annual subscriptions to CIMH (interviewee 010, 011, 036, 022, 023, 027, 015, 002, 016, 017)	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
30. Environmental risks that can compromise any of the outcomes of the BRCCC project	Rating (select one, ONLY)
Extreme weather conditions that can affect CIMH (infrastructure damage) and the weather stations installed in the 8 countries (interviewee 001, 008, 012, 034, 048)	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4

31. Were there any key lessons learned that can be applied to future projects with similar objectives so as to enhance its sustainability?

of respondents = 12 (25%)

- Under-estimate the need for proper project support staff – interviewee 001
- Tools and products are sustainable given that capacities were built – interviewee 012
- RCC makes CIMH more palatable to the donor community– interviewee 012
- Video-conferencing and greening capabilities will reduce operational costs– interviewee 012
- Weather instruments need to consider the environmental risks and be fortified to mitigate these where possible – interviewee 034
- Promote stakeholder dialogue in the selection of sites for the equipment– interviewee 034
- Undertake site reconnaissance prior to the purchase of equipment– interviewee 034

32. Do you have any other comments you would like to raise pertaining to the sustainability of the benefits of the BRCCC project?

of respondents = 5 (10%)

²⁵ For instance, are requisite systems for accountability and transparency, and required technical knowhow, in place?

- Promote the sale of information to financial institutions (interviewee 018)
- Internally, there is need for at least 2 persons to provide oversight on the BRCC (interviewee 048)

EFFICIENCY

33. Whose procurement policies and procedures were utilized for the project? Do the procurement policies and procedures promote the selection of the most economical options such as higher weighting for costs for bids; purchase of the most economical airfare for participants for workshop etc.?

of respondents = 6 (13%)

- WMO's policies and procedures were utilized (interviewee 015, 031, 035, 048)
- Procurement guidelines developed by the procurement specialist hired by the project was used for the process (interviewee 005, 031, 048)
- Airfares, definitely the most economical choice were selected (interviewee 031)
- The overall project got a 'good bang for the buck'. The infrastructure investment was quite good and much needed area of support (interviewee 036)

34. To what extent were the costs related to the implementation of the BRCCC activities justified, given the changes/effects/benefits²⁶ that have been achieved? Please give details.

of respondents = 14 (29%)

- There is a strong multiplier effect of the benefits in view of the costs since all the beneficiary countries are SIDS and the climate models and tools being developed are applicable across the Caribbean (Interviewee 001)
- The investment in the PICSA training in Guyana will yield benefits and lessons that can be applied across the Caribbean. Further, there are now regional trainers in PICSA (at least 6 persons trained in Guyana and at CIMH) that would limit the need for University of Reading in future projects. (Interviewee 008)
- The solar PV system cost approximately BDS\$539,000 to implement and CIMH is already saving approximately BDS\$6000 per month, not to mention the value of the environmental benefits (Interviewee 031).
- Equipment installed in countries (rain gauges, soil moisture, water level sensors) are well justified given the early warning function they provide and being able to collect data on areas/locations that was never achieved before. In addition, over time the archived data will be invaluable to support modeling and research to inform better planning and decision-making for climate variability and change and the data set can potentially generate revenue (Interviewee 031, 039, 042,).
- The specialists employed were also good investments. For instance, the Procurement Specialist was able to expend 90% of the procurement budget from May 2015 to December 2016. The GIS and IT Specialist were able to upgrade and automate systems that were previously done manually. (Interviewee 031)
- CariCOF meetings are costly but the forum contributes to awareness raising, informs planning and decision making through hands on engagement in the development of

²⁶ Regional climate monitoring, CariCOF, CAROGEN, CARISAM, EWISACTS, statistical capacities, remote sensing data for climatology, instrument calibration, climate databases, student interns, regional climate and environmental computation platform, and GIS capabilities.

outlooks, strengthens collaboration among national and regional partners and is twinned to include the EWISACTS Consortium meeting strongly justifies the investment (Interviewee 037).

35. Was the project implemented in the most efficient way compared to alternatives? Was the cost comparable with similar projects? Please provide details/examples

This was not explored by the evaluation

36. Were any cost saving strategies implemented? Please provide details

of respondents = 6 (13%)

- Twinned meetings. For instance, CariCOF and EWISACTS workshops – interviewee 031
- CIMH will be homogenizing the equipment in countries. They only buy from SUTRON. This reduces the costs for the training since the equipment from SUTRON – interviewee 031
- Very efficient on the use of materials for building the stations. Used local materials. Used sites that would have existing infrastructure to reduce the implementation costs – interviewee 032

37. Were there significant differences in support (monetary terms) provided to beneficiary countries? If yes, what was the reason for this?

of respondents = 1 key informant

- All countries benefited from the same workshop and cost variations are primarily attributed to the ticket prices. Countries did not benefit equally, from a cost perspective, as it relates to the installation of equipment, which is primarily due to variations in country needs and geographic characteristics (Interviewee 031)

38. Was any budget line items underestimated or overestimated? If so, do you know what was the rationale for this? Is there anything that can be done differently to improve budgeting for similar projects in the future?

of respondents – 1 key informant (Interviewee 031)

One budget line that was really overestimated – the VLAB activity. One budget line that was under budgeted – the implementation of a paperless office. The review identified that they need more IT equipment and policies (printing, storage of documents etc.) to sustain the process. The biggest issue was the late start that made funding accumulate because contracts started later and the project was not extended to reflect the full time for the late start. For the other budget lines they might not have been spent, but it was due to the fact that the project started up late and slowly. The project would need to be extended to an equivalent timeframe to spend the monies. For instance, the salary for the HR specialist – the person was budgeted for the entire project but the specialist was only here for 8 months

39. Was any of the project deliverables delayed? If so, did it have any implications on the overall costs and effectiveness in the program delivery?

of respondents = 4 (2%)

- Delays in hiring of staff and technical experts. Affected the spend rate as noted above. Might have affected the effectiveness since HR outputs have not been endorsed to date (interviewee 031, 001)

- Delays in the receipt of the instruments but did not affect costs of effectiveness (interviewees 007, 008)

40. Is there anything that you would have done differently to improve the efficiency of the project?

of respondents = 1

Have from the beginning a project manager – efficiency and effectiveness dimensions

41. Do you have any other comments you would like to raise pertaining to efficiency of the BRCCC project?

of respondents = 4 (2%)

- The duration of the CariCOF was reduced. A tour of the host country would be included. Good from the perspective of cost saving for CIMH - – interviewee 004
- would have preferred that when there are certain training that there are more participants from Guyana given the size of the country – interviewee 007
- Did not observe any wastage of resources. Most activities were well management– interviewee 002
- make better use of the existing capacity across the region – interviewee 022

IMPACT

42. Do you think that the BRCCC made contribution to reduced losses from hydro-meteorological hazard events and climate variability and change on beneficiary countries?

of respondents = 32 (67%)

- Dominica - the weather station that was installed in ‘wet patch’ in Dominica was timely with respect to the Erika event. The station was installed in July and Erika happened in August and provided ample warning of flood risks to the areas such as Dennery, La Caye, Deliade and Pois Joli. Unfortunately, one other station was damaged by the Erika event. (Interviewee 032)
- Saint Lucia - a radar water level station was installed at Alba Bridge in November 2015 which was key to informing the evacuation of the population affected in this area during TS Matthew in September 2016 (Interviewee 032)
- St. Kitts and Nevis - almost lost the Basseterre aquifer, which contributes 60% of potable water for St. Kitts, from the recent drought season (2014-2016). The drought outlook was available well in advance and they started to ration water early and were able to protect the integrity of the aquifer (Interviewee 040).
- Multi-island - a recurring example is a comparison of the 2009-2010 and the 2014-2016 drought across the Caribbean. It was noted that the second drought, which was longer and therefore more serious actually resulted in less outcry and effects due to the early warning provided by the drought outlook (Interviewees 001, 002, 008, 009, 012, 015, 016, 017, 021, 023, 032, 034, 040, 043, 046).
- Too early to tell but the nature of the BRCCC will reduce losses in the future – interviewee 031, 029, 027, 026, 023, 020, 002, 048)

43. In your opinion, what real difference has the project made to the beneficiaries? Please explain

of respondents = 31 (65%)

- Greater awareness of climate and climate risks (interviewee 001, 011, 031)
- Strengthened early warning capacities (interviewee 012, 034, 037, 038, 039)
- Improved national and regional collaboration (interviewee 014, 013, 017, 026, 028)
- Regional agencies now have strengthened understanding of nexus between climate data and the work of their sectors (interviewee 015, 018)
- Brought to the fore the need for the use of data in decision making not only at the policy and technical levels but also at the community levels (Interviewee 009, 036)
- Increased the capacity of NMHA and their ability to meet the GCFS goals (interviewee 003, 004, 006, 007, 008, 016, 023)
- Promoted CIMH to be recognized as a premier agency among the regional CARICOM agencies as well as their international peers in the area of climate services and innovation (interviewee 043)
- Strengthened the sustainability prospects for CIMH with the potential to further scale up climate services across the Caribbean (interviewee 012, 043)
- Promoted social science integration into the work of CIMH (interviewee 033)
- The weather station that was installed in ‘wet patch’ in Dominica was timely with respect to the Erika event – interviewee 032)

44. Are you aware of any unplanned results, both negative and positive, as a result of the project?

of respondents – 12 (25%)

- EWISACTS is a positive unplanned result (interviewee 012, 043, 044)
- PICSA) programme that is being piloted in Guyana, Belize and Jamaica is also proving to be a positive unplanned result (interviewee 001, 007)
- Surpassing the mandatory functions of an RCC was not envisaged by CIMH during the
- A negative unplanned result that has been reported is that with the rise in climate products and information, people in the public are taking the information at face value (interviewee 014)
- Not very happy with some of the radar sensors obtained from SUTRON. Working with them to fix this and costs to be borne by SUTRON (interviewee 032)

45. Are there any other projects that you think also made a contribution to the key objectives that were supported by the BRCCC – *enhancing the core functions of CIMH and supporting the establishment of the WMO RCC*? Please provide details

of respondents – 7 (15%)

- The Environment Canada, which supplemented costs for non-beneficiary countries to benefit from the training activities (interviewee 048, 007, 036)
- The Italian government supported the development of the DEWETRA Platform (Interviewee 008)
- Building on the legacy of other projects such as CARIWIN, CAMI, Caricom-Brazil-CDEMA project, ERC. It is like a layered cake/programme (Interviewee 043)

46. Do you have any other comments you would like to raise pertaining to impact of the BRCCC project?

of respondents – 3 (6%)

- A project of this magnitude need special project manager staffing position (interviewee 012)

- CIMH can recommend who can attend the training but then the final decision is left to the country. As a result, in countries that the relevant person was selected for the training there is a change. But in others where managers were exposed to the training – there is no sharing of information. This could be because managers do not think they should go into the field (interviewee 032)
- At some point the project might have over shadowed the other departments at CIMH. Need to let the wider staff know how they will benefit. Some staff members were not always clear (interviewee 033)

MANAGEMENT ARRANGEMENTS

Project Level - BRCCC

47. Do you think that the management arrangements and processes that were put in place/utilized (staffing, policies and procedures for procurement, governance structure such as the Project Steering Committee and the EWISACTS etc.) were suitable/appropriate/relevant and promoted effective and efficient delivery of the project’s outputs and outcomes?

of respondents – 14 (29%)

- Yes, particularly the decision to hire the project management (interviewee 001, 015)
- Management arrangements were suitable and promoted effectiveness. Hard working team at CIMH (interviewee 011, 016, 017, 018, 021, 022, 023, 024)
- Governance arrangements were good (PSC) – (interviewee 015, 008, 048)
- EWISACTS was beneficial (Interviewee 044)

48. How would you rate the overall technical and administrative capacities of staff at CIMH that were engaged in the roll-out of the BRCCC project? Please provide any additional details, if possible.

- Extremely capable
- Very Capable
- Somewhat capable
- Not so capable
- Not at all capable

	#	%
Extremely capable	25	63%
Very capable	14	35%
Somewhat capable	1	3%
Not so capable	0	0%
Not at all capable	0	0%
Total	40	100%

49. Is there anything that should have been done differently to improve the management arrangements of projects of this nature?

of respondents – 5 (10%)

- Better operationalization of the communication elements within CIMH and with Donors (Interviewee 005)
- PSC could have included a country representative (Interviewee 015)
- Need for dedicated project manager (interviewee 031, 036, 048)

Organizational Level - CIMH

50. Do you think that the management arrangements at CIMH that were supported by BRCCC project have affected the efficiency and effectiveness of CIMH's operations?

Please provide details for the following specific areas:

- Human resource management policy, procedures manual and information systems,
- Procurement policies,
- Proposed organizational structure and comprehensive job descriptions,
- Performance management system,
- Student services manual,
- IT related protocols and procedures

of respondents – 4 Key Informants at CIMH

- Procurement policies are completed, endorsed and of high quality – interviewee 012, 031, 048, 036,
- HRM elements completed but not endorsed. Quality unknown – interviewee 031, 049

51. Are the key outputs noted in the question above, aligned with international standards and best practices? Will they be useful for attracting donor funding? Please provide details.

of respondents – 5 (10%)

Yes, the procurement policy meets international best practices – interviewee 015, 031, 036, 043, 048)

52. Are there adequate staff and funding to sustain the requirements proposed in the management and admin processes/policies? Please provide details.

This question was skipped since the details of the model organizational structure were not provided

53. What key lessons were learned in strengthening the institutional components mentioned above?

CAPACITY BUILDING

Training/Workshops (questions for CIMH staff only)

54. How are participants selected to benefit from workshops/training activities? Are criteria applied for the selection of eligible candidates to ensure that they are the relevant/most suited to benefit from the training? Are efforts made to promote equal opportunities to benefit from workshops/training activities?

of respondents = 4 (8%)

- Participants are not selected by CIMH. The invitation is sent to the country and the most suitable representative is chosen to represent the country at the meetings. CIMH might have its preference to have consistency in representation from countries, but this is not always achievable (interviewee 001, 007,
- For some training CIMH made recommendations of who should participate (interviewee 008, 031)

55. Are the costs for the training activities and workshops justified given the results that are achieved from these activities?

Question not asked as findings from Online Survey 2 would suffice

Internship/Attachment Programs

56. How are interns and attachment beneficiaries selected? Are criteria applied for the selection of eligible candidates to ensure that they are the relevant/most suited to benefit from the training? Are efforts made to promote equal opportunities to benefit from internships/attachment programs?

of respondents = 4 (8%)

- area of focus must be linked to the competence of the intern – interviewee 001
- Updated Training Facilities (Infrastructure and IT related) at CIMH
- Some IT interns helped to build CID, CARISAM, CAROGEN. Data collection for the EWISACTS was done by interns (Interviewee 012)
- Interns were sourced primarily from UWI and would have to fit the criteria for the area of work they would be supporting– interviewee 031
- Only one intern was hand picked because he had previous experience with CIMH – interviewee 031

Please rate your level of agreement with the statements below:

57. There has been a change in the effectiveness of training courses, for instance grades, since the upgrade and modernization of the training rooms.

Survey question not utilized since data was provided from CIMH regarding grades for training courses.

58. The video conferencing capability has reduced operational costs for CIMH, for instance, staff members can now attend international meetings remotely

Survey question not utilized since data was obtained from Online Survey 1 on the video-conferencing facilities. Similar questions included.

59. There has been an increase in the number of students being able to participate in the courses offered at CIMH since the introduction of the video-conferencing option at CIMH

Survey question not utilized since data was provided from CIMH regarding students.

Upgrades/Repairs to the Buildings at CIMH

60. How satisfied are you with the upgrades made to the instrument calibration laboratory, training facilities and other selected buildings?

- Very satisfied*
- Somewhat satisfied*
- Neither satisfied nor dissatisfied*
- Somewhat dissatisfied*
- Very dissatisfied*
- Don't know*

%

Very satisfied	24	51%
Somewhat satisfied	4	9%
Neither satisfied nor dissatisfied	0	0%
Somewhat dissatisfied	0	0%
Very dissatisfied	0	0%
Don't know	19	40%
Total	47	100%

61. What concrete examples can be provided to illustrate how the renovation and repairs have supported CIMH in enhancing and expanding on its core functions, including the role of a WMO RCC?

of respondents = 6 (13%)

- Students are more comfortable and can focus on learning and enhanced teaching experience– interviewee 001, 031, 043)
- Savings from green technologies offering cost savings to the operational budget that can now be re-directed for other critical areas – interviewee 031
- Reduced paper for classes since the moodle platform is being used for teaching – interviewee 033
- Can do calibration more accurately now - for instance relative humidity, temperature, pressure and rainfall. Better calibration data mean better quality calibration services. They are using the highest-level equipment. It can be outsourced to make money from it (not WMO territories) but private companies (Interviewee 034)
- CIMH to re-brand their training programme and the agency – interviewee -43

Greening of CIMH

62. Is there evidence of cost saving as a result of the greening activities that have been implemented? If yes, what is the average reduction in the electricity bill per month?

1 Key Informant: Interviewee 043

Saved 6000 BDS last month June 2017. This is about a 1/3 of what they normally spend. A year and half ago they spent 25000 per month. Now closer to 12K per month. These prices fluctuate based on oil prices of course.

63. Were the most cost effective equipment procured for the greening activities?

Annex IV – List of Interviewees Contacted and Status of Completion

List of Interviewees					
No.	Name	Agency	Category	Status	Date of Interview
1	Cedric Van Meerbeeck	CIMH	Other	Completed	4-Jul
2	Garvin Cummings	Guyana Met Office	National	Completed	5-Jul
3	Lyndon Alves	Guyana Met Office	National	Completed	5-Jul
4	Komalchand Dhiram	Guyana Met Office	National	Completed	5-Jul
5	Hubert Whyte	Airport Authority - Grenada	National	Completed	7-Jul
6	Trevor Thompson	Ministry of Agriculture, Grenada	National	Completed	7-Jul
7	Samantha Dickson	NADMA - Grenada	National	Completed	7-Jul
8	Adrian Trotman	CIMH	Other	Completed	10-Jul
9	Trisha Miller	Airport Authority - Grenada	National	Completed	10-Jul
10	Shem Willie	Saint Lucia Met Service	National	Completed	10-Jul
11	Sonia Nurse	Barbados Met	National	Completed	3-Jul
12	Clairmonte Williams	Barbados Met	National	Completed	3-Jul
13	Brian Murray	Barbados Met	National	Completed	3-Jul
14	Shirene Cuthbert	CIMH	Other	Completed	4-Jul
15	Elizabeth Riley	CDEMA	Other	Completed	11-Jul
16	Amanda Charles	CTO	Other	Completed	25-Jul
17	Lyndon Robertson	CARPHA	Other	Completed	12-Jul
18	Rasheeda Hall	CARDI - Jamaica	Other	Completed	27-Jul
19	Patricia Aquing	CWWA	Other	Completed	21-Jul
20	Chester Layne	CMO		Not Completed	
21	Joth Singh	USAID	Other	Completed	24-Jul
22	Mansfield Blackwood	USAID	Other	Completed	24-Jul
23	Ayşe Altunoğlu	WMO	Other	Completed	31-Jul
24	Alex Ifill	Barbados Water Authority		Not Completed	
25	Leslie Brereton	Ministry of Agriculture, Barbados		Not Completed	
26	Steve Daniel	Ministry of Health, Barbados		Not Completed	
27	Sharmaine Clauzel	CARPHA	Other	Completed	12-Jul
28	Andrea Franklin	GWI		Not Completed	
29	Simon Mason	IRI University of Columbia		Not Completed	
30	Steven Benjamin	NAWASA		Not Completed	
31	Dave Marques	NAWASA		Not Completed	

32	Gerard Tamar	Airport Authority - Grenada		Not Completed	
33	Wayne Springer	Met Services, Grenada		Not Completed	
34	Celia Edwards	Ministry of Agriculture, Grenada		Not Completed	
35	Corsel Robertson	St Vincent Met Office	National	Completed	26-Jul
36	Venantius Descartes	Saint Lucia Met Office	National	Completed	12-Jul
37	Marshall Alexander	Dominica Met Office	National	Completed	20-Jul
38	Keithley Meade	Antigua and Barbuda Met Office	National	Completed	18-Jul
39	Elsworth Warner	St Kitts and Nevis		Not Completed	
40	Velda Octave-Joseph	NDMA - Saint Lucia		Not Completed	
41	Danroy Ballantyne	SVG Water	National	Completed	25-Jul
42	Howie Prince	SVG Disaster Office		Not Completed	
43	Desiree Neverson	SVG Met		Not Completed	
44	Bille Jeffers	SVG Met	National	Completed	26-Jul
45	Joan McDonald	SVG Met		Not Completed	
46	Simon Toulon	Antigua and Barbuda Water	National	Completed	18-Jul
47	Owolabi Elabango	Antigua and Barbuda Agriculture	National	Completed	18-Jul
48	Ode Paige	Antigua and Barbuda Met Office	National	Completed	18-Jul
49	Dale Destin	Antigua and Barbuda Met Office	National	Completed	18-Jul
50	Sylvester St. Ville	Dominica Ministry of Health	National	Completed	20-Jul
51	Annie Carrette-Hoseph	Dominica Met Office	National	Completed	20-Jul
52	Karen Rivere-Cuffy	Dominica Office for Disaster Management	National	Completed	20-Jul
53	Adisa Trotter	Dominica Ministry of Agriculture	National	Completed	20-Jul
54	Jonathan Cox	CIMH Hydrology	Other	Completed	21-Jul
55	Cisne Pascal	Project Manager, BRCCC	Other	Completed	22-Jul
56	Kathy-Ann Caesar	CIMH Meteorology	Other	Completed	24-Jul
57	Damien Prescod	CIMH	Other	Completed	24-Jul
58	Vialey Richards	SVG Water	National	Completed	25-Jul
59	Mikhail Akers	SVG Water	National	Completed	25-Jul
60	Brian Dyer	St. Kitts Disaster Office	National	Completed	25-Jul
61	Elmo Burke	St. Kitts Met Service	National	Completed	25-Jul
62	Vincia Brown	St. Kitts Met Service	National	Completed	25-Jul
63	David Farrell	CIMH	Other	Completed	25-Jul

Annex V – Online Surveys and Summary Findings

Online Survey #1 - Level of Awareness, Satisfaction and Use Survey – Climate Products and Service

This survey is specifically aiming to assess effectiveness by closely examining the (i) level of awareness, satisfaction and use of climate products and services that were enhanced through the support provided by BRCCC, and (ii) level of awareness and satisfaction with the key visibility and marketing products that were developed.

INTRODUCTION

Which category do you represent?

- Donor
- Implementing Agency (CIMH)
- NMHS
- Regional Agency
- National Agency
- Private Sector
- NGO

Category	#	%
National Partner/Agency	22	34%
NMHS	24	38%
Regional Partner/Agency	15	23%
Private Sector	2	3%
NGO	1	2%
TOTAL	64	100%

Which of the following sectors do you primarily work in or represent?

- Agriculture
- Water
- Health
- Disaster Risk Management
- Tourism
- Coastal Zone Management
- Other

Sectors	#
Agriculture	20
Water	15
Health	9
Disaster Risk Management	17

Coastal Zone Management	3
Tourism	5
Meteorology	18
Aviation	2
Media	2
Physical Planning	1
Total	92

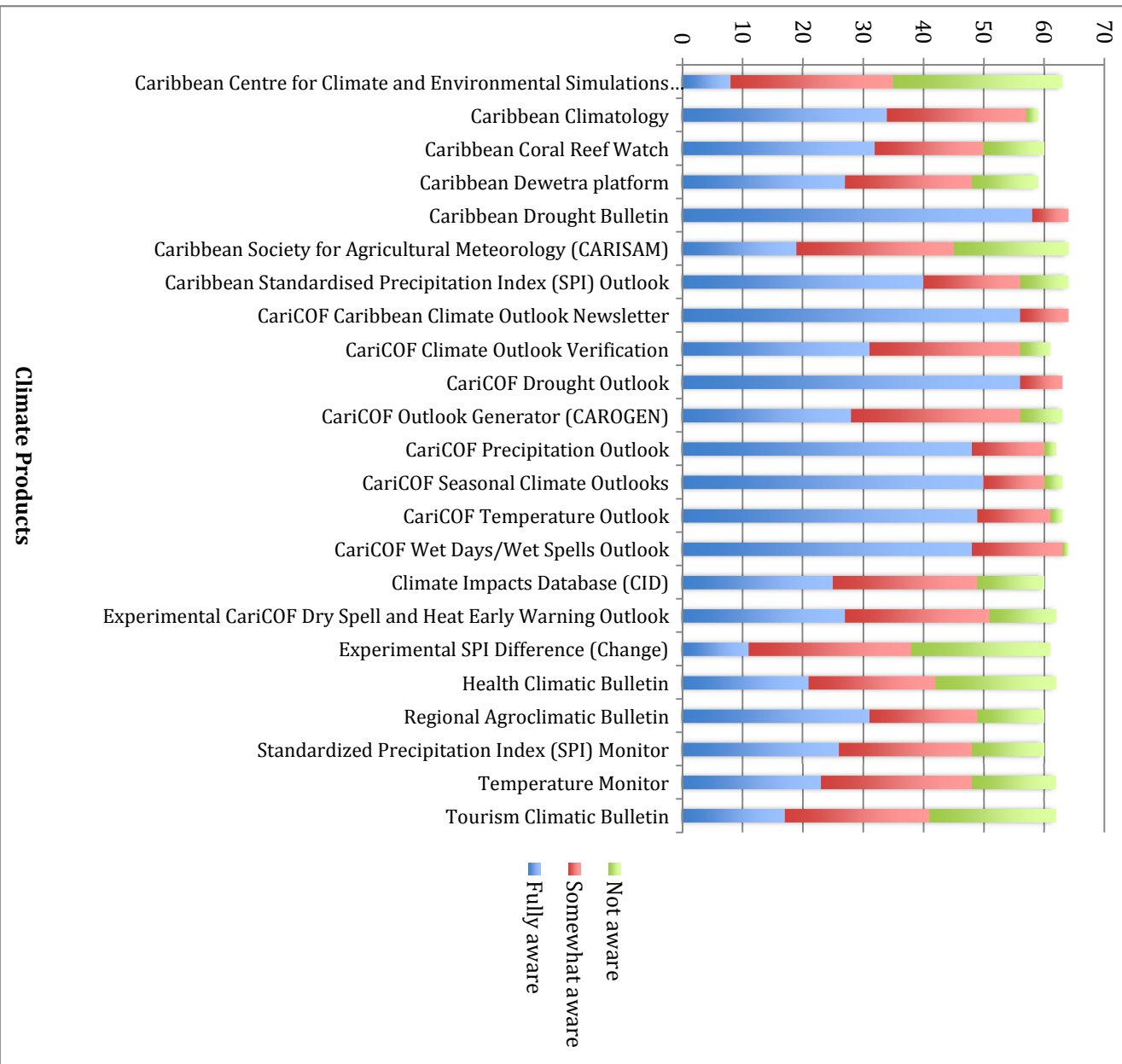
LEVEL OF AWARENESS OF CLIMATE SERVICES AND PRODUCTS SUPPORTED BY BRCCC

How aware are you of the following climate information tools or products?

- ❖ *Fully Aware*
- ❖ *Somewhat Aware*
- ❖ *Not Aware*

1. Caribbean Centre for Climate and Environmental Simulations
2. Caribbean Climatology
3. Caribbean Coral Reef Watch
4. Caribbean Dewetra platform
5. Caribbean Drought Bulletin
6. Caribbean Society for Agricultural Meteorology (CARISAM) Portal
7. Caribbean Standardised Precipitation Index (SPI) Outlook
8. CariCOF Caribbean Climate Outlook Newsletter
9. CariCOF Climate Outlook Verification
10. CariCOF Drought Outlook
11. CariCOF Outlook Generator (CAROGEN)
12. CariCOF Precipitation Outlook
13. CariCOF Seasonal Climate Outlooks
14. CariCOF Temperature Outlook
15. CariCOF Wet Days/Wet Spells Outlook
16. Climate Impacts Database
17. Experimental CariCOF Dry Spell and Heat Early Warning Outlook
18. Experimental SPI Difference (Change)
19. Health Climatic Bulletin
20. Regional Agroclimatic Bulletin
21. Standardized Precipitation Index (SPI) Monitor
22. Temperature Monitor
23. Tourism Climatic Bulletin

What is your level of awareness of the following climate information tools or products?



How did you come to know of the climate information, tools, and products?

- CIMH Bulletins
- CIMH Facebook account
- CIMH Twitter account
- CIMH Newsletters

- CIMH/RCC Website
- Climate Product Sheets
- Meeting/Workshop events such as EWISACTS, CariCOF
- Other CIMH Workshops/events
- Press releases
- Word-of-mouth
- Other

Source	#	%
CIMH Bulletins	44	20%
CIMH Facebook	9	4%
CIMH Twitter	3	1%
CIMH Newsletters	28	13%
CIMH/RCC Website	28	13%
Climate Product Sheets	9	4%
Meeting/Workshop events such as EWISACTS, CariCOF	57	26%
Other CIMH Workshops/events	18	8%
Press releases	7	3%
Word-of-mouth	13	6%
Other (NCOF, Met Service)	3	1%
TOTAL	219	100%

** Respondents can select multiple answers.

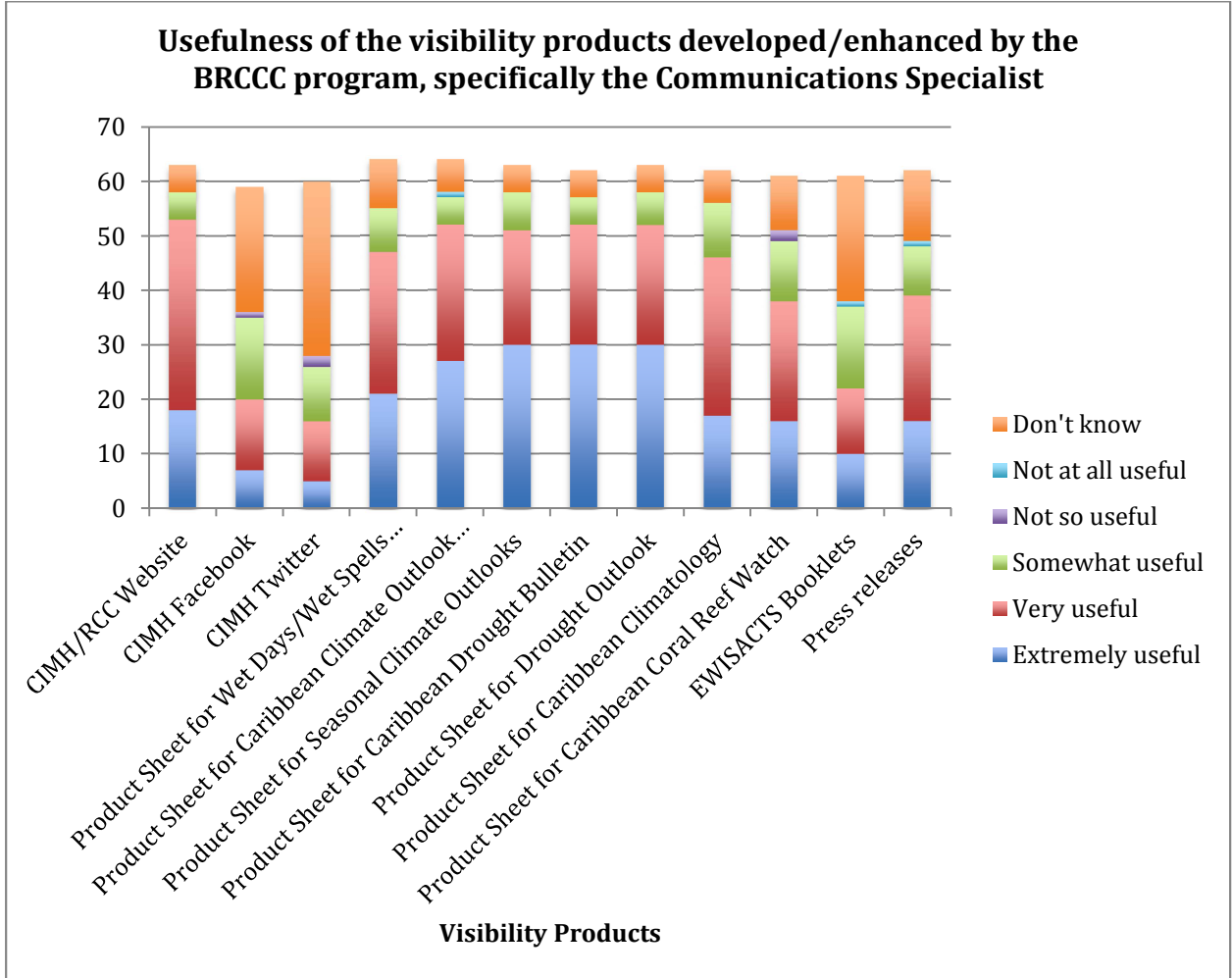
VISIBILITY AND MARKETING PRODUCTS

Please rate the usefulness of the following visibility products that were developed to promote the climate products and services.

- ❖ *Extremely useful*
- ❖ *Very useful*
- ❖ *Somewhat useful*
- ❖ *Not so useful*
- ❖ *Not at all useful*
- ❖ *Don't Know*

1. CIMH/RCC Website
2. CIMH Facebook account
3. CIMH Twitter account
4. Product Sheet for wet days/wet spells outlook
5. Product Sheet for Caribbean Climate Outlook Newsletter
6. Product Sheet for Seasonal Climate Outlooks
7. Product Sheet for Caribbean Drought Bulletin
8. Product Sheet for Drought Outlook

- 9. Product Sheet for Caribbean Climatology
- 10. Product Sheet for Caribbean Coral Reef Watch
- 11. EWISACTS Booklets
- 12. Press releases



Were you engaged in the development of any of the product sheets listed above (Wet Days/Wet Spells, CariCOF, and Drought Bulletin etc.)?

- YES
- NO

Category	#	%
Yes	30	47%
No	34	53%
Total	64	100%

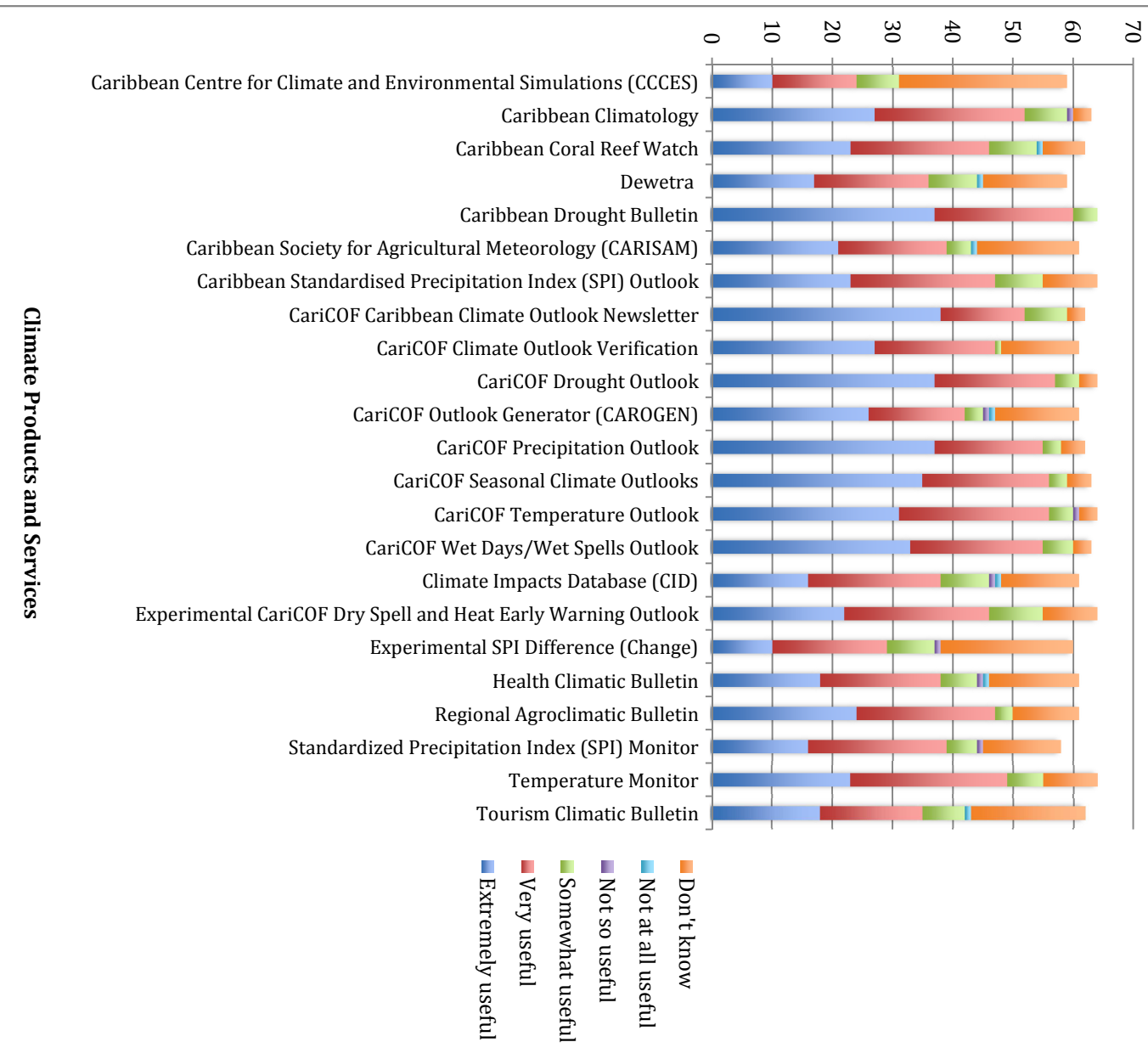
UTILITY OF THE CLIMATE SERVICES AND PRODUCTS SUPPORTED BY BRCCC

In your opinion, how useful are the following climate tools, products or services for informing decision-making at the national and/or regional levels, including key climate sensitive sectors?

- ❖ *Extremely useful*
- ❖ *Very useful*
- ❖ *Somewhat useful*
- ❖ *Not so useful*
- ❖ *Not at all useful*
- ❖ *Don't Know*

1. Caribbean Centre for Climate and Environmental Simulations
2. Caribbean Climatology
3. Caribbean Coral Reef Watch
4. Caribbean Dewetra platform
5. Caribbean Drought Bulletin
6. Caribbean Society for Agricultural Meteorology (CARISAM) Portal
7. Caribbean Standardised Precipitation Index (SPI) Outlook
8. CariCOF Caribbean Climate Outlook Newsletter
9. CariCOF Climate Outlook Verification
10. CariCOF Drought Outlook
11. CariCOF Outlook Generator (CAROGEN)
12. CariCOF Precipitation Outlook
13. CariCOF Seasonal Climate Outlooks
14. CariCOF Temperature Outlook
15. CariCOF Wet Days/Wet Spells Outlook
16. Climate Impacts Database
17. Experimental CariCOF Dry Spell and Heat Early Warning Outlook
18. Experimental SPI Difference (Change)
19. Health Climatic Bulletin
20. Regional Agroclimatic Bulletin
21. Standardized Precipitation Index (SPI) Monitor
22. Temperature Monitor
23. Tourism Climatic Bulletin

Usefulness of climate tools, products or services for informing decision-making at the national and/or regional levels, including key climate sensitive sectors



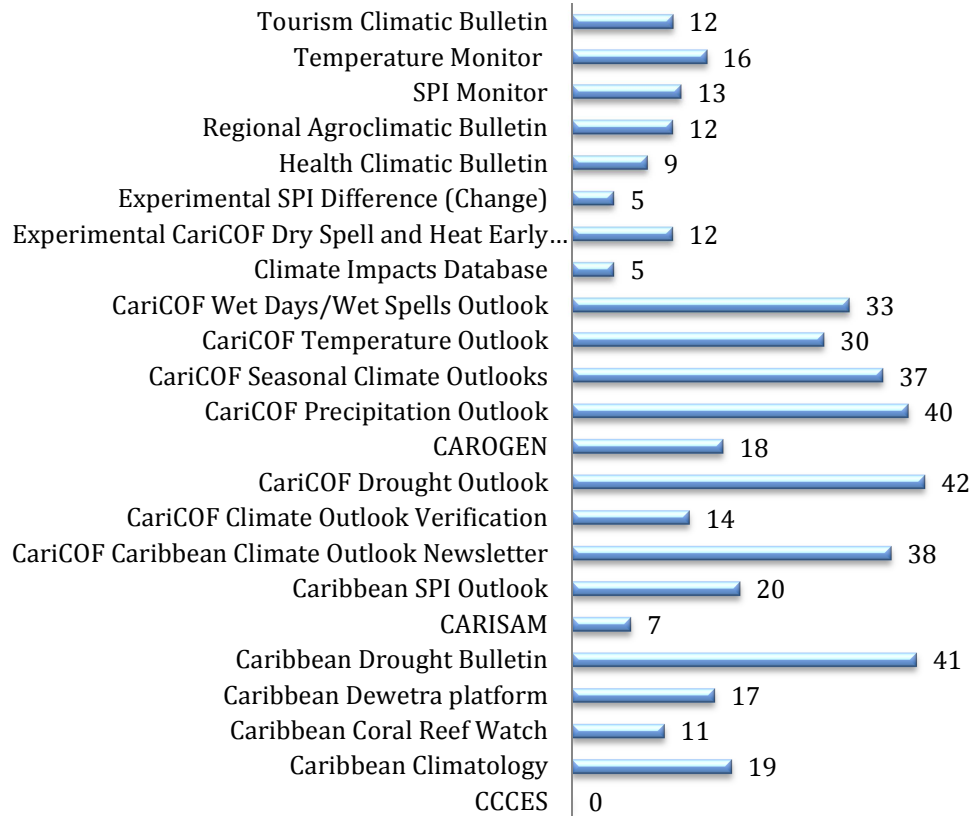
Climate Products and Services

EXTENT OF USE FOR DECISION MAKING

Which of the following climate tools, products or services have you specifically used to support decision-making?

1. Caribbean Centre for Climate and Environmental Simulations
2. Caribbean Climatology
3. Caribbean Coral Reef Watch
4. Caribbean Dewetra platform
5. Caribbean Drought Bulletin
6. Caribbean Society for Agricultural Meteorology (CARISAM) Portal
7. Caribbean Standardised Precipitation Index (SPI) Outlook
8. CariCOF Caribbean Climate Outlook Newsletter
9. CariCOF Climate Outlook Verification
10. CariCOF Drought Outlook
11. CariCOF Outlook Generator (CAROGEN)
12. CariCOF Precipitation Outlook
13. CariCOF Seasonal Climate Outlooks
14. CariCOF Temperature Outlook
15. CariCOF Wet Days/Wet Spells Outlook
16. Climate Impacts Database
17. Experimental CariCOF Dry Spell and Heat Early Warning Outlook
18. Experimental SPI Difference (Change)
19. Health Climatic Bulletin
20. Regional Agroclimatic Bulletin
21. Sahara Dust Forecast
22. Standardized Precipitation Index (SPI) Monitor
23. Temperature Monitor
24. Tourism Climatic Bulletin

Which of the following climate tools, products or services have you specifically used to support decision-making?



Can you share concrete examples of what key decisions have been influenced by the climate products and services listed?

- **Water**
- Used outlooks do determine TV reports ahead of the drought 2016 in Trinidad for example: <https://youtu.be/TxGes7NYT0Y> (Respondent #17)
- The dry season and precipitation outlooks are used to make decision on the inter connectivity of pipe network, e.g. whether to increase storage capacity and/or reroute pipes from vulnerable areas to those less vulnerable (Respondent #62)
- The information help to formulate the messages used in communication and influencing the formation and reactivation of the national drought risk management committee (Respondent #5)
- **Coral Reef**
- Coral Reef Watch and Drought watch are being used to decide when to increase coral reef monitoring (Respondent #9)
- CZMU monitors reef temperatures on-site so forecasts of bleaching may assist with planning (Respondent #47)

- **Public Works**
- Wet days/wet spells forecast assist the local Public Works Department in scheduling work program e.g. (i) the drain/culvert cleaning programs (ii) scheduling of new road works and paving (Respondent #18)
- **Health**
- Informing asthmatic and allergic medical responses (Respondent #19)
- The CariCof wet days/wet spells outlook has been used in the monitoring vector activities especially mosquito and the possibility of an increase in breeding (Respondent #12)
- Climate products have been used to support evidence-based decisions as regards programming for health and climate activities and livelihoods-based projects.
- Based on the normal to above normal May to December 2017 wet season and the above normal temperature predictions, the health impacts have been identified and health care worker and the general public are made aware of these through presentations and discussions.
- **Agriculture**
- Inform the development of the agriculture strategic plan of action in Dominica (Respondent #15)
- Inform planning of agricultural activities such as land preparation and planting before cropping and scheduling of field operations such as irrigation and pesticide spraying during the crop (Respondent #26)
- Showed members of a farmers group how they can use the information to make decision and the type of crops they should be planting (Respondent #30)
- Information used by farmers especially those cultivating short-term crops (Respondent #45).
- The drought bulletin plays an important role in planning for a cropping cycle (Respondent #53).
- **Disaster Management**
- Dewetra is used as a guidance tool for flood watches/warnings (Respondent #49).
- Issuing early warnings to the public for expected conditions during coming season (dry/wet) (Respondent #61)
- Media involvement in dissemination of Early Warning Information from the National Disaster Management Agency/Met Service; Rapid response now than ever thus enhancing the preparedness before, during and after disasters, which contributes positively to risk reduction, disaster management (Respondent #33).
- **Multi-Sectoral**
- The CIMH's BRCCC outputs have been featured in the recently prepared 2015 State of the Jamaican Climate report and the ongoing preparation of the State of the Caribbean Climate report. Both reports serve as primary sources of regional and local climate information for decision-makers (Respondent #13).
- Information used as reference to look for coherence with Outlooks for Mesoamerican region (Respondent #41)

- The information has been and is being used in the preparation of project proposals and to guide decisions about training activities (Respondent #46).
- Information built climate resilience in vulnerable communities in Grenada (St. Andrews, St. Marks, St. Patricks etc.) through participatory approaches; RWH technologies, training and resources to combat impacts of climate change, flood-prone areas, water storage, increased drip irrigation technology ((Respondent #33)

THANK YOU FOR YOUR CONTRIBUTION

Online Survey #2: Evaluation of BRCCC Training & Workshops

This survey is specifically aiming to assess the relevance, effectiveness and efficiency of the training and workshop, including the upgrade to the training facilities, which were all supported by BRCCC.

Instructions – read each question carefully. Select not applicable ONLY if you did not attend the training/workshop on the list.

INTRODUCTION

Which category do you represent?

- Donor
- Implementing Agency (CIMH)
- NMHS
- Regional Agency
- National Agency
- Private Sector
- NGO

Category	#	%
National		
Partner/Agency	16	30%
NMHS	21	40%
Regional		
Partner/Agency	13	25%
Private Sector	2	4%
NGO	1	2%
TOTAL	53	100%

Which of the following sectors do you primarily work in or represent?

- Agriculture
- Water
- Health
- Disaster Risk Management
- Tourism
- Coastal Zone Management
- Other

Sectors	#	%
Agriculture	13	20%
Water	6	9%

Health	7	11%	
Disaster Risk Management	10	16%	
Coastal Zone Management	3	5%	
Tourism	3	5%	
Met Services	16	25%	
Aviation	2	3%	
Media	4	6%	
Total	64	100%	**multiple sectors for some respondents

Which of the following workshops/training did you attend?

1. GIS Training 2016
2. Media Training
3. Caribbean Drought Monitoring Training 2015
4. Wet Season CARICOF Assembly 2014
5. Dry Season CARICOF Assembly 2014
6. Wet Season CARICOF Assembly 2015
7. Dry Season CARICOF Assembly 2015
8. Wet Season CARICOF Assembly 2016
9. Dry Season CARICOF Assembly 2016
10. Wet Season CARICOF Assembly 2017
11. 1st EWISACTS Consortium Workshop 2015
12. 2nd EWISACTS Consortium Workshop 2015
13. 3rd EWISACTS Consortium Workshop 2016
14. 4th EWISACTS Consortium Workshop 2017
15. Dominica National EWISACTS Workshop
16. Barbados National EWISACTS Workshop
17. Satellite Data Training Workshop 2016
18. E-SIAC Course
19. F-SIAC Course 2015
20. Calibration & Maintenance Workshop - Sutron
21. Calibration & Maintenance Workshop - Vaisala
22. Climate Database Workshop

	#	%
GIS Training 2016	5	3%
Media Training	9	5%
Caribbean Drought Monitoring Training 2015	9	5%
Wet Season CARICOF Assembly 2014	12	6%
Dry Season CARICOF Assembly 2014	13	7%

Wet Season CARICOF Assembly 2015	16	9%	
Dry Season CARICOF Assembly 2015	12	6%	
Wet Season CARICOF Assembly 2016	12	6%	
Dry Season CARICOF Assembly 2016	16	9%	
Wet Season CARICOF Assembly 2017	23	12%	
1st EWISACTS Consortium Workshop 2015	4	2%	
2nd EWISACTS Consortium Workshop 2015	5	3%	
3rd EWISACTS Consortium Workshop 2016	4	2%	
4th EWISACTS Consortium Workshop 2017	8	4%	
Dominica National EWISACTS Workshop	1	1%	
Barbados National EWISACTS Workshop	3	2%	
Satellite Data Training Workshop 2016	6	3%	
E-SIAC Course	9	5%	
F-SIAC Course 2015	9	5%	
Calibration & Maintenance Workshop - Sutron	2	1%	
Calibration & Maintenance Workshop - Vaisala	1	1%	
Climate Database Workshop	8	4%	
TOTAL	187	100%	**multiple sectors for some respondents

How are you generally made aware of the workshop/training?

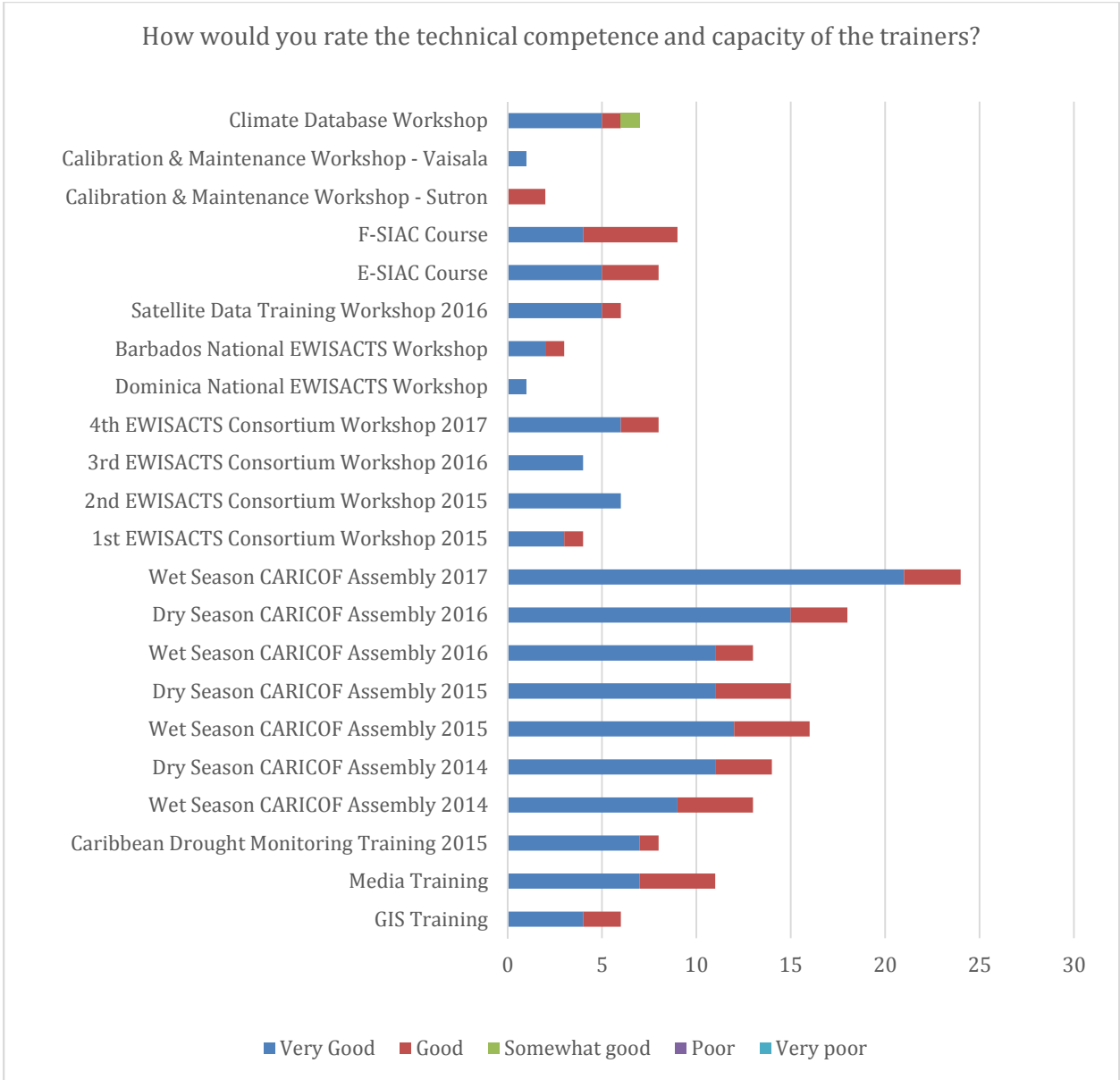
- Direct invite from CIMH
- CIMH website
- Via partner agencies
- Other

	#	%
Direct invite from CIMH	41	71%
CIMH website	4	7%

Via partner agencies	9	16%	
Other	4	7%	
Total	58	100%	**multiple sectors for some respondents

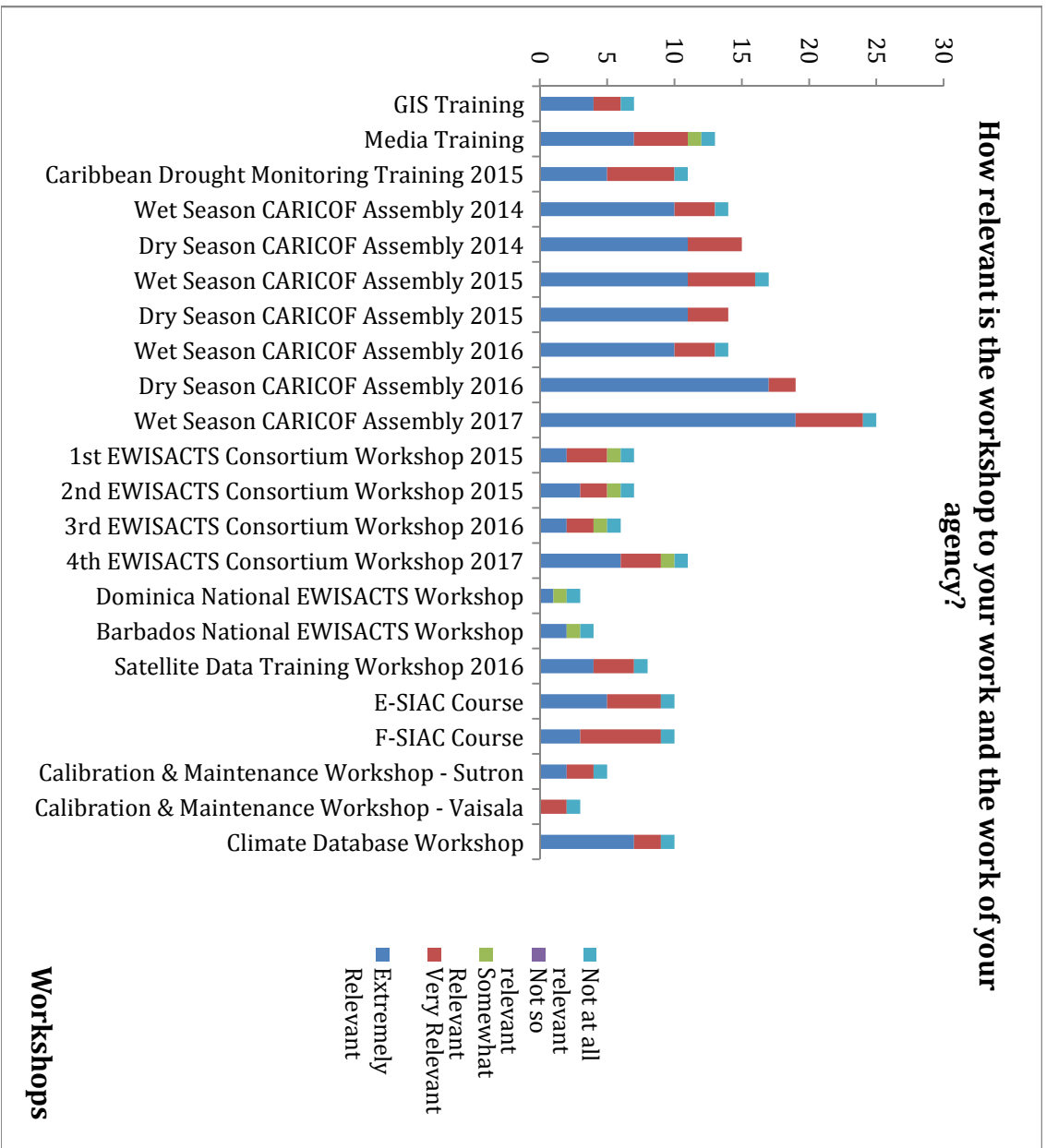
How would you rate the technical competence and capacity of the trainers?

- Very good
- Good
- Somewhat good
- Poor
- Very poor
- Not applicable/did not attend



How relevant is the workshop to your work and the work of your agency?

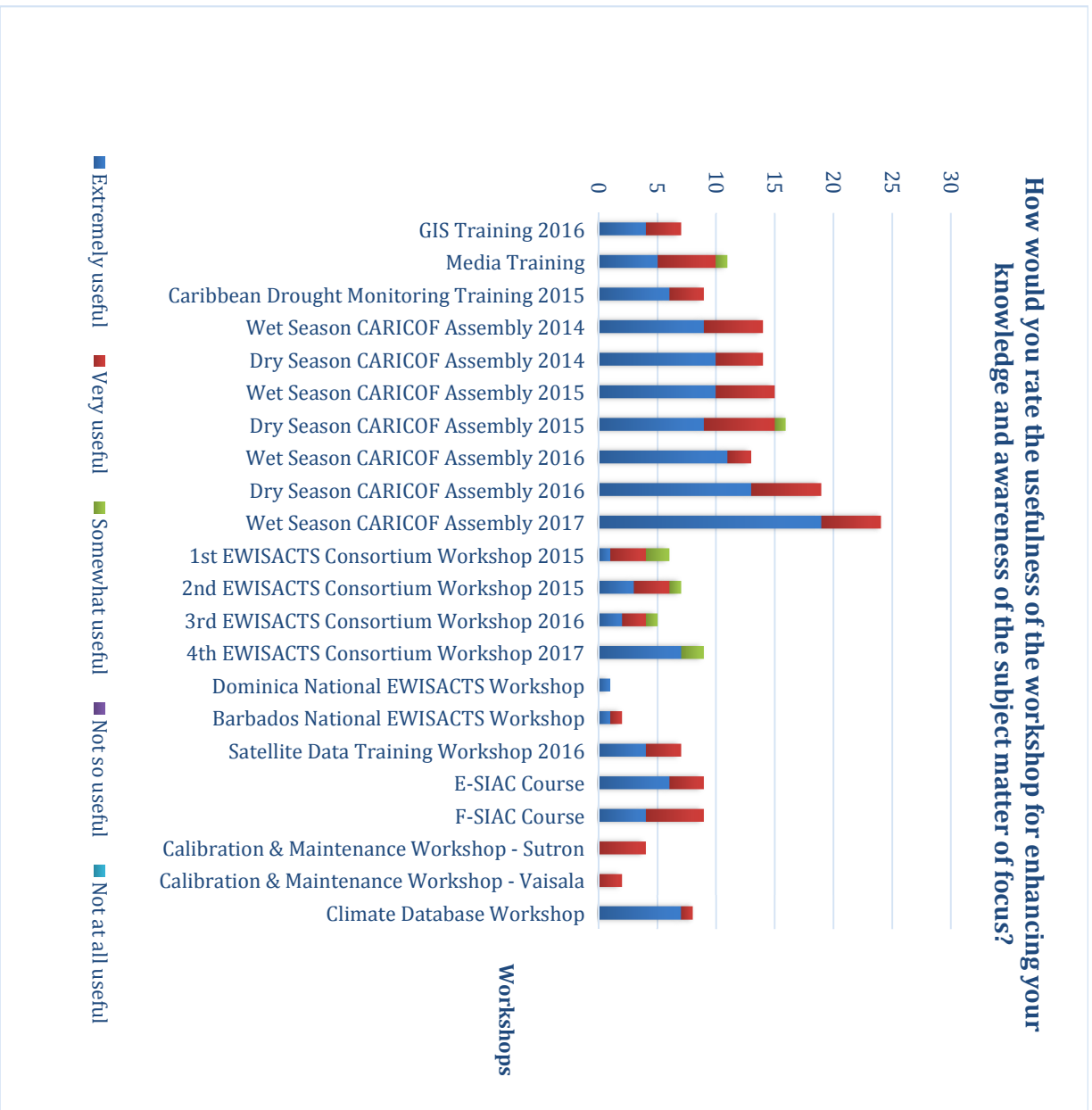
- Extremely relevant
- Very relevant
- Somewhat relevant
- Not so relevant
- Not at all relevant



How would you rate the usefulness of the workshop for enhancing your knowledge and awareness of the subject matter of focus?

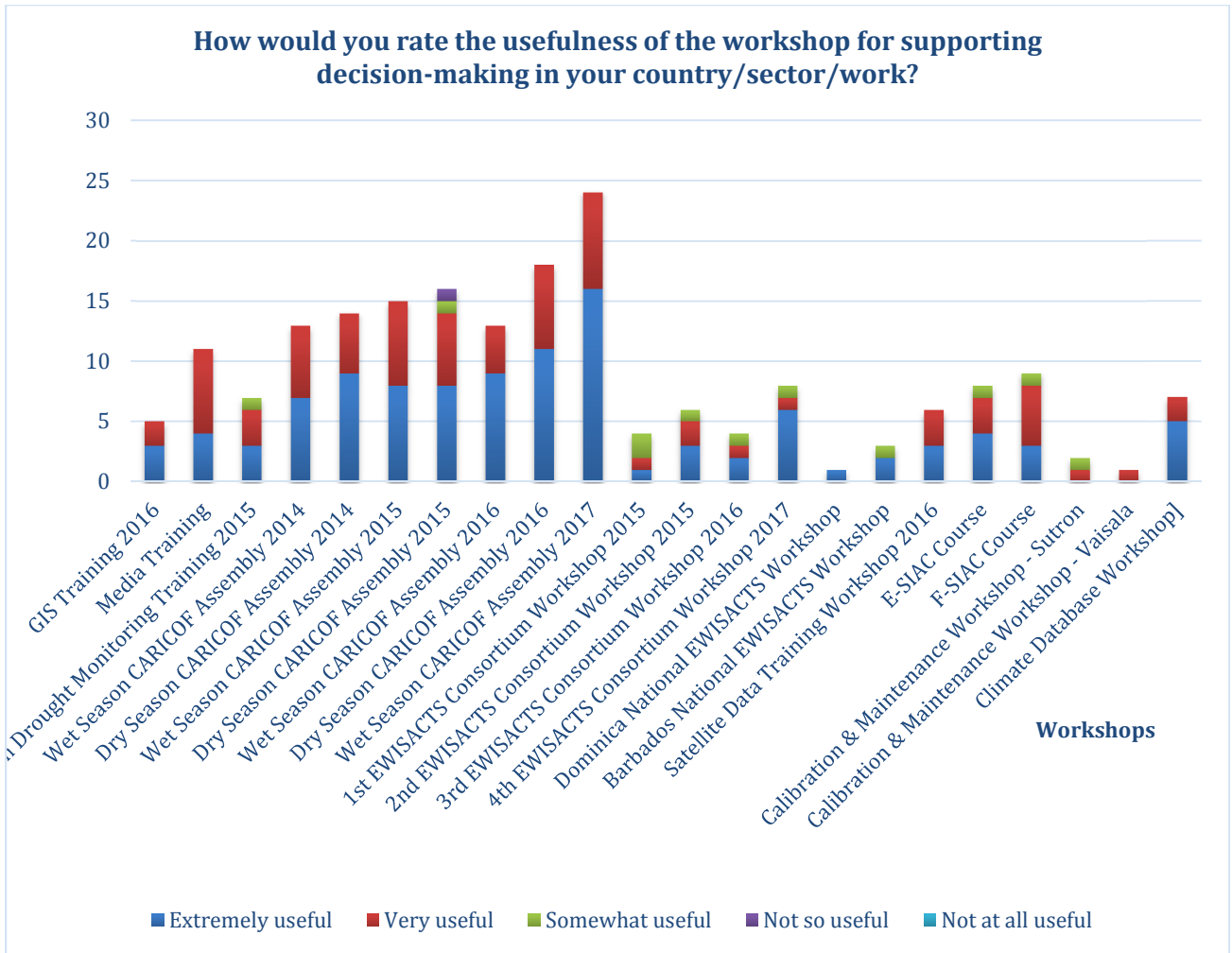
- Extremely useful
- Very useful
- Somewhat useful
- Not so useful
- Not at all useful
- Not Applicable/Did not attend

How would you rate the usefulness of the workshop for enhancing your knowledge and awareness of the subject matter of focus?



How would you rate the usefulness of the workshop for enhancing decision-making in your country/work?

- Extremely useful
- Very useful
- Somewhat useful
- Not so useful
- Not at all useful
- Not Applicable/Did not attend



If you rated a workshop as ‘extremely useful’ and ‘very useful’, kindly share specific examples/stories of how you have been applying knowledge and skills from workshops to better inform decision-making.

- When I joined the service in 2010, I had no knowledge of meteorology. The E-SIAC course helped me to gain an understanding of Climate and the use of Stats in Climate. After the course I was able to look at the climate data and make some important inferences from it (Respondent #4).
- The training on the use of the climate predictability tool and CAROGEN seasonal forecast generator were extremely useful because now I can use these tools to create national climate outlooks for the country (Respondent #12).
- The knowledge gained and the software taught helps me to provide the best scientific outcomes to the public especially agricultural sector which influence when certain crops are planted (Respondent #23).
- At farmers meeting and other sessions I am confident enough to share climatic information. I recently conducted a lecture to college students on the impact of climate change on the economic sectors of the country. The Ministry of

- Agriculture has appointed me as a focal point on a climate change project (Respondent #15)
- Training has helped me enhance my local newsletter (Respondent #40).
 - Extremely useful because in my country we just read the weather report as presented from met office. Now I understand it is most effective if a trained weather forecaster does the presentation on TV and Radio (Respondent #45).
 - I am better able to interrupt climate sensitive data and apply it to my Job (Respondent #51)
 - Making use of the SPI during the 2015 wet season, which had low rainfall figures, there was a better understanding of expected condition during the 2016 dry season. Stakeholders were informed and were better prepared (Respondent #48).
 - The seasonal forecast workshop increase my knowledge of drought, temperature and rainfall on the agriculture sector (Respondent #35).
 - Through the workshop, participants were able to know sources of data and how to use the McIDAS-V 1.5 to make them useful information for your work (Respondent #34).
 - Media training helped me to relate climate services to human impacts that shape weather coverage on TV and online. I presented my experiences in media at Trinidad Tobago COF (Respondent #17): <https://youtu.be/2dC4tCFdUbwand>
 - Also helped with Heat Alert on TV news reports: https://youtu.be/1lLuWhhqU68?list=PLyWR44_Vv0_hyP3mxxFmkVgHcrI5pilEG
 - The media training I've applied the tips suggested to a better approach on how I interact with the public to produce a more satisfied customer (Respondent #49).
 - The media training have taught me how to properly get the message across to stakeholders which in turn leads to a general understanding and proper decision making (Respondent #30).

Is there anything that can be done in the future to improve the learning experience and your overall satisfaction with workshops/trainings convened by CIMH?

1. Avoid working overtime and include hands on session for better impact on the learning experience including the use of dummy data-sets (Respondent #16, 49)
2. Training should include practical sessions (media, calibration of equipment) (Respondent #17, 26)
3. In most cases another day could be added to the event because they are in most cases too intense and there is not enough time to comfortable digest all of the various concept (Respondent #8)
4. Investment in courses/lectures online can enhance capacities so participants can work at their own pace and reduce costs for travel (Respondent #22, 27)

UPDATED TRAINING FACILITIES AT CIMH

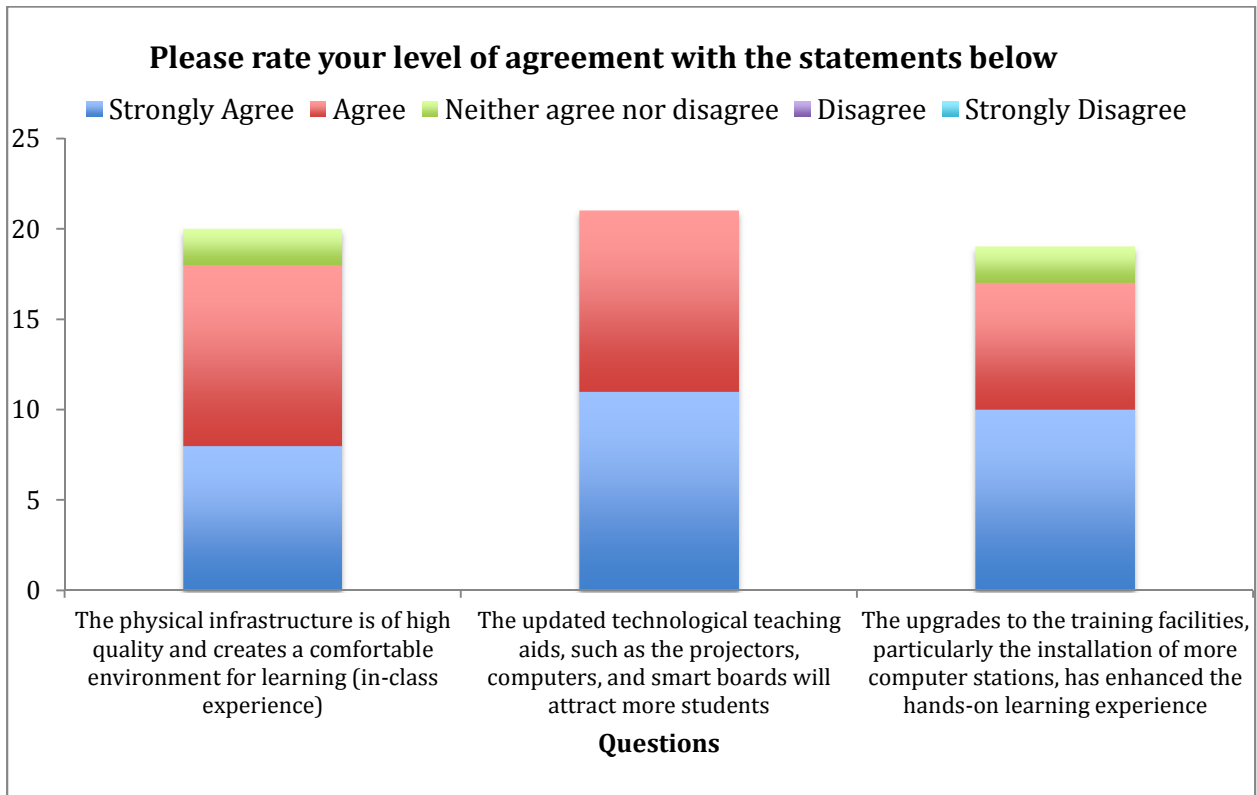
If you participated in any training/workshop/meeting that was hosted at the newly renovated training facilities at CIMH, please rate your level of agreement with the statements below. If you have not, you can skip this section and move to the next section on video-conferencing.

The physical infrastructure is of high quality and creates a comfortable environment for learning (in-class experience).

The updated technological teaching aids, such as the projectors, computers, and smart boards will attract more students and generate more income for CIMH.

The upgrades to the training facilities, particularly the installation of more computer stations, has enhanced the hands-on learning experience

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

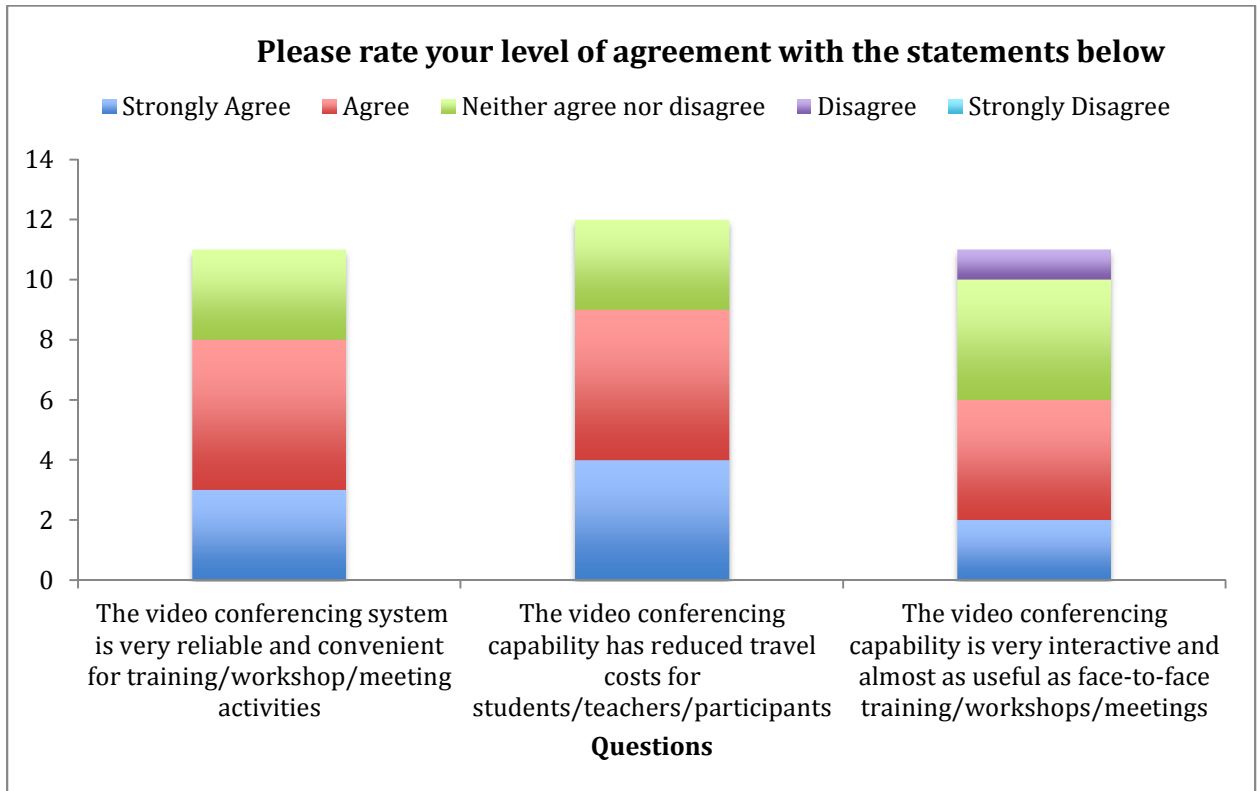


CIMH'S VIDEO-CONFERENCING CAPABILITY FOR MEETINGS AND TRAINING

If you participated in any training/workshop/meeting that was hosted via the video-conferencing equipment at CIMH, please rate your level of agreement with the statements below:

- The video conferencing system is very reliable and convenient for training activities**
- The video conferencing capability has reduced travel costs for students that are normally sponsored**
- The video conferencing capability is very interactive and almost as useful as face-to-face training**

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree



THANK YOU FOR YOUR CONTRIBUTION

Annex VI – List of Documents Reviewed

1. Agreement establishing CMO
2. Agreement between WMO and USAID
3. Letter of Agreement between WMO and CIMH BRCCC Project Document
4. No cost extension memo
5. WMO Procurement Procedures
6. Report of Attachment Of A Caribbean Contingent To The University Of Arizona Under The BRCCC Programme – Prepared by Dr. Shelly-Ann Cox and Dr. Roche Mahon (June 2016)
7. CIMH-UA Research Exchange Report – Prepared by Roché Mahon (Post-doctoral Researcher), Shelly-Ann Cox (Post-doctoral Researcher), and Jodi-Ann Petrie (January 2017)
8. Report Of Attachment Of A Caribbean Contingent To The IRI Under The BRCCC Programme – Prepared by Dr. Van Meerbeeck (July 2016)
9. Report Of Attachment Of A Caribbean Contingent To The IRI Under The BRCCC Programme - Prepared by Adrian Trotman (April 2016)
10. The Caribbean Regional Climate Outlook Forum (CariCOF) Wet Season 2016 Report – Prepared by CIMH (2016)
11. The Caribbean Regional Climate Outlook Forum (CariCOF) Dry Season 2016 Report – Prepared by CIMH (2016)
12. The Caribbean Regional Climate Outlook Forum (CariCOF) Dry Season 2015 Report- Prepared by CIMH (2015)
13. The Caribbean Regional Climate Outlook Forum (CariCOF) Wet Season Report 2015 - Prepared by CIMH (2015)
14. Pre-CariCOF Training Workshop Report – 2015 Wet Season. Prepared by CIMH (2015)
15. The Caribbean Regional Climate Outlook Forum (CariCOF) Wet Season 2014 Report – Prepared by CIMH (2014)
16. Terms of Reference for the Consortium of Regional Sectoral Early Warning Information Systems Across Climate Timescales (EWISACTS) – Prepared by CIMH, CARDI CDEMA, CARPHA, CTO, CHTA, CWWA (2016)
17. First (1st) Meeting of the Consortium of Regional Sectoral EWISACTs Coordination Partners – Prepared by S. Stoute, D. Rankine, R. Mahon, J. Petrie, C. Van Meerbeeck, A. Trotman (2015)
18. Second (2nd) Meeting of the Consortium of Regional Sectoral EWISACTs Coordination Partners – Prepared by Jodi-Ann Petrie, Wayne Depradine, Adrian Trotman, Roché Mahon, Dale Rankine, Cédric Van Meerbeeck, Shelly-Ann Cox, Shireen Cuthbert, Wazita Scott (2015)
19. Third (3rd) Meeting of the Consortium of Regional Sectoral EWISACTs Coordination Partners – Prepared by Shontelle Stoute, Shelly-Ann Cox, Roché Mahon, Wayne Depradine, Jodi-Ann Petrie, Adrian Trotman, Cédric Van Meerbeeck (2016)
20. BRCCC Internship Report of Theron Lumsden (December 2014)

21. BRCCC Internship Report of Branden W. Spooner (September 2016)
22. BRCCC Internship Report of Michael Mayers (September 2016)
23. BRCCC Internship Report of Keiann O. R Payne (June 2016)
24. BRCCC Internship Report of Sheldon Grant (n.d)
25. BRCCC Internship Report of Trisha Miller (2014)
26. Mahon, R., Van Meerbeeck, C., Trotman, A., & Petrie, J. (2015). Towards Baseline User Needs for Climate Services in the Caribbean: Preliminary results from a survey of 2015 Wet Season CariCOF participants. Barbados, Caribbean Institute for Meteorology and Hydrology: 64.
27. Presentation on User needs assessment of climate services in the Caribbean – prepared by Roché Mahon, Shelly-Ann Cox, Jodi-Ann Petrie, Adrian Trotman Caribbean Institute for Meteorology and Hydrology
28. Presentation on Provider capacity to deliver climate services in the Caribbean – prepared by Roché Mahon, Shelly-Ann Cox, Adrian Trotman, Cédric Van Meerbeeck, David Farrell, Jodi-Ann Petrie Caribbean Institute for Meteorology and Hydrology
29. Presentation on Advances in tailored climate early warning information for the Caribbean- Prepared by Roché Mahon, Shelly-Ann Cox, Adrian Trotman, Cédric Van Meerbeeck, Wayne Depradine, Shontelle Stoute, Jodi-Ann Petrie
30. Press Release - CARPHA joins regional climate resilience alliance led by CIMH (April 28, 2017)
31. Press Release - CIMH and Sutron Corporation partner to help Caribbean nations build climate resilience (August 8, 2016)
32. Product Sheet for wet days/wet spells outlook
33. Product Sheet for Caribbean Climate Outlook Newsletter
34. Product Sheet for Seasonal Climate Outlooks
35. Product Sheet for Caribbean Drought Bulletin
36. Product Sheet for Drought Outlook
37. Product Sheet for Caribbean Climatology
38. Product Sheet for Caribbean Coral Reef Watch
39. First Bi-Annual Report 26 August 2014 - Prepared By: Sueanne Clinton (August 2014)
40. Second Bi-Annual Report 26 August 2014 - Prepared By: Sueanne Clinton (February 2015)
41. Third Bi-Annual Report 26 August 2014 - Prepared By: CIMH (August 2015)
42. Fourth Bi-Annual Report 26 August 2014 - Prepared By: CIMH (January 2016)
43. Fifth Bi-Annual Report 26 August 2014 - Prepared By: CIMH (July 2016)
44. Sixth Bi-Annual Report 26 August 2014 - Prepared By: Sueanne Clinton (January 2017)
45. Annual Programme Report – Year 3 – Prepared by CIMH (23 April 2016)
46. Annual Programme Report – Year 2 – Prepared by CIMH (23 April 2016)
47. Terms of Reference of the Project Steering Committee – Prepared by CIMH (2014)
48. Report Of The Fifth Meeting Of The BRCCC Programme Steering Committee (June 2017)

49. Report Of The Fourth Meeting Of The BRCCC Programme Steering Committee (February 2017)
50. Report Of The Third Meeting Of The BRCCC Programme Steering Committee Meeting (September 2016)
51. Report Of The Second Meeting Of The BRCCC Programme Steering Committee Meeting (March 2016)
52. Solar PV System at CIMH – Prepared by Destine Gay and Dr. Tom Rogers (April 2017)
53. Greening of the CIMH Buildings and Operations – Prepared by Destine Gay and Dr. Tom Rogers (December 2015)
54. INTERIM REPORT. Caribbean Institute for Meteorology and Hydrology Caribbean Regional Climate Centre (in Demonstration Phase). September 2015
55. Terms of Reference of GIS Specialist
56. Terms of Reference of Communications Specialist
57. Terms of Reference of Procurement Specialist
58. Terms of Reference of Human Resources Specialist
59. Terms of Reference of Project Manager
60. Terms of Reference of Temporary Academic Staff
61. Terms of Reference of Research Assistants
62. Terms of Reference of IT Specialist
63. Terms of Reference of Climate Forecaster Assistant
64. VLAB Management Group Either Session Report (2016)
65. Calibration and Maintenance Workshop for Climate Monitoring Equipment – Prepared by Damien Prescod and Sergio Fernandez (2016)
66. Climate Database Training Workshop Register (June 2017)
67. Satellite Data Training Workshop Report (May 2016)
68. Report on E-SIAC (Statistics in Applied Climatology) (2014)
69. Report on F-SIAC (2015)
70. GIS Workshop Training Report – Prepared by Tarick Hosein and Grahame Niles
71. Caribbean Drought Training Workshop, BRCCC Program (Report) – Prepared by Shontelle Stoute, Adrian Trotman (2015)
72. Participatory Integrated Climate Services for Agriculture (PICSA) Field Manual – University of Reading (2015)

Annex VII – List of Research Papers Supported by BRCCC

1. Fit for Purpose? Envisioning National Climate Service Centers in Caribbean Small Island Developing States. (CIMH and University of Arizona)
2. Zika Virus Outbreak, Dominica, 2016. *Journal of Emerging Infectious Diseases*. (accepted). (Joint work by the Ministry of Health Dominica, SUNY Group and CIMH).
3. Evaluating user needs for Climate Services in the Caribbean (CIMH and University of Arizona)
4. Characterising the climate of Georgetown (Guyana) in a changing climate through statistical modelling (CIMH and University of Reading and Statistical for Sustainable Development)
5. Defining the onset of the wet season in the eastern Caribbean – an empirical / statistical approach (CIMH, SSD and IRI)
6. Operational drought Forecasting in the Caribbean and Central America: evolving methodology (CIMH and IRI)
7. Drought Risk Management in the Caribbean Community: Early Warning Information and Other Risk Reduction Considerations. *In: Drought and Water Crises 2 (Eds. D. Wilhite and R. Pulwarty)*. Chapter 20. In Press. (Written by CIMH and UWI – three of the Co-authors funded by BRCCC, the two Post-docs and an intern)