



Caribbean Telecommunications Union

2012

Caribbean Spectrum Management Project Overview

1. Executive Summary

Name of the Project:	Caribbean Spectrum Management Project
Beneficiaries:	20 Member countries of the Caribbean Telecommunications Union and other Caribbean countries that are willing to participate.
Applying Institutions:	Caribbean Telecommunications Union
Executing Agency:	Caribbean Telecommunications Union
Project Budget:	US\$ 3.0 M
Commencement Date:	2 nd Quarter, 2012
Duration:	48 Months

2. Rationale

Radio frequency spectrum is a natural, renewable resource, which is equally available in every country. The ability of each nation to take the full advantage of this natural resource is highly dependent on the ability of national spectrum managers to effectively manage it. This entails the establishment of systems for allocation and assignment of spectrum, facilitating the provision of radio based communications services and monitoring and enforcing rules pertaining to spectrum usage. An appropriate automated spectrum management system is a critical tool for effectively executing these functions.

Rapidly evolving technological innovations are challenging both regulators and policy makers in their ability to understand and be informed on the technological developments and best practices. Today's wireless technologies are more sophisticated and efficient in their use of spectrum and the traditional spectrum management policies in use in the region are limiting the speed of proliferation and the full realisation of the benefits of these technologies. Building the skill and expertise of stakeholders is necessary to ensure that the spectrum is utilised efficiently.

Radio frequency spectrum does not respect regional or national boundaries. Consequently, there is a need for Caribbean nations to cooperate in the methodologies to be employed in managing spectrum. This is an imperative, given the diversity of regulatory structures and institutions for spectrum management in the region, which limits opportunities for regulators in individual countries to benefit from regional cooperation. It militates against the pooling of scarce resources and is a disincentive for investors.

As Caribbean countries seek to migrate to knowledge economies, broadband access to the Internet must become ubiquitous. The high penetration of mobile devices across the Caribbean represents a viable option for attaining universal broadband access. It is therefore imperative that spectrum is made available to facilitate wireless broadband access. This process for harmonising the allocation of spectrum across the Caribbean must be approached collectively.

Finally existing outmoded spectrum policies and practices are delaying a comprehensive response to the increasing demand for spectrum-based services and devices. Many spectrum management policies and practices are proving to be barriers to regional integration as they pose challenges to the cost effective entry of new players into the telecommunications market and create obstacles to the timely provision of new services.

Following are the major issues that need to be addressed in the region:

1. Establishing the Caribbean Spectrum Management Steering Committee and Caribbean Spectrum Management Task Force as permanent bodies to oversee the formulation and implementation of harmonised policies for the Caribbean.
2. Agreeing and promoting harmonised regional approaches to digital broadcasting, digital switchover and the digital dividend
3. Updating the 2008 Spectrum Management Policy Framework to reflect the increasingly dynamic and innovative evolution of wireless technologies and the approaches and practices to be adopted by Caribbean countries
4. Developing an associated training and capacity building plan to identify required skill sets and current gaps, including long term strategies for sustainability
5. Engaging with dependent territories (e.g. Martinique, Guadeloupe and St. Martin) and with countries situated in close proximity, to address co-ordination issues to minimise cross border interference.
6. Undertaking field audits in CTU Member countries, where necessary, and determining modalities for implementation of audit recommendations by Regional Spectrum Management Authorities.
7. Determining and acquiring the appropriate automated spectrum management system for CTU countries and establishing a Caribbean centralised spectrum management database.
8. Establishing a regional framework for radio frequency use in disaster/emergency situations
9. Developing regional standards and certifications for amateur radio skills and best practices.
10. Refining the preliminary regional and national spectrum allocation tables.
11. Researching the assignment of geo-stationary orbital slots to the Caribbean and the technical feasibility of making use of them.

3. Purpose of the Project

The Caribbean Spectrum Management Project builds on an earlier Caribbean Spectrum Management Policy Reform Project (CSMPRP) and seeks to deepen the harmonization of spectrum management policies and practices across the region. This will be accomplished through the work of the Caribbean Spectrum Management Steering Committee and the Caribbean Spectrum Management Task Force which will be established as permanent regional bodies. It will address several areas identified by the CTU which point to an urgent need for training, review, reform and harmonization of policies and techniques for spectrum management in the Caribbean. It will also consider emerging issues such as digital switchover and dividends which are presenting challenges for the region.

Among the new issues to be addressed by the project are digital switchover and dividends, spectrum allocation for wireless access broadband, the development of mechanisms for dealing with cross-border interference - a problem experienced in many Caribbean countries - development of a Spectrum Pricing Policy Framework, defining regional approaches to disaster/emergency communications and developing regional amateur radio skills and systems.

In addition, the project will seek to establish an automated regional spectrum management system. This system, at the regional level, will form the basis for assisting those Caribbean states, which are not yet equipped with an appropriate automated spectrum management platform.

Moreover, through its capacity building activities, the project will also develop an updated Caribbean Spectrum Management Policy Framework and strengthen and streamline the activities of national regulatory bodies responsible for management of the radio spectrum. The project further aims to enhance the competencies of Caribbean spectrum experts on various aspects of radio frequency spectrum management and enable enhancement of their involvement in and contributions to the proceedings of relevant regional and international fora.

Finally, the project will seek to focus, investigate and bring to completion earlier sporadic work into the availability of geosynchronous orbital allocations for Caribbean countries and the requirements and feasibility of accessing any such allocations still existing.

4. Overview of Earlier Project

The Caribbean Telecommunications Union's 2006 – 2009 CSMPRP was the first comprehensive regional attempt to address issues of a harmonised approach to Caribbean spectrum management.

The pace of policy development and attendant legislative and regulatory reform in the Caribbean had not kept in step with the rapid evolution in wireless technologies. The traditional methods for spectrum management had become impractical and inefficient in the context of new technologies. In addition, the persistence of diverse systems and processes for spectrum management in the Caribbean precluded the establishment of a harmonized system for Caribbean spectrum management. These issues represented a potential barrier to entry of prospective pan-Caribbean investors.

The CSMPRP laid a comprehensive platform to begin addressing these and current issues. The CTU proposes, through the new Caribbean Spectrum Management Project, to address emerging issues for the Caribbean, such as digital switchover and digital dividends. The project will develop harmonized approaches for addressing these and other issues.

The Caribbean Spectrum Management Policy Reform Project achieved the following:-

- **Establishment of the Caribbean Spectrum Management Steering Committee** which identified the critical issues to be addressed, the scope of works, priorities and schedule of activities to be undertaken.
- **Establishment of the Caribbean Spectrum Management Task Force** which developed the approaches, specified details, assigned responsibilities and time frames for executing Steering Committee Plans, drafted policy documentation and had oversight for the implementation.
- **Training and Capacity Building** of practitioners in different aspects of spectrum management.
- **Multi-stakeholder Consultations** which provided opportunities for sharing of information among regional spectrum officers and other stakeholders, and developing consensus.
- **Field Audits** of spectrum management practices and operations were executed in 7 countries and recommendations for improvement were made.
- **Caribbean Spectrum Management Policy Framework** which provides a regional framework for harmonised policies and practices for the Caribbean.

- **Preliminary Caribbean Indicative Spectrum Allocation Table** highlighting differences between countries and variances from the ITU Region 2 Allocation Table.
- **Promotion** of the Caribbean Spectrum Management Policy Framework document and preliminary Caribbean Indicative Spectrum Allocation Table was done in the latter part of 2009 and 2010. It has been laid before parliament in several Caribbean countries.

In 2005, the CTU's highest decision-making body mandated the CTU Secretariat Secretary General address Caribbean Spectrum Management. In response, the CTU held a series of consultations with Caribbean spectrum stakeholders to determine the requirements for the Caribbean. Based on the results, the CTU designed a Spectrum Management Policy Reform Project (CSMPRP) to develop harmonised Spectrum Management Policies for the Caribbean. Through the project, the CTU established the Caribbean Spectrum Management Steering Committee and a Caribbean Spectrum Management Task Force to oversee and implement the activities of the project.

The CSMPRP Steering Committee and Task Force, comprised spectrum management practitioners, operators, policy makers, regulators, Caribbean representatives of Telecommunications organizations and other radio spectrum stakeholders from across the Caribbean. These organs identified the spectrum issues that are of concern to the Caribbean.

CTU Secretariat was responsible for facilitating the meetings and work of the Steering Committee and the Task Force (including sourcing of financing), monitoring and reporting on the progress of the project and assisting governments in the implementation of the recommendations of the Task Force and the Policy Framework.

In 2007, the Caribbean Telecommunications Union was mandated by its 20 member countries to continue the programme of Spectrum Management reform. See Appendix 1.

The 2010 high level Work Plan developed by the Steering Committee and the detailed implementation Plan of the Task Force identify the work that is to be undertaken in subsequent spectrum management projects which build on the platform established by the CSMPRP.

The project was challenged by the lack of appropriately qualified technical staff to promote and dedicate more time to work in the project. This has limited the ability to extend the benefits of the CSMPRP to all of the CTU members. In addition, some expertise has been lost through normal staff attrition, when trained personnel leave the regulatory intuitions. New recruits will therefore require training on spectrum management practices and principles.

The lack of appropriate levels of funding for executing regional initiatives has also delayed the full realisation of some aspects of the CSMPRP.

5. Project Deliverables

Following are the deliverables for the project:

- A permanent Caribbean Spectrum Management Steering Committee
- A permanent Caribbean Spectrum Management Task Force as a permanent Caribbean body
- A Caribbean framework for mitigation and resolution of interference problems for participating countries.

- Updated Caribbean Spectrum Management Policy Framework documenting appropriate harmonized policies and best practices for the management and administration of spectrum in the Caribbean, with prioritised emphasis on digital broadcasting, digital switchover and the digital dividend.
- Caribbean Spectrum Pricing Policy Framework to reflect the current evolution of wireless technologies and the changes in Caribbean markets.
- Comprehensive database of regional spectrum allocations and a detailed indicative spectrum allocation table for the Caribbean.
- Automated Caribbean Spectrum Management System and regional database, encompassing administrative, technical and geographical requirements.
- Development of regional expertise and strengthening of the institutional mechanisms for spectrum management in the Caribbean.
- A Caribbean amateur radio certification regime
- A policy for regional disaster communications
- A report on the current availability of and requirements and feasibility for accessing geosynchronous orbital slots for the Caribbean

6. Methodology

The main activities of the project are itemized hereunder:

1. Reconstitution of the Caribbean Spectrum Management Steering Committee and Task Force with the establishment of a funding mechanism.
2. Engagement of Caribbean spectrum managers which operate according to the ITU's Region 1 and 2 guidelines and countries situated in close proximity to develop appropriate mechanisms to address co-ordination issues and minimize cross border interference between affected countries.
3. Conduct research and employ multi-stakeholder consultations to develop regionally harmonised recommendations and guidelines for digital switchover.
4. Surveys, collection and collation of frequency usage information to develop National Frequency Allocation Tables (NFAT) and a harmonized Regional Frequency Allocation Table (RFAT) based on consensus by relevant countries.
5. Research and development of an appropriate Caribbean Spectrum Pricing Policy Framework
6. Additional Field Audits and implementation of the recommendations for improving efficiency and effectiveness of national spectrum management procedures indicated in the audits performed.
7. Enhanced competencies of Caribbean spectrum experts on principles of Spectrum Management and Monitoring techniques through relevant training programmes. See Appendix 2.
8. Research into the requirements for a comprehensive automated Caribbean Spectrum Management System, encompassing administrative, technical and geographical requirements including: licensing, billing, database, propagation models, frequency arrangements for different bands, frequency assignment, coordination and interference calculation and specification of the required terrain data. Acquisition of the system.
9. Convene multi-stakeholder consultations to develop guidelines for the allocation of spectrum for harmonization of regional disaster/emergency communications
10. Consulting closely with Amateur Radio Operators to develop a regional standard certification regime
11. Engage experts to research and report on the existence and feasibility of accessing allocations of geosynchronous orbital slots for the Caribbean.

12. Update the existing Caribbean Spectrum Management Policy Frameworks to reflect the results of multi-stakeholder consultations

7. Benefits of the Project

- **Caribbean Connectivity.** Harmonised approaches to spectrum management are essential for a fully integrated seamless Caribbean space and a Caribbean Single Market and Economy. This project continues the process of harmonisation in spectrum management in support of the goals and that of a connected Caribbean.
- **Economic and Social Gains.** Effective radio spectrum management enables as many users as possible to make use of radio frequencies, thus maximising the value that society gains from the spectrum. In a region of small countries with limited natural resources, Caribbean Governments have derived significant economic benefit from license fees and auctions of radio frequencies and these revenues often support the provision of social services or are used to extend communications services to more citizens. Additional gains could be had from the benefits of a properly planned and regionally coordinated switchover to digital broadcasting as well as from clarification of opportunities for new Caribbean satellites, both of which outcomes would be facilitated by this project.
- **Supporting Migration to Knowledge Economies.** Broadband access is regarded as a significant enabler for knowledge economies. The project will address the harmonised approaches to the allocation of spectrum to facilitate wireless broadband access.
- **Greater Levels of Expertise.** The project will increase awareness about spectrum management issues and will produce a group of practitioners in each country who are trained in the discipline of spectrum management and are able to execute the necessary functions within their administrations in compliance with international standards.
- **Caribbean Frequency Assignment Database.** Following the fieldwork, comprehensive national and regional databases of frequency allocations will be established. The benefits of having this information readily available will be realised by practitioners across the region in assisting them in planning and resolution of problems.
- **Updated Caribbean Policy Framework.** The project will result in an updated document that presents a harmonized Caribbean Policy Framework for spectrum management, licensing and assignment and best practices and approaches to be adopted by the region, including for digital broadcasting. Caribbean governments would have a body of information which will be used to guide the development of their national policy and regulatory frameworks.
- **Automation and Harmonization of Caribbean Spectrum Management System.** This aspect of the project will facilitate pooling of resources, sharing of experiences and availability of a pool of expertise on a common system across the region and will support the development of harmonized approaches to spectrum management. A Caribbean spectrum management system will be in keeping with and support the goals of a Caribbean single Market.
- **Caribbean Spectrum Management Steering Committee and Task Force.** The Caribbean Spectrum Management Steering Committee and Task Force will be reconstituted as permanent entities which will facilitate the formulation of the Policy. The Task force will address on-going spectrum management issues for the region; periodically update the Caribbean Spectrum Management Policy Framework; develop Caribbean positions on spectrum issues and represent the Caribbean at international fora.

- **An Enabling Environment.** The project will foster an environment of regulatory certainty that would encourage greater private sector participation and investment in the telecommunication sector across the Caribbean.

8. Beneficiaries of the Project and Framework for Cooperation

The 20 member countries of the CTU will be working together toward production of this public good.

The CTU will establish the necessary framework to facilitate cooperation among its members and provide high level coordination for the project.

The Caribbean Spectrum Management Steering Committee and the multi-stakeholder Spectrum Management Task Force, which worked very effectively for the CSMPRP will be reconstituted for this Caribbean Spectrum Management Project.

The **Steering Committee** shall be comprised of senior government officials from five CTU member countries which are representative of CTU Member States and other Caribbean States.

The **Caribbean Spectrum Management Task Force** shall be comprised of 14 members representing a diverse group of stakeholders. As the implementing agent for the Project, the Task Force will organize the work to be done, assign responsibilities, co-opt subject matter experts to working groups and monitor the progress of the project's activities. CTU Members will be required to participate in the training and consultation sessions.

The CTU will be the institution to coordinate the Project's progress but it will work in close association with the ITU, CITELE and private institutions as required, to ensure success.

9. Risks and Sustainability of the Project

The main risks associated with this project are in ensuring sufficient financing and human resource support, both expertise and manpower. Both of these are mitigated by the modular structure of the project which would facilitate progress even if finances are limited. In addition, it is anticipated that the governing institutions which have been and will be beneficiaries of the work of the project, will allocate appropriate resources to sustain the work. The CTU will also continue to contribute its resources to support the systems that would have been established in order to facilitate the on-going activities.

The CTU will work very closely with the regional regulatory institutions to build a framework that assigns responsibilities to appropriate organisations for sustaining different aspects of the work. In addition, the CTU will continue to serve in an advisory role to monitor the post-project maintenance of the systems established through the project.

10. Execution

The CTU's members comprise governments, operators, regulators, members of the academic fraternity, and other telecommunications stakeholders. As such, the CTU is ideally suited to bringing diverse stakeholders to work together as evidenced by the success of the CSMPRP.

The nature of the CTU's work requires regional approaches which necessitates the Secretariat to visit and engage each member country in its work, so that all CTU members benefit from its programmes.

The CTU also facilitates remote participation in its activities and conducts on-line courses to ensure the widest possible participation by members and Stakeholders.

The CTU Secretariat possesses significant expertise in telecommunications and has a network of experts that augments the core Secretariat staff and contributes to the work of the CTU. In addition to the technical staff, the CTU Secretariat has an Administrative Officer, Contract administrator, a resident Event Coordinator who works in the CTU's 20 member countries and other technical assistants and administrative support staff.

11. Project Budget

Following is a budget estimate (in US dollars). Details of the costs are provided in Appendix 3.

Activities	Activity and type of expense	Unit of measurement	Total Value
Establishment of a Permanent Caribbean Spectrum Management Steering Committee and Task Force	Meetings; Policy Development	Meetings and Harmonised Policy Documents	648,000
Development of a Regionally Harmonised Approach to Digital Broadcasting and Switchover	Consultant Meetings Training	Harmonised Plan for Digital Switchover	110,000
Automated Caribbean Spectrum Management System	Consultants Survey Audits Training	Spectrum Management System	750,000
Development of a Caribbean Spectrum Pricing Policy Framework	Consultant Training	Document	315,000
Development of an Interference Mitigation and Resolution Mechanism	Design Meetings	Framework for Resolution Document	120,000
Development of a Standard Certification Regime for Caribbean Radio Amateur Operators	Consultant Survey	Report and Harmonised System of Certification	150,000
Development of a Regional Disaster/Emergency Communication Plan	Consultant Meetings	Communications Plan	110,000
Research and Report on Availability and Feasibility of Accessing Geostationary Orbital Slots for the Caribbean	Consultant Report	Report with Recommendations	70,000
Execution, Monitoring and Reporting of the Project	Consultants	Effective Project Management	729,000
TOTAL			\$3,002,000.00

Appendix 1



Caribbean Telecommunications Union

10th General Conference of Ministers

5th October, 2007

Royal Bahamas Police Conference Centre
Nassau Bahamas

RESOLUTION

WHEREAS on Wednesday 18th April 2007 the Ministers of Telecommunication¹, of the Member States of Caribbean Telecommunications Union (CTU) convened a special session to receive an updated report on the Spectrum Management Policy Reform Project and to consider the Draft Spectrum Management Policy Framework Document Version 1.1 dated 7th to 9th March 2007.

RECOGNISING that this project was undertaken under a mandate in October 2004 from the General Conference of Ministers

RECOGNISING that the work is progressing in a satisfactory manner under the guidance of the CTU Secretariat

RECOGNISING that the Draft Spectrum Management Policy Framework Document developed on the basis of multi-stakeholder consultation and the work of the Spectrum Management Task Force, a working committee comprised essentially of technocrats from the Member States, regulators and operators as directed by the Spectrum Management Steering Committee (a sub-committee of the Executive Council)

CONSIDERING that the Spectrum Field Audit Reports of seven Member States had identified a number of weaknesses in the management of the finite radio spectrum resource

CONSIDERING that the Draft Spectrum Management Policy Document addressed relevant areas for policy harmonisation and improved spectrum management processes and procedures

¹ Jamaica, Anguilla, St Kitts and Nevis, Dominica, Montserrat, St Vincent and the Grenadines

AND

CONSIDERING that the funding from donor agencies has been identified to sustain the Project for the next two years to mid 2009

THE MINISTERS OF TELECOMMUNICATIONS RESOLVED THAT:

1. The Secretariat be encouraged and supported in continuing the development of a Regional Spectrum Management Policy Framework in order to achieve greater levels of harmonization in policy, processes and procedures in the Region

2. **That Secretariat in continuing the work gives special attention to the following areas:**
 - a. The development of a Caribbean Region Spectrum Allocation Table
 - b. Spectrum Management, Monitoring and Enforcement
 - c. Pricing Models for the determination of appropriate fee structures
 - d. Implementation modalities after the finalization of the Policy Framework
 - e. Human capacity development
 - f. Appropriate mechanisms and funding to ensure the sustainability of the work

Dated: Wednesday 18th April 2007, Anguilla

Ratified on 5th October, 2010 by the CTU's 10th General Conference of Ministers.

Appendix 2



Caribbean Telecommunications Union

Caribbean Spectrum Management Policy Reform Project Training Requirements

Principles of Radio Spectrum Management

1. Radio Regulation and Policy Development
 - Acts
 - Regulations
 - Policy
 - Procedures
2. Spectrum Planning
 - Table of Frequency Allocation (TOFA) Development for Region 2
3. Frequency Planning
 - Allotments
 - Channelling
 - Simplex
 - Duplex
 - Sharing Concepts
4. Authorization, Operational Policy and Radio Station Licensing
5. Frequency Selection Techniques
6. Engineering Concepts
 - Radio Coverage
 - Path Profiling
 - Technical (EMC) Analysis
7. Frequency Coordination
 - Development of Policy and Standards including disaster / emergency communications
8. Interference Investigation and Methods of Mitigation
9. Economic Considerations and Cost Recovery Principles
10. Enforcement
 - Radio Monitoring
 - Inspections
 - Prosecution
11. Operations Planning
12. Concepts of Database Development and its Importance for Frequency Planning, Technical Applications and Radio Station Licensing
13. Digital Switchover and the Digital Dividend
14. Automation of Spectrum Management Processes
 - Automated Frequency Management Systems and Tools

Appendix 3

DETAILED EXPENSES

1. Re-establishment and Operations of the Caribbean Spectrum Management Steering Committee and Task Force 2012 - 2016

Activities	Activity/nature of expense	Unit of measurement	Total Value
Convene 2 Caribbean Spectrum Management Steering Committee Meetings per year (10 participants) <ul style="list-style-type: none"> • Project priority setting and oversight 	8 Meetings . travel/per diem . logistics	Number of meetings	120,000
Convene 4 Caribbean Spectrum Management Task Force Meetings per year (20 participants) <ul style="list-style-type: none"> • Policy formulation and drafting • Update / maintenance of spectrum management policy framework document • Development of indicative table of frequency allocations for the Caribbean 	16 Meetings . travel/per diem . logistics	Number of meetings	480,000
Administration for Facilitating the Work of the Task Force and Steering Committee			48,000
TOTAL			\$648,000.00

2. Development of a Regionally Harmonised Approach to Digital Broadcasting and Switchover

Activities	Activity/nature of expense	Unit of measurement	Total Value
Review the global best practices	Consultancy to perform review	Report	10,000
Organize 3 multi-stakeholder consultations on digital broadcasting technology standards, switchover and dividend	Meeting . travel . per diem . logistics	Number of meetings	90,000
Formulate and publish a regional policy document for digital broadcasting, switchover and dividend for the Caribbean	Publication Preparation	Digital Switchover Policy Report	10,000
TOTAL			\$110,000.00

3. Automated Caribbean Spectrum Management System

Activities	Activity/nature of expense	Unit of measurement	Total Value
Survey Caribbean States in order to: 1. Review the current implementation of automated spectrum Management systems in the Caribbean. 2. Assess the immediate needs in Spectrum Management	Consultancies for design and dissemination of survey instrument, conduct and consolidation of results	Report of the Survey	10,000
Perform Field Audits in 13 countries. Resolve the problems identified. Determine the nature of information in centralized database. Identify options for a regional Spectrum Management System	Consultancy for Field Audits	Reports and Recommendations	150,000
Conduct 1 Regional consultation to review options for Spectrum Management System. Recommend an appropriate system for the region Prioritize the roll-out of System in the Caribbean countries	Meeting . travel . per diem . logistics	Identification of appropriate system	30,000
Acquire System Commission a fully integrated Caribbean Spectrum Management System.	Consultancy for acquisition of and implementation of appropriate Spectrum Management System	Caribbean Spectrum Management System	500,000
Conduct 2 Regional training programmes on Spectrum Management System	Meeting . travel . per diem . logistics		60,000
TOTAL			\$750,000.00

4. Development of a Caribbean Spectrum Pricing Policy Framework

Activities	Activity/nature of expense	Unit of measurement	Total Value
Survey Caribbean States to determine the merits/deficiencies of existing pricing models	Consultancy for survey design and dissemination, follow-up interviews.	Survey and Survey Report	10,000
Prepare 6 modules for 6 training programmes on Spectrum Pricing	Consultancy to prepare training modules	Number of programmes	75,000
Deliver 6 Training Programmes on Spectrum Pricing	Meetings . travel/ per diem . logistics	Number of meetings	90,000
Convene 4 Spectrum Management Multi-stakeholder consultation Workshops	Meetings . travel/per diem . logistics	Number of meetings	120,000
Develop a harmonized Spectrum Pricing Policy	Consultants	Report	20,000
TOTAL			\$315,000.00

5. Development of an Interference Mitigation and Resolution Mechanism

Activities	Activity/nature of expense	Unit of measurement	Total Value
Survey Caribbean States to establish the scope and nature of cross border interference	Consultancy for design and dissemination of survey instrument, follow-up interviews	Survey report	\$10,000
Develop and deliver 3 multi-stakeholder consultation Workshops designed to lay a common foundation of understanding. Topics to be explored include: <ul style="list-style-type: none"> • Interference studies • Negotiation • Dispute resolution 	Meeting <ul style="list-style-type: none"> . travel . per diem . logistics .programme material 	Number of meetings	\$90,000
Establish an escalation process for reporting cases of interference in collaboration with the Spectrum Management Task Force.	Consultancy for Research and process formulation	Report with Documents for implementing process	20,000
TOTAL			\$120,000.00

6. Development of a Standard Certification Regime for Caribbean Radio Amateur Operators

Activities	Activity/nature of expense	Unit of measurement	Total Value
Survey Caribbean countries to determine which international procedures are adhered to and determine what additional processes/standards/tests are used	Consultancy for survey design and dissemination, follow-up interviews.	Survey report	\$20,000
Research existing international certification processes and develop a standard certification regime for Caribbean amateur radio operations	Consultancy for research	Preliminary Certification Regime Report	\$20,000
Conduct 3 Regional Consultation/workshops programmes on Spectrum Management System to disseminate information and finalise Certification regime.	Meeting <ul style="list-style-type: none"> . travel . per diem . logistics 	Meetings	90,000
Assimilation of review and survey data and Production of Final Certification Regime	Consultancy	Certification Regime Report	20,000
TOTAL			\$150,000.00

7. Development of a Regional Disaster/Emergency Communication Plan

Activities	Activity/nature of expense	Unit of measurement	Total Value
Review the global best practices	Consultancy to perform review	Report	20,000
Organize 2 multi-stakeholder consultations on emergency spectrum planning	Meeting . travel . per diem . logistics	Number of meetings	60,000
Formulate and publish a Policy document for regional disaster/emergency communications for the Caribbean	Publication Preparation	Emergency Policy Report	30,000
TOTAL			\$110,000.00

8. Research and Report on Availability and Feasibility of Accessing Geostationary Orbital Slots

Activities	Activity/nature of expense	Unit of measurement	Total Value
Research history and status of the issue with the ITU and relevant international satellite organisations	Consultant; honorarium	Report with recommendations	25,000
Organize 1 multi-stakeholder consultation to present research findings and recommendations and get feedback	Meeting . travel . per diem . logistics	Number of meetings	30,000
Formulate and publish a final guidelines document on regional availability and feasibility for accessing Caribbean geostationary orbital slots	Consultant Publication Preparation	Final Report	15,000
TOTAL			\$70,000.00

9. Consulting Services for Execution, Monitoring and Reporting of the Project

Activities	Nature of expense	Fee x Man Months	Total Value
Telecommunications Specialist to oversee the Project	Consultant fee	4,000 x 50	200,000.00
Contract Administrator for financial oversight and reporting	Consultant	3,500 x 52	182,000.00
Telecommunications Engineer to assist in the execution of the technical aspects of the project	Consultant	3,000 x 48	144,000.00
Logistics and administrative support, Publications	Consultant	2,500 x 50	125,000.00
Legal Counsel	Retainer	1000 x 18	18,000.00
Promotion	Country Visits, Travel, Per Diem,	1,000 x 20 countries	20,000.00
Web Portal Development and Maintenance	Current Website		40,000.00
TOTAL			\$729,000.00

