Caribbean ICT Research Programme's First Interim StewardFish Progress Report:

Gap analysis of NFOs' Use of ICT in Governance
&
Recommendations for Improvements

Antigua and Barbuda, Barbados, Belize, Saint Lucia and St. Vincent and the Grenadines

Specifically:

1(a) Instrument to conduct a gap analysis of the NFOs use of ICT in governance, using a participatory approach

1 (b) Report, including the methodology, results of the gap analysis and recommendations for improving the use of ICT in governance by NFOs and their members.

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PROJECT TITLE:	Developing Organizational Capacity for Ecosystem Stewardship and Livelihoods in Caribbean Small-Scale Fisheries (StewardFish)
Component 1:	Developing Organizational capacity for fisheries governance
Output 1.1.2:	Information and communication technologies (ICT) used for good governance
Activity 1.1.2.1:	Analyse NFO capacity in ICT and share exemplary best practices
Deliverables 1.1.2.1	(a) Instruments to conduct a gap analysis of the NFOs use of ICT in governance, using a participatory approach (b) Methodology, Gap Analysis & Recommendations for Improving the Use of ICT in Governance by NFOs and their Members

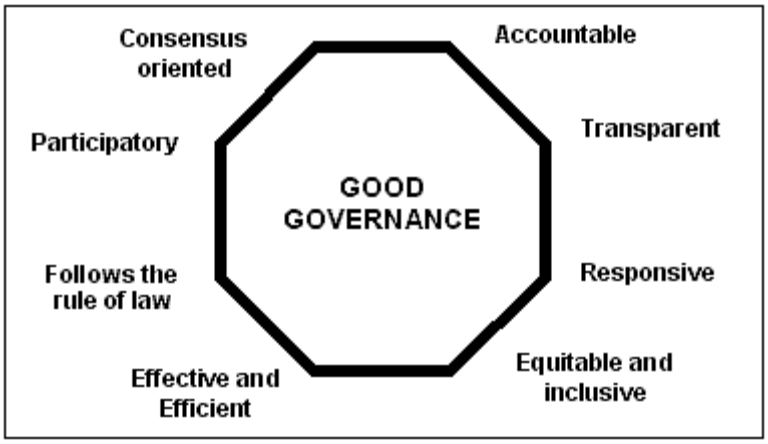

Image source: UNDP (2009)

Executive Summary

This report analyzes current gaps in the use of ICT for governance by national fisherfolk organizations (NFOs) in Antigua and Barbuda, Barbados, Belize, Saint Lucia and St. Vincent and the Grenadines. The findings of the gap analysis direct recommendations for remediation strategies and actions. These recommendations recognize the critical role of the Caribbean Network of Fisherfolk Organizations (CNFO) in strengthening the proposition of, and provisions for ICT for NFO governance.

The gap analysis was informed by the constitutions and by-laws of NFOs and the CNFO as the authoritative references for essential governance functions and roles. These were examined in relation to potential benefits of ICTs by role and function. Assessments were conducted on ICT hardware, software, services and digital literacy necessary for context-appropriate ICTs to work for good governance. The gap analysis also drew heavily on rich consultations and other forms of interaction with multiple stakeholders over several months straddling 2019 and 2020. Key informants were drawn from amongst NFO leaders, board members and associates as well as fisheries authorities and the CNFO. Consultations were also held with personnel from The University of the West Indies' Centre for Resource Management and Environmental Studies (CERMES) and Caribbean Natural Resources Institute (CANARI) as well as with the regional coordinator for the StewardFish Project. Insights were gained into FFO governance arrangements, operations and operational priorities, ICT facilities, current use of ICT for governance, and prevailing challenges to the discharge of governance functions and to the use of ICT in support of governance. Triangulated insights were gained into NFO capacity to use ICT for good governance. Best practices in the use of ICT for good governance were identified.

The report finds that to varying degrees across all countries, a debilitating barrier is the lack of a framework for the systematic embedding of ICT into routine operations. Such a framework would include but not be limited to: basic ICT policy and strategy; documented procedures, guidelines, guidance notes, checklists and templates; key data and its requirements specification; digital literacy proficiency standards, learning resources, capacity development provisions and code of conduct; and underlying information and communications strategies and plans. The report finds that the absence of such a framework as well as weaknesses in underlying governance processes and organizational arrangements percolate up to weaknesses in the application of ICT for governance. Among other things, this is characterized by a weak information management chain.

All FFOs under consideration have been found to suffer from resource constraints, in some cases crippling. This amplifies the need for operational and resource efficiencies derived from streamlined processes, structured documentation, standardization, sharing of resources and context-appropriate competence. The report recommends an overarching strategy for cloud based infrastructure, centralized information assets and standardization as a context-sensitive response strategy. A minimum configuration of ICT hardware, software and services is recommended for NFOS and for the CNFO.

The report recommends that the CNFO play a central role as resource repository, advocate and mentor; and that, through its Leadership Institute, it administers an ICT for governance course for NFO board members in its member countries. Such a course would be delivered through mixed-mode, comprising asynchronous mobile learning and synchronous reinforcement, the latter face to face where national (COVID-19) regulations allow. Course delivery would engage the facilitation services of in-country trainers to support local learners. The report further recommends that within a basic ICT for governance framework, which it deems to be a strategic imperative, the proposed course is adopted as an on-boarding requirement for all NFO board members.

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Acknowledgments

Gracious thanks are due to all who gave abundantly of their time to provide essential inputs into the Caribbean ICT Research Programme's component of the StewardFish project, particularly to the activities under the first package of deliverables: *Gap analysis of NFOs' Use of ICT in Governance and Recommendations for Improvements*. These individuals are nominally named in Appendices 1 and 2. If anyone has been omitted in error, we offer sincerest apologies and thanks. Very special thanks to Dr. Shelly–Ann Cox of CERMES and Ms. Nadine Nemhard of the CNFO for critical and gracious assistance in very many ways.

Acronyms

AGM	Annual General Meeting
ALS-K to 12 LS 6	Alternative Learning System K -12 Learning Strand 6
ANU	Antigua and Barbuda
BARNUFO	Barbados National Union of Fisherfolk Organizations
BFA	Barbuda Fisherfolk Association
BFCA	Belize Fishermen Cooperative Association
BLZ	Belize
BRB	Barbados
CALFICO	Calliaqua Fishing Co-operative
CANARI	Caribbean Natural Resources Institute
CC4FISH	Climate Change Adaptation in the fisheries sector in the Eastern Caribbean Fisheries Sector project
CERMES	Centre for Resource Management and Environmental Studies
CIRP	Caribbean ICT Research
CNFO	Caribbean Network of Fisherfolk Organisations
CRFM	Caribbean Regional Fisheries Mechanism
DLGF	Digital Literacy Global Framework
FAC	Fisheries Advisory Committee
FAD	Fish Aggregating Device
FAO	Food and Agriculture Organization
FFO	Fisherfolk Organization
ICDL	International Computer Drivers Licence
ICT	Information and Communication Technologies
IT	Information Technology
IUU	Illegal, Unreported and Unregulated fishing
LCA	Saint Lucia
LOA	Letter of Agreement
NFO	National Fisherfolk Organization
NGO	Non-governmental Organization
PFO	Primary Fisherfolk Organization
POS	Point of Sale
QCO	Quality Control Officer
TOR	Terms of Reference
UN	United Nations
UNDP	United Nations Development Programme
UN-ESCAP	United Nations' Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
VCT	Saint Vincent and the Grenadines

Background

It is well established that contemporary times call for at least basic ICT skills in the workplace (wherever and whatever that is) as well as for social and civic activities. ICTs not only often enable efficiency gains and considerable cost reduction in consumables; they are often essential to access and share information, to interact with others, and to transact even the most basic of business operations. The United Nations Development Programme (UNDP) recognizes the importance of ICTs in the provision of "new and innovative communication channels that empower people and give voice to those who previously had none, while allowing them to interact via networks and networking" (UNDP 2012). This first interim progress report of the Caribbean ICT Research Programme (CIRP) under the *Developing Organizational Capacity for Ecosystem Stewardship and Livelihoods in Caribbean Small-Scale Fisheries (StewardFish)* Project is concerned with the application of these facilities to good governance in national fisherfolk organizations (NFOs).

The report covers Activity 1.1.2.1: Analyse NFO capacity in ICT and share exemplary best practices; and provides the following deliverables as specified in the Letter of Agreement (LOA):

1. Instrument(s) to conduct a gap analysis of the NFOs use of ICT in governance, using a participatory approach
2. Report, including the methodology, results of the gap analysis and recommendations for improving the use of ICT in governance by NFOs and their members.

It additionally includes local best practices and recommendations for NFO proficiency standards, as specified in the detailed activities though not in the stated deliverables.

Scope

The geographic scope of CIRP's StewardFish activities comprises Antigua and Barbuda, Barbados, Belize, Saint Lucia and St. Vincent and the Grenadines. The thematic scope covers an assessment of gaps of NFO's use of ICT in governance and recommendations for improving the use of ICT in governance by NFOs. It does not extend to an analysis or assessment of the FFOs':

1. governance-related processes
2. capacities to perform the thematic aspects of governance functions (such as, for example, accounting or the content specifics of templates for meeting minutes, reports etc.)

The report takes governance to refer to the system by which an entire organization is directed, controlled and held accountable to achieve its core purpose over the long term (BSI 2013) (ISO 2020). Understandings of *good* governance are nuanced according to context and scope. For example, a public sector perspective of good governance prioritizes, among other things, the conduct of public affairs and management of public resources free of abuse and corruption, with due regard to the rule of law. A human rights perspective of good governance prioritizes the promotion of growth and sustainable human development (UN Commission on Human Rights, 2009), etc. etc. In these contexts, good governance is taken to refer to processes and outcomes deemed necessary to achieve the goals of development. More generally, good governance refers to processes and outcomes necessary to achieve any organization's stated goals; and it is participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive, and follows the rule of law (UN-ESCAP 2009).

A number of previous regional projects as well as other components of the regional StewardFish project assess institutional needs in the area of governance, unrelated to ICT. The latter include:

1. Output 1.1.1: Leaders with strengthened capacity in management, administration, planning sustainable finance, leadership and other operational skills; including, inter alia, 1.1.1.4 - determining priority training needs of FFOs, developing training packages and facilitating related pilot activities
2. Output 1.1.3: Capacity for policy engagement, and of women as leaders, is strengthened
3. Output 4.1.1 Improved results and learning through fisherfolk participatory monitoring and evaluation.

Methods

Preparatory consultations were held with StewardFish regional executing partner teams to share intersecting aspects of project terms of reference and in an attempt to inform CIRP's localization of governance language, definitions and conceptual framework to industry practice in Caribbean fisheries. Face to face meetings were held with the Caribbean Natural Resources Institute (CANARI); and remote meetings with the Centre for Resource Management and Environmental Studies (CERMES). Meetings were also held with the regional StewardFish Project coordinator to ensure a common understanding of the intent of CIRP's undertaking, its methods and intended outputs and outcomes. These resource persons are listed in Appendix 1. Sensitive to the imposition on respondents' time, considerable desk research was conducted prior to meeting with NFO representatives. This was the case for both the (I) gap analysis of the NFOs' use of ICT in governance, and (II) recommendations for improving the use of ICT in governance by NFOs and their members. As there was no travel budget, face to face consultations were employed opportunistically with remote channels used otherwise.

I. Gap Analysis of NFOs Use of ICT in Governance

The gap analysis of NFOs' use of ICT in governance considered:

1. essential governance functions of NFOs
2. NFO governance functions that would benefit from ICTs
3. essential ICT hardware, software and services necessary for context-appropriate ICTs to work for good governance
4. organizational and operational context for discharge of NFO governance functions
5. NFOs' use of ICT for governance
6. NFOs' access to essential ICT hardware, software and services necessary for context-appropriate ICTs to work for good governance
7. triangulated insights into NFO capacity to use ICT for good governance.

Relevant NFO constitutions and by-laws were used as the specification for essential governance functions. These documents were variously acquired from the Caribbean Network of Fisherfolk Organizations (CNFO), CERMES, CANARI, fisheries authorities, and NFO leaders. The constitutions and by-laws also revealed the various roles within the NFO governance frameworks; and they were assessed for ICT-enabling FFO governance responsibilities by role.

Semi-structured interviews and focus groups were used to inform the gap analysis of the NFOs' use of ICT in governance through the provision of insights into:

- operational priorities, challenges and resources
- best practices in the use of ICT for good governance
- ICT facilities available to support core governance functions

As a precursor to the focus groups, initial consultations were held with the chairs of the Barbuda Fisherfolk Association (BFA), the Barbados National Union of Fisherfolk Organizations (BARNUFO), the Belize Fishermen Cooperative Association (BFCA) and the St. Vincent and the Grenadines National Fisherfolk Co-operative Limited ("VCT NFO"); and with the administrative secretary of the CNFO. Due to the ongoing unavailability of the chair of the St. Lucia Fisherfolk Co-operative Society Limited ("LCA NFO"), the vice chair was interviewed. These consultations were used to preliminarily discuss FFO governance arrangements and related mandates, operations, challenges, roles and resources; as well as to provide an overview of CIRP's undertaking under StewardFish, seek inputs into primary research instruments and seek advice on the best methodology for conducting data gathering exercises. Meetings were conducted in person for the CNFO and Belize (BFCA?); and remotely through a mix of Skype, WhatsApp and Zoom calls for Antigua and Barbuda, Barbados, Saint Lucia and St. Vincent and the Grenadines.

The chairs of BFA, BARNUFO, BFCA, VCT NFO and LCA NFO and the administrative secretary of the CNFO were asked to arrange remote focus group meetings with NFO Board members in order to provide further insights necessary to assess gaps in the use of ICT for governance in relation to the essential governance functions specified in the constitutions and by-laws; and to identify best practices in the use of ICT for good governance. In some cases, remote focus group meetings could not be arranged on account of unavailability of FFO representatives or limited access to electronic conferencing facilities. In such cases, structured interviews were held with key persons as recommended by the chairs and administrative secretary. Appendix 2 lists the informants for this primary data collection exercise and Appendix 3 shows the guiding questions used. Interviews and focus groups were conducted in person for St. Vincent and the Grenadines; and remotely through a mix of Skype, WhatsApp and Zoom calls for all other countries. All synchronous meetings were supplemented by email and WhatsApp messaging.

Key informants assisted with fact checking of the draft narratives on FFO background, constituents and organizational arrangements; and tabulated summaries. The Instrument used for the latter is shown in Appendix 4. The methods used to analyse the gaps in the use of ICT in NFO governance are summarized in Table 1.

Table 1 Methods Used to Analyze Gaps in NFOs' Use of ICT in Governance

Information Sought	Methods
1. Essential governance functions of NFOs	Desk research on constitutions and by-laws
2. NFO governance functions that would benefit from ICTs	Expert analysis of NFO governance functions vis-à-vis ICT capabilities
3. Essential ICT hardware, software and services necessary for context-appropriate ICTs to work for good governance	Expert analysis of NFO governance functions that would benefit from ICTs vis-à-vis ICT capabilities
4. Organizational and operational context for discharge of NFO governance functions	Desk research and guiding questions for consultations shown in Appendix 3
5. NFOs' use of ICT for governance, including best practice	Semi-structured interviews and focus groups based on Guiding Questions (Appendix 3) followed by further details provided on request, as necessary; and finally fact checking of narrative

6. NFOs' access to essential ICT hardware, software and services necessary for context-appropriate ICTs to work for good governance	Insights gained from semi-structured interviews (Appendix 3), supplemented by individual interviews with key informants to fact check tabulated summaries using instrument shown in Appendix 4
7. Triangulated insights into NFO capacity to use ICT for good governance.	Insights gained from semi-structured interviews and focus groups based on Guiding Questions (Appendix 3), reference ICT self-assessments by NFO leads, instrument shown in Appendix 5, and other consultations with NFO representatives

II. Recommendations for Improving the Use of ICT in Governance by NFOs

The gap analysis was used as the basis of specific recommendations to improve the use of ICT in governance by the NFOs under study. The methods, summarized in Table 2, considered:

1. baseline hardware and software infrastructure, as well as key enabling services, artefacts and processes, necessary to put ICT to work for good governance in the context of NFO circumstances
2. competence necessary to use ICT to execute essential governance functions of NFOs

Table 2 Methods Used to Formulate Recommendations to Improve the Use of ICT in NFO Governance

Information Sought	Methods
1. Baseline ICT hardware, software and services, as well as key enabling artefacts & processes, for good governance	Study findings: essential governance functions of NFOs extracted from constitutions and by-laws in gap analysis exercise
	Semi-structured interviews and focus groups based on Guiding Questions (gap analysis instrument)
	Desk research and expert knowledge: software and hardware necessary to execute core governance functions
2. Competence necessary to use ICT to execute essential governance functions of NFOs	Study findings: ICTs necessary to execute core governance functions
	Desk research on ICT proficiency standards
	Study findings: considerations for selecting ICT proficiency standards
	Study findings: reference ICT self-assessments by NFO leads

ICTs necessary to execute core governance functions were identified on the basis of the essential NFO governance functions, as extracted from constitutions and by-laws, and expert ICT knowledge. The semi-structured interviews and focus groups were conducted in person for St. Vincent and the Grenadines; and remotely through a mix of Skype and WhatsApp calls for all other countries. Respondents are listed in Appendix 2. Specification of the competence necessary to use ICT to execute essential governance functions of NFOs drew on the findings of desk research into, and considerations for selecting, a digital literacy proficiency standard.

The draft ICT competency self-assessment instrument, tested on NFO chairs (vice chair in the case of Saint Lucia) and the CNFO administrative secretary, is presented in Appendix 5. It was administered in person to the NFO chairs in Belize, and St. Vincent and the Grenadines; and to the administrative secretary of the CNFO; and remotely through Skype for Antigua and Barbuda, Barbados and Saint Lucia. As the instrument comprises 77 questions and takes well over an hour to complete for each respondent, it was not applied more fully in the gap analysis.

NFO Governance Requirements

Fisherfolk organizations in the Caribbean generally serve multiple purposes. On the one hand, they set out to build fisherfolk self-esteem, agency and capacity while affording them various benefits that derive from economies of scale and group-based advocacy. On the other hand, they set out to serve Governments' objectives to organize, and collaborate with, marine resource users for more efficient and effective management of the resource (CRFM 2004).

The governance responsibilities of FFOs are prescribed in their by-laws which are variously co-operatives or associations. Associations are less formal than cooperatives and are subject to fewer legal requirements (CANARI 2014). Despite differences, there are notable common features in the NFO objectives for the countries under study: Antigua and Barbuda (ANU), Barbados (BRB), Belize (BLZ), Saint Lucia (LCA) and St. Vincent and the Grenadines (VCT). In particular, as shown in Table 3, Table 4, Table 5 and Table 6, all countries' NFOs include objectives with significant financial, engagement, advocacy and representation, and capacity building aspects, respectively.

Table 3 NFO Objectives with a Significant Financial Aspect

NFO Objectives	ANU	BRB	BLZ	LCA	VCT
1. Assist in **relieving** the need, hardship & distress of members of the association based on their assessed condition & in accordance with the by-laws and available resources	✓				
2. **Raise funds** & invite & receive contributions from any person or persons whosoever by way of subscriptions, donations & otherwise provided, that the association shall undertake any permanent trading activities in raising funds for its primary charitable objects	✓				
3. Ensure that all **monies**, gifts or benefits in any form whatever, donated for any purpose are utilized for that purpose solely, provided that reasonable administrative expense properly incurred may be made changeable against such monies, gifts or benefits	✓				
4. Provide a **better way of life** for membership (fisher folk)	✓				
1. Acquire, **purchase or rent** capital items and equipment used in the fishing industry		✓			
2. **Sell, hire** or supply on credit capital items such as boats, engines fishing gear & spare parts		✓			
3. **Acquire** the required fixed assets		✓			
4. Supply the necessary inputs and **provide facilities** for the members to engage in the fishing industry		✓			
1. Initiate, **sponsor** and promote modern fishing techniques using modern fishing equipment, boats and gears as basic educational media			✓		
2. Act as a **guarantor** for member-societies in the event of their accessing credit			✓		
3. Do such things as shall serve the **economic** and cultural welfare of its members and of the people of Belize.			✓		
1. Enhance **improvement** of the fishing sector and living standards of fisherfolk				✓	
2. Carry out the collective supply of services and **purchase** of fishing inputs which will benefit individual fisherfolk societies and their members through economies of scale				✓	
3. **Raise capital**, funds or loans for the objects of the Society				✓	
4. **Invest** in or carry out allied economic activities which serve the economic needs of members				✓	

5. Devise and carry out programmes for **production**, marketing, planning and regulations to assure improvement of standards, regularity of its supply and income generation of members				✓	
1. Work for the **improvement** of the fishing industry and betterment of fishers' living standards					✓
2. Act as the overall **marketing organization** for fish and fish products for the co-operatives					✓
3. Provide services and functions that benefit individual societies and their members through **economies of scale**					✓
4. Determine the amount and mode of **payment** of subscription of its members					✓
5. **Raise funds** or loans for the objects of the Society and for making the necessary advances to members and for that purpose, to mortgage the immovable, or pledge the movable, property of the Society					✓
6. **Borrow money** from any person, society, company or corporation and give security for any funds borrowed on any of the lease/ personal property of the Society by way of mortgage or otherwise.					✓

Table 4 NFO Objectives with a Significant Engagement Aspect

NFO Objectives	ANU	BRB	BLZ	LCA	VCT
1. **Form alliances** with other such constituent organizations affiliated with the Barbuda Fisher Folk Association	✓				
2. **Foster** positive **community** spirit through approved and appropriate activities	✓				
3. **Encourage the development** of all members (and the community, as a whole, in areas of sports, fitness, security, health, family life, symbolism, pride and heritage preservation)	✓				
4. **Unify** fisher folk to provide a strong and unified platform	✓				
1. **Organise** activities to the general welfare of the members		✓			
2. Engage in **fisheries resources management** and conservation		✓			
1. **Unite** the fishing co-operatives at the national level and to formulate policies for continued development			✓		
2. **Promote** programs which directly or indirectly affect the economic position of the societies			✓		
3. Initiate, **sponsor and promote** modern fishing techniques using modern fishing equipment, boats and gears as basic educational media			✓		
4. **Promote** an interchange of ideas and information between the societies			✓		
5. **Foster** a true co-operative spirit among societies			✓		
1. **Promote** the organization and development of fisherfolk co-operatives in St. Lucia				✓	
2. **Associate** with other registered societies and related regional and international agencies for mutual benefits				✓	
3. Promote and engage in activities of **education**, technical assistance and research which will benefit members and the general operation of the Society				✓	
1. **Encourage** co-operation among fishermen's co-operatives and to train their leaders					✓
2. **Promote** membership **education**					✓
3. Ensure the **adherence** to international fisheries standards and regulations for fishing and exportation of fish or marine products					✓

Table 5 NFO Objectives with Significant Advocacy & Representation Aspects

NFO Objectives	ANU	BRB	BLZ	LCA	VCT
1. Act as a **bargaining** agent for members (fisher folk)	✓				
2. Provide a much needed voice for fisher folk	✓				
3. **Unify** fisher folk to provide a strong and unified platform	✓				
1. **Negotiate with government** or other local or international agencies on matters of interest to members		✓			
2. Engage in **fisheries resources management** and conservation		✓			
1. **Unite** the fishing co-operatives at the national level and to formulate policies for continued development			✓		
2. Maintain a close **watch** on all matters which affect the welfare of the societies			✓		
3. **Represent** the fishing co-operatives in dealings with government departments and ministries and private organizations on current matters of concern to the societies			✓		
4. **Press for legislative action** that will establish policies for the further development of the fishing co-operatives e.g. price support, adequate quotas, concessions, etc.			✓		
5. Do such things as shall serve the **economic** and cultural **welfare** of its members and of the people of Belize.			✓		
1. Enhance improvement of the fishing sector and **living standards** of fisherfolk				✓	
2. **Safeguard** the common interests of its members				✓	
3. Provide whenever necessary, **representation** at all bodies touching or connected to the interest of the Society				✓	
4. Devise and carry out programmes for production, marketing, planning and regulations to assure **improvement of standards**, regularity of its supply and income generation of members				✓	
1. **Promote** the organization and development of fishermen's co-operative societies					✓
2. **Safeguard** the common interests of its affiliated members					✓
3. Work for the improvement of the fishing industry and **betterment** of fishers' living standards					✓
4. Act as **spokesman**, representative and negotiator for all fishermen in relation to Government and other authorities and organizations					✓
5. Ensure the **adherence** to international fisheries standards and regulations for fishing and exportation of fish or marine products					✓

Table 6 NFO Objectives with Significant Capacity Building Aspect

NFO Objectives	ANU	BRB	BLZ	LCA	VCT
1. **Encourage the development** of all members (and the community, as a whole, in areas of sports, fitness, security, health, family life, symbolism, pride and heritage preservation)	✓				
2. **Train** its members in activities pertaining to the fishing industry and related matters		✓			
3. Initiate and develop economically efficient methods of fishing and marketing of fish and fishery products		✓			
4. Engage in **fisheries resources management** and conservation		✓			
5. Engage in all other activities incidental to its objectives		✓			

6.	Initiate, **sponsor and promote** modern fishing techniques using modern fishing equipment, boats and gears as basic educational media			✓		
7.	**Promote** the organization and development of fisherfolk co-operatives in St. Lucia				✓	
8.	Promote and engage in activities of **education**, technical assistance and research which will benefit members and the general operation of the Society				✓	
9.	**Promote** the organization and development of fishermen's co-operative societies					✓
10.	**Encourage** co-operation among fishermen's co-operatives and to train their leaders					✓
11.	**Promote** membership **education**					✓
12.	Ensure the **adherence** to international fisheries standards and regulations for fishing and exportation of fish or marine products					✓

The objectives for Belize and Saint Lucia NFOs additionally include catchall scope as shown in Table 7.

Table 7 NFO Catchall Objectives

	NFO Objectives	BLZ	LCA
1.	Do such things as shall serve the economic and cultural welfare of its members and of the people of Belize.	✓	
2.	Undertake such activities that are consistent with the operations of the Society, the economic and social interests of its members, their communities and promotion of the co-operatives movement in general		✓
3.	Do such lawful things as are incidental or conductive to the attainment of the aforesaid objects		✓

Opportunities for ICT in NFO Governance

FAO (2013) recognizes the need for ICT in the institutional arrangements and organisational forms needed for successful fisherfolk associations and unions. A key application of ICT identified by the report is the extension of reach and coordination of collective action between these organizations. It promotes ICT for collaboration across organisations and network types. Other applications of ICT identified in the report are focused on regulatory measures and other forms of sector, not organizational, governance: safety during fishing; monitoring, control and surveillance (MCS) and combatting illegal, unreported, unregulated (IUU) fishing; and monitoring markets and trade development.

There is little literature on the actual use of ICT by FFOs for **organizational governance** though there are some reports on the use of ICT in marine resource governance within the small-scale fisheries sector. Petrik, M. and S. Raemaekers (2018), for example, pays in depth attention to ICT-based data collection tools and their gains for managers and policymakers. It provides examples of tools developed for these purposes, in particular: Enhanced Fish Market Information Service Kenya (EFMIS-Ke), a virtual marketplace app; and Hapi Fis, an app for logging marketing and biological data at local fish markets in the Solomon Islands. The authors elaborate on their application, Abalobi, which includes accounting capabilities that assist fishers with businesses operations, a fish capture log and a marketplace app.

Petrik, M. and S. Raemaekers (2018) recommend the use of ICT tools to include fishers in decision-making and management; and empower them in market transactions but does not address the matter of organizational governance in fisherfolk organizations per se. Many other sources provide accounts of the

use of ICT for fishers' livelihoods (for example Omar, S. Z. and Chhachhar, A. R. 2012) and the governance of Caribbean fisherfolk organizations without regard to the use of ICT (for example McConney et al 2017). There is a paucity of literature on the specific matter of interest to this report: the use of ICT for small-scale fisheries organizational (as distinct from marine resource) governance.

As a starting point, we consider the functions specified in governance terms of reference (constitution and by-laws) that can most profit from the use of ICT. Table 8 shows these for a selection of Caribbean FFOs: regional (CNFO, depicted as ✓), national (Belize and St. Lucia, depicted as ✓ and ✓ respectively) and primary (Goodwill Fishermen's Co-operative Society Limited of St. Vincent and the Grenadines, depicted as ✓). These functions include:

- managing programmes, activities and/ or personnel
- communicating with organizations
- representing FFOs at forums
- presenting general reports
- compiling reports
- presenting reports on finances
- preparing and reviewing budgets, accounts and balance sheets
- managing financial systems and records using best practices
- managing general records
- managing correspondence
- managing meetings
- maintaining directories of fisherfolk and their organizations
- documenting governance matters
- overseeing administrative systems and maintaining legal responsibility
- managing and updating information
- sharing information
- consulting with members and the executive
- promoting the FFO
- participating in interviews
- preparing promotional materials
- preparing articles for the FFO newsletter
- engaging on social media
- developing and implementing the FFO's communication and advocacy strategy and plan
- tracking Caribbean fisheries information.

All FFO officers do not carry all responsibilities. Table 8 specifies the functions that are required of organizational office holders: the executive chairman (and its closest equivalents: chairman and president); deputy chairman (and its closest equivalents: vice president and vice chairman); treasurer; secretary (and its closest equivalents and proxies: general secretary and assistant secretary); public relations officer; fisheries liaison and organizational liaison. As management roles call for functionally similar information and communications requirements as Board members, the CNFO's constitution and by-laws of the other FFOs are used in this work as the reference point for key functions necessary for governance.

In addition to managing, updating and sharing information which is intrinsic to almost all roles and therefore rarely explicitly cited in the constitution and by-laws, the Table shows that tasks related to the

management of meetings; maintenance of fisherfolk and FFO directories; management of programmes, activities and/ or personnel; and presentation of general reports are common to several roles across many FFOs. A number of other responsibilities, for example presenting reports on finances and preparing promotional materials, are specific to particular roles such as the treasurer and the secretary or PRO, respectively.

Quite apart from generic organizational governance matters, the small-scale fisheries sector comprises both vertical and horizontal reporting requirements, that fall under the organizational governance umbrella. Among the reporting requirements is the accounting, by the national fisherfolk organizations (NFOs) and primary fisherfolk organizations (PFOs), of operations such as the management of facilities (gas stations, tackle shops, etc. etc.) and conduct of other business of the NFOs, PFOs and regional fisheries organizations such as the Caribbean Network of Fisherfolk Organisations (CNFO) to the extent that they exist.

Table 8 ICT-enabling FFO Governance Responsibilities by Role

Responsibilities	**Exec Chair/ Pres/ Chair**	**Dep Chair/ Vice Pres/ Vice Chair**	**Treasurer**	**Secretary/ General/ Assistant Secretary**	**PRO**	**Fisheries Liaison**	**Organizational Liaison**
Manage programmes, activities and/ or personnel	✓✓	✓✓			✓		
Communicate with organizations						✓	✓
Represent FFOs at forums	✓✓	✓✓					
Present general reports	✓✓	✓✓✓					
Compile reports							✓
Present reports on finances			✓				
Prepare & review budgets, accounts & balance sheets				✓✓			
Manage financial systems and records using best practices			✓✓✓	✓			
Manage general records				✓✓			
Manage correspondence				✓✓✓			
Manage meetings	✓✓✓	✓✓✓		✓✓✓			
Maintain directories of fisherfolk and their Organizations				✓✓	✓✓		✓
Document governance matters				✓			
Oversee admin systems & maintain legal responsibility				✓			
Manage & update information					✓		
Share information				✓			
Consult with members & exec				✓		✓	
Promote FFO	✓	✓✓			✓		
Participate in interviews					✓		
Prepare promotional materials					✓		
Prepare articles for newsletter							✓

Responsibilities	Exec Chair/ Pres/ Chair	Dep Chair/ Vice Pres/ Vice Chair	Treasurer	Secretary/ General/ Assistant Secretary	PRO	Fisheries Liaison	Organizational Liaison
Engage on social media					✓		
Develop & implement communication & advocacy strategy and plan					✓		
Track Caribbean fisheries information etc.						✓	

Key

✓	Caribbean Network of Fisherfolk Organisations (CNFO)
✓	Belize Fishermen Co-operative Association (BFCA)
✓	St. Lucia Fisherfolk Co-operative Society (SLFCS)
✓	Goodwill Fishermen's Co-operative Society Limited, St. Vincent and the Grenadines (VCT-GFC)
Asst Sec	Assistant Secretary
Chair	Chairman
Dep Chair	Deputy Chair
Dep Pres	Deputy President
Exec	Executive
Exec Chair	Executive Chair
FFO	Fisherfolk Organization
Fish's Liaison	Fisheries Liaison
Gen Assem	General Assembly
Gen Sec	General Secretary
NFO	National Fisherfolk Organization
Org's	Organizations
PFO	Primary Fisherfolk Organization
Pres	President
PRO	Public Relations Officer
Sec	Secretary
Treas'r	Treasurer
Vice Chair	Vice Chairman

ICT Proficiency Standards

Inadequate knowledge and skills are cross-cutting barriers to realizing the potential gains of ICT in governance. The foundation for these is digital literacy, the skills required to achieve digital competence, the confident and critical use of information and communication technology (ICT) for work, leisure, learning and communication (Eurostat, 2019). Digital literacy enables the ready access, management, understanding, integration, communication, evaluation and creation of information safely and appropriately through digital technologies.

There exist frameworks for lifelong, non-formal ICT learning specified in terms of demonstrable learning outcomes applicable to personal, civic, social and work-related activities. Such frameworks purposefully address knowledge, skills and competences at increasing levels of proficiency; where knowledge refers to the outcome of the assimilation of information through learning; skills to the ability to apply knowledge and use it to complete tasks and solve problems; and competence to the combination of knowledge, skills and attitudes appropriate to a particular context: learning; employment; citizenship etc. (European Communities, 2008).

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has proposed a Digital Literacy Global Framework (DLGF) as the basis for the development of localized frameworks, curricula and assessments across different countries and regions (UNESCO, 2018). The DLGF was designed to underpin the achievement of Sustainable Development Goal (SDG) 4.4, to "by 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship" (UN 2014). As a guide for countries at all stages of development and for all contexts, it was developed through broad scale consultation with experts and stakeholders crossing diverse economic and regional contexts.

The development of the DLGF took into consideration existing frameworks adopted by 47 countries across several regions as shown in Table 9. After careful consideration, DigComp 2.0 (European Union, 2018) was selected as the reference digital literacy framework. DigComp 2.0 in turn had been synthesized from other, major digital literacy frameworks and undergone a long consultation and development process. The competence areas and competences of the DigComp 2.0 framework are shown in Appendix 6. DLGF supplements DigComp 2.0 to ensure applicability to countries at all stages of economic and technological developmental. As shown in Table 10, all of the competences captured in the 47 frameworks can be mapped to DigComp 2.; and consequently they can be mapped to DLGF.

Table 9 Countries with Digital Literacy Frameworks Considered in DLGF Development

Geographical region	Income level of country				Total
	High	Upper - middle	Lower - middle	Low	
1. Asia	1	3	7		**11**
2. European Union	1	1			**2**
3. High – income countries outside EU	2				**2**
4. Latin America	1	4			**5**
5. Middle East and North Africa	4	4	4		**12**
6. Sub-Saharan Africa		4	6	3	**13**
7. Other		1	1		**2**
Total	**9**	**17**	**18**	**3**	**47**

Table 10 Mapping of Selected Digital Literacy Frameworks onto the Extended DigComp Framework. Source: (UNESCO, 2018)

	DigComp Competency (Appendix 6)																											
Digital literacy frameworks	**0**	**1**	**1.1**	**1.2**	**1.3**	**2**	**2.1**	**2.2**	**2.3**	**2.4**	**2.5**	**2.6**	**3**	**3.1**	**3.2**	**3.3**	**3.4**	**4**	**4.1**	**4.2**	**4.3**	**4.4**	**5**	**5.1**	**5.2**	**5.3**	**5.4**	**6**	**Total**
Kenya Basic Education Curriculum Framework	5			2		4			3					5		2	3			2			2			2	2	6	**38**
Philippines ALS-K to 12 LS 6	7		19	1	6		3	4		1	4	2		19	4	3		4	1	6	5					3	6		**98**
India Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA)	1		4		2	1	1	1	1					1															**12**
Costa Rica Student Performance Standards in Digital Technology-enhanced Learning	15		4	4	4		4	6	1	10	5			11		1	10	8	3	2	1			1	1	3	13		**107**
Chile SIMCE TIC Matrix of ICT Skills for Learning			2	2	2		1								3	1				1	1						1		**14**
British Columbia Digital Literacy Framework	8	1	13	4	1	5	3	2	4	2	7	5		6	3	5	4	1	3	4	8	1	4	5	2	3	2		**106**
IC3 Global Standard 5	16		16	1	14		5	3			2	1		14	2	1	1	1	5	4	3			1		1	3		**94**
ICDL Competences	21		22	5	19	1	5	2		4	3	1		41	10	2	3	2	8	6	3	1				2	12	4	**177**
Microsoft Digital Literacy Standard Curriculum Version 4	15		13	1	5		1				1			10	3	1			5	2	1						7	2	**67**
Total no. of instances mapped	**88**	**1**	**93**	**20**	**53**	**11**	**23**	**18**	**9**	**17**	**22**	**9**	**0**	**107**	**25**	**16**	**21**	**16**	**25**	**27**	**22**	**2**	**6**	**7**	**3**	**14**	**46**	**12**	

Note: DLGF supplements the DigComp 2.0 Framework with the underscored competence areas: 0 and 6

ICDL: International Computer Drivers Licence | ALS-K to 12 LS 6: Alternative Learning System K -12 Learning Strand 6

The competence areas and competences of the proposed DLGF are shown in Table 11. The baseline DigComp framework specifies twenty-one competencies across five competence areas: information and data literacy; communication and collaboration; digital content creation; safety and problem solving. These areas of competence are deemed necessary to use digital technologies in a "confident, critical, collaborative and creative way to achieve goals related to work, learning, leisure, inclusion and participation in our digital society" (European Union, 2018).

DLGF extends DigComp by the addition of two competence areas: (i) devices and software operations, labelled "0" in Table 11 and (ii) career-related competences, labelled "6" in Table 11. The former covers basic operations of digital devices, such as powering them on and off, understanding basic concepts of hardware and software, and operations on a graphical user interface. Career-related competences cover use of digital technologies as productivity tools for particular work contexts, and provides an explicit channel, implicit in DigComp, to localize the framework for NFO governance.

Table 11 Proposed Competence Areas and Competences for the Digital Literacy Global Framework (DLGF)

Competence area	**Competences**
0. Fundamentals of hardware and software	0.1 Basic knowledge of hardware such as turning on/off and charging, locking devices 0.2 Basic knowledge of software such as user account and password management, login, and how to do privacy settings, etc.
1.Information and data literacy	1.1 Browsing, searching and filtering data, information and digital content 1.2 Evaluating data, information and digital content 1.3 Managing data, information and digital content
2. Communication and collaboration	2.1 Interacting through digital technologies 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 2.5 Netiquette 2.6 Managing digital identity
3. Digital content creation	3.1 Developing digital content 3.2 Integrating and re-elaborating digital content 3.3 Copyright and licenses 3.4 Programming
4. Safety	4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being 4.4 Protecting the environment
5. Problem solving	5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively using digital technologies 5.4 Identifying digital competence gaps
6. Career-related competences	6. Career-related competences refers to the knowledge and skills required to operate specialized hardware/software for a particular field, such as engineering design software and hardware tools, or the use of learning management systems to deliver fully online or blended courses

Country-specific Findings

Antigua and Barbuda

There is no NFO in Antigua and Barbuda. As the Barbuda Fisherfolk Association (referred to as "B.F.A." in the Association's by-laws) is the FFO that represents Antigua and Barbuda on the CNFO Board, this report treats it as a proxy for an NFO.

B.F.A. was registered in 2015 to:

- assist in relieving the need, hardship and distress of members of the association based on their assessed condition and in accordance with the by-laws and available resources
- practice sea food harvesting in a sustainable way consistent with the preservation of the environment
- form alliances with other such constituent organizations affiliated with the Barbuda Fisherfolk Association
- raise funds and receive contributions from any person or persons whosoever by way of subscriptions, donations and otherwise provided that the association shall undertake any permanent trading activities in raising funds for its primary charitable objects
- ensure that all monies, gifts or benefits in any form whatever, donated for any purpose are utilized for that purpose solely, provided that reasonable administrative expense properly incurred may be made changeable against such monies, gifts or benefits
- foster positive community spirit through approved and appropriate activities
- encourage the development of all members (and the community, as a whole, in areas of sports, fitness, security, health, family life, symbolism, pride and heritage preservation)
- act as a bargaining agent for members (fisher folk)
- provide a much needed voice for fisher folk
- unify fisher folk to provide a strong and unified platform
- provide a better way of life for membership (fisher folk).

Constituents

Membership in the Barbuda Fisherfolk Association is open to Barbudan fisherfolk. The Association offers four categories of membership: ordinary, life, honorary and friends of the association.

Organizational Arrangements

For very many years, keen focal points for fisheries advocacy in Antigua and Barbuda have been illegal fishing as well as the legislation, with related regulations, to protect fish stocks. Fishing cooperatives have long been recognized as an important vehicle for advocacy and to enable meaningful stakeholder participation in the planning and decision making of matters relating to marine resources in Antigua and Barbuda (Cooper B. and Bowen, V. 2001). The Fisheries Act, No. 22 of 2006 requires stakeholder (fishermen, local authorities and other relevant persons) involvement in the preparation and review of fisheries management and development plans. Ongoing consultation has been found to result in the stabilization of stock levels, reduced conflict, greater efficiency in the management process and a greater sense of stewardship (FAO 2015).

In the absence of an NFO and an inactive Fisheries Advisory Committee, the dedicated legal mechanism for fisherfolk participation in the governance process under the Act, the Antigua and Barbuda Fishermen's Alliance was formed in the mid-1990s to bring FFOs together for action and to develop their organizations. A major motive was to oppose the threat of illegal fishing from neighbouring countries.

After some years of inactivity, there is currently interest in reviving the Alliance due to the absence of an NFO or a Fisheries Advisory Committee.

The B.F.A. is a strong advocate on issues such as the number of gears, and fishing methods used by some fishers whom they believe contribute to dwindling fish stocks and compromise reef health. The B.F.A. has also advocated for the protection of spawning areas for lobsters, and closed seasons to enable fish stock to replenish. Antigua and Barbuda has implemented and is currently enforcing closed seasons for several species[1].

Elected officers of the B.F.A. hold office for three years and are collectively referred to as "the executive". The administrative authority of the association rests with the executive. The by-laws specify that the Board of Directors comprises a President, Vice President, Secretary, Assistant Secretary, Treasurer, Assistant Treasurer, Public Relations Officer (PRO), Social Services Officer/Coordinator and two trustees. At this time, all offices are filled except for that of the Social Services Officer/Coordinator. There are three trustees, one of whom is a past fireman; the BFA expects to utilize his expertise to provide some safety training as mandated for registration under the Fisheries Regulations No. 2 of 2013

At this time the only commercial activity conducted by B.F.A is the sale of vouchers for gas which they purchase at a reduced rate. The Board's Secretary manages hard copy receipt books used by the Vice President and Assistant Secretary who collect cash for vouchers. Customers purchase vouchers from the vice president at his farm any time of day from 6 am; or from the Assistant Secretary at his home between 7:00 and 8:00 am each day. The Secretary maintains the accounts, procures new receipt books and vouchers, and manages the bank account.

The Association is keen to develop its business portfolio. Its only assets, though, are a compressor recently donated by the Red Cross and a freezer recently donated by the Mill Reef Club in Antigua. It has received permission to set up the compressor in the compressor room at the Barbuda Fisheries Complex; the plan is to charge divers to fill their tanks. The association is considering hiring someone from the village with the necessary training. Note the 20' freezer is not in working condition but an electrician is preparing an estimate to have it fixed.

The B.F.A does not own its own property but has use of the conference room at the Barbuda Fisheries Complex for meetings. Though it does not own any ICT, some Board members, including the President, own personal laptops that they use for the Association's business, and B.F.A. has access to secretarial services at the Complex. The Association does not have any paid employees and Board members do not receive remuneration.

In addition to the B.F.A, the other FFOs operating in the twin island state are the Antigua and Barbuda Fishermen Co-operative Society Ltd., the Antigua and Barbuda Sports Fishing Club and the Antigua and Barbuda FAD Fishers Association. There are also loose collections of individuals, such as the Spear Fishers Association and the South Coast Fishermen's Alliance, which are not registered under either the Friendly Societies or the Cooperative Societies Acts.

[1] See the annexes of the FAO Fishery and Aquaculture Country Profile for Antigua and Barbuda here: http://www.fao.org/fishery/facp/ATG/en; and https://www.antiguanice.com/v2/client.php?id=1030&news=10520 for a local announcement, both last accessed 31 May 2020.

The Antigua and Barbuda Fishermen Co-operative Society Ltd. (formerly the St. John's Fishermen Co-operative Society Ltd) is the largest fisheries co-operative in the country. However it is currently in litigation with the Financial Services Regulatory Commission (FSRC) and the Supervisor of Co-operatives following a request from three Board members to FSRC to remove specific Board members on account of several violations of the Society's by-laws[2]. The Co-operative owns a container which houses its offices at Point Wharf near the Fisheries Division.

In addition to the Barbuda Fisheries Complex, the Government owns three fisheries complexes in Antigua. They were set up to provide fisherfolk with basic services such as proper fish landing sites and lockers, as well as meeting rooms outfitted with portable multimedia projectors. Internet services are provided to FFOs upon request to the fisheries authority. FFOs do not have direct access to computers at the complexes but secretarial support is provided for typing and printing by managers, administrative assistants or clerks on duty. The Barbuda Fisheries Complex suffered considerable damage from Hurricane Irma in 2017 and the restoration efforts did not prioritize consumables or ICT. The complexes and Fisheries Division are normally used as drop off and collection points for hard copy mailed documents for the FFOs. All complexes in Antigua are managed by the Fisheries Division, whilst the one in Barbuda is administered by the Barbuda Council, with oversight by the Fisheries Division. They all have officers which receive and process users' fees and manage the sale of ice and other goods.

The FAD Fishers Association, formally constituted under a JICA CARIFICO project in 2017, uses the facilities of the main complex at Point Wharf where the Fisheries Division is located. It does not operate any business, as its focus is on management of FAD fishing. The Sport Fishing Club does not operate business year-round but does run annual sport fishing tournaments for cost recovery. Though the Club does not own dedicated facilities for its operations, many of its members are business owners so those facilities and equipment, as well as personal facilities, are used to support the Club's operations. The Club was founded in 1966 and is one of the oldest associations in Antigua and Barbuda is well organized.

Use of ICT in Governance

The Barbuda Fisherfolk Association's ICT capabilities and use are very modest. Meetings are conducted in person and document resources are almost exclusively paper-based. They are read, not distributed nor projected. As for all such organizations, the Secretary is required to take minutes for all meetings. The current secretary does this in hard copy, retained either in a book or in a folder. All other records of the Association, including the register of members and all of the accounting for gas purchase and voucher sales, are also maintained in hard copy by the Secretary. No computer-based support is used though he owns a tablet. No electronic transactions or banking is used.

The PRO, who is responsible for developing and promoting activities to foster good relationships between members of the Association and the general public, conducts all of his business in person. He manually distributes flyers and walks around the village sharing news about events or other matters. He uses neither WhatsApp nor phone. Indeed, B.F.A. messages are otherwise predominantly propagated through word of mouth. Communications with the Fisheries Division is generally by voice. Phone based communications, including WhatsApp and voice, is the most used ICT channel for communications with

[2] The Daily Observer news article may be viewed here: https://antiguaobserver.com/fishermen-cooperative-society-Board-of-secrecy-accused/

the other FFOs and with the CNFO. Six out of nine Board members have Smartphones with regular access to data services.

Though the CNFO has set up a WhatsApp group specifically for Antigua and Barbuda, it is less active than other countries. The CNFO assesses that this is due in part to the challenges faced by the Antigua and Barbuda Fishermen Co-operative Society Ltd. B.F.A. members do, however, participate in the general CNFO WhatsApp group which is open to all eligible fishers and includes the CNFO Executive, Board, and each country's representatives.

The Association has a bank account and all B.F.A. members are required to pay membership fees. In the case of regular members, fees are due annually. A villager provides annual auditing services on a volunteer basis. The treasurer presents financial reports as necessary at executive meetings and the audited balance sheets and statements of income and expenditure at each annual general meeting (AGM). These documents are not reproduced and distributed to meeting participants. They are read by the Treasurer. The standing agenda for the AGM comprises reports from the President and Treasurer as well as any other. While individuals, most particularly the President, may have and use digital content creation tools such as Word, PowerPoint and Excel, the B.F.A. does not use these applications during their meetings.

The B.F.A uses email but do not have an organizational account so they use the Secretary's, the President's and the Vice President's accounts and addresses. They do not conduct virtual meetings though the President participates remotely in fisheries-related meetings. There is no web presence through either Facebook or a website. No other social media channels are used. The software tools used by B.F.A in support of governance are shown in Table 12. Like the B.F.A., the use of ICT by the FAD Fishers Association is very limited.

Table 12 Software Tools Used by B.F.A. in Support of Governance

	Software Tools	Yes	No	Comments
Digital Content Creation	Word processing	✓	☐	Mostly the President Microsoft Word – personal copy
	Desktop publishing	☐	✓	Microsoft Word
	Image and video editing	☐	✓	
	Presentation	☐	✓	Microsoft PowerPoint – personal copies
	Spreadsheeting	☐	✓	Microsoft Excel for financial records and reports
	Financial & inventory management	☐	✓	Word (mainly) & Microsoft Excel
	Point of sale	☐	✓	
	Project management	☐	✓	Microsoft Word
	Database management	☐	✓	Microsoft Word
Communication & Collaboration	Web publishing	☐	✓	
	Social media	✓	☐	WhatsApp ✓ Facebook ☐ Twitter ☐ YouTube ☐ Instagram ☐
	Online collaboration	☐	✓	Google Drive ☐ Other _____
	Video conferencing	✓	☐	Free Skype ☐ Free Zoom ✓ Other _____
	Email	✓	☐	Personal emails of 3 Board members on their phones or laptops and Wi-Fi

At this time BFA has no software licensing; hardware maintenance subscription; resident ICT capability for basic technical support; regional or national ICT mentors, stewards and training facilitators for FFOs; Internet service at the Board level; cloud storage, or website hosting & administration.

On account of the business operations and the availability of dedicated office space, the Antigua and Barbuda Fishermen Co-operative Society Ltd. owns ICT assets. Their financial systems are computerized, there is ease of sharing and they produce regular reports. They also use ICT for business operations, for example to deal with suppliers.

The Sport Fishing Club utilizes all standard software applications for their business; and communicates using a mix of phone, WhatsApp and email communications. They maintain a website, http://www.antiguabarbudasportsfishing.com/, which provides a clearly categorized catalog of past, current and upcoming tournaments. They also maintain a Facebook page, https://www.facebook.com/AntiguaAndBarbudaSportsFishingClub/ which has 7,665 likes and 7,735 followers. There are 52 albums, each with multiple photos, up to 253 in one case. Photos are primarily related to the Club's competitions, tournaments and social events.

Best Practice

The Antigua and Barbuda Government wishes to assemble a coastal watch association to report all illegal activity and incidents of note at sea to the Fisheries Division and the Coast Guard. Matters of interest include illegal fishing, habitat destruction, dumping, oil spills and search and rescue. As a precursor to this, mariners have been sending notifications with coordinates for the Division's attention. For example, members of the FAD Fishers Association have used their mobile phones to take videos of French vessels fishing illegally in national waters, and transmit the videos to the Fisheries Division via WhatsApp. The Division has used these to lodge complaints with the relevant authorities (e.g., DG MARE, the European Commission's Directorate-General for Maritime Affairs and Fisheries, the authority responsible for the Law of the Sea and Maritime Affairs).

FAD Fishers have also taken pictures of unfamiliar fish species and sent them to the Fisheries Division via WhatsApp for their identification. During the period of social distancing and stay at home orders due to COVID-19, virtual inspections of fishing vessels have been conducted to ensure vessel markings are appropriately featured on vessels and fish hold and other areas are in a satisfactory condition for licensing. This service was utilized mainly by members of the Sports Fishing Club and the FAD Fishers Associations.

Gaps

There are many information and communications needs at this time. Key gaps in the B.F.A.'s procedures include reference artefacts necessary to frame the use of ICT for this and other purposes. These include:

1. Documented guidelines for good practice in record keeping
2. Documented guidelines for good practice in document management
3. Documented specifications for data requirements for all standard records including fisherfolk registries
4. Data on fisherfolk necessary to capture in registry
5. Templates for key document types e.g. fisherfolk registries
6. Communications strategy and plan
7. ICT policy and strategy
8. Digital literacy code of conduct

9. Guidance notes and checklists for web conferencing and other common ICT-based activities
10. Record of ICT assets
11. ICT proficiency standards
12. ICT learning materials

Gaps in the processes necessary to put ICT to work for governance in the NFO include:

1. A robust file management system
2. A robust directory management system
3. Basic ICT training
4. An orientation programme for new Board members and management, including an ICT component.

Subscription to cloud storage is highly recommended.

Barbados

Background

The Barbados National Union of Fisherfolk Organisations (BARNUFO) was established in 1999 to strengthen the capacities of the roughly dozen active FFOs that existed in the country at the time. Key areas targeted for capacity building were: organizational resilience, sustainable livelihoods and advocacy (McConney et al 2017). The Union's constitution was amended in 2006 to expand and adjust the terms of Union and Board membership, increase the ceiling on the number of representatives per PFO, and adjust the quorum.

BARNUFO sits on the national Fisheries Advisory Committee (FAC) which advises the Minister of fisheries on policy and practices. It also sits on the CNFO Board. The Union is considered the most representative fisherfolk body in the country and, on this basis, the NFO. The organization has no legal status but is administratively registered with the Fisheries Division. The Union's objectives are to fulfil the requirements of its members, with a view to improving their socio-economic conditions based on the sustainable development of fisheries. To achieve its objectives, BARNUFO may:

- acquire, purchase or rent capital items and equipment used in the fishing industry
- sell, hire or supply on credit capital items such as boats, engines, fishing gear and spare parts,
- acquire the required fixed assets
- supply the necessary inputs and provide facilities for the members to engage in the fishing industry
- train its members in activities pertaining to the fishing industry and related matters
- initiate and develop economically efficient methods of fishing and marketing of fish and fishery products
- negotiate with government or other local or international agencies on matters of interest to members
- organise activities to the general welfare of the members
- engage in fisheries resources management and conservation
- engage in all other activities incidental to its objectives.

Constituents

Only registered primary FFOs qualify for full BARNUFO membership. There are several FFOs in Barbados, at various stages of activity. These are the Boat Owners and Fishers Association, Bridgetown Fisherfolk Association, Central Fish Processors Association, Oistins Fisherfolk Association, Paynes Bay Fisherfolk

Association, Small Boat Owners Association, Sand Pit Fisherfolk Association, Weston Fisherfolk Association, Conset Bay Fisherfolk Association and Silver Sands Fisherfolk Association. Six are currently fully operational. In addition to the PFOs, BARNUFO currently accepts other organizations and individuals, outside of primary FFOs, as associate members. These may vote and hold some posts. Affiliate and sponsorship membership is also available for individuals and organizations outside of the fisheries industry, but they may not vote.

Organizational Arrangements

The BARNUFO Board of Directors comprises up to seven elected positions: president, vice-president, treasurer, secretary, assistant secretary/public relations officer, projects officer and membership officer. The Board is required to select members to fill Board vacancies, find financial resources to implement the work programmes of the Union, employ persons to implement the work programme as necessary, acquire and sell fixed assets for the Union as necessary, formulate suitable credit schemes for the membership, appoint sub-committees as necessary, and appoint suitable persons for the custody of the Union's finances. All BARNUFO members are required to pay membership fees.

A considerable focal point of BARNUFO's work has been, and continues to be, the facilitation of training to enhance fisherfolk livelihoods. In addition to the annual basic fishermen's training course, a broad portfolio of themes is covered including navigation, safety at sea, first aid, engine maintenance, small business management, introduction to the computer, fish handling and quality assurance.

Another long standing focal point of BARNUFO's work has been advocacy to enhance fisherfolk livelihoods. The Union, for example, assisted with the development of the 2001–2003 national Fisheries Management Plan and at this time much of its attention is devoted to its participation on a multi-stakeholder "Users' Committee" which has developed a comprehensive code of conduct for governance of the seven fish markets in Barbados. The Code is richly grounded in applicable legislation and applies to everyone in the industry who handles fish. The development of the Code was highly participatory, with vendors providing inputs during training sessions held over a 6-month period in 2019.

The Code is expected to be implemented after final ministerial approval. Engagement, outreach and advocacy have been critical to the process of Code development and will continue to be critical to the implementation of, and compliance with, the Code. Advocacy in particular, will be key to the upgrading of landing sites which do not have proper facilities for fish processing but are required to comply with the Code of Conduct.

The Union has been provided space at the Fisheries Division for its office. BARNUFO owns a computer, USB ("flash") drives and a combination printer-scanner and utilizes the Division's conference room and multimedia projector for meetings. When the Division has cause to use the projector, BARNUFO is unable to access it. The Union feels the need for a portable projector of its own to use with its presentations at other sites, particularly as advocacy and training are priorities. Not all Board members have regular access to a laptop or desktop computer with Internet access but they all do have regular access to a Smartphone with Wi-Fi or data service. Headsets are not common. The key ICT hardware facilities owned by, and accessible to, BARNUFO are summarized in Table 13.

The other FFOs do not own facilities. They usually meet at landing sites or community centres, upstairs of the National Library and the radio room in the boat yard at the Oistins Market. Members usually use personal computers and phones for administrative functions.

Table 13 ICT Hardware Owned by, and Accesible to, BARNUFO

Hardware	Yes	No	Comments
NFO office has:			BARNUFO's office is in the Fisheries Building
Computer	✓	☐	
External hard drive	☐	✓	
USB ("flash") drive/s	✓	☐	
Printer	✓	☐	All in one scanner and printer
Scanner	✓	☐	All in one scanner and printer
Headset	☐	✓	
Multimedia projector	☐	✓	Borrowed from the Fisheries Division as needed
All Board members have regular access to a laptop or desktop computer with Internet access	☐	✓	
All Board members have regular access to a Smartphone with Wi-Fi or data service	✓	☐	
All Board members have headset	☐	✓	

Use of ICT in Governance

BARNUFO regularly uses Word and Excel for standard office functions. A focus group meeting facilitated by the Chair and conducted under StewardFish, revealed an emphatic view that Microsoft Word is essential for all personnel with administrative responsibilities. Information on training, membership and other matters is saved in Excel and Word. The secretary uses Excel to manage finances but finds that QuickBooks offers advantages for the generation of reports. At this time, QuickBooks is not used by any FFO in Barbados.

The Union maintains a single Excel document comprising spread sheets for BARNUFO Board members, member FFOs, affiliate members and fisherfolk. Each sheet comprises the following fields: name, mailing address, telephone #, email address, preferred contact media, female/male, age, profession, FFO / fishing community, Board Member of fisherfolk organisation, training / workshops/ meetings attended, skills and interests/ hobbies. The by-laws require that BARNUFO maintain a register of the members comprising the full name, address and other contact information of the member, date of application for membership, registration number of the member, date of admission to membership, and date of cancellation of membership (if any).

BARNUFO is eager to have at its disposal a resident store of sector data, particularly fisherfolk information, at minimum: name, roles (fisher, vessel owner, vender etc.), vessel number and name, gender, age and numbers and types of vessels. In the absence of this resident data store, BARNUFO accesses sector data from the Fisheries Division. The information received in response to formal letters of request is sometimes inadequate and there are often considerable delays for receipt.

McConney. P. et al (2017) have found that BARNUFO's record keeping has been unreliable in the past. At this time, there remains an expressed need for file management competence to reduce inefficiencies. The several persons who access the office computer use different file and folder management strategies.

Despite the use of folders and subfolders, some files are kept on the desktop. Files are consequently often hard to find and there are concerns about data privacy. Also, file names are typically suffixed with the year but not exact date so versioning is often a challenge. Nevertheless, the Union is not a long way off as it maintains electronic templates for key document types such as the fisherfolk registries, meeting agenda, minutes, registration, organization, training and letters. It also has access to a rich Dropbox repository of resources created by an affiliate member. The online drive is shared with 21 members comprising BARNUFO Board Members, CERMES staff and affiliates.

There is considerable interest in virtual meetings to reduce the burden of travel. However not all Board members have computers and the management of virtual meetings is a challenge as there is often need for technical assistance. There are no guidelines or check lists to prepare for them. Some Board members feel that they should all be issued laptops to participate in virtual meetings.

WhatsApp is the ubiquitous channel for communications and it has worked very well in Barbados. The BARNUFO president, who chairs the Board of directors, recognizes her role as primarily one of advocacy and liaises closely with all stakeholders, from the Minister to fishers, primarily through WhatsApp. She ably creates and manages WhatsApp groups for all projects and thematic discussions.

Other channels for BARNUFO engagement, outreach and advocacy include a Facebook page (https://www.Facebook.com/BARNUFO/) originally set up by Shelly-Anny Cox of CERMES. Various persons including the chairman of the Board and Public Relations Officer (PRO) determine content and post to the page. The *About* page features a map with directions to the Union, telephone number and email address as well as the Mission and founding date. There is a prominent *Call Now* feature that provides the telephone number. The page also provides a prominent *Send Message* control for viewers to send a message. As at the end of May 2020, the most recent post had been made on the same day, the page had 231 likes and 259 followers. There were 74 timeline photos, 281 mobile uploads and 5 cover photos. Photo album categories were BARNUFO school tour, fish dish competition, BARNUFO information session, 2012 BARNUFO training, 2012 BARNUFO graduation, profile pics and "untitled". There were five video posts, four of which are fisheries-related and the other a Mothers' day greeting. The most recent fisheries-related video was posted in 2019. Past features in the events area of the page include a July 2014 BARNUFO Movie Night and Karaoke Competition and a June 2016 "Q in the Community". Pages liked by the BARNUFO Facebook page are relevant to its business and mission: the Blue Network, Caribbean Network of Fisherfolk Organisations and Vulcan Productions. The page has not been rated.

Though BARNUFO has maintained a useful website in the past, it is currently offline. The site was designed, and is managed, through a commercial arrangement. The content is determined by the chairman of the Board and other Board members. In the past, the BARNUFO secretary has updated it and changed the template to include a database function. BARNUFO would ultimately like to include additional features such as online payment of membership fees and secured areas for Board members to access sensitive information. Software Tools used by BARNUFO are shown in Table 14.

Table 14 Software Tools Used by BARNUFO. in Support of Governance

	Software Tools	Yes	No	Comments
Digital Cont	Word processing	✓	☐	Microsoft Word
	Desktop publishing	✓	☐	Canva (free) and Publisher

	Software Tools	Yes	No	Comments
	Image & video editing	☐	✓	Microsoft Word, Paint
	Presentation	✓	☐	Powerpoint
	Spreadsheeting	✓	☐	Microsoft Excel
	Financial & inventory management	☐	✓	Microsoft Word
	Point of sale	☐	✓	
	Project management	☐	✓	Microsoft Word
	Database management	☐	✓	Microsoft Word
Communication & Collaboration	Web publishing	☐	✓	
	Social media	✓	☐	WhatsApp ✓ Facebook ✓ Twitter ☐ YouTube ☐ Instagram ☐
	Online collaboration	✓	☐	Google Drive ☐ Dropbox ✓ Other _____
	Video conferencing	✓	☐	Free Skype ✓ Free Zoom ☐ Other WhatsApp
	Email	✓	☐	barnufo@caribsurf.com

Best Practice

The fluent and pervasive use of WhatsApp by BARNUFO provides an excellent example of effective, efficient, transparent and responsive operations. The use of themed groups, for both long and short term projects and activities, provides transparency and promotes participation and consensus-building in a timely, economical, equitable and inclusive manner.

As an example of use, the BARNUFO Chair created a WhatsApp group titled "FF Leadership Group" to introduce the Board, a number of active members and the Acting Chief Fisheries Officer to CIRP in advance of the stakeholders' consultation regarding FFO use of ICT, conducted under the StewardFish project. The group comprised 23 participants. A couple unsolicited recommendations to include in discussions were "lots of work needs to be done" and "Would like to suggest that we start with record keeping and accounting as to me this is the basis of the organisation". Following the consultation, comments included "a very good meeting"; and CIRP shared a link to useful tips on WhatsApp features (https://www.pocket-lint.com/apps/news/WhatsApp/138115-secret-WhatsApp-tricks-you-might-not-know-about) alongside a word of thanks for the rich participation. Though the WhatsApp Group had been established to provide the background and proposed agenda for a single stakeholder consultation and to coordinate its logistics, it is still active six months hence, having received 687 posts. With the exception of a handful of greetings, all themes relate to fisheries.

Gaps

Though a 1-day orientation programme is held for new Board members, it does not comprise any ICT component. Other gaps in the BARNUFO governance procedures include reference artefacts necessary to frame the use of ICT for this and other purposes. These include:

1. Documented guidelines for good practice in record keeping

2. Documented guidelines for good practice in document management
3. Documented specifications for data requirements for all standard records including fisherfolk registries
4. ICT policy and strategy
5. Digital literacy code of conduct
6. Guidance notes and checklists for web conferencing and other common ICT-based activities
7. Record of ICT assets
8. ICT proficiency standards
9. ICT learning materials

Gaps in the processes necessary to put ICT to work for governance in the NFO include:

1. A robust file management system
2. A robust directory management system
3. Basic ICT training
4. The inclusion of an ICT component in the existing orientation programme for new Board members.

As BARNUFO regularly conducts outreach and advocacy activities across the country, a multimedia projector is a priority. There is adequate storage space for it at BARNUFO's office. No software licensing subscription is in effect, neither is there any formal hardware maintenance subscription but there is some resident ICT capability on the Board. It is a shame that the website, https://barnufo.org/, is currently inactive. It would be excellent to arrange renewal of website hosting and clear lines of responsibility within BARNUFO specified.

Belize

Background

The Belizean NFO, the Belize Fishermen Co-operative Association (BFCA), was established in 1970. Its objectives are to:

- unite the fishing co-operatives at the national level and to formulate policies for continued development
- maintain a close watch on all matters which affect the welfare of the societies
- promote programs which directly or indirectly affect the economic position of the societies
- represent the fishing co-operatives in dealings with government departments and ministries and private organizations on current matters of concern to the societies
- press for legislative action that will establish policies for the further development of the fishing co-operatives e.g. price support, adequate quotas, concessions, etc.
- initiate, sponsor and promote modern fishing techniques using modern fishing equipment, boats and gears as basic educational media
- promote an interchange of ideas and information between the societies
- foster a true co-operative spirit among societies
- act as a guarantor for member-societies in the event of their accessing credit
- do such things as shall serve the economic and cultural welfare of its members and of the people of Belize.

Constituents

BFCA membership is limited to fishing co-operatives in Belize. At one time it comprised Northern Fishermen Cooperative Society Ltd., National Fishermen Cooperative, Caribeña Fishermen Cooperative, Placencia Fishermen Cooperative and Rio Grande Fishermen Cooperative. There are three members at this time:

1. National Fishermen Producers Society Co-operative
2. Northern Fishermen Co-operative Society Ltd
3. Rio Grande Fishermen Co-operative

The two largest co-operatives, the National Fishermen Producers Society Co-operative and the Northern Fishermen Co-operative Society Ltd, are commercially active and very successful. The Rio Grande Fisherman Co-operative is currently on a lull.

The Belize Federation of Fishers comprises community-based fishing associations. These associations are not formal members of BFCA, but BFCA advocates for all fishers, including the associations.

Organizational Arrangements

The BFCA Board of Directors comprises a chairman, vice-chairman, treasurer and secretary. Its managing committee represents the Association. Each member cooperative is managed by its own managing committee from which one representative on the BFCA managing committee is drawn. Responsibilities of the BFCA managing committee include, where applicable: supervision of equipment rental, maintenance and use; settling terms of contracts; maintenance of all records and ensuring an adequate accounting system; provision of the proper supervision, management, control and investment of funds; management of property, membership applications and committee membership; reporting to the annual general meeting on matters such as the Association's financial condition, past operations, future plans and recommendations; giving effect to decisions and instructions; and occasionally making rules and regulations governing the conduct of meetings.

In the early years, the fisheries cooperative movement in Belize was held up as an exemplar for advocating the Government for members' rights (Wilson, D. C. et al Ed 2013) and for providing comprehensive services for its members (BFCA 2010; CRFM 2007). However, several internal and external factors challenged the relevance and effectiveness of the Cooperative over time. The 2010 – 2015 Strategic Plan (BFCA 2010) counts among these: local and global economic threats to fishing cooperatives, declining influence of BFCA in policy decisions, weak cooperative management structures, declining stock of major fisheries resources, and declining global market prices. Around 2014, the loss of funding from the cooperatives, on which BFCA relied, struck a harsh blow. Since then there have been no paid employees though previously an executive secretary occupied a paid position. The sole staff member, the executive director, is an unpaid volunteer. The Association does not currently have a bank account and though the by-laws stipulate that all BFCA members are required to pay a modest fee, no monies are collected at this time.

The BFCA facilities fell into disuse and its building has been abandoned for several years. The last audit was 2014. Meetings are generally held in a conference room downstairs of the Caribbean Regional

Fisheries Machinery (CRFM), where the CNFO office is set up. Meetings are also sometimes held at the National Fishermen Producers Society Co-operative or the Northern Fishermen Co-operative Society Ltd.

Prior to 2014, the Association owned ICT equipment including five computers and a projector. These assets were maintained in an inventory, but not included in the annual audit report. They have since been written off. BFCA currently relies on the ICT facilities of the CNFO. Items of hardware accessible to it are shown in Table 15.

Table 15 ICT Hardware in Use by BFCA in Support of Governance Functions

Hardware	Yes	No	Comments
The **CNFO** office, which the NFO (BFCA) uses, has:			
Computer	✓	☐	Use of CNFO's
External hard drive	✓	☐	Use of CNFO's
USB ("flash") drive/s	✓	☐	Owned by BFCA
Printer	✓	☐	Use of CNFO's
Headset	☐	✓	Use of CNFO's
Multimedia projector	☐	✓	Use of CNFO's
All Board members have regular access to a laptop or desktop computer with Internet access	✓	☐	
All Board members have regular access to a Smartphone with Wi-Fi or data service	✓	☐	
All Board members have headset	☐	✓	

All BFCA Board members have regular access to a laptop or desktop computer with Internet access and regular access to a Smartphone with Wi-Fi or data service but headphones are not generally owned.

Following several years of BFCA ineffectiveness, there is now cause for optimism on account of new leadership with a strong vision. Between February 2018 and January 2019 the BFCA email address and Facebook accounts were reactivated; and at least a dozen meetings were held on various matters including the rehabilitation of the BFCA building, preparations to open a BFCA bank account and planned BFCA activities. There has been virtual participation in some of the meetings and WhatsApp discussions have been conducted with BFCA members. Financial assistance for the upkeep of the BFCA was sought and a letter was written to the Minister requesting a seat on the Gill Net Taskforce. The Association also secured a position on the Shark Committee. At least one interview was held and at least one newspaper article written.

Though currently a Board is in place, meetings are poorly organized and record keeping is poor. There is need for systematic, strategic programming and structured resourcing. Indeed, the 2010 – 2015 BFCA Strategic Plan recognized that critical to its success are its membership, its management committee and staff. The proposed organizational structure comprises a management committee, executive director, office manager / secretary and accountant.

The BFCA's member co-operatives also face a number of challenges. Originally formed in response to discontent among local producers of the lucrative lobster (and later conch) processing and exporting

rights held by foreign monopolies (Wilson, D. C. et al Ed 2013), they face direct competition from two private companies with permits to export fish and fish products (FAO 2019).. Notwithstanding competition with the private companies, the National Fishermen Producers Society Co-operative and the Northern Fishermen Co-operative Society Ltd are successful. Their assets include buildings and trucks. They do not own gas stations or tackle shop, as they generate revenue by buying and exporting lobster and conch under export licence. Resilience strategies such as diversification to reduce the reliance on lobster and conch; and introduction of gas stations and tackle shops, are under consideration. The Rio Grande Fishermen Co-operative and many of the associations are far less commercially lucrative and generally have only modest facilities at best. There is generally poor communication between the co-operatives.

Use of ICT in Governance

Without operational office space and facilities, the BFCA usually relies on the CNFO for ICT related support. For example a member recently requested assistance to read a PDF document as he was not able to open it on his phone. The CNFO administrative assistant took a screenshot and sent it back to him.

Microsoft Word is used for electronic documents of all types and mobile phones are regularly used for photos. The email address, bzfishcoop@gmail.com, is regularly used by the CNFO who provides support for the NFO. Free Skype is used for video conferencing and WhatsApp is used regularly.

A modest Facebook personal profile, not a page or group, was created in July 2013. It is still accessible at: https://www.facebook.com/belizefishermen.cooperativeassociaton. A Facebook page, accessible at https://www.facebook.com/Belize-Fishermen-Cooperative-Association-276086746385152/, was created in December 2018. The About tab shows a physical address in Belize City, a broken link (http://www.bfca.org/) to the BFCA website which has not been active since 2014, and a birthday date, October 23, 1970. It is unclear if this is the date that BFCA was first constituted or the birthday of the Facebook profile owner. The most recent post prior to end May 2020 was November 13 2019. At that time the profile had 654 likes and 691 followers. There had been 8 mobile uploads, 31 timeline photos, 1 cover photo and 2 profile pictures. All of the media uploads are relevant to the fisheries sector, primarily of training sessions and field events. The CNFO Administrative Officer created both the Facebook profile and the page; and currently manages them.

The software tools in use by BFCA are summarised in Table 16.

Table 16 Software Tools in Use by BFCA for Governance Functions

	Software Tools	Yes	No	Comments
Digital Content Creation	Word processing	✓	☐	Microsoft Word
	Desktop publishing	☐	✓	Contracted out as necessary or contributed to CNFO for newsletter & social media
	Image & video editing	☐	✓	
	Image & video production	✓	☐	Mobile phone
	Presentation	☐	✓	
	Spreadsheeting	☐	✓	CNFO provides this support
	Financial & inventory management	☐	✓	No bank account

	Software Tools	Yes	No	Comments
	Project management	☐	✓	Microsoft Word when necessary
	Database management	☐	✓	There is no fishers' registry but the cooperative shares its records annually
	Point of sale	☐	✓	
Communication & Collaboration	Web publishing	☐	✓	
	Social media	✓	☐	WhatsApp ✓ Facebook ✓ Twitter ☐ YouTube ☐ Instagram ☐
	Online collaboration	☐	✓	Google Drive ☐ Other _____
	Video conferencing	✓	☐	Free Skype ✓
	Email	✓	☐	bzfishcoop@gmail.com

Without operational office space and ICT equipment of its own, BFCA's electronic documents are generally stored on the CNFO's computer or thumb drives. There is no structured backup strategy or cloud storage. There is also no use of cloud services, such as Google Docs, for collaboration. The Association's computers (now not in use) were purchased with Microsoft Office installed so there was no need for subsequent licensing agreement but the application version was frozen at the time of purchase.

The National Fishermen Producers Society Co-operative and the Northern Fishermen Co-operative Society own computers and they have telephone and internet service. They use ICT for their basic tasks. ICT is not, however, a priority for the Rio Grande Fishermen Co-operative as pressing matters, such as the price and purchase of members' product as well as the need for gear, command its interest. Its use of ICT is therefore very low.

The fishing associations are generally also poorly equipped with ICT facilities and few if any have laptops. In many cases, accounts are managed manually and in other cases in Excel, audited by the Co-operative Department each year. There are several fishermen's forums which are recorded by a local non-governmental organization (NGO); and meeting announcements are issued on radio as fishers often listen to them out at sea. While a database of fishers is maintained by the Fisheries Department and a local tourism-based NGO, there is an expressed need for the fishing associations to have a database comprising, inter alia: their members' names; families; production on weekly, monthly and annual bases; and income. This information is deemed important to "take to the bank". The cooperatives provide job letters to take to the bank, courts and visa offices. These provide annual production and value.

Best Practices

At this time, the level of use of ICT in the Belize NFO is so low that there are no exemplary practices to report.

Gaps

The 2010 – 2015 BFCA Strategic Plan identifies among the requirements for improved management structure and function, the need for a fully equipped office with, among other things, information and communications technology as necessary to efficiently and effectively meet BFCA's objectives. Quite apart from these facilities and the assistance rendered by the Cooperative Department to set up BFCA's

accounts and record keeping, there are other significant gaps. The following artefacts, for example, are necessary to properly frame BFCA's use of ICT in governance:

1. Documented guidelines for good practice in record keeping
2. Documented guidelines for good practice in document management
3. Documented specifications for data requirements for all standard records including fisherfolk registries
4. Data on fisherfolk necessary to capture in registry
5. Templates for key document types e.g. fisherfolk registries
6. Communications strategy & plan
7. ICT policy and strategy
8. Digital literacy code of conduct
9. Guidance notes and checklists for web conferencing and other common ICT-based activities
10. Record of ICT assets
11. ICT proficiency standards
12. ICT learning materials

Data on fisherfolk necessary to capture in registry is available in the form of annual brochures from the co-operatives identifying active and inactive members. A record of ICT assets was maintained in the past, but not currently.

Gaps in the processes necessary to put ICT to work for governance in the NFO include:

1. Robust file management system
2. Robust directory management system
3. Basic ICT training
4. ICT component of orientation programme for new Board members and management

Subscription to cloud storage is highly recommended.

Saint Lucia

Background

The Saint Lucia NFO is the umbrella organization for the country's nine PFOs. It was registered in 2007 as the St. Lucia Fisherfolk Co-operative Society Limited. Its objectives are to promote the economic and social interests of its members and specifically to:

- promote the organization and development of fisherfolk co-operatives in St. Lucia
- enhance improvement of the fishing sector and living standards of fisherfolk
- carry out the collective supply of services and purchase of fishing inputs which will benefit individual fisherfolk societies and their members through economies of scale
- safeguard the common interests of its members
- raise capital, funds or loans for the objects of the Society
- associate with other registered societies and related regional and international agencies for mutual benefits
- undertake such activities that are consistent with the operations of the Society, the economic and social interests of its members, their communities and promotion of the co-operatives movement in general

- invest in or carry out allied economic activities which serve the economic needs of members
- provide whenever necessary, representation at all bodies touching or connected to the interest of the Society
- devise and carry out programmes for production, marketing, planning and regulations to assure improvement of standards, regularity of its supply and income generation of members
- promote and engage in activities of education, technical assistance and research which will benefit members and the general operation of the Society
- do such lawful things as are incidental or conductive to the attainment of the aforesaid objects.

Constituents

Membership in the NFO is open to all registered fishermen's co-operative societies in St. Lucia. All members are subject to the supervision and control of the Society. They are obliged to carry out all instructions of the Board of Directors and the Managing Director or any person authorized by them.

The nine PFOs, all of which are members of the Saint Lucia Fisherfolk Co-operative Society Ltd, are:

1. Anse La Raye Fishers & Consumer Co-operative Society
2. Castries Fishermen Co-operative Society
3. Choiseul Fishermen Co-operative Society
4. Dennery Fishermen
5. East Coast Fishers Co-operative Society
6. Goodwill Fishermen Co-operative Society
7. Gros Islet Fishermen Co-operative Society
8. Laborie Fishers and Consumer Co-operative Society
9. Soufriere Fishermen Co-operative Society

Two of these are virtually non-functional while the other seven are operating.

Organizational Arrangements

The business of the Society is conducted by the Board which comprises a president, vice president, secretary, assistant secretary and treasurer. Among other things, the NFO is required to maintain a register of members comprising the name and address of each member and the statement of shares it holds, the date on which the name of each member was entered into the Register, and the date on which any member ceases to be a member. Some years ago, the managers of the PFOs constituted a Managers' Forum. Amongst themselves they identify and advance matters which they wish the NFO to consider.

An administrative assistant provides key support to the Board through a variety of services such as: maintenance of a register of all members; assistance to the secretary to finalize minutes and monthly status reports to the Board; identification and sourcing of materials, supplies and fishing related inputs for bulk purchasing for fisherfolk; preparation of position papers, reports, comments and press releases for the Board of Directors; conduct of research; representation of fisherfolk at various meetings, workshops, seminars and conferences as directed by the Board; attendance at Board meetings; presentation of reports, as and when required by the Board; preparation of the draft annual work plan and budget for Board consideration; and responding to correspondence to fisherfolk as directed by the Board.

The NFO prepared a comprehensive work programme in 2014 setting out activities to be conducted in the areas of education and training; technical assistance; workshops, meetings and conferences; PFO rehabilitation; administrative improvements in support of capacity building; procurement and distribution of fishing supplies and equipment; representation of PFOs on matters arising from the Fishers Co-operatives Manager's Forum; representation on behalf of PFOs locally, regionally and internationally; and advocacy of PFOs highlighting the value of, and contribution by, fishers in the socio-economic development of Saint Lucia with respect to the sub-sectors of fisheries and co-operatives. The work plan still stands as many of the initiatives are ongoing.

The St. Lucia Fisherfolk Co-operative Society has been allocated office space vacated by what was formerly the St. Lucia Fish Marketing Corporation. However, it is unable to pay the utility and sanitation bills in that Government owned property so uses the physical facilities and registered office address of the Castries Fishermen Co-operative Society. The NFO does not own any ICT assets though it has use of Castries' computer, on-site server, external hard drive, USB ("flash") drive/s, printer and multimedia projector. Not all Board members have regular access to a laptop or desktop computer with Internet access, and all but one have regular access to a Smartphone with Wi-Fi or data service. There is no ownership or use of headsets either by the host Castries Fishermen Co-operative Society or Board members of the St. Lucia Fisherfolk Co-operative Society.

The Saint Lucia co-operatives have been set up with businesses. The Saint Lucia Fisherfolk Co-operative Society Ltd, Dennery Fishermen, Choiseul Fishermen Co-operative Society, Soufriere Fishermen Co-operative Society, Castries Fishermen Co-operative Society, Gros Islet Fishermen Co-operative Society, Goodwill Fishermen Co-operative Society and Laborie Fishers and Consumer Co-operative Society each owns a building and retail store; and runs (though does not own) a gas station. Castries, Gros Islet, Soufriere and Choiseul additionally have ice making machines. Castries also has a gaming room and conference room. All co-operatives have access to a conference room. Their facilities have Internet access and an office with computers. The East Coast Fishers and Consumers Cooperative Society Limited has a small building and ice making machine. Their retail store is closed but they sell fuel. The Anse La Raye Fishers and Consumer Co-operative Society is not operational.

The commercial operations of the Saint Lucia FFOs are a natural focal point for explorations into governance matters. They provide a tangible and compelling case for the discharge of NFO and PFO Board duties in accordance with good governance characteristics. Priorities for the management of FFO business operations are accountability, transparency, responsiveness, effectiveness and efficiency and adherence to the rule of law. As for all FFOs that operate business in all countries under examination, robust quality assurance systems are essential to ensure appropriate classification of goods and services; accurate data logging and reconciliation of inventory, earnings, sales, deposits and accounts; and recording of members' benefits. A quality assurance framework is also essential to ensure separation and clarity of duties across different roles within the business operations. The adherence to occupational safety and health standards is essential as is the documentation of principles, processes, procedures and protocols to ensure efficient and effective operations. In several cases, constrained local managerial capacities are barriers to the implementation of, and adherence to, a quality assurance framework.

The Board of Directors has a critical role to ensure good governance of the FFOs but constrained resources limit its ability to discharge these duties.

Use of ICT in Governance

Saint Lucia is amongst the top tier of countries in terms of the adoption and use of ICT for financial management within the NFO and PFOs. Despite the lack of ICT assets of the NFO, its administrative matters are primarily conducted electronically. The Microsoft Office suite is used for word processing, presentations and spreadsheeting; while Quickbooks is used for financial and inventory management. QuickBooks has also been linked to the point of sale (POS) systems in all Saint Lucia FFOs with the exception of Laborie and East Coast Fishers Cooperative which do not have POS. The linkage is reportedly working very well.

While video conferencing is seldom used, email communications is regularly used, especially for the joint procurement of fishing items. Personal email accounts are used though there is an organizational one, stluciafisherfolk@gmail.com.

The Castries Fishermen's Co-operative Society Ltd maintains an excellent Facebook page: https://www.Facebook.com/cfCo-operative/. The page has 302 people who like and 305 people who follow it. To the end of May 2020, the most recent post had been made one day prior; there were 30 mobile uploads, 2 timeline photos, 2 profile pictures and 1 cover photo. All of the photos save a loan "Happy New Year 2020" greeting, are in some way relevant to fisheries.

The page includes a prominent Call Now feature that provides the telephone number. It also provides a prominent Send Message control for viewers to send a message to the Co-operative. The About page provides a map with directions to the Co-operative, telephone number as well as rich additional information about the Co-operative, its registration details, objects and the various businesses it operates. It also provides a link to local businesses. The pages liked by this page are all relevant to the core business of the co-op: CCRIF SPC Insurance Company, GEF Small Grants Programme- Saint Lucia Public & Government Service and Environmental Defence Fund, Environmental Conservation Organization, Nonprofit Organization.

The software tools used by the Saint Lucia NFO in support of governance are summarized in Table 17.

Table 17 Software Tools Used by the LCA NFO in Support of Governance

	Software Tools	Yes	No	Comments
Digital Content Creation	Word processing	✓	☐	Microsoft Word
	Desktop publishing	☐	✓	There is generally no desktop publishing conducted
	Image & video editing	☐	✓	
	Presentation	✓	☐	Microsoft Powerpoint but not at all common
	Spreadsheeting	✓	☐	Microsoft Excel
	Financial & inventory management	✓	☐	Quickbooks and Excel
	Point of sale	✓	☐	Quickbooks and Excel
	Project management	☐	✓	
	Database management	☐	✓	
Comm unicati	Web publishing	☐	✓	
	Social media	WhatsApp ✓ Facebook ✓ Twitter ☐ YouTube ☐ Instagram ☐		

	Software Tools	Yes	No	Comments
	Online collaboration	☐	✓	Google Drive ☐ Other _____
	Video conferencing	✓	☐	Free Skype ✓ Free Zoom ✓ Infrequent use of video conferencing
	Email	✓	☐	Regularly used, especially for joint procurement of fishing items. Use of personal email accounts though there is an organizational one

The annual Go Daddy subscription is US$179.88. The domain is reserved for the Society's website but it has not yet been developed. The cost for website development has been estimated at US$5000 with a monthly maintenance fee of US500. The Society does not pay license fees for any Microsoft Office products but they do pay an annual upgrade fee of US$510.50 for Quickbooks.

Best Practices

The linking of Quickbooks to POS by the Saint Lucia FFOs is an example of best practice that should be shared with all Caribbean FFOs that operate commercial enterprises.

The use of Facebook for dissemination of information, public promotion of FFOs and engagement within as well as outside of the FFO communities is another example of good practice. The Castries Fishermen's Co-operative Society Ltd Facebook page: https://www.Facebook.com/cfCo-operative/, in particular leverages the popularity of the social networking channel in a manner that is engaging, and effective. Its regular postings of relevant and current information, with an emphasis on images and video, promotes the organization and sector at large; and provides accessibility, a sense of transparency and responsiveness. At the same time, rich information on the About page provides useful resources about the particulars of the co-op's operations.

Exchange of information on FFOs' experiences with Facebook, and sharing of the population strategies used by the Castries Fishermen's Co-operative Society Ltd Facebook page, in particular, would benefit all FFOs. As the basic Facebook engine is free and the channel enjoys tremendous adoption rates, tips on increasing the impact and return are highly recommended. These include, for example, guidance on the difference between profiles, pages and groups, creating and joining groups, use of fan pages, maintain an FFO brand presence, listing events, syndicating blogs, sharing posts, streaming live video and creating a community. There is an abundance of free training resources, including videos, online.

Gaps

The commercial operations of the Saint Lucia FFOs are also a natural focal point for ICT gap analysis as they are all *already* ICT-enabled and in need of some maintenance and updating. This notwithstanding, there are several areas in the commercial operations of the FFOs that would benefit from capacity building. While the organizations have documented guidelines for good practice in record keeping and data on fisherfolk necessary to capture in registry, they would benefit from sensitization to the background of particular roles within the commercial businesses; and capacity building to include knowledge and skills to discharge all organizational roles: manager, supervisor, accounts clerk, sales clerk, stock clerk, etc. Constrained human capacity are barriers to growth and for new income streams, for example through opportunities such as ice production, as this requires strategic and operational planning and organization. Basic training priorities include bookkeeping, inventory management, accounting

procedures and protocols as well as management procedures and principles. Specific ICT training priorities include data entry, QuickBooks accounting software, computerized financial and inventory management.

At this time, ICT gaps in the Saint Lucia NFO include a robust file management system and directory management system as well as an orientation programme for Board members including, among other things, basic digital literacy training. The NFO could also benefit from guidelines for good practice in document management, documented specifications for data requirements for all standard records including fisherfolk registries, templates for key document types e.g. fisherfolk registries, a communications strategy and plan, an ICT policy and strategy, digital literacy code of conduct, guidance notes and checklists for web conferencing and other common ICT-based activities, a record of ICT assets quite apart from the entry in audited accounts, ICT proficiency standards and ICT learning materials.

Software licences are required for financial and inventory management software and there is an expressed need for compatible software versions for interconnectivity. If these basic matters are addressed, it is felt that considerable gains may be realized if the financial management systems in all FFOs are integrated with their point of sale (POS) systems and inventory and financial management systems networked. Subscription to cloud storage is highly recommended.

A deep concern was expressed regarding the risks associated with the lack of, or limited, availability of training facilitators after they are trained. The need for ongoing training and ready access to training resources for all fishers and FFO personnel was emphasized.

St. Vincent and the Grenadines

Background

The St. Vincent and the Grenadines National Fisherfolk Co-operative Limited, the country's NFO, was registered on the 20th September 2013. It has as its aims and objectives, to:

- promote the organization and development of fishermen's co-operative societies
- encourage co-operation among fishermen's co-operatives and to train their leaders
- safeguard the common interests of its affiliated members
- work for the improvement of the fishing industry and betterment of fishers' living standards
- act as the overall marketing organization for fish and fish products for the co-operatives
- provide services and functions that benefit individual societies and their members through economies of scale
- act as spokesman, representative and negotiator for all fishermen in relation to Government and other authorities and organizations
- determine the amount and mode of payment of subscription of its members
- raise funds or loans for the objects of the Society and for making the necessary advances to members and for that purpose, to mortgage the immovable, or pledge the movable, property of the Society
- promote membership education
- ensure the adherence to international fisheries standards and regulations for fishing and exportation of fish or marine products
- borrow money from any person, society, company or corporation and give security for any funds borrowed on any of the lease/ personal property of the Society by way of mortgage or otherwise.

Constituents

Membership in the St. Vincent and the Grenadines National Fisherfolk Co-operative Limited is open to all registered fishermen's co-operatives in St. Vincent and the Grenadines. At this time the following PFOs are members of the NFO:

1. Goodwill Fisherfolk Co-operative
2. Calliaqua Fishing Co-operative (CALFICO)
3. Barrouallie Fisherman's Co-operative Society Ltd.

The following three PFOs are registered with the Co-operative Division but not, at this time, members of the NFO:

1. VCT FAD Fishers Group
2. Fish Vendors Co-operative
3. Union Island Fisherfolk Co-operative

Organizational Arrangements

The NFO Board of Directors consists of a president and vice president, a secretary, assistant secretary and a treasurer. At the NFO AGM, the NFO 's annual report is reviewed, its operations are discussed, the maximum size of loans is determined, appeals are considered, an external auditor is appointed, members of the Board and committees are elected and any other pressing matters are treated.

According to the by-laws, a manger must be appointed but there is none at the moment, nor are there any other staff employed by the NFO. The organization has a modest bank account and it makes ad hoc payments, for example to persons assisting with fund raising events. The Co-operative has no office but owns several items including a filing cabinet, a 20 ft x 20 ft tent, deep fryers, ice boxes, diving tanks and suits, snorkels and masks, and several lion fish traps. It also owns a working desktop computer and printer, but they are kept in storage on the Fisheries Department component. The Co-operative has been given verbal notice to move its belongings as the space is required for construction of a port.

Each PFO has a Board comprising a president, vice president, secretary, committee members, treasurer and a supervisory committee. PFO leaders are not necessarily fishers. For example at this time, they include a retired head master and NFO secretary; a community activist; a fisher; a past president of the NFO and a fish vendor. The PFOs organize fish nights, reach out to fishers and make sure that the Board has regular meetings.

The Barrouallie Fisherman's Co-operative Society Ltd. has office space in the gas station that they operate. They also sell oil and tackle; and rent lockers to fishers. Two persons are employed as attendants at the gas station and the facility is outfitted with a desktop computer and printer. Two hotels, to be built by 2021 near Barrouallie, present a potential opportunity to market fish. There is also a plan to establish a black fish shed to dry and otherwise process the fish.

The Calliaqua Fishing Co-operative (CALFICO) buys and sells fish and has a tackle shop. The tackle shop has not been fully operational, but a manager has recently been hired so they are currently selling drinks, renting lockers and stalls, and selling ice on the compound. They indicate that business is improving but their commercial operations have been significantly impacted by poor record keeping in the past. With the hiring of a manager , there are signs of improvement. There is currently an interim Board but monthly

reports have not been transmitted to the NFO for some time. Their assets include diving tanks, a desktop computer and a printer.

The Goodwill Fisherfolk Co-operative will soon be displaced to Edinboro as the Government is establishing a port at their current site. The Co-operative previously sold gas, oil and tackle, but a number of matters including the inheritance of bad debts, a robbery at the station and poor record keeping, contributed to the cessation of operations. It does not currently conduct any commercial activity. It has however submitted to the NFO a bid for the management of the new facility which is expected to feature a gas pump, lockers, tackle shop and ice making facility. The NFO is progressing through the review process which includes feedback from the Fisheries Department.

The Fish Vendors Co-operative, which is about a year old, has the intention to buy and sell fish in the Kingstown Fish Market but to date that operation has not commenced. There is a management team in place but members' roles and responsibilities need to be clearly understood and there is need to build the capacity of its membership. The Co-operative has no ICT equipment.

The VCT FAD (fish aggregating device) Fishers Group is focussed on co-management. FAD management entails deployment and maintenance of FADs as well as record keeping and fees collection. The fee collection aspect involves the FAD Group collecting a levy /toll on all fish that is caught at the various FAD's. No consensus has been reached on the methodology to be used and thus to date the fee collection has not been implemented.

The key ICT hardware facilities owned by, and accessible to, the NFO are shown in Table 18. The NFO maintains a record of ICT assets but this is not included in their annual audit report.

Table 18 ICT Hardware Owned by, and Accesible to, VCT NFO

Hardware	Yes	No	Comments
NFO office has:			There is no office. Fisheries Department conference room is used for meetings
Computer	☐	✓	In storage as no dedicated office space
External hard drive	☐	✓	
USB ("flash") drive/s	✓	☐	
Printer	✓	☐	In storage as no dedicated office space
Headset	✓	☐	
Multimedia projector	☐	✓	Fisheries Department's
All Board members have regular access to a laptop or desktop computer with Internet access	☐	✓	
All Board members have regular access to a Smartphone with Wi-Fi or data service	☐	✓	One does not have but the others yes.
All Board members have headset	☐	✓	

All members of the NFO are required to pay fees. Presently the PFOs are not paying the annual fees. When the NFO came into being the PFO's were all in great financial difficulty and the NFO did not force the issue of financial compliance.

Use of ICT in Governance

Without office space and operational ICT equipment of its own, NFO documents are generally printed at, and by, the Fisheries Department; and NFO meetings are held in the Department's conference room. Arrangements for minute taking, transcription and management are poor. In some cases minutes remain hand written with no electronic transcription. This is also the case for all of the PFOs with the exception of the Barrouallie Fisherman's Co-operative Society Ltd. which employs a secretary and assistant secretary to support their commercial activity. These personnel record meeting minutes. At a focus group facilitated by CIRP under StewardFish, the other PFOs expressed keen interest in assistance with the structuring and taking of minutes as, at that time, they did not have the support of employed staff. At a meeting facilitated by CIRP the Co-operative Department, in attendance, offered its assistance to type minutes for the NFO. They also recommended that a person be hired under the Youth Empowerment Service (YES) Programme to support all of the fisheries organizations with their administrative work. Up to several months later, neither had materialized.

Without office space and operational ICT equipment of its own, NFO documents are generally stored on the President's thumb drives and laptop. Though hard copies are kept and ad hoc softcopies are stored on thumb drives, there is no structured backup strategy or cloud storage. There is also no use of cloud services, such as Google Docs, for collaboration.

All VCT FFOs with ICT capability use Microsoft Word for general documents and Excel for spreadsheeting. The NFO's desktop computer (which is not in use as there is no office space) was purchased with a licensed copy of Microsoft Office. There is therefore no need for subscription payments on the one hand, and the versions of the software products are frozen at the date of purchase, on the other.

There is no desktop publishing, image or video editing, and very little electronic presentation. Some personnel were trained on QuickBooks in 2017 but according to multiple sources, the software was only installed for Barrouallie. Reportedly participants from the other FFOs did not receive copies of the application so were not able to practice or apply what they learnt. None of the FFO leaders feel competent with the software. Barrouallie purchased a copy of Quickbooks and hired the original tutor to instruct them on further use of the software. They used the software for a while but have since stopped using it and have resorted to using Excel. No other FFO has ever used Quickbooks. During consultations with CIRP under StewardFish, FFO leaders expressed interest in refresher training on Quickbooks and the training of additional persons. More important from their perception is training in Microsoft Office.

Electronic communications is particularly important in St. Vincent and the Grenadines as the country comprises several islands: Bequia and Mustique in the Northern Grenadines; and Canouan, Union Island and Mayreau in the Southern Grenadines. At this time, all NFO Board members are literate. All but one have regular access to a Smartphone with Wi-Fi or data service. The member without a Smartphone has access to, and can use, a laptop with Internet access at his home. Not all other Board members have regular access to a laptop or desktop computer with Internet access. The NFO has two email addressed, nationalfisherfolk@yahoo.com and nationalfisherfolk@gmail.com, that are in use by the President from his personal laptop and through the facilities of the Fisheries Department. A conservative estimate is that 75% of fishers have Smartphones.

WhatsApp groups are used extensively by the NFO, including one which includes its constituents as well as the CNFO and several personnel from the Co-operative Department. WhatsApp groups are also used to inform members in the Grenadines of workshops and other events but there is little access to the

groups by the Northern communities which do not have FFOs. As the Union Island Fisherfolk Co-operative has members from Mayreau, it may be possible for other cross-island membership. There is indeed considerable cross-island movement as, for example, the President of the FAD Fishers Group is from Bequia but works in Mustique.

The facilitation of remote meetings is very important to St. Vincent and the Grenadines, particularly to reduce the cost and inconvenience of travel between St. Vincent and the other islands. The president of the Union Island Fisher-folk Co-operative, in particular, is a very active fisher and has been keen to participate remotely despite the fact that his co-operative is not active at this time. Stay at home orders arising from the COVID-19 global pandemic forced the NFO to hold its first online meeting in May 2020. It was conducted using Go to Meeting, facilitated by the CRFM. By the middle of June that year, two additional Board meetings were held remotely by Zoom, facilitated by the CNFO. As with all regular Board meetings, the representative of the Co-operatives Division was in attendance.

The NFO maintains a Facebook page (https://www.Facebook.com/pages/category/Community-Service/National-Fisherfolk-Organization-NFO-in-SVG-1456316297839347/). The About page features the phone number and Messenger contact information. There is no description or further information about the organization. To the end of May 2020: the most recent post was December 4 2019, there were sixty-two followers and sixty likes, 113 mobile uploads, 7 timeline photos, 4 cover photos, 3 profile pictures, 42 views of the video captioned "The Chairman of the Fisherman's Month of Activities 2019, and the Vice President of NFO, Mr. Raoul Lewis gave an opening speech" posted May 10, 2019, 215 views of the video captioned "Fish Fest on Friday 1st March" posted March 4, 2019 and no page reviews. Photos are all relevant to the organization, primarily of training activities, catch, fisheries conferences and workshops, and advertisements for fish nights and fish fests.

The software tools used by the VCT NFO in support of governance are shown in Table 19.

Table 19 Software Tools Used by the VCT NFO in Support of Governance

	Software Tools	Yes	No	Comments
Digital Content Creation	Word processing	✓	☐	Microsoft Word
	Desktop publishing	☐	✓	Microsoft Word
	Image and video editing	☐	✓	
	Presentation	✓	☐	Microsoft Powerpoint
	Spreadsheeting	✓	☐	Microsoft Excel for financial records and reports
	Financial & inventory management	☐	✓	Word (mainly) & Microsoft Excel
	Point of sale	☐	✓	There is no commercial activity at this time
	Project management	☐	✓	Microsoft Word
	Database management	☐	✓	Microsoft Word
Communication &	Web publishing	☐	✓	
	Social media	✓	☐	WhatsApp ✓ Facebook ✓ Twitter ☐ YouTube ☐ Instagram ☐
	Online collaboration	☐	✓	Google Drive ☐ Other _____
	Video conferencing	✓	☐	Free Skype ☐ Free Zoom ✓ set up by CERMES

	Software Tools	Yes	No	Comments
	Email	✓	☐	Used via personal laptop and Fisheries Department's facilities

Best Practices

At this time, the NFO's management of its Facebook page and WhatsApp groups must be commended. The President's keen interest in developing his ICT skills is also commendable. His use of Microsoft Powerpoint presentations includes the delivery of "Mobile apps for fishermen: catching ICT at sea and on the road" at the 70th Annual Gulf and Caribbean Fisheries Institute (GCFI) in Mexico, November 2017. He received the Gladding Memorial Award at 2019 GCFI in the Dominican Republic. This annual award is presented to fishers who demonstrate a significant commitment to the sustainable use and long-term conservation of marine resources in the Gulf and Caribbean region. As a member of the CNFO and on the basis of his involvement in several regional projects, he is also a frequent user of Skype and, on the guidance of CIRP, uses a headset to ensure best audio quality for himself and others in the audio conference.

Another commendable ICT practice for the St. Vincent and the Grenadines NFO is its rapid adoption of virtual Board meetings in 2020 in response to COVID-19 stay at home orders. By way of example, the agenda for the third online meeting held 11 June 2020, in which CIRP conducted its final StewardFish consultation, was as follows:

1) Welcome to the 3rd online Board meeting
2) Reading of the last minutes of the Board meeting
3) Special guest up: Dr Kim Mallalieu, UWI CIRP
4) Stewardship project update
5) CC4FISH project update
6) Reports and updates of each primary co-operative
7) CNFO report and updates by country representative, Winsbert Harry
8) Fisheries updates
9) Co-operative updates
10) Open discussion
Other business
New business

The meeting was conducted by Zoom, set up by the CNFO, and shared through Whatsapp to Board members. One Board member participated via laptop while the others participated via phone. They were able to view the Powerpoint presentation delivered by CIRP and to actively participate in discussions.

Another very important practice of the St. Vincent and the Grenadines National Fisherfolk Co-operative is the attendance of the representative of the Co-operatives Division at all Board meetings, including those conducted remotely. This form of support is of considerable value to the NFO particularly as its lack of dedicated office space limits the scope and depth of activities it is able to conduct.

Gaps

There are many information and communications needs at this time. Chief amongst these is the need for a database of fishers and support for document management, particularly for meetings. Key gaps in the

St. Vincent and the Grenadines NFO's governance procedures include reference artefacts necessary to frame the use of ICT for this and other purposes. These include:

1. Documented guidelines for good practice in record keeping
2. Documented guidelines for good practice in document management
3. Documented specifications for data requirements for all standard records including fisherfolk registries
4. Data on fisherfolk necessary to capture in registry
5. Templates for key document types e.g. fisherfolk registries
6. Communications strategy and plan
7. ICT policy and strategy
8. Digital literacy code of conduct
9. Guidance notes and checklists for web conferencing and other common ICT-based activities
10. ICT proficiency standards
11. ICT learning materials

Gaps in the processes necessary to put ICT to work for governance in the NFO include:

1. A robust file management system
2. A robust directory management system
3. Basic ICT training
4. An orientation programme for new Board members and management, including an ICT component.

Priority needs expressed by FFO leaders include guidance on how to use ICT equipment more efficiently, training on Microsoft Word and the optimal use of Facebook. The NFO also wishes to explore novel, ways to reach fishers, share information and promote fisherfolk to lead the organization. There is also interest in maximizing the functionality of fishers' phones for example by conducting interviews to report on incidences in their communities to create compelling advocacy products. Guidance on how to hold the camera, set up the microphone and so on, are sought. FFO leaders express keen interest in phone tips including guidance on how to get the most out of WhatsApp and social media. Recommended focal points for tips also include matters relating to security and backup.

Subscription to cloud storage is highly recommended.

Gap Analysis of NFOs' Use of ICT in Governance

Overarching Gaps

Though there is some variation across the organizations under consideration in this study, there are currently, across the Board, common gaps in the achievement of NFOs' stated objectives. Low incentive and low levels of resourcing number among the many challenges. Previous studies have found that FFOs are generally challenged to provide adequate incentive to sustain active membership (see, for example, CANARI 2015a, CANARI 2015b) and are equally challenged to provide adequate incentive for fisherfolk to meet Government targets for the stewardship of marine resources (FAO 2015). Previous assessments have also found evidence of poor governance in Caribbean FFOs. For example, in Saint Lucia these include poor management and leadership as well as inadequate communication, lack of structure and misunderstanding of roles and responsibilities in co-operatives (CANARI 2015a). Challenges in St. Vincent and the Grenadines have been found to include inadequate involvement of fishers in their cooperatives

and in decision making, insufficient communication among players in the industry and inadequate reporting (CANARI 2015b).

The current study has found that the previously documented challenges of NFOs prevail. They manifest in a variety of ways that range from modest forms of inefficiency all the way to the collapse of operations. The study's focus is the use of ICT to strengthen governance operations; and it has found that related gaps exist in the areas of information management, meeting management, advocacy and engagement, policy and practice, facilities and capacity building.

Governance Framework

It is uncommon to find explicit reference to ICT, information technology (IT), technology, computer, web, digital or the Internet mentioned in any of the governance artefacts for the organizations under study. Exceptions are the CNFO Constitution, the CNFO Policies and Procedures Manual (April 2017 version) and the bye-laws of the St. Vincent and the Grenadines National Fisherfolk Co-operative Limited. Extracts are shown in Table 20.

Table 20 Reference to ICTs in FFO Governance Artefacts

Governance Artefact	Extract
Caribbean Network of Fisherfolk Organisations Policies and Procedures Manual (April 2017 version)	Representation within CNFO is guided by the following: The individual representing their organisation must be … computer literate with knowledge in the use of the basic programs (p.6)
	ICTs will be used by the CNFO to get the advocacy messages to its audiences in real time with audio, content and visuals (p.22)
	CNFO and its member organizations will use their Websites as an important channel for their advocacy work (p.22) The CNFO Website will serve to share information and knowledge and get its membership and Fisherfolk in general (p.22)
	In carrying out advocacy campaigns the CNFO will adopt a multi-channel and integrated communication approach … aimed at informing and mobilizing the Network members, attracting and maximizing attention of stakeholders, like-minded organizations, decision-makers and specific segments of the general public, and influencing the policy agenda and policy formation nationally and regionally. (p.20)
	The Executive meetings can be conducted via the available electronic media (p.10) Public Relations Officer … Engages with users on social media (p.12) Social media can also help attract young people to the sector (p.22)
Caribbean Network of Fisherfolk Organisations Constitution	The membership MUST ensure that they have a working Telephone, Email Address and Internet Connection (p.5)
	Must be Computer Literate with knowledge in the use of the basic programs. (p.3)
By-laws of the St. Vincent and the Grenadines National Fisherfolk Co-operative Limited	Notice of the Annual Meeting shall be forwarded by mail, electronic or by printed media at least (15) fifteen days prior to the date of the meeting to each member of the St. Vincent and the Grenadines National Fisherfolk Co-operative Limited by the Secretary (p.5)

As shown in Table 20, the CNFO requires that its representatives are computer literate. However, this requirement is not enforced in a systematic manner. Neither the CNFO nor any of the NFOs under study specify proficiency standards to assess incoming officers. In no case is there an orientation programme or guidebook that sets out an ICT code of conduct or checklist of facilities.

While the early stage development of the Belize Fishermen Co-operative Association by-laws in 1970 of itself accounts for the lack of reference to ICT, the other NFO's were more recently constituted: the Barbados National Union of Fisherfolk Organisations was established in 1999 and its by-laws amended in 2006; the St. Lucia Fisherfolk Co-operative Society was registered in 2007; the St. Vincent and the Grenadines National Fisherfolk Co-operative Limited was registered in 2013; and the Barbuda Fisherfolk Association was registered in 2015.

Though the CNFO formally, and other NFOs informally, recognizes the essential role that ICTs play in advocacy, information sharing, outreach, mobilization, and influencing the policy agenda, there are no documented ICT policies, practices or procedures; and consequently no reference for compliance. There is no overarching strategy or plan for ICT or for its provisioning. In the absence of these, there are no guidelines that cover infrastructural and service matters, creation and management of information assets, process standardization and human capacity.

Information Management

We have already recognized that good governance is achieved through processes that meet an organization's stated goals in a manner that is participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive, and follows the rule of law. The objectives of the NFOs under study, summarized in Table 3 - Table 7, are functions that are inherently participatory, consensus oriented, responsive, equitable and inclusive. The objectives also include adherence to the rule of law in the context of marine resources and their management. However, they are largely silent on matters of accountability, transparency, effectiveness and efficiency. While information and its management are central to all aspects of good governance, it is especially critical for accountability, transparency, effectiveness and efficiency.

Effective governance, which strongly features accountability and transparency, relies on financial information from legitimate sources. All NFOs are required to hold bank accounts, collect fees, manage funds and report on finances. As indicated in Table 8 financial management numbers among the FFO governance responsibilities that would benefit directly from ICT; yet there are considerable gaps in this area. One of the NFOs explored under this project does not have a bank account, almost none currently collect fees, and some manage funds entirely without electronic records other than the external audit which, in at least one case, is conducted gratis.

Efficient governance operations require fast and easy access to information. Considerable gaps were observed in NFO provisions in all aspects of the information management lifecycle: identification, acquisition, organization, storage, maintenance, access, use and retention. In most cases critical information has not been explicitly identified or acquired; and storage is primarily on personal laptops with no or ad hoc backup means. Access to the information that exists generally requires manual investigations into who possesses it and then a manual request and follow-up procedure to gain access, often subject to many incumbent delays. In most cases information is not used to advance the objects of

the NFOs and the enabling capacities for this are limited. There exist no policies or practices that pronounce on any stage in the management lifecycle including the retention and back up of information.

The two data stores that were found through the current study were a Dropbox repository created for BARNUFO and a hard drive repository maintained by the CNFO. These excellent repositories are rich with important information necessary to meet NFO objectives yet can benefit from a number of folder and file management optimizations including the use of a formalized classification scheme, naming conventions and other guidelines to strengthen the legitimacy of information and boost the efficiency of its access.

Figure 1 illustrates the top level ("root") folder structure of the BARNUFO repository with the files that are stored in the root. Angle brackets ("<>") have been used to redact identities. The figure reveals some excellent examples of file naming, such as "Meeting_Minutes_15-04-15_BARNUFO_draft_23 Apr 2015 (1).docx", which includes all meta data necessary to understand that the document is a record of minutes of a BARNUFO meeting held on 15 April 2015 and authored on 23 April 2015. Another example of good practice evident from Figure 1 is the saving of email messages and websites in addition to standard documents. A number of gaps in information management base practice are also revealed by Figure 1. These include:

- No apparent coverage of the key functions of NFOs
- Inconsistent classification e.g. by theme in some cases and by year in others
- Lack of classification rationalization of related themes eg. "Fisherfolk Training 2015", "capacity development", "BARNUFO Training 2018"
- Inconsistent format of folder names with respect to location of data tag, e.g. "3 Jan info sessions" and "BARNUFO Evolution Workshop Dec 12, 2013"
- Incomplete date tag e.g. panel discussion 23Jul
- Inconsistent use of case e.g. "PROCESSING HALL" and "for action and input"
- Files directly in the root folder for no apparent reason
- Ambiguous, unspecific file names e.g. "List of Nomination Names.doc", "BARNUFIO Meeting Agenda.docx", "2 final draft of agenda.docx" etc.

- 2014 Calendar Visuals
- 3 Jan info sessions
  - Photos
  - Presentation pdfs
- BARNUFO Evolution Workshop Dec 12,2013
- BARNUFO Fisherfolk Training 2017
- BARNUFO Fisherfolk Week of Activities 2018
- BARNUFO Training 2018
- BARNUFO_Validation_Dec282013
- Board nominations
- capacity development
  - leadership training
- Climate Change Project
- communication and PR
- FAO FFO workshop
  - administration
  - capacity database
  - case study docs
  - FAO docs
  - field trip photos
  - presentations

- *2 final draft of agenda.docx*
- *2018 Hurricane preparedness Meeting BARNUFO.pdf*
- *AGENDA FOR FISHERFOLK MEETING.docx*
- *Agenda%20Fisheries%20workshop%20July19[1].doc*
- *AGENDA%20FOR%20FISHERFOLK%20MEETINGml[1].docx*
- *AGENDA%20FOR%20FISHERFOLK%20MEETINGml[2].docx*
- *<name>'s Resigination Letter.mht*
- *Barbados fishing idustry.docx*
- *BARNUFIO Meeting Agenda.docx*
- *BARNUFO MEETING MAY 25th 2012.docx*
- *BARNUFO PARTICIPANTS LIST.docx*
- *BARNUFO presentation-100416_<>.pptx*
- *BARNUFO presentation-180416_<>.pptx*
- *BARNUFO sign.xps*
- *BARNUFO Website from gmail account.mht*
- *BARNUFO%20Fisherfolk%20training%202012[1].jpg*

- Presentation COSTA RICA
- WG session 1 reports
- WG session 2 reports
- workshop draft report

- Fisherfolk Feeding Initiative
- Fisherfolk Training 2015
  - Advanced First Aid
  - Book Keeping & Financial Planning
  - Fonts
  - Navigation & Solas
  - Preventative Engine Maintenance
  - Standard Operation Procedures in Fish Handling
- Fisheries Forum
- Fisherman's week 2017
- for action and input
  - constitution booklet covers
  - membership cards + form
  - quotations
  - report covers
  - stationery from Thu 26 Feb meeting
- GEF small grants
  - fish leather
- iica SPS conference presentations
- Leading fisherfolk
- membership drive
- National Fisherfolk Workshop in Project Management
- newspaper articles
- old assorted stuff
- panel discussion 23Jul
- PROCESSING HALL
- reports and resources
- stationery to use
- strategic planning
- team meetings
  - minutes
- test stationery archive
- Website Photos
  - work plan Jan-Jun 2015

(a) Folders in the Root Folder

- *BARNUFO.url*
- *BARNUFO5936[1].pdf*
- *basic_seafood_haccp_slideshow.pptx*
- *<org> Airlines Limited - Booking <ref number>- Inbox - Yahoo! Mail.url*
- *Caribbean Network of Fisherfolk Organisations (CNFO)_070217.pptx*
- *Constitution of BARNUFO and Amendments info.docx*
- *Constitution-to print as booklet in Acrobat Reader.pdf*
- *Date for meeeting with <org>.mht*
- *Development meeting.docx*
- *Doc 3 BARNUFO MEETING CARICOM AMBASSADOR <>.docx*
- *Doc 3 BARNUFO Meeting updated.docx*
- *Draft Fisheries Code - Inbox - Yahoo! Mail.url*
- *Emailing Fisheries governance and challenges in Barbados.pptx - Inbox - Yahoo! Mail.url*
- *Farmer;s corner programme.docx*
- *Final draft for fisherfolk meeting.docx*
- *Fisheries%20workshop%20July19[1].pub*
- *FISHLOGO2.jpg*
- *FW fishing for web - Inbox - Yahoo! Mail.url*
- *Gmail - Invitation to partner with <org> on a regional project.mht*
- *Gmail - <name> 's cell number.mht*
- *Graduation List 2018 Training.xlsx*
- *HACCP Training Manual.pdf*
- *ICT Road Show Forum -ICTs in Public & Private Sector.url*
- *Invoice for professional fee for <name>.pdf*
- *List of Nomination Names.doc*
- *LOW SULPHUR DIESEL - Inbox - Yahoo! Mail.url*
- *Maritime Courses Caribbean Fisheries Training and Development Institute (CFTDI).mht*
- *<>+chapter+31may.doc*
- *MEETING OF THE FAO.docx*
- *MEETING WITH THE BRIDGETOWN FISHERFOLK.docx*
- *Meeting_Minutes_15-04-15_BARNUFO_draft_23 Apr 2015 (1).docx*
- *Monnereau_et_al_2015_vulnerability_of_the_fisheries_sector_to_climate_change_CTR_77.pdf*
- *National Consulation on a White Paper for Agriculture - Inbox - Yahoo! Mail.url*
- *Need information on BARNUFO urgently - Inbox - Yahoo! Mail.url*
- *Nurse - (2011) -- The implications of global climate change for fisheries.pdf*
- *PERSONNAL NOTES ON COMPARE AND CONTRAST WRITING.docx*
- *Revised flyer_2018 Hurricane preparedness Meeting BARNUFO.pdf*

(b) Documents in the Root Folder

Figure 1 Contents of BARNUFO Dropbox Repository Root Folder

The folder and file management strategies shown in Figure 1 are typical of many of the countries examined in this study.

Figure 2 shows the top level folder structure of the CNFO hard drive repository. It features the same shortcomings as BARNUFO's but in this case the scale of relevant documents is greater than that of a

single NFO so the demand for efficiency is higher. The folder titles comprise 31,692 characters including spaces, 18,134 excluding spaces. They contain 3105 unique words and 20 full sentences. There are 39 folders automatically titled “new folder” which are likely empty and should be deleted. There are 73 top level folders, and its subfolders nesting is as deep as seven levels, as shown in Table 21.

Table 21 Occupation of Levels in the CNFO Electronic File Repository

Directory Level	Root	2	3	4	5	6	7
Number of Folders in CNFO repository	73	243	462	312	150	19	2

2018 Meetings	COAST	Jan
2019	COFI 2018	leadership
2019 CNFO ANNUAL REPORT	commonwealth foundation	letterhead
A proposal references	Communicating for conservation	letters 2019 CNFO`
ACCOUNTS	CONSTITUTION	MEDIA
Advocacy Flyers	CRFM	MITCH
BLUE HALO	CRFM PRESS RELEASE	NEWS
BOARD OF CNFO	CSAP	Newsletter
Business plan	DARWIN PLUS BVI	online meeting protocols
Calendar	Executive Meeting 9th meeting beyond	passport
CANARI	FAO	PISCES
CARIFORUM	FAO Carlos	Poster
CC4FISH	FAO SIDA PROPOSAL 2019	PROTOCOL
CDB	FEWER	Safety at Sea
CERMES NEWSLETTER	Fisherfolk Month	SARGASSUM
CERTIFICATES	FULTEC	SCOTIA BANK FINANCIAL
CFAS	GCFI	Social Security
CLIMATE CHANGE	Gender	SSF Guidelines
CLME+	GIFT	SSF PROPOSAL FAO LENA
CNFO	GILL NET	STEWARDFISH
CNFO COMP #1	HPSCANS	TRANING MANUALS
CNFO QUICKBOOKS ACCOUNTING	HURRICANE 2017	USER RIGHTS
CNFO SITE	Inter-American Foundation	WEBSITE
CNFO WHATSAPP GROUP		WECAFC
CNFO WORKPLAN		WINSBERT HARRY

Figure 2 Top Level Folder Classification of CNFO Hard Drive Repository

The lexical density in the CNFO folder structure is 22.7. That is to say that the number of lexical words (nouns, adjectives, verbs, and adverbs) divided by the total number of words (lexical words plus prepositions, interjections, pronouns, conjunctions and count words) contained in all folder names is 22.7. The higher the lexical density, the greater the information packaging (Johannsson, 2008) and generally

speaking the greater the efficiency of the classification scheme. A lexical density of 25.2 is typical of an elementary school text book. A far higher density is required for an efficient classification scheme for a folder structure.

As the importance of information management strategies is not explicitly recognized and there has been no purposeful analysis of NFO objectives vis-à-vis these strategies, it is easy to create folders arbitrarily as new documents are stored. Though it is entirely possible that current users can navigate swiftly through the BARNUFO and CNFO electronic file repositories, shortcomings in the application of sound information management strategies present inordinate difficulties with access and population by other users now and in the future. Good governance calls for the specification and systematic use of context-appropriate folder classification schemes and protocols for folder and file naming, as well as for the depth to which folders should be created.

Meeting Management

Meetings are an established aspect of NFO policies and procedures. They variously include annual general meetings, general assembly meetings and elections, Board of directors' meetings, executive meetings and staff meetings. The management of meetings is therefore a key governance activity for FFOs. Yet there are long standing challenges that press on the best of meeting management practices. Consistent with Atapattu's findings (1997, 1998a, 1998b), this study has found that FFOs are often unable to conduct meetings due to lack of quorum and chronic low participation.

The current study has also found that where basic ICTs have the potential to alleviate some of the attendance matters, they are seldom used; or used ineffectively or inefficiently. Notable exceptions are the recent efforts of the St. Vincent and the Grenadines National Fisherfolk Co-operative and the ongoing activities of the CNFO. As we have seen, the St. Vincent and the Grenadines National Fisherfolk Co-operative has introduced remote meetings in response to the limitations of movement imposed on account of COVID-19. The CNFO has been conducting remote meetings for some time as their constituents are distributed over several countries. Unlike the CNFO, the NFOs have not yet built their capacity to set up virtual meetings; nor have they adopted specific guidelines for netiquette and good practice, for example protocols for muting unless speaking.

Across the Board, ICTs are not being used to their full potential to support the meeting life cycle which comprises planning, preparation, notification, documentation, resourcing, conducting, reporting, archiving and dissemination activities. The selection and use of appropriate digital tools, for example calendaring applications to enhance time and task management, has not yet occupied the attention of the NFOs. While a number of the NFOs at this time struggle with more fundamental issues such as human resources to take minutes, the electronic documentation of minutes, electronic facilities to store meeting resources, some NFOs and certainly the CNFO are ready for assistance in these areas.

Alongside gaps in the ICT aspects of meeting management, there exist gaps in strategies for time management, task management and work flow management.

Advocacy and Engagement

Advocacy and engagement are important aspects of FFO governance that are aimed at enhancing livelihoods and achieving an improved quality of life for fisherfolk and their communities. They feature strongly in the NFO by-laws as shown in Table 3 - Table 6. However, the foundations on which advocacy

is built are weak in many cases. For example, the guiding principles, purpose, strategy, plan and budget are not articulated in related NFO policies.

With the exception of BARNUFO, primary stakeholders and audiences are in generally not explicitly specified. Limited understanding of the role of traditional and new media in advocacy is another barrier to the purposeful application of ICT in information sharing, outreach, mobilization, and influencing of policy. The rich system of supporting artefacts and channels necessary for advocacy initiatives to take root are in short supply. These include newsletters, websites, social media, policy briefs, etc. Understanding of the considerations for the selection of appropriate forms of media, to suit the audience and advocacy message is also a gap.

Facilities

In most of the countries, the general physical facilities as well as ICT hardware, software and services available to the FFOs are modest at best; and mostly acquired through ad hoc means. In many cases we have seen that the NFOs use facilities owned by other agencies such as the fisheries authorities.

Capacity

The present study has found a gap both in the capacity to use basic ICTs for good governance and also in the provisions for relevant training. ICT training, where it has been conducted, has been specific to a particular application such as QuickBooks. No training has been conducted on digital literacy.

Results of the digital literacy self-assessment (Appendix 5) reveal anecdotal evidence of a variety of gaps in ICT proficiency. From the responses averaged over the 5 NFO leads and a single CNFO representative, and summarized in Figure 3, the minimum target of 85% was only met by respondents in two categories: (1) browsing, searching and filtering and (2) interacting through digital technologies.

Respondents fell short in all of the other 17 categories, namely:

1. evaluating data and information to determine the reliability of sources, data or information on the Internet
2. managing data, information and digital content to organize, store and retrieve data, information and content on their digital devices
3. sharing through digital technologies
4. engaging in citizenship through digital technologies
5. collaborating through digital technologies
6. netiquette
7. managing digital identity
8. developing & revising digital content
9. copyright and licences to use digital content produced by others
10. protecting devices
11. protecting personal data and privacy
12. protecting themselves and others from the potential harmful effects of ICT to health and well-being
13. protecting the environment
14. solving technical problems with ICT hardware and software
15. identifying ICT needs
16. using digital technologies for good governance

17. identifying digital competence gaps & solving them.

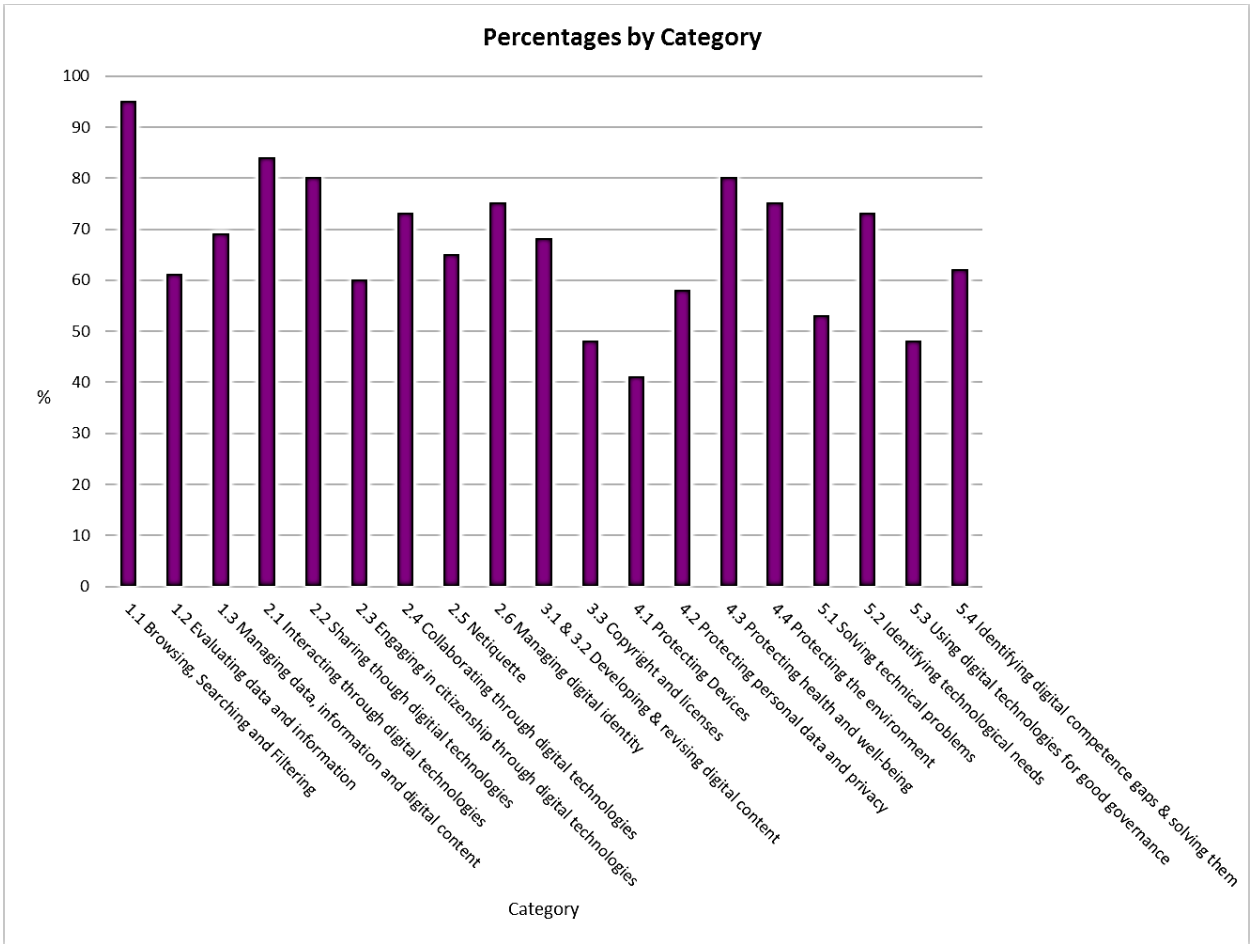

Figure 3 NFO Lead Digital Literacy Self-assessment

In the figure, 100% indicates that all respondents can perform all tasks in a particular category entirely on their own; while 50% indicates that on average, the respondents require a lot of help to perform the tasks in the category.

Subsequent meetings with the NFO leads and feedback from larger focus group meetings and interviews revealed that the average self-assessments in Figure 3 are generally optimistic representations of the competencies within FFO Board and management ranks.

Quite apart from digital literacy, this study has revealed several underlying gaps in capacity. This is particularly critical for organizations involved in, as well as those wishing to enter into or recover from failed, business concerns. Gaps include specification and understanding of organizational roles; duties of roles, strategic and operational planning and organization, bookkeeping, financial and inventory management, accounting procedures and protocols as well as management procedures and principles.

Exemplars

The strength of an institution is a measure of its capacity to achieve specified objectives. In the case of NFOs these objectives are enshrined in by-laws. It is important that an assessment of organizations' practices is considered within their particular **context**, including any competing, compelling and unavoidable constraints. For low-resource organizations, simple yet potent uses of ICT for governance represent exemplary practice.

WhatsApp for Governance: BARNUFO

BARNUFO's use of WhatsApp groups stands out; and the FF Leadership Group, is a case in point. It captures the use of accessible, convenient and highly effective ICTs in support, not only of key objects of NFOs (advocacy and livelihoods) but also of good governance: participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive, and follows the rule of law. The 687 messages exchanged in the Fisherfolk Leadership group over a six-month period from December 2019 provide efficacious coverage of all of these areas, for example:

Capacity building for effectiveness, efficiency and livelihoods

- schedules, postponements and rescheduling and reminders of local capacity building activities
- reminders of upcoming capacity building activities
- registration details for capacity building and reminders of requirements
- identification of persons unable to attend training for future provisions to be made
- reminders of arrangements for collection of training certificates
- explanations for training certificates to be available only from a single site
- caution to avoid "pandemonium" in collection of certificates
- notices of free online courses
- Informational resources such as:
    - You Tube videos "Enhancing Safety at Sea of Fisherfolk through ICT Training[3]" and "When Barracudas Attack[4]"
    - Facebook pages such as "Trinis who fish[5]" which carries information on the impacts of industrial waste and pollution on marine life
    - Facebook Live sessions such as IDB-sponsored "Climate Change and the Caribbean: Resilience and Sustainability[6]"
- Learning resources of training and other events
- members' notifications of reasons for unavailability at events and training

Inclusive Participation, Transparency, Accountability, Consensus Orientation and Advocacy

- request for documentation e.g. "a document outlining the concerns/issues in relation to Oistins jetty"
- request for positions e.g. "a definitive statement on the Oistins jetty",

[3] Available at https://youtu.be/_arb06KVPvU, last viewed 2 June 2020
[4] Available at https://www.youtube.com/watch?v=xIKGqhqcmPU&feature=youtu.be, last viewed 2 June 2020
[5]Available at https://www.facebook.com/groups/1142408325798566/permalink/2817917098247672/?sfnsn=mo last viewed 2 June 2020
[6] Available at https://www.facebook.com/watch/live/?v=1380806442103966&ref=watch_permalink. Last viewed 2 June 2010

- request for statements e.g. “Can we get a definitive statement from someone in authority as to where we stand?”
- other requests regarding responsible parties, timelines of events, etc.
- notification that the Chair was instructed to consult the Attorney General shut down of the markets
- questions from fishers routed through BARNUFO to the Permanent Secretary (PS) such as “Will the vendors going to marker to process and sell their fish be allowed to use their passes also?”
- concerns voiced by constituents such as:
    - “Can the fishermen still go fishing seeing that there is a curfew and the markets are open to us?”
    - “my boat is not in the complex but it's at the mooring. My concern is would I be able to go and start the engine to keep the batteries up?”
    - “what about the boats docked at the other sites all around the island that will need more attention than town since we shouldn't be moving around?”
    - “Should the markets be assisting us and let persons know it's ok to come purchase your fish in the market?”
    - clarification e.g. “are we paying the vat when making overseas orders??”
- contents of letters to authorities representing concerns of FFOs and fishers expressed through the WhatsApp group and other channels e.g. to the Attorney General seeking clarification on matters of importance to fishermen and boat owners regarding impending COVID-19 shut downs, in particular: *“Does the fishing sector and market fall under essentials? If the market is to close whilst boats are at sea what will the protocal be? If boats are told to stay in port and markets closed will boat owners and agents have permission to check on their vessels whilst they are docked in the Bridgetown complex during the 24-hour curfew?”*
- responses from the Authorities
- recollection of commitments and other information from the Minister
- sharing of experiences with the Police Force; and the Attorney General’s response
- conveyance of information from the Fisheries Division
- call for review of notes from meetings
- requests to forward information and other resources beyond the WhatsApp group including an appeal to announce the message over boats’ radios to reach persons not in the “chat”
- confirmation that information shared in the WhatsApp group will be shared
- calls for persons to support petitions (such as antifogging)
- requests for assistance for various activities
- notification of availability to provide assistance, to attend events, etc
- calls to stay united
- calls to work with the Authorities
- links to awareness building resources, for example news articles such as “I’m Not Paying $35 For 10 Flying Fish[7]” and “Turf war over fishing grounds behind 2018 pirate attacks[8]”

[7] Available at https://www.classimax.com/im-not-paying-35-for-10-flying-fish/?fbclid=IwAR1F1TmPk1ZLXQJ3I6vozs1AhPlxSA560HJJqKDC7AL7WCEHSm8EAdq8wEE, last viewed 2 June 2020

[8] Available at https://www.stabroeknews.com/2020/02/22/news/guyana/turf-war-over-fishing-grounds-behind-2018-pirate-attacks/, last viewed 2 June 2020

- Cautions regarding fake news and guidance on the use of reliable sources e.g.:
  - advice to refer only to reliable sources of information for example the Ministry of Maritime Affairs
  - guidance on how to get information from reliable sources such as the World Health Organization (WHO)
  - reports on BARNUFO investigations of the authenticity of information circulating in social and other media.

Responsiveness to the livelihood needs and wellbeing of constituents

- calls for public promotions of harvesting and selling of fish to neutralize opinion that fisherfolk make huge profits
- guidance on how to sell fish to avoid spoilage
- enquiries regarding the state of facilities such as freezers at various landing sites
- calls from fisherfolk to have freezers serviced
- adjusted opening hours of fish markets
- emergency contact information
- Met Office forecasts of concern
- cautions to stay out of the territorial waters of other countries
- notice of robberies
- signs of COVID-19 infection
- summary of Corona Virus from an assistant professor at the Center for Infectious Diseases at Johns Hopkins University
- statements and directives from the Government regarding COVID-19 regarding food handling and hygiene practices
- specific recommendations to prepare for any eventuality coming out of COVID-19
- discussions on the "financial impacts on an already strained fishing season"
- roll call check in to make sure everyone is well during global pandemic
- exchange of greetings for Christmas

Adherence to the rule of law

- notice from the quality control officer (QCO) of schedule for inspection of documentation authorizing vendors to work at the fish markets, and that the names of persons not complying will be printed as the documented verbal warning
- reminders from the QCO of food safety and personal hygiene regulations to protect oneself, family and customers
- guidance on procedures for vendors, fishermen, boat owners agents and other fisherfolk in effect during social distancing
- observations, for example that some vendors "are operating as business as usual with no restraint or adherence to the social distancing practices"
- very many calls to conduct business responsibly
- advice from the Acting Director of Fisheries on the requirements for the conduct of research in Barbados waters

- foreign call to report illegal fishing e.g. in Davao Gulf[9]

Use of ICT

- BARNUFO's encouragement to "Advertise advertise advertise. Take pic of the fish before u package them so customers can see the amount that they will be getting for e.g. a quarter king fish etc or $20 In tuna. Advertise on Facebook, Instagram, WhatsApp whatever"
- QCO recommendations for fisherfolk to contact their customers and encourage them to preorder fish requests while social distancing is in effect
- request for voice note contribution to data gathering exercise by CERMES on the impacts of COVID-19 on fisherfolk and the fishing industry in Barbados and responses from group participants

It is recommended that guidance notes are prepared with examples, such as the foregoing, for all NFOs to see the rich coverage of governance functions possible with WhatsApp. BARNUFO's use of this channel is exemplary and should be widely promoted.

ICT Requirements for Board Members: CNFO

An exemplary practice in the area of policy is the CNFO constitution which requires that members MUST have a working telephone, email address and Internet connection; and that the individual representing a member organization must be computer literate with knowledge in the use of the basic programs. This is a practice recommended for all NFOs in future amendments to their by-laws and for inclusion in the terms of reference for Board members.

ICT as Response Strategy: VCT NFO

The St. Vincent and the Grenadines National Fisherfolk Co-operative's swift move to virtual meetings in response to COVID-19 is an exemplary case of agility. The low-resourced organization was not deterred by its own inability to set up the virtual meetings, rather it arranged for other organizations to assist in this regard. Participation through the sub-optimum mobile phone has also not been a debilitating deterrent. The NFO's capacity to recover quickly from difficulties is a true mark of resilience that should be widely shared. The active inclusion of the many friends of the NFO, including the CNFO and the representative of the Cooperatives Division, is another hallmark of resilience and good governance.

ICT for IUU & Virtual Inspection: ATG

The use of WhatsApp and mobile phone cameras by the FAD Fishers Association and other fishers in Antigua and Barbuda (ATG) is an excellent example of an ICT channel used to cross organizational boundaries. Local reports on IUU are the source of national reports to international agencies, in the interest of all stakeholders. The building of relationships, trust and interdependencies such as this are critical to the objects of good governance within all FFOs, and should be emphatically encouraged.

The use of ICT channels to facilitate virtual inspections of ATG fishing vessels is an example of regulatory responsiveness stimulated by the COVID-19 constraints on movement. Though this activity is not of itself an organizational governance function, the use of ICT in services between FFOs and the fisheries authorities is important for good governance as indicated above.

[9] Available at https://www.facebook.com/373699723076491/posts/919005948545863/?sfnsn=mo&d=n&vh=i. Last viewed 3 June 2020

ICT in Mixed Media: BLZ

Not all NFOs are at the same stage of development, nor are all of their development trajectories monotonic. The BFCA is a case in point as a considerable lull followed an extended period of model performance. Their recovery path and strong leadership are worthy of note. The prioritization of its email and Facebook account reactivation, as well as WhatsApp discussions and the facilitation of virtual participation in some meetings, are examples of best practice. Another exemplary practice of the BFCA is its use of mixed media channels for outreach and advocacy. The use of ICT-facilitated new media alongside traditional media is a very important lesson for all NFOs, particularly low resources ones.

ICT in Financial Management: LCA NFO

The linking of QuickBooks to point of sale (POS) systems by the Castries Fishermen Co-operative Society facilitates effective, efficient, transparent and responsive commercial operations that are conducted in a manner that enables accountability and adherence to the rule of law. This would benefit all FFOs that run commercial operations.

Though Quickbooks training was conducted in several of the countries under study, for a variety of reasons it was only adopted in Saint Lucia. This country appears to have benefitted from the software and its linking to point of sale facilities on account of the determined advocacy of NFO leadership. Additionally, the Saint Lucia NFO has at the ready a handful of individuals who are able to provide technical support through a mix of formal and informal engagement. This is an exemplary example of the dependence of ICT on an enabling environment marked by commitment and a ready system of support. The lesson should be shared with all NFOs.

Systems Approach to ICT: CNFO

The CNFO is an active user of digital communications channels including social media and a website, to promote the objects of the organization. It is committed to developing the capacity and knowledge base of its membership; and has established a virtual leadership institute for this purpose. The organization has an established requirement for Board members to possess a minimum of ICT facilities and related skills. It utilizes a number of guidance notes that dictate the conduct of virtual meetings; and various protocols are employed to ensure that online training sessions are recorded for later access. Open source tools are used almost universally to minimize cost, and the administrative secretary has enthusiastically taken up the set up and management of virtual meetings. She is keen for guidance on strategies to optimize the organization's folder classifications to increase the effectiveness and efficiency of information management.

The CNFO has therefore adopted a systems approach to ICT that runs from policy, to practice, to capacity; and includes important components of infrastructure. It is largely systemic and systematic. While there is room to grow and strengthen, the will, interest and commitment to do so are evident. The CNFO is already an active and devoted supporter of its constituents and it is recommended that it draws on ready channels and relationships to include ICT support and encouragement to them.

Recommendations

We have found pockets of good practice as well as gaps in the use of ICT for good governance on the part of NFOs in five Caribbean countries. Focal areas for strengthening lie in the areas of: governance framework, information management and record keeping, meeting management, financial management, advocacy and engagement, ICT safety, ICT proficiency standards and ICT capacity building.

Governance Framework

The successful application of ICT for good governance relies on an effective underlying governance framework comprising strategies, policies, decision-making structures; alongside corresponding embedded practices and human capacity. As a tangible example, efficient and effective electronic information management (information acquisition and/ or document creation, storage, searching, retrieval, archiving, use and collaboration) cannot be accomplished through the introduction of ICT tools alone. Its success is critically dependent on a **system** of policy, procedures and processes; as well as adequate capacity and the dogged adoption of incumbent practices.

A framework for good governance is characterized by accountability and comprises processes that are transparent, participatory, consensus oriented, responsive, effective and efficient, equitable and inclusive, and follow the rule of law. With an appropriate governance framework, ICT can deliver organizational gains in all of these areas. A key component is an **ICT policy** covering, among other things, software procurement matters; use of software; organizational website, where it exists; backup procedures; maintenance, administration and support of software applications; security and emergency management; and software services. ICT gains rely on an effective and fit for purpose ICT policy, as well adequate capacity to apply ICT for good governance. Other artefacts, specifically tuned to the parameters of good governance, are also required for ICTs to yield gains. In particular:

ICT gains in transparency, accountability and the rule of law rely on:

- Organizational **policies covering transparency**, **accountability** and the **rule of law**, for example with respect to meeting minutes, budgets, accounts etc.
- Documented **definitions** and **guidelines** to operate in accordance with the policies
- Identification of all **artefacts** necessary for routine as well as ad hoc scrutiny by external agencies
- to policy guidelines and associated procedures
- Digital literacy **training** to include how to:
    - develop and revise fit for purpose digital content
    - identify how problems with common digital devices and tools can compromise good governance
    - document ICT problems and implemented solutions in a traceable, verifiable manner
    - assess whether the proposed solution compromises good governance
    - Manage digital identity.
    - use of online content in accordance with its copyright status and licenses
    - evaluation of reliability of sources

ICT gains in participation, equitability, inclusiveness, consensus building and responsiveness rely on:

- Organizational **policy covering participation, equitability, inclusiveness and consensus building**
- Documented **definitions** and **guidelines** to operate in accordance with the policies
- Organizational performance **metrics**, where applicable

- Selection of **fit for purpose ICTs** to reach multiple categories of stakeholders.
- Digital literacy **training** to include:
  - guidance on basic strategies for engagement through digital technologies.
  - netiquette and other basic strategies and guidelines for collaboration using digital technologies

ICT gains in effectiveness and efficiency rely on:

- Basic **training for all Board members and senior management** on:
  - information and data literacy
  - communication and collaboration
  - digital content creation
  - ICT safety
  - ICT for governance
- **Role-specific training** for secretary, treasurer and any personnel responsible for the creation of specially-formatted content e.g. newsletters, brochures, persistent web content etc.
- **Guidelines** for the management of information, records and meetings

It is recommended that draft templates are created for all of the foregoing policies, definitions, guidelines, metrics and identified evidentiary artefacts. They do not need to be elaborate but do need to be context appropriate and pitched in such a way as to ensure that they are practical to implement by the NFOs; and can yield meaningful outcomes. Feedback from all NFOs should inform finalized versions that should be widely shared for countries to localize as they see fit. The templates should align with all strategies, mechanisms, procedures and artefacts for good governance provided for NFOs outside of ICT considerations. These include, for example, the outputs of several projects implemented by CANARI, CERMES and other organizations.

ICT alone is not enough to yield gains in governance. A robust framework is not enough to yield gains in governance. The systematic practice of procedures within a robust framework with the support of fit for purpose, context-appropriate, ICTs, and appropriate capacity, are all necessary, though perhaps not sufficient, for good governance. It is therefore further recommended that **proficiency standards** are specified for NFO Board members and that they are required to undertake basic training to achieve the associated competency standards. It is recommended that this basic training include, but not be limited to, a module titled *Introduction to ICT for FFO Governance*, at the end of which learners should be able to:

1. Describe the organisational governance structure of Caribbean small-scale fisheries
2. Discuss the core concepts of governance and its role in efficient and well run FFOs
3. Demonstrate familiarity with key CNFO and NFO governance documents and digital assets
4. Identify at least six (6) ICT best practices to support good governance
5. Describe key competencies required to effectively use ICT for governance.

Recommended module topics are:

1. About the CNFO and NFOs: vision, mission, aims and objectives
2. Purpose of CNFO and NFO governance: structure, processes and relations
3. Key CNFO and NFO governance documents and digital assets
4. ICT best practices to support good governance
5. Core competencies required to use ICT for governance

6. Key governance activities: **information management and record keeping**; **meeting management**; **advocacy and engagement**

Information Management and Record-Keeping

Recognizing the importance of information management to good governance, and the current state of affairs across all NFOs examined under this study, it is recommended that a great deal of effort is placed in this area. Basic electronic information management planning will yield increased trust worthiness of information and improved co-ordination of its use; and at the same time will save a great deal of wasted time through efficiency gains. The planning exercise should result in recommendations that are **effective** and **simple** for target users to **routinely** apply.

We propose that the focal point for electronic information management is the set of conventions used to name and organize folders and files in electronic storage devices. Effective schemes ensure that it is easy for all users to file and to find electronic documents; to identify final document versions as distinct from drafts; to determine which files may be deleted; and to export data stores from one device to another. Such schemes are storage efficient and inherently scalable.

An efficient file system comprises folders and files organized according to an organization's goals and operations. Folder **classification** is determined from an analysis of the organizations' functions and activities; as well as its inventory or existing electronic artefacts; and their frequencies. As an illustrative example, a starting point for the reclassification of BARNUFO's existing dropbox repository (Figure 1) is shown in Figure 4. Major categories of missing items, for example the organization's constitution as well as its policies and etc necessary for good governance, are quickly evident from the reclassified folder structure. Many others such as minutes of Board meetings, finances and audited accounts, are clearly missing as they have not been moved to the Dropbox. The final reclassification of root folders would be determined in consultation with BARNUFO to seek clarifications on ambiguously titled folders; the organization's insights into its routine operations and an examination of additional missing items.

- 2014 Calendar Visuals
- 3 Jan info sessions
  - Photos
  - Presentation pdfs
- BARNUFO Evolution Workshop Dec 12,2013
- BARNUFO Fisherfolk Training 2017
- BARNUFO Fisherfolk Week of Activities 2018
- BARNUFO Training 2018
- BARNUFO_Validation_Dec282013
- Board nominations
- capacity development
  - leadership training
- Climate Change Project
- communication and PR
- FAO FFO workshop
  - administration
  - capacity database
  - case study docs
  - FAO docs
  - field trip photos
  - presentations
    - Presentation COSTA RICA
  - WG session 1 reports
  - WG session 2 reports
  - workshop draft report
- Fisherfolk Feeding Initiative
- Fisherfolk Training 2015

- BARNUFO
  - Action and Input Required
    - Constitution Booklet Covers
    - Membership Cards + Form
    - Quotations
    - Report Covers
  - Administration
    - Old Assorted Stuff
    - Stationery
      - From Thu 26 Feb meeting
      - To use
      - Test Archive
  - Board
    - Nominations
  - Communication and PR
    - Newspaper articles
    - 2014 Calendar Visuals
    - Website Photos
    - 3 Jan info sessions
    - BARNUFO_Validation_Dec282013
    - Photos
    - Presentation pdfs
  - Initiatives
    - Fisherfolk Feeding
    - Fisherfolk Week
      - 2017
      - 2018

- Advanced First Aid
- Book Keeping & Financial Planning
- Fonts
- Navigation & Solas
- Preventative Engine Maintenance
- Standard Operation Procedures in Fish Handling
- Fisheries Forum
- Fisherman's week 2017
- for action and input
  - constitution booklet covers
  - membership cards + form
  - quotations
  - report covers
  - stationery from Thu 26 Feb meeting
- GEF small grants
  - fish leather
- iica SPS conference presentations
- Leading fisherfolk
- membership drive
- National Fisherfolk Workshop in Project Management
- newspaper articles
- old assorted stuff
- panel discussion 23Jul
- PROCESSING HALL
- reports and resources
- stationery to use
- strategic planning
- team meetings
  - minutes
- test stationery archive
- Website Photos
  - work plan Jan-Jun 2015

(a) Existing BARNUFO Root Folder

- Membership
  - Drive
- Strategic Planning
  - Work plans
    - Jan-Jun 2015
- Team meetings
  - Minutes
- Training
  - 2013
    - Evolution Workshop Dec 12,2013
  - 2015
    - Fisherfolk Training
      - Advanced First Aid
      - Book Keeping & Financial Planning
      - Fonts
      - Navigation & Solas
      - Preventative Engine Maintenance
      - Standard Operation Procedures in Fish Handling
  - 2017
    - BARNUFO Fisherfolk Training 2017
  - 2018
    - BARNUFO Training 2018
- Conferences
  - IICA SPS Conference Presentations
  - Panel Discussion 23 July
  - Fisheries Forum
- Contact Information
  - Leading Fisherfolk
- External Capacity Development
  - FAO FFO workshop
    - administration
    - capacity database
    - case study docs
    - FAO docs
    - field trip photos
    - presentations
      - Presentation COSTA RICA
    - WG session 1 reports
    - WG session 2 reports
    - workshop draft report
  - Leadership Training
  - National Fisherfolk Workshop in Project Management
- International Projects
  - Climate Change Project
  - GEF small grants
    - Fish leather
- Resources

(b) BARNUFO Root Folder Pre-Analysis Reclassification

Figure 4 Example Pre-Analysis Reclassification of BARNUFO Root Folder

General principles for folder and file management include:

- Standardized naming convention for files and folders
- Use of descriptive and precise naming convention to avoid ambiguity
- Consistently application of naming convention
- Clear distinction between final versions and drafts – preferably through inclusion of date
- Annual review of folder structures to correct misfiling and delete redundant content.

The files directly in the root of the BARNUFO Dropbox illustrate some of these principles. Table 22 shows the existing names of a sample of files on the left and example comments regarding recommended conventions on the right. Recommendations for improvement include use of unambiguous meta data to

convey specifics e.g. “Board Meeting Agenda ...” and “Safety Training…” as opposed to “Meeting Agenda ...” and “Training…”; inclusion of month and year (and day if version timescales are short) for files associated with events or for which the version number is important; use of three-letter month to avoid the ambiguity of numeric data formats; use of a standard format for placement of meta data; use of a case protocol e.g. all lower case, sentence case etc.; and deletion of redundancy e.g: “–” & “[1]” even if generated automatically.

Table 22 Example Recommendations on Samples of File Names

Sample File Names	E.g. Recommendations
2 final draft of agenda.docx Development meeting.docx Graduation List 2018 Training.xlsx List of Nomination Names.doc BARNUFO5936[1].pdf	Include unambiguous meta data to convey specifics e.g. “Board Meeting Agenda ...”, “Safety Training…”
BARNUFO presentation-100416_<>.pptx Caribbean Network of Fisherfolk Organisations (CNFO)_070217.pptx Doc 3 BARNUFO MEETING CARICOM AMBASSADOR <>.docx Doc 3 BARNUFO Meeting updated.docx Final draft for fisherfolk meeting.docx FISHLOGO2.jpg Invoice for professional fee for <name>.pdf Revised flyer_2018 Hurricane preparedness Meeting BARNUFO.pdf 2018 Hurricane preparedness Meeting BARNUFO.pdf HACCP Training Manual.pdf	Include month and year, and day if necessary, for files associated with events or for which the version number is important – date is the most robust way to identify versions. Three-letter month (e.g. “Nov”) avoids ambiguous numeric data formats
AGENDA FOR FISHERFOLK MEETING.docx BARNUFIO Meeting Agenda.docx BARNUFO PARTICIPANTS LIST.docx basic_seafood_haccp_slideshow.pptx	Use a standard format for placement of meta data e.g. “Agenda BARNUFO Meeting …”
Farmer;s corner programme.docx Barbados fishing idustry.docx	Fix typos e.g. “;” and “industry”
<>+chapter+31may.doc MEETING WITH THE BRIDGETOWN FISHERFOLK.docx MEETING OF THE FAO.docx Constitution of BARNUFO and Amendments info.docx	Set and consistently apply a case protocol e.g. all lower case, sentence case etc.
Monnereau_et_al_2015_vulnerability_of_the_fisheries_sector_to_climate_change_CTR_77.pdf Nurse - (2011) -- The implications of global climate change for fisheries.pdf BARNUFO%20Fisherfolk%20training%202012[1].jpg	Delete redundancy e.g: “–” & “[1]” even if generated automatically. Year is adequate for external publications

It is recommended that a standard schema for information classification and conventions for folder and file naming are adopted across all countries under examination. The CNFO is the most natural umbrella body to promote and apply such schema across these and other countries that share persistent association. These simple strategies will strengthen the legitimacy of information and boost the efficiency of its access. It is also recommendation that a module titled *ICT for FFO Governance: Information*

Management and Record-Keeping is included in a capacity building programme required of all NFO Board members. On successful completion of this module, learners should be able to:

1. Describe various record-keeping artefacts and activities required for effective FFO governance.
2. Explain the concepts of data and information and differentiate between various types of structured and unstructured data
3. Demonstrate knowledge of FFO policies, procedures and standardized templates associated with record-keeping
4. Discuss considerations for the choice of ICT tool for record-keeping
5. Organize an electronic file management system based on the use of folders and subfolders, and a designated naming convention
6. Create and manage an FFO membership directory using basic spreadsheet functions
7. Explain critical data issues such as security, privacy and archiving and the role they play in record-keeping

Proposed module topics are:

1. Record-keeping artefacts and activities required for effective FFO governance.
2. The concepts of data, information and knowledge
3. Categories and characteristics of data
4. CNFO policies, procedures and standardized templates associated with record-keeping
5. Selecting the appropriate ICT tools for record-keeping
6. Organizing a file management structure using folders and subfolders, and file naming convention to store and readily locate and retrieve electronic files
7. Managing the FFO membership directory using the common spreadsheet as a data management tool
8. Data governance issues in records management ~security, privacy and archiving

Meeting Management

Recognizing the importance of meeting management to good governance, and the current state of affairs across most NFOs examined under this study, it is recommended that a great deal of effort is placed in this area. It is recommendation that a module titled *ICT for FFO Governance: Meeting Management* is included in a capacity building programme required of all NFO Board members. On successful completion of this module, learners should be able to:

1. Describe the various meetings to be conducted as part of established FFO governance policy and procedures
2. Explain when to use various digital communication and collaboration tools for a given business context, with attention paid to *WhatsApp, email, Google Hangout and Skype*
3. Explain the concepts of time management, task management, and work flow management
4. Demonstrate the use of calendaring applications to enhance time and task management
5. Select and use appropriate digital tools to manage a virtual end-to-end meeting scenario
6. Identify online communications netiquette and good practice in online meetings and communities

Recommended module topics are:

1. Schedule of meetings in FFO governance policies and procedures
2. Beyond WhatsApp: digital communication and collaboration tools such as email, Google Hangout, Zoom and Skype
3. Concepts of time management, task management, and work flow management
4. ICT calendaring applications to enhance time and task management
5. Core competencies required to use ICT for management of the entire end-to-end virtual meeting chain
6. Communications netiquette and good practice in online meetings and communities

Financial Management

All NFOs are required to engage in some form of financial activity, if only to collect membership fees. This study has found, though, that this varies widely across the countries ranging from no bank account or financial activity whatsoever to vibrant commercial activity. It is recommended that commercial operations which are regularly utilizing Quickbooks, link the application to point of sale facilities as has been done by the LCA NFO. Where the application is in use, it is generally run as a stand-alone application, delinked from point of sale facilities. The maintenance and capacitation of QuickBooks installations is widely varied following training in some, though not all, countries of interest to the current work. Training, with periodic refreshers, on the fundamental aspects of financial management as well as the practical aspects of using Quickbooks on its own as well as with the linked point of sale functionality is essential.

It is recommendation that low resource NFOs use either Excel or Word for financial management, according to the human resource capabilities. Relevant training in these applications is essential for all officers and management staff involved in financial reporting of any kind.

Advocacy and Engagement

Advocacy and engagement are critical to NFO governance as captured in the by-laws. It is recommended that content-appropriate tools, which recognize the resource constraints of NFOs and their Board members, are prioritized. The findings of this study suggest that smartphones and laptops are the primary devices for advocacy and engagement.

Cox, S-A. et al (2020) have found that WhatsApp and word of mouth are the preferred communication tools for fisheries information across multiple stakeholder groups. The current study has also found that WhatsApp has been used by BARNUFO as a potent channel for advocacy and engagement. It is well used by some of the other NFOs and continues to be the channel of choice for the CNFO to reach its constituents across multiple countries. It is recommended that BARNUFO and CNFO leads share their experience, guidelines for use, challenges and successes with all FFOs. Additional WhatsApp resources to share include tips on:

- managing:
  - last seen feature
  - read receipts
  - notifications

    - gallery images and video
    - profile picture
    - chats e.g. muting a chat or group chat, archiving, backing up, clearing all chats, deleting all chats, deleting or clearing a specific chat, marking chats as unread, pinning a chat to the top, deleting a specific message within a chat
- contact blocking
- automatic image/video saving preferences by chat
- downloading and viewing WhatsApp data reports
- referencing and replying to a specific message
- privately replying to a group message
- emphasizing text
- sending a voice message
- bookmarking important messages
- sending a public message privately
- determining how long messages have gone unanswered
- customising notifications
- creating shortcuts to specific conversations
- automatically adding dates to a calendar

It is recommendation that a module titled *ICT for FFO Governance: Advocacy and Engagement* is included in a capacity building programme required of all NFO Board members. On successful completion of this module, learners should be able to:

1. Describe NFO advocacy including purpose, strategy and guiding principles
2. Identify the primary stakeholders and audience for NFO Advocacy
3. Describe the role of media, including traditional and ICT/new media, in advocacy
4. Discuss the various forms of ICT channels and digital artefacts to support advocacy including: newsletters, websites, social media, policy briefs, etc.
5. Match audiences and channels: selecting the appropriate form of media to suit the audience and advocacy message
6. Use ICT tools such as spreadsheets, presentation utilities and standardized templates in the development of an advocacy plan and budget.

Recommended module topics are:

1. NFO advocacy purpose, strategy and guiding principles
2. Primary stakeholders and audience for FFO Advocacy
3. The role of media, including traditional and ICT/new media, in advocacy
4. ICT channels and digital artefacts to support advocacy including: newsletters, websites, social media, policy briefs, etc.
5. Selecting the appropriate form of media to suit the audience and advocacy message
6. Development of an advocacy plan and budget using ICT tools

ICT Provisions

ICTs for Governance Functions

ICTs vary widely and are variously suited to different purposes: individual, group or public broadcast messaging; synchronous ("real time") or asynchronous communications. Some are information-centric while others are communications-centric. Some provide structured, persistent content that is easy to navigate while others feature unclassified streams for swift consumption. Some ICTs are general purpose while others are used only for specialist purposes. Table 23 and Table 24 summarize recommendations for ICT resources by key governance function. As the suitability of ICTs differs according to purpose, the functions in Table 8 (functions required of FFO office holders) are classified as (i) digital content creation and (ii) communication and collaboration; then elaborated in Table 23 and Table 24 respectively.

Table 23 identifies ICT resources for **digital content creation**. The content artefacts in the table are drawn from the survey of the CNFO constitution and the by-laws of FFOs as well as findings from the focus group meetings and interviews conducted within the present activity. They are: minutes, basic records and directories, reports (performance appraisals, etc.), articles (newsletter, newspaper, brochure, pamphlet) and notices, constitution, by-laws, policies and contracts, work programmes, spreadsheets, presentations, databases and websites. The table identifies recommended practices and related resources as well as key enabling hardware, software and services for each content artefact.

The development of a communications strategy and plan; the use of templates and guidance notes as well as mentoring and training are recommended. Computers, voice recorders and storage devices are the recommended hardware. Software for word processing, text, image and video editing, web and desktop publishing, project management, spreadsheeting, presentation and database management as well as financial and inventory management and point of sale are recommended, as necessary and in accordance with the level of activity; and the human and other capacities of the NFO. According to the content artefact, services include: software licensing, hardware maintenance, cloud storage, internet, domain name and hosting and administration of websites. The artefacts are roughly divided into three tiers in increasing order of task specialization and level of ICT adoption. Tier 1 entries are basic and should be provisioned for all FFOs. Tier 2 entries are intermediate and are recommended for all FFOs, according to the nature of their operations. Tier 3 entries are recommended for the CNFO and NFOs according to their human, and other, resource capabilities.

Table 24 outlines ICT resources for **communication and collaboration**. The artefacts and activities under consideration, derived from Table 8, are: articles (newsletters, newspapers, brochures and pamphlets), notices, reviews, interviews, meetings, presentations, public engagement, promotional activities, records and reports. For each class of artefact and activity, recommendations are made for appropriate practices, hardware, software and services. A communications strategy and plan are important as are the use of templates and guidance notes; training and mentoring. A computer, printer, multimedia projector and headsets are essential hardware items. Web publishing, social media, online collaboration, video conferencing and email are essential software applications. Essential services include software licensing, hardware maintenance, Internet, web hosting, domain name, website administration and cloud storage according to human, and other, resource capabilities. General recommendations on ICT resources for role-specific functions are shown in Table 25.

Table 23 ICT Requirements by General Governance Function: Digital Content Creation

	Content artefacts	Practices & Resources	Hardware	Software	Services
TIER 1	Minutes	Training, templates	Computer, voice recorder, storage devices	Word processing, file conversion	Software licensing[10], hardware maintenance
	Basic records and directories	Training, templates	Computer, storage devices	Word processing, file conversion, spreadsheeting	Software licensing, hardware maintenance, cloud storage
	Basic reports	Training, templates	Computer, printer, storage devices	Word processing, file conversion, spreadsheeting	Software licensing, hardware maintenance, cloud storage
TIER 2	Articles (newsletter, newspaper, brochure, pamphlet) & notices	Training, communications strategy & plan, templates	Computer, printer, storage devices	Word processing, image & video editing, web & desktop publishing	Software licensing, hardware maintenance, Internet, online collab, cloud storage
	Constitution, by-laws, policies, contracts etc.	Training, templates, guidance notes	Computer, printer, storage devices	Word processing	Software licensing, hardware maintenance, cloud storage
	Work programmes	Training, templates, guidance notes	Computer, printer, storage devices	Word processing, project management	Software licensing, hardware maintenance, cloud storage
	Presentations	Communications strategy & plan, mentoring, guidance notes	Computer, storage devices, multimedia projector	Presentation, image & video editing software	Software licensing, hardware maintenance
	Specialist reports	Training, templates	Computer, printer, storage devices	Financial and inventory management applications; point of sale application	Software licensing, hardware maintenance, cloud storage
TIER 3	Databases	Training, templates	Computer, storage devices	Database management system	Software licensing, hardware maintenance
	Website	Communications strategy & plan, templates	Computer, printer, storage devices	Text editing, word processing, web publishing, desktop publishing	Software licensing, hardware maintenance, Internet, cloud storage, domain name, website hosting and admin

[10] As necessary

Table 24 ICT Requirements by General Governance Function: Communication and Collaboration

Artefacts/Activities	Practices & Resources	Hardware	Software	Services
Articles (Newsletter/ brochures/ pamphlets)	Communications strategy & plan, training	Computer, printer	Web publishing, social media, online collaboration	Software licensing, hardware maintenance, Internet, web hosting, domain name, website administration, cloud storage
Notices	Communications strategy & plan, training	Computer, printer	Web publishing, social media, online collaboration	
Reviews	Templates, guidance notes	Computer, printer	Online collaboration, social media	Software licensing, hardware maintenance, Internet, cloud storage
Interviews	Comms strategy & plan, mentoring, training	Headset	Video conferencing	Software licensing, internet
Meetings	Comms strategy & plan, mentoring, training	Printer, multimedia projector, headset	Video conferencing	
Presentations	Communications strategy & plan	Computer, printer, projector, headset	Online collab, video conf'g, social media	Software licensing, hardware maintenance, Internet
Public engagement	Comms strategy & plan	Computer	Social media, email	
Promotional activities	Communications strategy & plan	Computer, printer	Social media, email, web publishing	Software licensing, hardware maintenance, Internet, web hosting, website admin, cloud storage
Records and reports	Guidelines, templates	Computer, printer	Online collaboration, web publishing	Internet, web hosting, domain name, website administration, cloud storage

Table 25 General Recommendations on ICT Resources for Role-Specific Functions

Artefacts/Actions	Role	Practices	Hardware	Software	Services
Financial records and reports	Treasurer	Robust file management system, training, templates	Computer	Accounting, web publishing	Software licensing, hardware maintenance, Internet, web hosting, domain name, website administration, cloud storage
Articles (Newsletter/ Newspaper/ brochures/ pamphlets)	Secretary and PRO	Communications strategy & plan	Computer	Web publishing	Software licensing, hardware maintenance, Internet, web hosting, domain name, website administration, cloud storage

ICT for Governance Architecture

The gap analysis conducted as part of this study reveals that in most of the countries, the physical facilities as well as ICT hardware, software, services, policies and competencies of the NFOs are modest at best. These constraints limit the NFOs' ability to employ good governance practices. A systematic approach to the design of ICT infrastructure for governance, recognizing these constraints, is recommended. A distributed digital infrastructure is recommended taking into consideration the need to access information by and for FFO organisations that are geographically distributed, the general lack of hired or resident employees at a particular site, limited capacity, and that smartphones are the device of choice for most FFO personnel and leadership.

The deficits in available equipment and office infrastructure point to the need for a light-touch approach to ICT governance and equipment that pushes as much of the supporting and administrative infrastructure to the digital domain, while emphasizing user mobility and capacity building in the physical domain. This advocates for an overarching strategy of cloud based infrastructure, centralized information assets, standardization and access to training on demand.

To support this mixed virtual/physical ICT infrastructure, and manage deployment costs and allow for ease of replication, we recommend predominantly cloud-based software-as-a-service platforms and applications, mixed with more conventional office computing infrastructure. The recommended architecture is shown in Figure 5.

Cloud Storage Services (Electronic Repository)

Google Drive can provide a flexible platform for creating a shared electronic repository that stores reference documents (policies, practices and procedures), administrative documents (eg. meeting minutes), standardized templates and guidelines for effective use of ICT for Governance. A properly organized file management structure based on the use of folders and subfolders, and a uniform file naming convention will make it easy for users to readily locate electronic files.

Mobile Computing (Smartphones and Laptops)

As the livelihood activities of fisherfolk are itinerant by nature, mobile devices (smartphones) and laptops will be an important component of this mixed virtual/physical ICT infrastructure and provide the primary basis by which digital resources (centralized databases, records, documents, etc.) and services (meetings, on-demand training) are accessed and consumed by FFO leaders. The mobile device provides the flexibility to access resources on demand and outside the constraints of physical office and limited Internet access using appropriate features such as *"available offline"*.

Centralized Database with Administrative Dashboards

Like most distributed enterprises, the NFOs which constitute the CNFO need to maintain certain common databases of information that have utility across the network. Examples include membership directories and office holders, as well as databases of basic industry data and statistics. A managed centralized database of records with designated read and write access rights, will be a valuable ICT resource to support good governance across all countries. Visual dashboards can be used to provide non-technical users with access to this information.

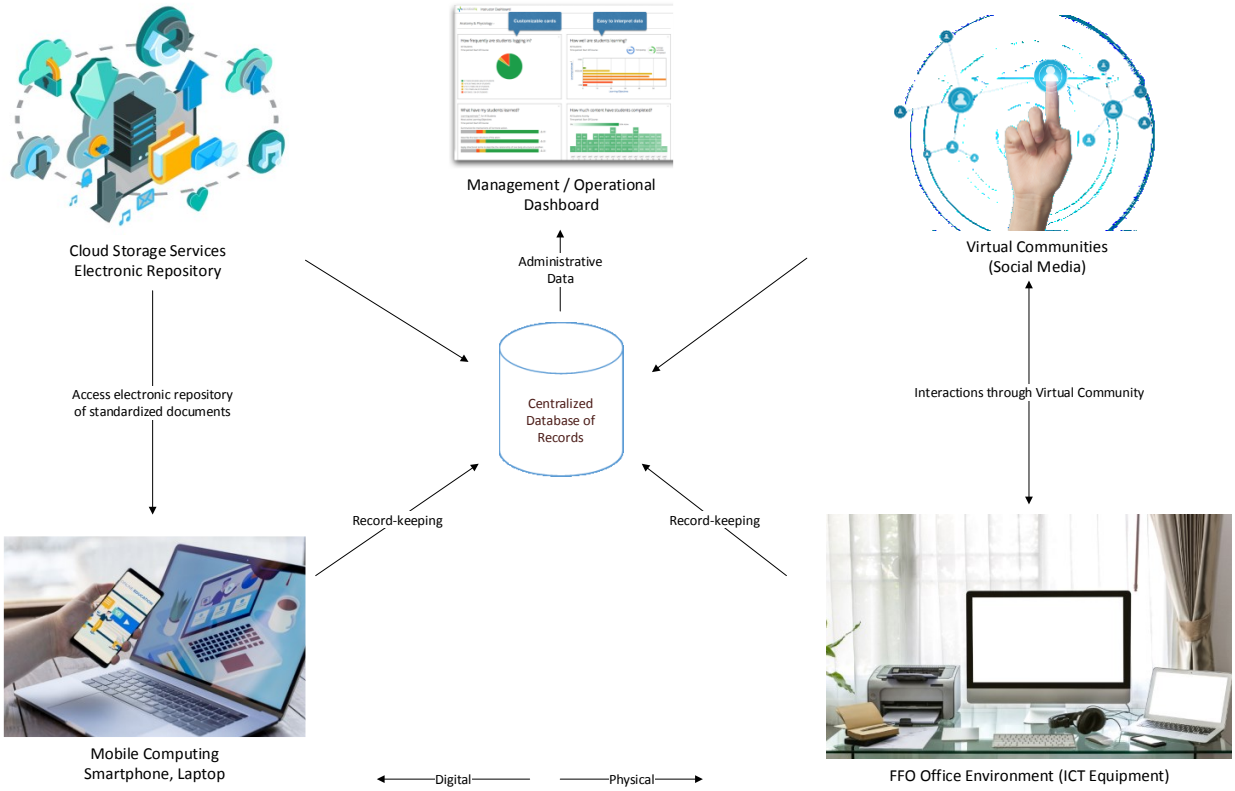

Figure 5 Recommended NFO Distributed ICT Architecture for Good Governance

Virtual Communities

Virtual online communities, based on social media (Facebook, Instagram, Twitter and YouTube), is an important digital resource for the NFOs and the CNFO; and a key enabler of the advocacy and engagement activities of governance. A searchable directory of the various websites and social media channels is also an important online resource to the community.

Key Hardware Facilities

The typical NFO Office requires the following minimal equipment to participate in the recommended mixed virtual/physical ICT infrastructure:

- Desktop or laptop computer
- Multi-function printer with capability for scanning, printing and photocopying
- Multi-media computer accessories including a good quality video camera, speakers and headsets with microphone
- Multi-media computer accessories including a good quality video camera, speakers and headsets with microphone

Key Software Facilities

Considerable effort must be applied to ensure that ICT interventions for NFOs are sustainable. At this time, sustainability calls for non-disruptive interventions that are simple to adopt and adapt. It is also essential that interventions provide tangible returns in efficiency and effectiveness. Within applicable constraints and for financial and human resource economy, a minimum number of tools yielding maximum value is highly recommended. It is therefore recommended that ICT tools already in use are prioritized and capacity in these areas strengthened. This bold recommendation is made despite the fact that some alternate tools are better suited to the needs and constraints of FFOs. A companion report elaborates on considerations for selection of office and Web conferencing software which are both critical to the governance operations of NFOs.

Other recommended software tools are Google Classroom, Google Drive, and other Google productivity applications such as Calendar, Docs, Sheet and Slide. Google's web conferencing application, Hangouts Meet offers group messaging with G Suite integration, Google search functionality and meetings scheduling. It is not used by the CNFO or NFOs at this time.

Storage

The file type statistics of the BARNUFO Dropbox repository, shown in Figure 6, provide insights into baseline electronic storage needs of NFOs. This information is useful for resource planning and is useful to triangulate evidence of application, and version, use. For this particular repository:

- the total electronic data stored is 2 GBytes
- Pictures, Powerpoint presentations, PDF documents and videos account for the majority of data storage at 41%, 22%, 14% and 10.3% respectively
- Word documents, though generally more bloated than PDF documents, only account for 2.3% of total data storage and 14% of data storage for documents
- Excel is in use somewhat and it is equally spread between old (.xls) and current (.xlsx) formats
- While both old (.ppt) and current (.pptx) versions of Powerpoint are in use, the latter account for two and a half times the former
- Interestingly, there are a few (3) desktop publishing (Publisher) files in the repository.

The snap shot of the document repository provides a limited view of the range and particulars of all electronic materials of an NFO. It is also a conservative estimate of the storage needs as the day to day files are stored and managed on a mix of office desktop machine and personal laptops, many of which never find their way into the repository. It is clear that well over 2 GBytes of storage is required, particularly if media including pictures and videos which are central to promotion and advocacy, are routinely stored, as they should be, in online repositories.

Resources such as are found in the BARNUFO repository should be archived periodically on a device separate from the day to day computer. In addition to the resources used regularly, the discharge of many good governance functions requires ongoing, convenient access to a body of materials. These include extra-organizational reference materials as well as organizational materials filed in a manner that intrinsically reveals key meta data such as the date of last update, etc. 1 TB external hard drives as well cloud storage is recommended for each NFO. A high capacity USB thumb drive is also recommended for use by the president and secretary of each NFO.

Extension	Description	Bytes	% Bytes	> Files
.jpg	JPG File	826.5 MB	40.9%	693
.pdf	PDF-XChange Viewer Docu...	284.0 MB	14.1%	113
.docx	Microsoft Word Document	46.5 MB	2.3%	92
.pptx	Microsoft PowerPoint Prese...	445.1 MB	22.0%	38
.doc	Microsoft Word 97 - 2003 D...	16.0 MB	0.8%	26
.url	Internet Shortcut	5.9 KB	0.0%	9
.mp4	MP4 File	131.4 MB	6.5%	8
.xlsx	Microsoft Excel Worksheet	216.9 KB	0.0%	7
.mht	MHTML Document	1.4 MB	0.1%	6
.ppt	Microsoft PowerPoint 97-20...	184.9 MB	9.1%	6
.xls	Microsoft Excel 97-2003 Wo...	215.0 KB	0.0%	4
.mp3	MP3 File	76.9 MB	3.8%	4
.pub	Microsoft Publisher Docum...	5.8 MB	0.3%	3
.png	PNG File	68.5 KB	0.0%	2
.ttf	TrueType font file	142.3 KB	0.0%	2
.rtf	Rich Text Format	552.7 KB	0.0%	1
.xps	XPS Document	855.9 KB	0.0%	1
.tiff	TIFF File	937.6 KB	0.0%	1

Figure 6 BARNUFO Dropbox Repository File Statistics

ICT Safety

ICT provisions are only as reliable as the safety with which they are managed. The range of impact of safety measures runs from efficiency to availability, with the loss of electronic resources often amounting to a catastrophe. Table 26 identifies recommended mitigation practices for ICT safety, relating to hardware damage, software damage, health risks and environmental damage. Training as well as documented practices and procedures are the key mitigation strategies.

Table 26 Mitigation Practices for ICT Safety

Risk	Mitigation practices
Hardware damage	• Basic ICT safety training for hardware users e.g. placement of hardware to prevent damage from water, falling objects etc.
Software damage (data loss/damage, hacking, system inefficiency)	• Recognise suspicious/spam emails, messages and pop-ups that can corrupt data and the computer systems • Install and activate protection, scan devices (USB, hard disk, etc.) to check for viruses or other problems • Identify safe sources for downloading files, applications and any downloadable content • Make frequent backups of important content on a separate device or in the cloud • Identify confidential data that should not be made publicly accessible on the Internet • Update the operating system, security software and other applications to ensure optimal efficiency

Risk	Mitigation practices
	• Create and manage a strong password by saving it in a separate document and changing it regularly • Customize privacy settings on all devices and applications as is appropriate
Physical health risks (human)	• Ensure proper education and training on the health risks associated with prolonged or inappropriate computer usage (poor posture, repetitive stress syndrome, poor blood circulation, vehicular accidents, etc.) and to mitigate them • Customize basic display and other features of device (font size, screen background, night light, brightness, etc.)
Mental health risks	• Ensure proper education and training on the mental health risks associated with prolonged computer usage such as addiction, anxiety and depression and their common symptoms • Upon detection of such symptoms, ensure help is accessible
Environmental damage	• Identify and implement basic measures to save energy and environmental resources such as avoiding unnecessary printing, turning off devices after use, not leaving chargers connected without a mobile phone • Identify where to dispose of old computers, batteries, toners, etc. to minimise environmental impact • Engage in the recycling of reusable items and materials

ICT Proficiency

The meaningful use of ICT by FFOs requires the core set of ICT competencies enshrined in a digital literacy framework ***applied to*** their specific functions. A standardized foundation of digital literacy proficiency is recommended for all NFO Board members and management. The competency-based DLGF, based on the DigComp framework, and localized for NFO governance, is recommended. The proposed competence areas and competences are shown in Table 27.

Table 27 Proposed Competence Areas and Competences for NFOs

Competence area	Competences
0. Fundamentals of hardware and software	0.1 Basic knowledge of hardware such as turning on/off and charging, locking devices 0.2 Basic knowledge of software such as user account and password management, login, and how to do privacy settings, etc.
1.Information and data literacy	1.1 Browsing, searching and filtering data, information and digital content 1.2 Evaluating data, information and digital content 1.3 Managing data, information and digital content
2. Communication and collaboration	2.1 Interacting through digital technologies 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 2.5 Netiquette 2.6 Managing digital identity

3. Digital content creation	3.1 Developing digital content 3.2 Integrating and re-elaborating digital content 3.3 Copyright and licenses 3.4 Programming
4. Safety	4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being 4.4 Protecting the environment
5. Problem solving	5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively using digital technologies 5.4 Identifying digital competence gaps
6. ICT for Governance	6.1 Introduction to ICT for FFO governance 6.2 ICT for FFO Governance: record-Keeping 6.3 ICT for FFO Governance: meeting management 6.4 ICT for FFO Governance: advocacy and engagement

ICT Capacity Building

Pedagogical Considerations

Pedagogy is the discipline that deals with the theory and practice of teaching or the means by which education achieves its objectives. At a programmatic level the concern is with the *what* and so is about identifying target competencies, learning objectives, sequencing and organizing of content, specifying learning activities and deciding how to deliver content. At an individual lesson or module level, instructional design is concerned with the *how* (Gustafson & Branch, 2002; Wiley & others, 2002) with a focus on which specific instructional, navigational and assessment methods are best suited for the course content, modality and learner.

The deliberate design of constructivist online learning for adult learners (Brookfield, 1995; Huang, 2002) is particularly relevant to the CNFO communities of learners. These considerations include:

1. **Importance of a structured curriculum**: learner's need to know how learning will be conducted, what learning will occur, and why learning is important
2. **Interactive learning**: Interactivity motivates and stimulates learners. *Active learning* through interactions with instructors, other learners and content is a crucial function in distance learning.
3. **Self-directed learning**: the ability to take control of the techniques and of the purposes of learning.
4. **Experiential learning**: prior experience of the learner creates individual differences, and could be a valuable resource in a collaborative and socially constructed learning environment
5. **Critical reflection and problem solving orientation**: a form and process of learning in which learners think contextually and critically within real-life contexts
6. **Motivation to learn**: Adults have high motivation to learn when new knowledge can help them solve important problems in their lives

7. **Instructor's role as facilitator**: the instructor's role is that of a consultant, guide, and resource provider with a responsibility to monitor and warrant the quality of learning and peer discussions.

Blended Learning Model

Resource-constrained environments in developing contexts can present unique technical, social and cultural constraints to the design of infrastructure through which teaching and learning can be sustainably delivered (Anderson, Anderson, Borriello, & Kolko, 2012). In the case of the NFOs under study, these constraints include:

- The livelihood activities of fisherfolk is, by nature, mobile and itinerant
- Internet access is often intermittent, depending on the availability of WiFi, as not all Board members and management subscribe to data plans
- In some cases, Internet service is low-bandwidth
- The mobile phone is the device of choice for most NFO Board members and management
- NFOs themselves are members of a distributed network of fisherfolk organizations, the CNFO, spread across several countries in the Caribbean.

Considering these constraints, the pedagogical requirements, and the high availability of Smartphones among Board members a blended learning model is recommended. This will allow for remote, disconnected access independent of continuous, high-bandwidth Internet access. As elaborated in Figure 7, this model integrates facilitated face-to-face sessions as well as self-paced online and offline learning methods. It also features a learning analytics component. The ability to measure, collect, report and analyze learner interactions is a key component of the *e*Learning architectural design (Chatti, Dyckhoff, Schroeder, & Thüs, 2013).

Various technology components can be used to instantiate this blended learning model. It is recommended that content delivery is designed to accommodate access through mobile devices on account of the high availability among NFO Board members. In order to manage deployment costs and allow for scalability, the predominant use of open source tools and cloud-based software-as-a-service platforms are recommended.

Architectural Design for Scalable eLearning

Figure 8 illustrates the architectural design recommended to support the proposed blended learning model. It comprises mobile phones; responsive, mobile-enabled, learning applications ("apps"); a learning management system; learning analytics; a virtual learner support community; and facilitated face-to-face sessions.

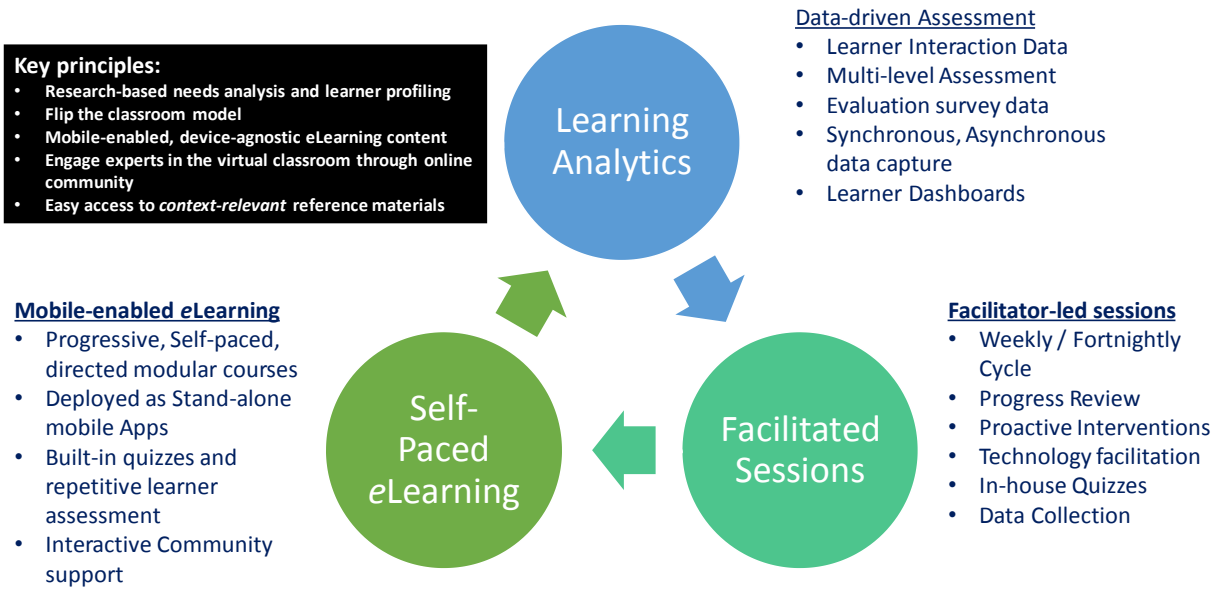

Figure 7 Blended Learning Model

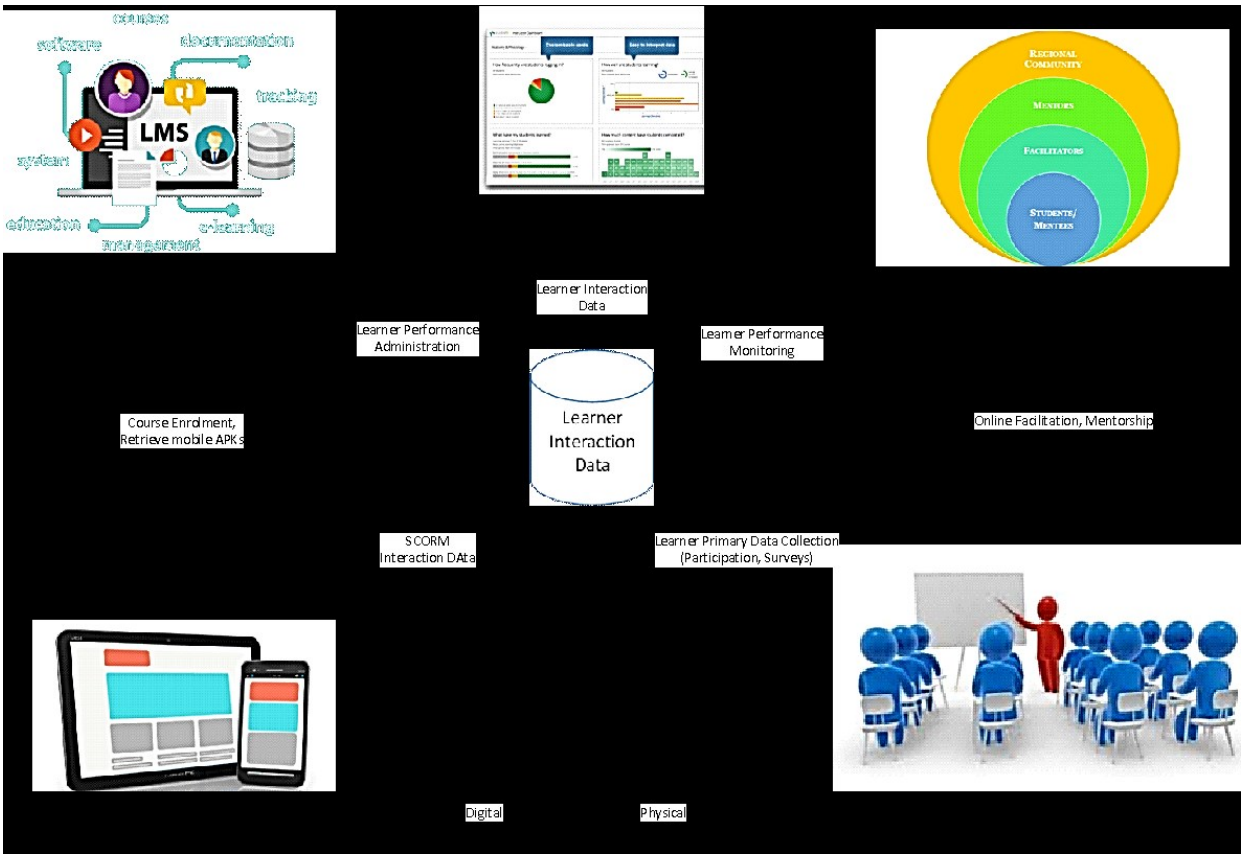

Figure 8 Blended Learning Architecture

Smartphones and laptops are important components of the learning architecture that provide the primary basis by which courses are accessed and consumed by learners. This is particularly important for overcoming many of the infrastructure deficits (e.g. Internet access, travel costs, etc.), as the mobile device provides learners with the flexibility to access learning content on demand and outside the constraints of physical classroom sessions; as well as limited Internet access. Smartphones also enable the design of a high degree of interactivity and dialogue in the modular *e*Learning courseware that allows for active learner interaction and engagement, even while disconnected. All user interaction with the course materials will be recorded and intermittently uploaded for subsequent analysis.

The use of the ADAPT[11] open source framework and authoring tool is recommended to enable the design of highly modular *e*Learning objects that combine text and graphic components on a scrolling page to create a rich, interactive and responsive learner experience. Responsive design enables the courses to be deployed on any device: *mobile phones, tablets and desktops*. The stand-alone mobile editions of courses can be generated as Android mobile apps that accommodate learners who do not have consistent Internet connectivity.

A Learning Management System (LMS) provides a centralized electronic repository for courseware and related content. Google Classroom is the LMS platform of choice because it provides a "social media" learner experience on contrast to more conventional LMS's, such as Moodle, used in formal learning. This social character, together with features that mimic a real-world classroom metaphor, enables managed student-to-student and student-to-facilitator interactions that encourage a community spirit within cohorts, and promotes peer to peer learning.

Engagement of learners in an overtly social and networked learning experience that emphasizes the connections that develop among the participants, materials, and learning, is key to success as online learning can be an isolating experience that leads to high attrition rates. Interactive face-to-face sessions scheduled on a regular (*or opportunistic*) basis, between learners and trained facilitators, is an important component of the blended learning model. It helps to mitigate the typically high attrition rates associated with exclusively online learning.

Learner interaction data is the "glue" that integrates the various components in this distributed learning architecture. It is recommended that all courseware is designed to capture and record learner interaction data. The learning analytics system will enable facilitators and course administrators to track student progress and record in-course assessment performance.

Recommended Strategy

There exists a number of opportunities that may be seized to enable effective, fit for purpose use of ICT in NFO governance, even recognizing the several constraints under which the organizations operate. These include:

- There is a general awareness that ICTs are necessary to increase the effectiveness and efficiency of NFO work
- There is some use of desktop applications, presentations and social media for basic governance functions (documentation of meeting resources, accounting, information sharing etc.)

[11] https://www.adaptlearning.org/

- There exist a number of individuals within the FFOs who use considerable initiative to enable best practice use of ICTs
- All NFOs share common core functions of administration, engagement and advocacy
- ICT is a potent tool for administration, engagement and advocacy
- There are some basic needs that ICT can satisfy across ***all*** NFOs
- The NFOs of all countries under study are members of the legally constituted Caribbean National Fisherfolk Organizations (CNFO)
- The CNFO is a vibrant advocate for small-scale fisherfolk and their organizations
- Despite the challenges of cross-country communications, the CNFO is in regular contact with NFOs through a mix of ad hoc, informal as well as structured, formal engagements
- Mentors, sensitive to governance needs, have been nurtured to support the CNFO, NFOs and PFOs in various operational and strategic areas and to otherwise build their capacity

The small-scale fisheries sector continues to receive considerable international support for capacity building and facilities. A well prepared and managed ICT strategy will ensure adequate fit for purpose resource assets across various funded projects. Properly documented ICT capacity and assets will facilitate efficient needs assessments and design of ICT interventions. The account of ICT assets and resources required for annual auditing is available for use in these assessments but should be treated as an essential planning not just reporting, tool. Also, an effective ICT strategy may direct advocacy for the provision of free Wi-Fi hotspots at key facilities through ongoing national initiatives which focus on underserved areas and communities.

It is recommended that the CNFO is used as the resource hub for **centralized information assets** that NFOs access and localize, as necessary, through **cloud based infrastructure** and that they themselves use cloud infrastructure for their operations. Among other things, the centralized information assets should include templates for policies, guidance notes, terms of reference etc. ICTs currently in use would be more potent with policies, templates and guidance notes; and those not yet in use would benefit significantly from them.

The CNFO is the ideal agent to acquire, co-author, host and promote the use of **standardized** information and training resources. Like most distributed enterprises, the network of NFOs needs to share, and in some cases jointly maintain, certain databases. Examples are databases of NFO roles and contact information, as well as basic industry data and statistics. FFOs that constitute NFOs in turn need to share membership directories of fisherfolk along with particular profile or asset data. A managed centralized database of records with designated access rights, represents a valuable ICT resource to support good governance. Visual dashboards can be used to provide non-technical users with access to information.

The CNFO is also best placed to lead the philosophy and practice of **training on demand**. It is committed to developing the capacity and knowledge base of its membership; and has established a leadership institute for this purpose. Google Classroom, the LMS recommended for the delivery of NFO Board training, is currently used by the CNFO for its Leadership Institute. It is recommended that the CNFO includes courses for NFO Boards to its existing Google Classroom training portfolio. Both the CNFO and the NFOs stand to profit significantly from this arrangement. The best practices in ICT for governance employed by NFOs should be integrated into training and advocacy with encouragement for wider adoption. The **opportunistic** inclusion of face to face sessions and events to accompany and reinforce virtual training and engagement is the highest of priorities.

A required training course on **ICT for governance** is recommended for all NFO Board members. This should cover the essentials of most need for all members. The use of, and training on, specialist software is recommended for officers with role-specific requirements for example the financial managers and treasurers, as well as the PRO. Though useful, such training is not essential for other Board members.

At the local level, it is recommended that basic **ICT proficiency standards** are endorsed by the local fisheries authorities and that relevant training for NFO Board members and management staff is included in the existing portfolio of programmes offered by, or through, the authorities.

All NFOs require training plans, and there continue to be international support with this at focus. ***Seamless*** integration of ICT into these plans, in accordance with an ICT strategy, will ensure unbroken capacity across various funded projects. Particular FFO's current activities are priority hosts for context-appropriate ICT capacity building. Leaders of the CNFO, NFOs and PFOs have received, and the CNFO is now facilitating, capacity building in governance which is an essential foundation for the *use of ICT* in good governance. The CNFO is the natural advocate for good governance to be resonant throughout regular NFO operations. Ongoing training and mentoring in this area is recommended.

As we have seen in the study at hand, considerable gain has been realized by NFOs that draw on the resources of its **affiliate members and friends**. There are many with keen and genuine interest in the progress of fisherfolk organizations. Together, they possess a wealth of experience and are often readily within reach for expert advice and assistance. Strong connections of this sort also represent a critical strategy for the efficient and effective discharge of governance functions within NFOs.

A sample checklist to fill the gaps found in NFOs' use of ICT for governance is provided in Appendix 7.

Recommended StewardFish Interventions

Training

Development

The development of a curriculum, linked to standardized proficiency levels on the one hand and to the specific functions common to all FFO Board and management personnel on the other, is warranted. Concerns from Saint Lucia and other countries, about the need for training and regular refresh, the poor availability of training, and associated opportunity costs, all motivate the blended delivery methodology. It is recommended that a blended learning course titled "ICT for FFO Governance" is developed, under StewardFish, to treat with 3 key governance functions required of all FFO Board members and managers: Tier 1 resources for digital content creation (Table 23) and public engagement (Table 24). In particular, the following modules are recommended:

1. Introduction to ICT for FFO Governance
2. ICT for FFO Governance: Information Management and Record-Keeping
3. ICT for FFO Governance: Meeting Management
4. ICT for FFO Governance: Advocacy and Engagement

Delivery

The delivery channel of choice is the smartphone on the basis of the very high adoption among FFO Board and management personnel; and the need for minimum ICT proficiency standards among these learners. Learners will complete each module on their own on the phone (or tablet, laptop or desktop computer if

available), when convenient over a predefined period, such as a week. The estimated time to complete each module ranges from 90 – 120 minutes. At the end of a module, learners will meet with a facilitator in a scheduled face to face session.

Both formative and summative assessments are recommended, comprising questions progressively built into modules. The questions will help learners test and validate their learning, reflect on the material and apply them to familiar contexts. A quiz will be administered at the end of the course. A 2-day train the trainer workshop for facilitators is recommended. This will comprise a representative walkthrough of the course content as well as instruction on the facilitation process, as well as expectations and use of the Google Classroom platform. Though ideally the train the trainer training would be delivered face to face, COVID-19 restrictions and uncertainty motivate online delivery.

As indicated prior, it is recommended that the proposed "ICT for FFO Governance" course is made mandatory for all incoming FFO Board members and management personnel. As the platform and curriculum model are scalable, additional courses may be developed using the same template. The platform software is free and the first instance of the course will be hosted on the Caribbean School of Data cloud infrastructure, with transition to CNFO facilities.

Facilitators

Training facilitators will be drawn from persons who wish to be trained to support FFO leaders through ***online*** learning accessible on their phone, laptop or desktop PC. They are required to score over 90% in a self-assessment and:

- possess at a minimum, high school education, with 5 CXC subjects, including Mathematics and English
- be available, willing and able to work with FFO leads through capacity building and mentoring, in the first instance for the delivery of a single cycle of the 4-module ICT for Governance course.

Training facilitators will be expected to:

- Provide at least two hours of online support per week to a virtual community of learners in their country
- Update the online facilitator's report on learner attendance, quiz performance and any other issues that may affect learner performance
- Facilitate weekly face-to-face or online sessions, in accordance with national regulations, with an assigned group of learners in country. Each session may be up to four (4) hours
- At the completion of each course, submit a final report with information on learners' performance, attrition rate and suggestions to improve course content

It is recommended that train the trainer workshop participants are selected from among those who are willing and able to conduct training within their regular duties and responsibilities. Some of the countries under study offered recommendations for trainers. In the case of Antigua and Barbuda, a recommendation was made for a fisheries officer. In the absence of a suitable candidate for Belize, the administrative secretary to the CNFO who worked for years for the NFO was recommended. The president of the St. Vincent and the Grenadines National Fisherfolk Co-operative, who himself is a fisher and boat owner, originally recommended that he take on the role of training facilitator and attend the ICT training of trainers workshop under the StewardFish project. As an invited guest at a subsequent NFO Board

meeting, CIRP reiterated the terms of reference for the training facilitator. The chairman of the Board then recommended that the representative from the Cooperatives Division, who regularly attends NFO meetings, be appointed facilitator and attend the training of trainers training. All, including the representative himself, agreed.

The following recommendations are therefore offered:

1. Antigua and Barbuda: Mr. Jamie Herbert, fisheries officer and local focal point for the FAD Association

2. Belize and CNFO: Nadine Nembhard, administrative secretary to the CNFO

3. St. Vincent and the Grenadines: Chief Inspector, Cooperative Department, Ministry of National Mobilisation, Social Development, Family, Gender Affairs, Persons with Disabilities and Youth.

In Barbados, it was emphasized that training design must recognize that information technology (IT) skills differ considerably. Focus group participants agreed that the Board secretary, who is the most ICT competent and has handled most of the related matters, is the best person to benefit from the ICT train the trainer training. In the absence of a response from the Acting CFO of the Barbados Fisheries Authority for a recommendation, Ms Christina Pooler secretary to BARNUFO, remains the standing recommendation.

In Saint Lucia, a deep concern was expressed regarding the risks associated with the lack of, or limited, availability of training facilitators after they are trained. The need for ongoing training and ready access to training resources for all fishers and FFO personnel was emphasized. Two recommendations were made for the selection of an ICT training facilitator: generically a staff member at the Fisheries Authority, and the president of the advocacy group Raise Your Voice Saint Lucia who has considerable knowledge of FFO business operations. On account of the lack of funds to support downstream training, staff of the Fisheries Authority is the preferred choice, though no particular one has yet been identified.

The assistance of the StewardFish regional project coordinator is sought for confirmed recommendations for Saint Lucia and Barbados. Also, under CIRP's amended Letter of Agreement, a trainer from Jamaica will be included in the train the trainer workshop so the assistance of the StewardFish regional project coordinator is sought for confirmed recommendations for Jamaica.

Pilot

It is recommended that CIRP co-delivers a pilot ICT for Governance workshop with participants of the Training of Trainers workshop to available participants from the CNFO and NFO leads in 6 countries: Antigua and Barbuda, Barbados, Belize, Saint Lucia, and St. Vincent and the Grenadines, and Jamaica. During this pilot delivery, CIRP will provide support and in-situ guidance for trainers in their role in the first two modules of the training course. CIRP will also migrate all training modules to the cloud services managed by the Caribbean Network of Fisherfolk Organizations (CNFO) to enable future delivery of the ICT for Governance course through the CNFO's Leadership Institute.

The recommended schedule is as follows:

Milestone	Proposed Schedule
Four online training modules on ICT for Governance	Developed and hosted online by 31 Sep 20

Training plan for train the trainer training	Completed by 31 Sep 20
Training of 7 trainers: CNFO; and trainers from Antigua and Barbuda, Barbados, Belize, Saint Lucia, and St. Vincent and the Grenadines and Jamaica	Equivalent of 2 days in October: at the very earliest possible once trainers identified and agree – latest 31 Oct 2020, with a review and planning session conducted at the end of the co-delivery of 2 modules to downstream learners
Training of trainers workshop report	Completed by 15 Nov 2020
CIRP and trainers codeliver ICT for Governance training to CNFO and NFO leads, CIRP supports trainers in their roles	Over 7 weeks, starting as early as possible once trainers are trained and the CNFO agrees – last session no later than first week of Dec 2020
Set up of online training modules for ongoing delivery through CNFO's Leadership Institute	No later than 20 Dec 20

Procurement

The space available to locate ICT equipment for NFOs varies across the organizations under study. None of these NFOs is currently occupying office space that it owns. Some do not own office space at all and one is not occupying office space that it owns on account of outstanding bills. In one case, an office, otherwise owned, has been assigned in an inconvenient location and with space deemed inadequate by the NFO. At this time, some NFOs are occupying space in other organizations' facilities while others are drawing on others' facilities without dedicated use of space for themselves. All FFOs which do not own their own meeting facilities, have access to those of the Fisheries Authority and various community centres.

Under StewardFish, CIRP is required to note the minimum requirements of ICT hardware and software that should be provided to technologically constrained NFOs. In accordance with the proposed ICT for governance architecture, each NFO Office should comprise, at a minimal, a desktop or laptop computer with multi-media capability including a good quality camera, speakers and headsets with microphone; and multi-function printer with capability for scanning, printing and photocopying. The installed software should include Microsoft Office Word, Excel and Powerpoint; as well as Skype or other preferred video conferencing software, such as Zoom. Each office computer should have easy access to key products from the Google suite such as Classroom, Drive, and other productivity applications such as Calendar, Docs, Sheet and Slide.

Other ICT recommendations for the CNFO and NFOs include an Android phone with high quality camera to be used by the Administrative Secretary of the CNFO to capture high resolution pictures and videos to promote the objects of the regional network. Graphic design software is also recommended for CNFO and BARNUFO as they are both active in the production of media materials for the advancement of organizational objectives. In all cases, laptop protection service and cases, as well as USB adapters where necessary, are recommended for all laptop purchases. Replacement projector lamp modules and HDMI to VGA adapters, where necessary, are recommended alongside projector purchases. Printer ink is recommended to accompany printer purchases. Cloud storage is recommended for FFOs which are currently ready to use such service; and hosting is recommended for FFOs that have been actively using their websites. Web conferencing is recommended for FFOs that have demonstrated experience and the need for hosting remote meetings.

Table 28 summarizes the recommended ICT procurement for the CNFO and NFOs under StewardFish. Considerations for selection and identification of reference items for purchase are elaborated in a companion report. Table 29 Recommended ICT Purchases for CNFO and NFOs under StewardFish

		ATG	BLZ	BRB	LCA	VCT	CNFO
Hardware Recommended	Laptop	✓	✓	✓	✓	✓	✓ ✓
	External hard drive	✓	✓	✓	✓	✓	☐
	USB drive	✓	✓	✓	✓	☐	☐
	Scanner printer	☐	✓	☐	✓	☐	✓
	Headset	✓	✓	☐	✓	✓	☐
	Projector	✓	✓	✓	✓	✓	☐
	Smart phone	☐	☐	☐	☐	☐	✓
Software and Cloud Services	Standard Office Suite	✓	✓	☐	☐	✓	✓
	Pro Office Suite	☐	☐	✓	✓	☐	☐
	Cloud storage	☐	☐	✓	☐	☐	✓
	Website hosting	☐	☐	✓	☐	☐	✓
	Web conferencing	☐	✓	✓	☐	☐	✓
	Graphic design	☐	☐	✓	☐	☐	✓

Conclusions

Best practice in the use of ICT is necessarily **fit for purpose**. This study has revealed a number of excellent practices involving different categories of stakeholders and involving information and communications facilities that meet the requirements for good governance. These serve as exemplars for wider adoption and span: general purpose individual and group messaging; stream-based information dissemination and public promotion; and structured, persistent information sharing; as well as specialist accounting functions. Yet a number of matters threaten the widespread adoption of these and other ICT practices for good governance. In particular:

- NFOs that do not run commercial business, do not have paid employees nor do they own facilities in which to house their offices
- Board members are not paid so other commitments may be prioritized over NFO duties
- The terms of office for Board members are not indefinite so built capacity is periodically lost
- On account of other pressing priorities there is potentially a lack of time on task to build digital literacy and consistently apply ICT skills.

A critical consequence of resource constraints has been a generally weak information management chain. This report has recommended an overarching strategy for cloud based infrastructure, centralized information assets and standardization as a context-sensitive strategy to treat with this gap.

Appropriate enabling organizational systems and the use of modest forms of ICT offer considerable potential to strengthen governance arrangements. Dimensions of enabling capacities include consensus decision-making, conflict mediation, stakeholder identification and analysis, participatory planning, monitoring and evaluation (Horsford and Lay, 2012). A great many resources have been invested in the small-scale fisheries sector in the Eastern and Southern Caribbean to build capacities in these areas and

in critical aspects of organizational governance: legal status; Board structure, orientation and policies; role of the Board in governance and strategic leadership; Board meetings; Board accountability; leadership and decision-making; organizational values; and so on.

Organizational competence is necessary for ICTs to deliver governance gains. To keep pace with the strengthening of other organizational capacities, human resource and otherwise, it is important that NFOs and PFOs build capacity in ICT. As competence comprises a mix of knowledge, skills and attitudes as well as time on task, one-off training sessions are inadequate to effect a competent work force. Rather, a ***systematic*** approach to capacitation is required. This includes the specification and assurance of minimum proficiency standards for Board and management personnel; the development and availability of persistent training resources and ICT mentors and training facilitators; the use of blended learning, with opportunistic face to face interaction; and the ***systemic*** adoption of a set of ***basic*** ICT policies, protocols and procedures. These, in concert with an enabling distributed architecture comprising shared information assets, is the only reasonable means of achieving the governance gains that ICT offers.

This report offers recommendations for a set of systematic interventions as the systemic framework for resident ICT competencies and practices. Though its focus is on organizational governance, it recognizes that ICT competencies are transferable and that they will be equally applied to realizing the other objects of NFOs and their members.

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Appendix 3 Gap Analysis Instrument: Guiding Questions

The objective of the semi-structured interviews is to determine FFO governance arrangements and related mandates, operations, challenges, roles, ICT resources and best practices in order to inform a gap analysis and recommendations for improving the use of ICT in governance by NFOs and their members.

These guiding questions will be posed in a conversational manner, in an order that flows naturally at the time of the interview with the respondent. They prompt further questions that ensure that adequate information is available for a full response. Substitutions may be made and additional questions may be added according to the activities, operations and circumstances of different FFOs.

1. Please describe the everyday operations of your FFO

2. Please describe the physical facilities and ICT accessories used to conduct the work of the FFOs: the office (if there is one), computer, laptop, printer, scanner, multimedia projector, Internet access, flash drives, external hard drives, cloud storage etc.

3. How long do officers generally remain in office: the Board? Management? Can you describe for me the entire process for your regular and special meetings of the Board and of management: agenda setting and distribution to participants, minute recording, venue for face to face meetings and channel for remote meetings; storage of meeting resources; access to meeting resources; organization of documents; naming conventions for electronic files, etc. etc.

4. Please describe the digital presence of your NFO & PFOs: website, Facebook, WhatsApp groups etc.

5. Tell me about the management of your digital presence and remote meetings: who does this?

6. Do the FFOs have any ICT or data policies?

7. Do the FFOs utilize guidance notes or codes of conduct for remote meetings?

8. Are there ongoing or planned initiatives (construction of landing sites or FFO facilities, ICT donations etc.) that would impact the operations of the FFOs in your country?

9. What training has been conducted, is currently being conducted or is planned for FFOs and fishers in any area relating to information and communication technology (ICT)?

10. Do the FFOs have a documented communications strategy or plan?

11. Are all FFOs able to participate in remote meetings?

12. Please tell me about the record keeping and any databases (fishers' registries etc. etc) maintained by the FFOs in your country.

13. Please tell me about all of the ICT applications that are used by the different FFOs: what are the applications? Who uses them? Do the users feel proficient in the applications? Is the data backed up? What are the challenges, if any?

14. Are the individuals who have been trained on ICT applications (e.g. QuickBooks) still using them?

15. What challenges do your FFOs have with (i) ICT and with (ii) operations that ICT may alleviate?

16. Do you have any recommendations for improving the use of ICT in governance by FFO's?

17. Please tell me about any local best practice in the use of ICTs for governance

18. Please tell me of any ICT hardware or software you feel is needed to improve FFO operations

19. Sample ICT self-assessments show <extracts relevant to discussion>. Does this fairly represent the capacity of the FFOs?

20. Can you recommend a facilitator to participate in StewardFish train the trainer training on the basis of the terms of reference?

Appendix 4 Gap Analysis Instrument: Tabulated Summaries for Fact Checking

Hardware	Yes	No	Comments
NFO office has:			
Computer/s	☐	☐	
External hard drive/s	☐	☐	
USB drive/s	☐	☐	
Printer	☐	☐	
Multimedia projector	☐	☐	
Headset	☐	☐	
All Board members have regular access to a laptop or desktop computer with Internet access	☐	☐	
All Board members have regular access to a Smartphone with Wi-Fi or data service	☐	☐	
All Board members have headset	☐	☐	

	Software Tools	Yes	No	Comments
Digital Content Creation	Word processing	☐	☐	
	Desktop publishing	☐	☐	
	Image & video editing	☐	☐	
	Presentation	☐	☐	
	Spreadsheeting	☐	☐	
	Financial & inventory management	☐	☐	
	Point of sale	☐	☐	
	Project management	☐	☐	
	Database management	☐	☐	
Comm unicati on &	Web publishing	☐	☐	
	Social media	☐	☐	WhatsApp ✓ Facebook ✓ Twitter ☐ YouTube ☐ Instagram ☐

	Software Tools	Yes	No	Comments
	Online collaboration	☐	☐	Google Drive ☐ Dropbox ☐ One Drive ☐ Other _____
	Video conferencing	☐	☐	Free Skype ✓ Free Zoom ☐ Other _____
	Email	☐	☐	NFO email address? _____

ICT Services	Yes	No	Comments
Software licensing	☐	☐	
Hardware maintenance subscription	☐	☐	
Resident ICT capacity for basic technical support	☐	☐	
ICT mentors, stewards and training facilitators for FFOs	☐	☐	
Internet	☐	☐	
Cloud storage	☐	☐	
Website hosting & administration	☐	☐	

Artefacts	Yes	No	Comments
Documented guidelines for good practice in record keeping	☐	☐	
Documented guidelines for good practice in document management	☐	☐	
Documented specifications for data requirements for all standard records including fisherfolk registries	☐	☐	
Data on fisherfolk necessary to capture in registry	☐	☐	
Templates for key document types e.g. fisherfolk registries	☐	☐	
Communications strategy & plan	☐	☐	
ICT policy and strategy	☐	☐	
Digital literacy code of conduct	☐	☐	

Artefacts	Yes	No	Comments
Guidance notes and checklists for web conferencing and other common ICT-based activities	☐	☐	
Record of ICT assets	☐	☐	
ICT proficiency standards	☐	☐	
ICT learning materials	☐	☐	

Processes	Yes	No	Comments
Robust file management system	☐	☐	
Robust directory management system	☐	☐	
Basic ICT training	☐	☐	
ICT component of orientation programme for new Board members and management?	☐	☐	

Appendix 5 ICT Competence Self Assessment

Quantitative Instrument to Conduct a Gap Analysis of NFOs' Use of ICT in Governance

The objective of the quantitative survey is to determine the digital competence of a sample of officers of fisherfolk organizations (FFOs) in Antigua and Barbuda, Barbados, Belize, Saint Lucia and St Vincent and the Grenadines. The gaps in these competencies vis a vis reference competencies necessary for the efficient and effective application of ICT for good governance will contribute to an understanding of the capacity building needs of FFO officers and be used as the basis for the development of a train the trainer programme for FFOs.

☐ 1 (not at all) ☐ 2 (with a lot of help) ☐ 3 (with a little help) ☐ 4 (on my own)

COMPETENCE AREA	Question Category & Stem	Question Detail
1. Information & Data Literacy	**1.1 Browsing, Searching and Filtering** *To use digital communication tools, I can:*	1. find useful and interesting articles, news, pictures, videos etc. in the digital environment
		2. find websites of government agencies for example the fisheries ministry and authority
		3. find and view the latest calls and messages made and received
	1.2 Evaluating data and information *To determine the reliability of sources, data or information on the Internet, I can:*	1. evaluate whether it is reliable
		2. distinguish between an official and a non-official website
		3. determine whether content is an advertisement or not
		4. identify hoaxes and fake news from fact checking services, flags and other means
	1.3 Managing data, information and digital content *To organize, store and retrieve data, information and content on my digital devices, I can:*	1. create and save contacts on my phone, PC or tablet
		2. create, copy, move, rename and delete files and folders on a PC
		3. create, open, copy, move and delete files and folders on a memory stick, memory card, CD or cloud service
		4. identify file types by their names' extension
		5. compress or extract compressed files and folders on my PC
2. Communication & Collaboration	**2.1 Interacting through digital technologies**	1. distinguish between synchronous and asynchronous communications
		2. make video calls using Skype or other applications
		3. create an account for e-mail and social media

	To use digital communication tools, I can:	4. send, receive and manage e-mails
		5. send text messages on WhatsApp, Messenger or Skype
		6. send and receive SMS on my phone
	2.2 Sharing through digital technologies *To share content through digital technologies, I can:*	1. post messages on Facebook or other social media
		2. share files as attachments to email
		3. share folders on the cloud
		4. share files, videos, audio, photos, locations, and contacts via WhatsApp, Skype and other social media
	2.3 Engaging in citizenship through digital technologies *To use digital technologies, I can:*	1. respond to authentication requests, if needed to access websites
		2. fill out online forms using a dropdown list, check box, radio button and calendar
	2.4 Collaborating through digital technologies *To collaborate using digital technologies, I can:*	1. send and receive e-mails with multiple recipients
		2. join a video call using Skype or other application
		3. add a participant to a video call I am making
		4. create a WhatsApp group and add members to it
	2.5 Netiquette *In official electronic communications to do with the FFO, I can:*	1. use basic online writing rules like avoiding using all capital letters and incorrect spelling
		2. use email etiquette for example by using BCC to hide multiple recipients
		3. use emoticons appropriately
		4. use social media appropriately for example by asking permission before posting photos of other people, limiting whom I send messages to, and being polite
		5. recognize inappropriate online behaviour such as hate speech
		6. counteract negative interactions online (by signalling posts to authors, the authorities etc.)
	2.6 Managing digital identity *To manage the digital identity of my FFO online, I can:*	1. create an online account and profile; log in and out safely, change my password and delete the account
		2. recognise the footprints that I leave online from posts, likes, shares, photos and video
		3. adjust the FFO's online profile appropriate to its viewers

3. Digital Content Creation	**3.1 and 3.2 Developing & revising digital content** *To create and edit simple digital content, I can:*	1. identify commonly used software applications for content creation from their icons
		2. use word processing software to write, format and edit text
		3. use spreadsheet software to organize and revise data and use simple formulas
		4. use presentation software to prepare and edit a simple presentation
		5. take pictures and videos with mobile devices
		6. take a screenshot on my PC, phone or tablet
	3.3 Copyright and licences *To use digital content produced by others, I can:*	1. distinguish between editable and non-editable documents for example PDF and locked files
		2. recognise the kind of copyright protection of online content
		3. use online content in accordance with its copyright status and licenses
		4. find and quote the source or author of online content before using or sharing it
4. Safety	**4.1 Protecting devices** *To protect my digital devices, I can:*	1. identify what may damage them (hardware breakdown, physical impacts, human error etc.)
		2. recognise suspicious emails, messages and pop ups that can cause data loss or damage
		3. install or activate protection through antivirus, antispam, pop-up blockers, screen locking and other means
		4. scan a device (USB, hard disk, etc.) to check for viruses or other problems
		5. identify safe sources for downloading applications
	4.2 Protecting personal data and privacy *To protect personal and FFO data and privacy, I can:*	1. create and manage a strong password by saving it in a password app and changing it regularly
		2. update the operating system, security software and other applications
		3. make frequent backups of important content on a separate device or in the cloud
		4. identify confidential data that should not be publicly accessible on the Internet
		5. manage privacy settings on my devices and applications
		6. explain what “strong authentication” is and why it is needed

	4.3 Protecting health and well-being *To protect FFO members' health and well-being from risks and threats, I can:*	1. identify medical risks from prolonged and inappropriate use of digital devices (backache, visual impairment, traffic hazards when using mobile phones etc.) and take protection measures
		2. identify symptoms of digital addiction (for example reduced social connections), and take measures to protect myself and FFO members
		3. customize basic display and other features of my device (font size, screen background, power management etc.)
	4.4 Protecting the environment *With respect to the environmental impact of digital technologies and their use, I can:*	1. identify the basic measures to save energy and environmental resources for example by avoiding unnecessary printing, turning off devices after use, not leaving chargers connected without a mobile phone
		2. identify where to deposit old computers, batteries, toners, etc. to minimise environmental impact
5. ICT for Governance	**5.1 Solving technical problems** *When I encounter a problem with digital devices and applications, I can:*	1. identify how problems with common digital devices and tools can compromise good governance
		2. access online support by providing problem details via email, forums etc
		3. document the problem and the implemented solution in a traceable, verifiable manner
		4. assess whether the proposed solution compromises good governance
	5.2 Identifying technological needs *To assess the digital needs of the FFO; and to choose appropriate tools, I can:*	1. understand the need for good governance and assess whether FFO ICT-related operations meet the criteria
		2. describe how common digital devices such as computer, printer, scanner and smartphone can be used to support good governance by the FFO
		3. describe how digital tools such as file managers, word processors, spread sheets, calendars, websites and social media can be used to support good governance by the FFO
		4. identify basic ICT policies and guidelines necessary for good governance
		5. choose appropriate digital devices and applications to support good governance in the FFO
	5.3 Using digital technologies for good governance	1. use the basic features of digital devices and tools to support good governance
		2. use digital devices and tools in a manner consistent with FFO usage policies and guidelines

	To use digital tools for good governance, I can:	1. dispose of electronic documents securely
		2. routinely apply disaster preparation and recovery processes to the FFOs ICT and ICT-related systems for resilience
	5.4 Identifying digital competence gaps & solving them *To assess the ICT skills of my FFO and determine how to meet them, I can:*	1. use tools to identify the digital competence gaps in my FFO
		2. identify online resources such as video tutorials, online and blended learning courses, for lifelong learning
		3. assess the potential impact of ICT competence gaps on FFO governance

Appendix 6 Competence Areas and Competences of the DigComp 2.0 Specification

Competence area	Competences
1. Information and data literacy	1.1 Browsing, searching and filtering data, information and digital content 1.2 Evaluating data, information and digital content 1.3 Managing data, information and digital content
2. Communication and collaboration	2.1 Interacting through digital technologies 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 2.5 Netiquette 2.6 Managing digital identity
3. Digital content creation	3.1 Developing digital content 3.2 Integrating and re-elaborating digital content 3.3 Copyright and licenses 3.4 Programming
4. Safety	4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being 4.4 Protecting the environment
5. Problem solving	5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively using digital technologies 5.4 Identifying digital competence gaps

Appendix 7 Sample Checklist to Fill Gaps in NFOs' use of ICT for Governance

- ❑ All FFOs to review, and address where needed, their by-laws for reference to the use of ICT to achieve governance objectives and for minimum competencies of Board members and management staff
- ❑ Specify basic ICT proficiency standards as prerequisites for ***all*** Board and management roles
- ❑ Promote the use of digital literacy self-assessment and use it as a point of reference for proficiency
- ❑ Develop learning materials on ICT basics required of all FFOs
- ❑ Make learning materials and training on ICT basics available to potential FFO Board members and management personnel
- ❑ Develop learning materials for mixed mode delivery for economy, persistence and convenience
- ❑ Design and deliver orientation programmes for new Board members and management to ensure that they are:
  - Intimately aware of the characteristics of good governance
  - Intimately aware of their responsibilities for good governance
  - tooled to apply appropriate ICT tools for good governance
- ❑ Ensure that Board members, management and operations staff of all FFOs are adequately trained in the fundamental aspects of their roles prior to training on ***role-specific*** ICT tools
- ❑ Specify, and arrange training to, role-specific ICT proficiency standards for relevant Board and management personnel
- ❑ Provide support to strengthen and disseminate existing good practice in ICT among FFOs
- ❑ Document organizational ICT capacity in terms of appropriate proficiency standards
- ❑ Develop training case studies around topical focal points of FFO activity, relevant to ***all*** FFO officers
- ❑ Develop a nominal ICT strategy and associated training plan for countries to localize and utilize as a road map and as the object of funded projects
- ❑ Ensure that there are at least two persons within or associated with the FFO who are adequately proficient to provide support in all common ICT-based tools
- ❑ Prioritize good practice in record keeping and document management
- ❑ Specify the data requirements for all standard records including fisherfolk registries etc.
- ❑ Produce templates for all standard records (e.g. fisherfolk registries etc) for appropriate ICT tools
- ❑ Customize or localize templates as appropriate
- ❑ Develop NFO and PFO databases of fisherfolk
- ❑ Develop a digital literacy code of conduct and associated definitions of roles
- ❑ Develop guidance notes and checklists for web conferencing and other common ICT-based activities
- ❑ Document ICT assets on an ongoing basis
- ❑ Advocate for free Wi-Fi at key facilities such as landing sites and fish markets
- ❑ Specify the principles, processes, procedures and protocols for systems to be supported by ICT
- ❑ Develop a nominal ICT policy including the purpose of, and procedures (as applicable) for:
- ❑ ICT policy covering, among other things, software procurement matters; use of software; organizational website, where it exists; backup procedures; maintenance, administration and support of software applications; security and emergency management; and software services.
- ❑ Ensure that ICT policy guidelines are followed to ensure the integrity and availability of data
- ❑ Support the development of a CNFO repository of nominal ICT resources (policies, guidance notes, terms of reference etc.) and its advocacy for adoption with NFOs and PFOs

- ❑ Adequately provision ICT equipment to ensure the integrity and availability of data
- ❑ Create local electronic repositories of key FFO information and data to dramatically reduce time wasted in interviews, surveys and other research activities
- ❑ Develop a cadre of regional and national ICT mentors, stewards and training facilitators for FFOs
- ❑ Use any and all willing ICT stewards and accessible channels to propagate tips on the use of familiar applications
- ❑ Utilize the CNFO's Leadership Institute to host self-paced ICT learning content and facilitate capacity building of its members in ICT for governance