LOCAL ADMINISTRATOR MANUAL
Fisheries Early Warning and Emergency Response (FEWER)


CRFM Secretariat
2018
LOCAL ADMINISTRATOR MANUAL:
FISHERIES EARLY WARNING AND EMERGENCY
RESPONSE (FEWER)

Prepared by:
ICT4Fisheries Consortium

under contract through the Marine sub-component of the Investment Plan for the Caribbean Regional Track of the Pilot Program for Climate Resilience, co-implemented by the Caribbean Regional Fisheries Mechanism (CRFM).

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LOCAL ADMINISTRATOR MANUAL: FISHERIES EARLY WARNING AND EMERGENCY RESPONSE (FEWER)

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Thanks are also due to the International Development Research Centre (IDRC) and the Technical Centre for Agricultural and Rural Cooperation ACP-EU (CTA) for facilitating the development and extension of the mFisheries framework on which FEWER was built. This framework underpins FEWER’s rich portfolio of instrumental, informational and communications functions, differentiated by class of user. It enables the implementation and interoperability of additional fisher-focused modules on a common software architecture.
Foreword

This document was produced under the Marine sub-component of Component 4, Applied Adaptation Initiatives, of the Caribbean Regional Track of the Pilot Programme for Climate Resilience (PPCR).

As a programme of the Climate Investment Funds (CIF), PPCR helps developing countries integrate climate resilience into development planning and investment. The PPCR comprises 28 national programmes and two regional tracks (the Caribbean and the Pacific) across the developing world. The CIF, through the Inter-American Development Bank (IDB), has provided grant funding to implement the Caribbean Regional Track of the PPCR. The University of the West Indies, Mona, through its Mona Office for Research and Innovation (MORI) is executing the PPCR regional programme. The Caribbean Regional Fisheries Mechanism (CRFM) is co-implementing the Marine sub-component of PPCR Component 4 to reduce the impact of climate change-related risks on the fisheries industry in the Caribbean.

The Marine sub-component of Component 4 seeks to reduce the risks to fishers associated with climate change and variability. Through one of the initiatives in this sub-component, a consultant was contracted to develop an early warning and emergency response system (EWERS) for fishers in Grenada, Dominica, Saint Lucia and St. Vincent and the Grenadines; and to provide associated training. The specific deliverables of the consultancy were:

1. Inception Report
2. Reports of stakeholder consultations with proposals for each country
3. Memoranda of Understanding among stakeholder groups for each country
4. Prototype EWERS for testing
5. Draft user and administrator manuals for EWERS
6. Report of training workshops and associated materials including impact assessment tool
7. Final EWERS, including e-services, installed and tested
8. Final user and administrator manuals for EWERS.

The EWERS has come to be referred to as Fisheries Early Warning and Emergency Response (FEWER). In its capacity as a co-implementing agency for the Marine sub-component of PPCR Component 4, the CRFM was responsible for technical oversight of FEVER’s development by the ICT4Fisheries Consortium.

The general requirements for FEVER were specified through face to face consultations with fishers and a rich spread of other stakeholders in Grenada, Dominica, Saint Lucia and St. Vincent and the Grenadines during the months of March and April 2017. Co-design teams of fishers, as well as non-fisher stakeholders, were subsequently constituted, and regular meetings held remotely with them and the development team, the ICT4Fisheries Consortium. Co-design meetings with fishers were conducted through skype and with non-fishers through Zoom. A FEVER Fishers’ WhatsApp group was used for asynchronous communications with and among fishers.
### Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>API</td>
<td>Application Programming Interface</td>
</tr>
<tr>
<td>CAP</td>
<td>Common Alerting Protocol</td>
</tr>
<tr>
<td>CDEMA</td>
<td>Caribbean Disaster Emergency Management Agency</td>
</tr>
<tr>
<td>CIF</td>
<td>Climate Investment Funds</td>
</tr>
<tr>
<td>CNFO</td>
<td>Caribbean Network of Fisherfolk Organizations</td>
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<tr>
<td>CRFM</td>
<td>Caribbean Regional Fisheries Mechanism</td>
</tr>
<tr>
<td>CTA</td>
<td>Technical Centre for Agricultural and Rural Cooperation</td>
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<tr>
<td>DM</td>
<td>Disaster Management</td>
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<tr>
<td>DMA</td>
<td>Disaster Management Agency</td>
</tr>
<tr>
<td>DRM</td>
<td>Disaster Risk Management</td>
</tr>
<tr>
<td>EWERS</td>
<td>Early Warning and Emergency Response System</td>
</tr>
<tr>
<td>FEWER</td>
<td>Fisheries Early Warning and Emergency Response System</td>
</tr>
<tr>
<td>HDD</td>
<td>Hard Disks Drives</td>
</tr>
<tr>
<td>HTTP</td>
<td>Hyper Text Transfer Protocol</td>
</tr>
<tr>
<td>ICT</td>
<td>Information Communication Technology</td>
</tr>
<tr>
<td>IDB</td>
<td>Inter-American Development Bank</td>
</tr>
<tr>
<td>IDRC</td>
<td>International Development Research Centre</td>
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<tr>
<td>IDS</td>
<td>Intrusion detection system</td>
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<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
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<tr>
<td>JS</td>
<td>Java Script</td>
</tr>
<tr>
<td>JSON</td>
<td>Java Script Object Notation</td>
</tr>
<tr>
<td>LEK</td>
<td>Local Ecological Knowledge</td>
</tr>
<tr>
<td>MORI</td>
<td>Mona Office for Research and Innovation</td>
</tr>
<tr>
<td>NAS</td>
<td>Network Attached Storage</td>
</tr>
<tr>
<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
</tr>
<tr>
<td>NPM</td>
<td>Node Package Manager</td>
</tr>
<tr>
<td>OOP</td>
<td>Object Oriented Programming</td>
</tr>
<tr>
<td>OS</td>
<td>Operating System</td>
</tr>
<tr>
<td>PPCR</td>
<td>Pilot Programme for Climate Resilience</td>
</tr>
<tr>
<td>RAID</td>
<td>Redundant Array of Independent Disks</td>
</tr>
<tr>
<td>RAM</td>
<td>Random Access Memory</td>
</tr>
<tr>
<td>RDBMS</td>
<td>Relational Database Management System</td>
</tr>
<tr>
<td>REST</td>
<td>Representational State Transfer</td>
</tr>
<tr>
<td>SAME</td>
<td>Specific Area Message Encoding</td>
</tr>
<tr>
<td>SMS</td>
<td>Short Message Service</td>
</tr>
<tr>
<td>SSL</td>
<td>Secure Sockets Layer</td>
</tr>
<tr>
<td>UNISDR</td>
<td>United Nations Office for Disaster Risk Reduction</td>
</tr>
<tr>
<td>URL</td>
<td>Uniform Resource Locator</td>
</tr>
<tr>
<td>UWI</td>
<td>University of the West Indies</td>
</tr>
<tr>
<td>WEA</td>
<td>Wireless Emergency Alerts</td>
</tr>
<tr>
<td>WSGI</td>
<td>Web Server Gateway Interface</td>
</tr>
</tbody>
</table>
Contents

1. Background .................................................................................................................................................. 1
   1.1 Small-scale fishers’ vulnerabilities to hazards ..................................................................................... 1
   1.2 National Disaster Risk Management (DRM) framework ................................................................. 1
   1.3 Multi-agent roles in disaster management for fishers ......................................................................... 1
       1.3.1 Role of fishers.............................................................................................................................. 1
       1.3.2 Role of fisheries authorities ....................................................................................................... 1
       1.3.3 Role of fisherfolk organisations .................................................................................................. 2
       1.3.4 Role of meteorological services ................................................................................................ 2
       1.3.5 Role of disaster management agencies .................................................................................... 2
   1.4 FEWER .................................................................................................................................................. 2
       1.4.1 Aims ........................................................................................................................................... 3
       1.4.2 Strategy ..................................................................................................................................... 3
       1.4.3 Objectives ................................................................................................................................ 3
       1.4.4 Modules ..................................................................................................................................... 3
       1.4.5 Administration ........................................................................................................................... 4
   1.5 Intended audience for this manual ......................................................................................................... 4
   1.6 Purpose and arrangement of this manual ............................................................................................. 4

2. FEWER Administrators .............................................................................................................................. 6
   2.1 FEWER country administrator ............................................................................................................. 6
   2.2 FEWER agency administrator ............................................................................................................... 9
   2.3 FEWER administrator scope: country vs agency .............................................................................. 11
   2.4 Other FEWER administrators ........................................................................................................... 11

3. The FEWER Administrators’ Dashboard .................................................................................................. 12
   3.1 The Browser ...................................................................................................................................... 12
   3.2 Accessing the administrators’ dashboard .......................................................................................... 12
   3.3 How do I access the FEWER administrative features? .................................................................... 12

4. Administrative Tasks by Module ............................................................................................................. 14
   4.1 Alerts .................................................................................................................................................. 14
       4.1.1 How do I access the Alerts Module? (A.A, C.A, C.G, T.A, R.R) .............................................. 14
       4.1.2 What is a CAP alert? .................................................................................................................. 14
       4.1.3 What is the difference between a CAP and a community-based alert? ............................... 15
       4.1.4 How do I view CAP alerts? (A.A, C.A, T.A, R.R) ................................................................. 15
       4.1.5 How do I create a new CAP alert? (A.A, C.A, T.A) ................................................................. 16
       4.1.6 Are the CAP field specifications unique to FEWER? (A.A, C.A, T.A) ................................. 18
       4.1.7 What is a CAP template? (A.A, C.A, T.A) .............................................................................. 18
       4.1.8 What is the Type of Message field? (A.A, C.A, T.A) .............................................................. 19
       4.1.9 What options does the Hazard field support? (A.A, C.A, T.A) ................................................ 20
       4.1.10 What options does the Recommended Action field support? (A.A, C.A, T.A) ................... 20
       4.1.11 What options do the Message Priority fields support? (A.A, C.A, T.A) ............................ 20
       4.1.12 What is the Time to Expire field? (A.A, C.A, T.A) ............................................................... 20
       4.1.13 What fields are included in CAP Alert Details? (A.A, C.A, T.A) ........................................... 20
       4.1.14 What does “Add a Parameter” mean in CAP Alert Details? (A.A, C.A, T.A) .................... 22
       4.1.15 Can the area affected by a hazard be specified? (A.A, C.A, T.A) ........................................ 22
       4.1.16 Can any arbitrary person issue a FEWER CAP alert? (A.A, C.A, T.A) ............................ 23
       4.1.17 Can CAP alerts be sent prematurely? ..................................................................................... 23
       4.1.18 How do I update a CAP alert? (A.A, C.A, T.A) .................................................................... 23
4.1.19 How do I cancel a CAP alert? (A.A, C.A, T.A) .......................................................... 48
4.1.20 How do I view how many members have viewed the CAP alert? (A.A, C.A, T.A, R.R) ...... 48
4.1.21 How do I view community alerts? (A.A, C.A, T.A, R.R) .............................................. 48
4.1.22 How do I view community alert groups? (A.A, C.A, T.A, R.R) ..................................... 49
4.1.23 How do I view members of an alert group? (A.A, C.A, T.A, R.R) .................................. 49
4.1.24 How do I create a new alert group? (A.A, C.A, T.A) ....................................................... 49
4.1.25 How do I create a new community alert? (A.A, C.A, T.A) .......................................... 50
4.1.26 How do I update a community alert? (A.A, C.A, T.A) ............................................... 50
4.1.27 Can I construct a CAP alert from a community alert? (A.A, C.A, T.A) ...................... 50
4.1.28 How do I export an administrator report from LEK records? (A.A, C.A, T.A, R.R) ......... 50

4.2 Damage Reporting ............................................................................................................ 51

4.2.1 How do I access the Damage Reporting Module? (A.A, C.A, T.A, R.R) .................... 51
4.2.2 How are damage reports organised in FEWER? (C.A, T.A) ........................................... 52
4.2.3 How do I create a damage report category? (C.A, T.A) ............................................... 53
4.2.4 How do I view damage reports? (A.A, C.A, T.A, R.R) ............................................... 54
4.2.5 How do I create a damage report? (A.A, C.A, T.A) ....................................................... 54
4.2.6 How do I update a damage report? (A.A, C.A, T.A) ..................................................... 55
4.2.7 How do I delete a damage report? (C.A, T.A) ............................................................... 55
4.2.8 How do I export an administrator report from damage reports? (A.A, C.A, T.A, R.R) .... 56

4.3 Emergency Contacts ....................................................................................................... 57

4.3.1 How do I access the emergency contacts module? (A.A, C.A, T.A, R.R) .................... 57
4.3.2 How do I view emergency contacts? (A.A, C.A, T.A, R.R) ........................................... 58
4.3.3 Can fishers see emergency contacts countries other than their own? ............................ 59
4.3.4 How do I view emergency contact details? (A.A, C.A, T.A, R.R) ............................... 59
4.3.5 How do I create an emergency contact? (C.A, T.A) ..................................................... 60
4.3.6 How do I update an emergency contact? (C.A, T.A) ................................................... 60
4.3.7 How do I provide additional details for an emergency contact? (C.A, T.A) ............... 61
4.3.8 How do I delete an emergency contact? (C.A, T.A) ..................................................... 61
4.3.9 How do I view contacts from another country? (A.A, C.A, T.A, R.R) ....................... 62
4.3.10 How do I export an administrator report from Emergency Contact records? (A.A, C.A, T.A, R.R) .................................................................................................................. 63

4.4 Emergency Procedures .................................................................................................... 64

4.4.1 How do I access the Emergency Procedures module? (A.A, C.A, T.A, R.R) .............. 64
4.4.2 How do I view the details of an emergency procedure? (A.A, C.A, T.A, R.R) .......... 65
4.4.3 How do I upload emergency procedures content? (C.A, T.A) ................................... 66
4.4.4 How do I edit emergency procedures details? (C.A, T.A) .......................................... 66
4.4.5 How do I delete an emergency procedure? (C.A, T.A) ................................................. 67

4.5 Local Ecological Knowledge ............................................................................................ 68

4.5.1 How do I access the Local Ecological Knowledge (LEK) module? (A.A, C.A, T.A, R.R) ...... 68
4.5.2 How are LEK reports organised in FEWER? (C.A, T.A) ............................................... 69
4.5.3 How do I create a LEK category? (C.A., T.A) ............................................................... 70
4.5.4 How do I view LEK reports? (A.A, C.A, T.A, R.R) ....................................................... 70
4.5.5 How do I create a LEK report? (A.A, C.A, T.A) ............................................................ 71
4.5.6 How do I delete a LEK report? (C.A., T.A) ................................................................. 71
4.5.7 How do I update a LEK report? (A.A, C.A, T.A) .......................................................... 72
4.5.8 How do I export an administrator report from LEK records? (A.A, C.A, T.A, R.R) .... 72

4.6 Missing Persons................................................................................................................. 73
Background

1.1 Small-scale fishers’ vulnerabilities to hazards
The US Bureau of Labour Statistics (2017)\(^1\) ranks fishing as the job with the second highest rate of work-related deaths in America, based on 2015 figures. Forbes (2017)\(^2\) ranks fishers and fishing workers as those with the most dangerous jobs, attributing the ranking to extreme weather, heavy equipment and drowning. Though harsh winter weather is not a factor, fishing methods differ, and there are few related statistics for the Caribbean, small-scale fishers in the region are particularly vulnerable on account of the modest safety provisions in their vessels and variable weather systems with seasonal hurricanes.

1.2 National Disaster Risk Management (DRM) framework
Reduction of risk to fishers is best undertaken within a national framework for disaster risk management (DRM). Such frameworks make provisions for the four phases of the disaster management (DM) cycle: mitigation, preparedness, response and recovery. They include policies, legislation, plans for preparedness and management, early warning systems, public awareness and capacity building as well as established organisational arrangements and procedures for all segments of society. National DRM frameworks are supported by sector- and community-specific plans which align with an integrated system of all-hazards mitigation, preparedness, response and recovery for all citizens.

1.3 Multi-agent roles in disaster management for fishers
National fisheries, disaster management and meteorological agencies play lead and ancillary roles in support of small-scale fishers within the national DRM framework. The following sections capture key aspects of these roles, drawing heavily on UNISDR (2006)'s Checklist for Developing Early Warning Systems\(^3\).

1.3.1 Role of fishers
Fishers should be involved in all aspects of the establishment and operation of early warning systems that are targeted to benefit them. They are to be aware of the hazards and potential impacts to which they are exposed and be able to take actions to minimise the threat of loss or damage by reducing sensitivity and increasing adaptive capacity. They are also to be knowledgeable, prepared and ready to react to warnings and emergency situations.

1.3.2 Role of fisheries authorities
As a division of government, fisheries authorities are required to be aware of national policies and frameworks for early warning. They are responsible for ensuring that these adequately serve the special needs of small-scale fishers. They should be actively involved in the design and maintenance of early warning systems by their considerable knowledge of the hazards to which fishers are exposed, of the communications capabilities of fishers and of message formulation that would be most meaningful to fishers.


Fisheries authorities must understand advisory information received and be able to advise, instruct and engage fishers to increase their safety and reduce loss and damage before and during emergency situations. They are an important intermediary between fishers and disaster management agencies, as well as between fishers and national meteorological ("Met") services and must maintain corresponding lines of communication.

It is important that fisheries authorities track the use and interpretation of early warning messages by fishers over time and accordingly direct revisions to message formats and dissemination processes. Fisheries authorities are also responsible for providing support to fisherfolk organisations to ensure that operational capabilities are built.

1.3.3 Role of fisherfolk organisations
Fisherfolk organisations play a critical role in effective early warning and emergency response for fisherfolk. They have regular access to fishers and considerable knowledge of the hazards to which they are exposed. Fisherfolk organisations can raise and sustain awareness about early warning and emergency response systems and procedures. They should assist fisheries authorities to implement such systems and procedures; and assist fisherfolk in preparing for and responding to natural disasters. They also play an important advocacy role to help ensure that early warning and emergency response for fishers remain on the national development agenda.

1.3.4 Role of meteorological services
National meteorological (Met) services have the expertise to analyse the risks to seafarers from natural hazards, and to translate the findings into messages that fishers can understand. The Met services are also able to specify the measurement parameters and warning thresholds associated with each relevant hazard. They, therefore, provide important inputs into the design and operation of early warning systems for seafarers, including the dissemination of clearly recognisable and consistent warnings that adhere to international standards and protocols.

1.3.5 Role of disaster management agencies
National disaster management agencies (DMAs) are responsible for coordinating agencies that manage all phases of the disaster management cycle. They specify the processes, roles, responsibilities and protocols for generating and issuing authoritative warnings. These specifications cover the warning dissemination chain and channels for technical warning services. DMAs must ensure consistent warning dissemination and communication systems are used for all hazards, and that alerts and messages are targeted to those at risk only. They play a critical role in the design and operation of early warning systems for fishers to ensure compliance with the protocols and rules of conduct for national early warning. DMAs also provide post-disaster relief and rehabilitation services; and play a very important role in the provision of learning resources and training to assist fishers to prepare for, and manage themselves during and after, natural disasters.

1.4 FEWER
Fisheries Early Warning and Emergency Response (FEWER) is a set of tools that link small-scale fishers with each other and with agencies that play critical roles in the overall DRM framework. These links are effected through a system of information and communications facilities. The tools comprise a mobile application and web-based administrators’ dashboard. FEWER is built on the mFisheries framework which provides services common to a range of applications that support various aspects of fishers’ livelihoods. FEWER is one of several tools that reduce fishers’ risks. No single tool can meet all needs.
1.4.1 Aims
FEWER aims to reduce fishers’ risks from natural hazards associated with weather (short term) and climate (long-term) through improved information and communications regarding issues of particular concern to fisheries, and to do so within the national DRM framework.

1.4.2 Strategy
The overarching strategy to reduce weather- and climate-related risks for fishers is to build their resilience. FEWER is the information and communications technology (ICT) component of this strategy. Other key aspects of the strategy ensure fishers’ understanding of risks and mechanisms for mitigation and response, enable context-appropriate reinforcement of these mechanisms, build relevant skills, and provide operational support. They also crucially call for the incorporation of fisher engagement and support into the planning and regular operations of a number of agencies, primarily fisheries authorities, fisherfolk organisations, Met services and DMAs.

1.4.3 Objectives
The objectives of FEWER are to provide specific risk-reducing capabilities that small-scale fishers can access through the mobile phone, and key agencies can manage through a web-based administrators’ dashboard. These capabilities together span all phases of the disaster management cycle with particular emphasis on the four crosscutting elements of early warning.

1.4.4 Modules
For most effect, the communication between fishers and key agencies is sustained through all phases of the disaster management cycle. For the mitigation phase, an acute awareness of the marine environment and any noticeable changes is key, as is the practice of letting others know of plans to set out before trips. For the preparedness phase, information about the weather and sea conditions, how to plan around these and what to do if they are unavoidable, are key. For the period during a disaster, emergency contacts and knowledge of what to do in the event of an emergency is vital. Also, during and immediately following a disaster, identification of missing persons is critical. In the latter period of the response phase and the early stages of recovery, the reporting of damage is an essential input for subsequent planning exercises.

FEWER provides support for all four DM phases through eight modules: Local Ecological Knowledge (LEK), Messaging, Weather, Alerts, Emergency Contacts, Emergency Procedures, Damage Reporting and Missing Persons as shown in Table 1.

<table>
<thead>
<tr>
<th>DM Phase</th>
<th>FEWER Module</th>
<th>Fishers ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation</td>
<td>LEK</td>
<td>• <strong>record</strong> anything in the marine environment that should be noted to reduce fishers’ risks</td>
</tr>
<tr>
<td></td>
<td>Messaging</td>
<td>• keep <strong>in touch</strong> with other fishers to be aware if, where and when anyone goes missing</td>
</tr>
<tr>
<td>Preparedness</td>
<td>Weather</td>
<td>• <strong>receive</strong> and <strong>share</strong> information from local and international sources with indicators when things look risky</td>
</tr>
<tr>
<td></td>
<td>Alerts</td>
<td>• <strong>receive</strong> from and <strong>send</strong> alerts to Fisheries, Met and Disaster Offices, and other fishers</td>
</tr>
</tbody>
</table>
Together, these modules cover the UNISDR early warning checklist elements: risk knowledge, monitoring and warning service, dissemination and communication, and response capability.

### 1.4.5 Administration

All FEWER modules except Messaging require either configuration and updating by local agencies; or interaction between these agencies and FEWER fishers who use the mobile app. Such administrative tasks are assigned to different types of FEWER administrators (“admins”) with access privileges set accordingly. The Messaging module does not require interaction between FEWER admins and fishers so is not treated explicitly in the Administrator Manual.

### 1.5 Intended audience for this manual

The target audience for this manual are representatives of national fisheries authorities, fisherfolk organisations, meteorological (Met) services and DMAs, who will take on the role of FEWER country and agency administrators in Grenada, Dominica, Saint Lucia and St. Vincent and the Grenadines. As the national body with responsibility for search and rescue at sea, the Coast Guard in FEWER countries are also target readers for the local administrator manual.

This manual and the companion manual for fishers are accessible from the FEWER mobile and desktop applications.

A superset of this document is available as the FEWER global administrator manual. The audience for that document comprises representatives of Caribbean authorities in fisheries, hydrometeorology and disaster management; as well as the Caribbean Network of Fisherfolk Organisations, who will all take on the role of FEWER regional reviewers. The primary audience for the global administrator manual is the regional agency with responsibility for FEWER global administration. Any other information technology specialists who assist or support the technical aspects of FEWER installation and regional administration are also target readers.

### 1.6 Purpose and arrangement of this manual

The purpose of this manual is to enable FEWER country and agency administrators to:

1. understand the role of FEWER in the reduction of climate-related risk to small-scale fishers;
2. understand the role of the host agency in the system of FEWER agencies;
3. distinguish between different FEWER administrator roles; and
4. conduct all tasks required of the host agency’s admin role.

Section 1 Background addresses aspects 1 and 2 of the document’s purpose (above). The following sections address aspects 3 and 4 of the document’s purpose: Section 2 outlines the scope and role of the
FEWER country administrator and that of the FEWER agency administrator. Section 3 describes the administrators’ dashboard through which FEWER administrators manage the application features used by fishers. Sections 4 and 5 walk through a representative selection of tasks performed by FEWER country and agency administrators by module and by country respectively. The appendix features the manual for the weather module’s extractor facility.

The roles which may execute each task are identified as C.A. for country administrator, A.A for agency administrator, T.A for country-level technical administrators, C.G for the Coast Guard (marine police) and R.R for regional reviewers. Global administrators are able to execute all administrative tasks so their role is not tagged with any task in the manual.

In preference to references at the end, footnotes are used for convenient access to resources.
2. **FEWER Administrators**

The administration of fisher early warning and emergency response communication falls to the fisheries authorities as the **FEWER country administrators (CA)**; and the disaster management agencies, Met services and fisherfolk organisations as **FEWER agency administrators (AA)**. The overarching coordination of FEWER is the responsibility of the CRFM as the regional authority for fisheries. The CRFM is joined by regional authorities for hydrometeorology and disaster management, and the Caribbean Network of Fisherfolk Organisations, as **FEWER regional reviewers (RR)**. These administrators view all information accessible to country and agency administrators, and can draw on this information to create reports, but do not otherwise play a role in the day to day support of FEWER operations at the national level. As a software application, the technical aspects of FEWER are managed at the national level by **technical administrators (TA)** and regionally by the **global administrator (GA)**. Technical administrators are local administrators that are technical representatives from either the I.T. unit of the fisheries-related ministry or the national ministry responsible for ICT. Global administrators are technical representatives sourced from the regional agency with responsibility for hosting and managing FEWER. Each class of administrator is defined by the set of allowable tasks. The relative scope of tasks is shown in Figure 2.1.

![Figure 2.1 Relative scope of tasks for FEWER Users](image)

2.1 **FEWER country administrator**

FEWER country administrators, referred to in this manual by a red “C.A”, are responsible for the configuration, management and administration of the national FEWER installation with country-level moderation privileges. They perform their role through FEWER’s web-based administrators’ dashboard. Once familiarised with their role, their expected average load for such activities is one hour per week. It is expected that country-level FEWER administration will rest with the fisheries authorities.
They perform tasks such as the following:

I. General:
   a) Create Users
      a) Create Agency Administrator
      b) Create Marine Unit/Coast Guard User

II. Alerts:
   a) Manage Alert Sources
      a) Add new CAP alert source
   b) Manage community alert groups
      a) Create Alert Group
      b) View Alert Groups
      c) Edit Alert Group
      d) Delete Alert Group
      e) View Alert Group members
   c) Manage community alerts & CAP alerts
      a) View List of community alerts & CAP alerts received
      b) View details of community alert & CAP alert
      c) Verify community alert
      d) Create community alert & CAP alert
      e) Distinguish FEWER from External CAP alerts
      f) Cancel FEWER CAP alerts
      g) Update community alert & CAP alert
      h) View alert delivery reports

III. Damage Reporting:
   a) Manage Public Damage Reporting
      a) View damage reporting categories
      b) Create damage reporting category
      c) View damage reports
      d) Create damage report
      e) Update damage report
      f) Delete damage report
      g) Export damage reports

IV. Emergency Contacts:
   a) Manage Emergency Contacts
      a) View a list of emergency contacts
      b) Create an emergency contact
      c) Add additional details for an emergency contact
      d) View additional details
      e) Update an emergency contact
      f) Delete an emergency contact
      g) Export emergency contacts

V. Emergency Procedures:
   a) Manage Emergency Procedures
      a) View emergency procedures
      b) Upload emergency procedures
c) Update emergency procedures

VI. Weather:
   a) Manage Weather Data Sources
      a) Create a new weather source
      b) Edit weather source
      c) Add weather parameter thresholds
      d) Delete weather source
      e) Upload extractor file
      f) Manually update weather information from a source
      g) View weather source details
      h) View weather source readings
      i) View weather sources from another country

VII. Missing Persons:
   a) Manage Missing Persons
      a) View Missing Persons
      b) Remove Missing Person report
      c) Create a Missing Person report
      d) Mark a person as found
      e) Export Missing Person reports

VIII. Local Ecological Knowledge (LEK):
   a) Manage Public LEK Reporting
      a) View LEK categories
      b) Create LEK categories
      c) View LEK reports
      d) Create LEK reports
      e) Update LEK reports
      f) Delete LEK reports
      g) Export LEK reports

FEWER country administrator: description
- An authoritative source on fisheries resource management in his/her country
- Able to provide information on sector-specific climate change and disaster risks
- Supervises fisheries extension officers

FEWER country administrator: requisites
- Regular access to, and proficiency with, web & productivity software tools
- Access to a smartphone and familiarity with web and social media applications
- Experience with extension services & training
2.2 FEWER agency administrator

FEWER agency administrators, referred to in this manual by a red “A.A”, provide key inputs into the application design and configuration; and provide direct support for fishers through different vantage points: (i) fisheries (ii) hydrometeorology and (iii) disaster management. There are generally, therefore, several FEWER agency administrators in each country.

FEWER agency administrators are responsible for managing, disseminating and moderating communications relating to early warning and emergency response. They do this through FEWER’s web-based administrators’ dashboard. Once familiarised with their role, their expected average load for such activities is one hour per week. FEWER agency administrators perform tasks such as the following:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Agency Administrator Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Alerts</td>
<td></td>
</tr>
<tr>
<td>1. Manage community alert groups</td>
<td>Fisher Organisations</td>
</tr>
<tr>
<td>a) Create Alert Group</td>
<td>Fisher Organisations</td>
</tr>
<tr>
<td>b) View Alert Groups</td>
<td>Fisher Organisations</td>
</tr>
<tr>
<td>c) Edit Alert Group</td>
<td>Fisher Organisations</td>
</tr>
<tr>
<td>d) Delete Alert Group</td>
<td>Fisher Organisations</td>
</tr>
<tr>
<td>e) View Alert Group members</td>
<td>Fisher Organisations</td>
</tr>
<tr>
<td>2. Manage community alerts &amp; CAP alerts</td>
<td></td>
</tr>
<tr>
<td>a) View List of community alerts &amp; CAP alerts received</td>
<td>All</td>
</tr>
<tr>
<td>b) View details of community alert &amp; CAP alert</td>
<td>All</td>
</tr>
<tr>
<td>c) Verify community alert</td>
<td>Disaster Management Authority</td>
</tr>
<tr>
<td>d) Create community alert &amp; CAP Alert</td>
<td>Disaster Management Authority</td>
</tr>
<tr>
<td>e) Distinguish FEWER CAP Alerts from External CAP Alerts</td>
<td>Disaster Management Authority</td>
</tr>
<tr>
<td>f) Cancel FEWER CAP alerts</td>
<td>Disaster Management Authority</td>
</tr>
<tr>
<td>g) Update community alert &amp; CAP alert</td>
<td>Disaster Management Authority</td>
</tr>
<tr>
<td>h) View alert delivery reports</td>
<td>Disaster Management Authority</td>
</tr>
<tr>
<td>II. Damage Reporting</td>
<td></td>
</tr>
<tr>
<td>1. Manage Public Damage Reports</td>
<td></td>
</tr>
<tr>
<td>a) View damage reports</td>
<td>All</td>
</tr>
<tr>
<td>b) Create damage report</td>
<td>Fisher Organisations; Disaster Management Authority</td>
</tr>
<tr>
<td>c) Update damage report</td>
<td>Fisher Organisations; Disaster Management Authority</td>
</tr>
<tr>
<td>d) Export damage reports</td>
<td>All</td>
</tr>
<tr>
<td>III. Emergency Contacts</td>
<td></td>
</tr>
<tr>
<td>1. Access Emergency Contacts</td>
<td></td>
</tr>
<tr>
<td>a) View a list of emergency contacts</td>
<td>All</td>
</tr>
<tr>
<td>b) View additional details</td>
<td>All</td>
</tr>
<tr>
<td>c) View all contacts from another country</td>
<td>All</td>
</tr>
<tr>
<td>d) Export emergency contacts</td>
<td>All</td>
</tr>
<tr>
<td>IV. Weather</td>
<td></td>
</tr>
<tr>
<td>1. Manage Weather Data Sources</td>
<td></td>
</tr>
<tr>
<td>Tasks</td>
<td>Agency Administrator Categories</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>a) Create a new weather source</td>
<td>Meteorological Services</td>
</tr>
<tr>
<td>b) Edit weather source</td>
<td>Meteorological Services</td>
</tr>
<tr>
<td>c) Add weather parameter thresholds</td>
<td>Meteorological Services</td>
</tr>
<tr>
<td>d) Delete weather source</td>
<td>Meteorological Services</td>
</tr>
<tr>
<td>e) Upload extractor file</td>
<td>Meteorological Services</td>
</tr>
<tr>
<td>f) Manually update weather information from a source</td>
<td>Meteorological Services</td>
</tr>
<tr>
<td>g) View weather sources from their country</td>
<td>All</td>
</tr>
<tr>
<td>h) View weather source details</td>
<td>All</td>
</tr>
<tr>
<td>i) View weather source readings</td>
<td>All</td>
</tr>
<tr>
<td>j) View weather sources from another country</td>
<td>All</td>
</tr>
</tbody>
</table>

V. Missing Persons
1. Manage Missing Persons
   a) View Missing Persons                                            | All                                                   |
   b) Create a Missing Person report                                 | All                                                   |
   c) Remove a Missing Person report                                 | Fisher Organisations; Disaster Management Authority    |
   d) Mark a person as found                                         | Fisher Organisations; Disaster Management Authority    |
   e) Export Missing Person reports                                  | All                                                   |

VI. Local Ecological Knowledge
1. Manage Public LEK Reporting
   a) View LEK Categories                                             | All                                                   |
   b) View LEK reports                                               | All                                                   |
   c) Create LEK reports                                             | Fisher Organisations; Disaster Management Authority    |
   d) Update LEK reports                                             | Fisher Organisations; Disaster Management Authority    |
   e) Export LEK reports                                             | All                                                   |

VII. Emergency Procedures
1. Manage Emergency Procedures
   a) View emergency procedures                                       | All                                                   |
2.3 FEWER administrator scope: country vs agency
FEWER country administrators can execute the same tasks as agency administrators and more. Fishers, who have public class access privileges, also execute some of these tasks using the FEWER mobile app.

2.4 Other FEWER administrators
The technical administrator (T.A) has all the access privileges of the country administrator. While the country administrator manages fisheries-related use of the system, the technical administrator ensures that all the software-related operations are functional for the respective countries. They are additionally responsible for creating, updating and uploading data extractors for the Weather module. The coast guard (C.G) is a specialised version of the agency administrator (A.A). The operations are restricted and focused specifically on the tasks related to the coast guard of the respective territories. They are responsible for monitoring the daily tracks of users as well as viewing records for the Alerts, Missing Persons and Weather modules. The regional reviewers are agencies that can access information that fishers identify as public. These agencies have a strategic priority for their support of FEWER and are a critical component for sustaining of FEWER. The regional reviewers (R.R) cannot modify any of the information generated in each territory but can produce a variety of reports that provide an understanding of FEWER's usage, and the impact of natural hazards in the Caribbean. FEWER requires technical support for regional hosting and management. These operations are the responsibility of the global administrators. The global administrators ensure that the hosting infrastructure and technical components of the FEWER system are correctly configured for the countries’ use. They can execute all FEWER tasks.
3. The FEWER Administrators’ Dashboard

The FEWER administrators’ dashboard is a web-based application that provides services to both administrators and public users. The dashboard provides controls and operations for administrators to manage and submit information to ensure the smooth operation of the FEWER services in their respective countries.

3.1 The Browser

The FEWER administrators’ dashboard works in modern web browsers on both the desktop and mobile devices. The following browsers are tested and supported:

<table>
<thead>
<tr>
<th>Desktop</th>
<th>Mobile</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chrome (v 62)</td>
<td>1. Chrome (v 62)</td>
</tr>
<tr>
<td>2. Firefox (v 57)</td>
<td>2. Firefox (v 57)</td>
</tr>
<tr>
<td>3. Internet Explorer 11</td>
<td>3. Webkit (v 533)</td>
</tr>
<tr>
<td>4. Microsoft Edge (v16)</td>
<td>4. Safari mobile</td>
</tr>
<tr>
<td>5. Safari (v 11+)</td>
<td></td>
</tr>
</tbody>
</table>

3.2 Accessing the administrators’ dashboard

To access the FEWER administrators’ dashboard, navigate to https://fewer.cirp.org.tt. The browser will display the FEWER website with its drop-down menu. It will also display a log-in screen as shown in Figure 3.1.

All administrators must log-in. Credentials (username and password) are provided as follows:

- Country administrator: configured on FEWER commissioning, with edit privileges assigned to the approved country administrator
- Agency administrator: created, assigned and managed by the country administrator

As regional FEWER Coordinator, the CRFM will specify the points of contact for the provision of access credentials. They may be contacted via secretariat@crfm.int, subject “FEWER”.

3.3 How do I access the FEWER administrative features?

After logging into the application with country administrator’s credentials the country administrator’s dashboard, shown in Figure 3.2, is displayed. The administrators menu is visible at the top of the screen. To access FEWER-specific management functions, hover over the “modules” menu option. The drop-down menu with FEWER modules is displayed. Click on any menu item to access the relevant module controls.
After logging into the application with the agency administrator’s credentials the administrator’s dashboard illustrated in Figure 3.3 is shown. Similarly, the FEWER-specific management features can be accessed either using the respective module icons or hovering over the “modules” menu option.

Regional reviewers will access the same dashboard as agency administrators illustrated in Figure 3.3. However, regional reviewers will have read-only access for FEWER modules. This implies that all of them create, update and delete operations will be unavailable for regional reviewers.
4. Administrative Tasks by Module

4.1 Alerts

4.1.1 How do I access the Alerts Module? (A.A, C.A, C.G, T.A, R.R)
After logging in to the FEWER administrators’ dashboard using the credentials provided, hover over the FEWER option in the menu and click the Alerts option from the list as shown in Figure 4.1.

![Figure 4.1 Accessing the Alerts Module from the FEWER main menu](image)

When the Alert module is selected, the Alerts dashboard is displayed. It is organised by CAP and community alerts, each with the controls to manage the respective alert type, as in Figure 4.2.

4.1.2 What is a CAP alert?
CAP stands for Common Alerting Protocol. It is an international standard that specifies a common message format for public alerts and warnings issued over different communications systems including broadcast television, free to air radio, cell phones etc. It is backwards-compatible with NOAA Weather Radio’s Specific Area Message Encoding (SAME) and Wireless Emergency Alerts (WEA).
4.1.3 What is the difference between a CAP and a community-based alert?
FEWER facilitates both Common Alerting Protocol (CAP) and community alerts. Table 2 summarises the key differences.

<table>
<thead>
<tr>
<th><strong>Table 2 Key distinctions between FEWER CAP and community-based alerts</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Alerting Protocol (CAP)</strong></td>
</tr>
<tr>
<td><strong>Scope</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Protocol</strong></td>
</tr>
<tr>
<td><strong>Source</strong></td>
</tr>
</tbody>
</table>

CAP alerts are displayed in the left-hand area of the Alerts dashboard. Current alerts display alerts approved for dispatch to all FEWER users. The “Pending Community Alerts” section display alerts that originate from fishers who wish to broadcast beyond their community. These broadcasts must be approved by the administrator. Each alert entry comprises the title of the alert, the action to be taken, the date issued and the set of administrator controls, as shown in Figure 4.3.
4.1.5 How do I create a new CAP alert? (A.A, C.A, T.A)
To create a new CAP alert, select the plus icon, located at the top left of the CAP Alerts area of the Alerts dashboard. A form, comprising general information (Figure 4.4), details (Figure 4.10) and map-based alert area facilities (Figure 4.11), is displayed. Complete all mandatory fields (those marked with the red asterisks) and all other fields as appropriate. Table 3 summarises the fields and valid options for a FEWER CAP alert.
**Table 3 Fields for General section of a New CAP Alert**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message template</td>
<td>Pre-configured alert templates to enable faster creation of common alerts</td>
<td>FEWER Strange Current Alert, FEWER Low Visibility Alert, FEWER ground swell alert, FEWER Whitecaps Alert, FEWER Storm Surge Alert, FEWER Coastal Flash Flood Alert, FEWER [COMMUNITY] Weekly Test, FEWER [COUNTRY] Monthly Test</td>
</tr>
<tr>
<td>Status</td>
<td>The code denoting the appropriate handling of the alert message</td>
<td>Actual, Exercise, Test, Draft</td>
</tr>
<tr>
<td>Type</td>
<td>The code denoting the nature of the alert message</td>
<td>Alert, Update, Cancel</td>
</tr>
<tr>
<td>Scope</td>
<td>The code denoting the intended distribution of the alert message</td>
<td>Public, Private</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Options</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Hazard Type          | The extended message identifier(s) (in the form sender, identifier, sent) of an earlier CAP message or messages referenced by this one. | Meteorological  
Environmental  
Not Otherwise Categorized                                                  |
| Protective Action    | The code denoting the type of action recommended for the target audience     | Take Shelter  
Evacuate  
Make Preparations  
Execute Pre-Planned Action  
Avoid the Area  
Monitor Conditions  
Resume Normal Activities  
Take No Action                                                  |
| Message Priority: Urgency | The code denoting the urgency of the subject event of the alert message | Immediate  
Expected  
Future  
Already Occurred  
Future                      |
| Message Priority: Severity | The code denoting the severity of the subject event of the alert message | Extreme  
Severe  
Moderate  
Minor  
Unknown                      |
| Message Priority: Certainty | The code denoting the certainty of the subject event of the alert message | Observed Event  
Likely  
Possible  
Unlikely  
Unknown                      |
| Time to Expiration   | The expiry time of the information of the alert message                     | 15 minutes  
30 minutes  
45 minutes  
1 hour  
90 minutes  
2 hours  
3 hours  
4 hours  
5 hours  
6 hours  
Other                      |

**4.1.6 Are the CAP field specifications unique to FEWER? (A.A, C.A, T.A)**

**4.1.7 What is a CAP template? (A.A, C.A, T.A)**
CAP templates are the basis for creating stock as well as customised alerts. Each country specifies its own set of templates for national alerts. FEWER CAP templates have been created to serve the special
needs of seafaring fisherfolk. These extend the national portfolio of CAP alerts. The nominal set of FEWER CAP templates is shown in Figure 4.5.

**4.1.8 What is the Type of Message field? (A.A, C.A, T.A)**

The CAP type of message comprises three components: status, code and scope. The status, in turn, has four possible values shown in Figure 4.6 as the drop-down options in the dashboard:

1. **Actual** – this is treated as an actionable alert for all users
2. **Exercise** – used for drills
3. **Test** – used for technical testing to ensure the system is working
4. **Draft** – a preliminary alert and not actionable at this time

![Figure 4.6 Drop-down options to complete CAP Alert Status](image)

The type parameter in CAP field has three possible values as follows and shown as the dashboard drop-down options in Figure 4.7:

1. **Alert** - initial information requiring attention by targeted recipients
2. **Update** - updates and supersedes the earlier message(s)
3. **Cancel** - cancels earlier message(s) identified

![Figure 4.7 CAP Alert Code](image)

The scope parameter in the CAP type of message field has three possible values as shown in the drop-down options in Figure 4.8:

1. **Public** - For general dissemination to unrestricted audiences
2. **Private** - For dissemination only to specified addresses.
4.1.9 **What options does the Hazard field support? (A.A, C.A, T.A)**
The CAP protocol specifies various categories of hazards: geophysical (including landslide), meteorological (including flood), safety (general emergency and public safety), security (law enforcement, military, homeland and local/private security), rescue and recovery, fire (suppression and rescue), health (medical and public health), Environmental (pollution and other environmental), transport (public and private transportation), Infrastructure (utility, telecommunications, other non-transport infrastructure), CBRNE (chemical, biological, radiological, nuclear or high-yield explosive threat or attack), and other events. FEWER CAP Hazard types include the environmental and other categories and refer to the met category as the weather. These are shown in Figure 4.9:

![Figure 4.9 CAP Alert Hazard Type]

4.1.10 **What options does the Recommended Action field support? (A.A, C.A, T.A)**
Protective action is a required field. It specifies the recommended actions for the intended audience. Its options are: take shelter, evacuate, make preparations, execute pre-planned action, avoid the area, monitor conditions, resume normal activities and take no action.

4.1.11 **What options do the Message Priority fields support? (A.A, C.A, T.A)**
The Message Priority fields (urgency, severity and certainty) are required. The respective options are:
- **Urgency:** immediate, expected, future, already occurred and unknown
- **Severity:** extreme, severe, moderate, minor, unknown
- **Certainty:** observed event, likely, possible, unlikely, unknown

4.1.12 **What is the Time to Expire field? (A.A, C.A, T.A)**
The Time to Expire field is optional. It refers to the expiry time of the information carried in the alert message. It has a default value of 6 hours.

4.1.13 **What fields are included in CAP Alert Details? (A.A, C.A, T.A)**
Figure 4.10 illustrates the Alert Details section of the New CAP Alert popup; Table 4 summarises the fields and elaboration follow.

The Event field is required. It provides further details of hazard type and is to be completed with brief text identifying the type of event conveyed in the alert message.
The short-text headline is a succinct, actionable headline. Some devices such as feature phones are only capable of displaying this headline. FEWER imposes a maximum limit of 140 characters to ensure readability on such devices. An extended description of the hazard or event that occasioned this message is provided in the following field. Similarly, the “What should affected people do” provides the opportunity for further details of the protective action.

![Alert Details](Figure 4.10 Details section of New CAP Alert popup)

The optional contact field identifies the person or agency for follow-up and confirmation of the alert message. The sender Name refers to the agency or authority issuing the alert. The optional alternate alert website provides a full link to a web page or other text resource with additional or reference information regarding this alert.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>The text denoting the type of the subject event of the alert message</td>
<td>Open-ended text input</td>
</tr>
<tr>
<td>Short-Text Headline</td>
<td>A brief human-readable headline. It should be made as direct and actionable as possible while remaining short</td>
<td>Open-ended text input</td>
</tr>
<tr>
<td>Describe the Event or Hazard</td>
<td>An extended description of the hazard or event that occasioned this message</td>
<td>Open-ended text input</td>
</tr>
<tr>
<td>What Should Affected People Do</td>
<td>An extended instruction to targeted recipients</td>
<td>Open-ended text input</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Options</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Who is the Contact</td>
<td>The text describing the contact for follow-up and confirmation of the alert message</td>
<td>Open-ended text input</td>
</tr>
<tr>
<td>Alternate alert website</td>
<td>A full, absolute URI for an HTML page or another text resource with additional or reference information regarding this alert</td>
<td>Open-ended text input</td>
</tr>
<tr>
<td>Sender Name</td>
<td>The human-readable name of the agency or authority issuing this alert</td>
<td>Open-ended text input</td>
</tr>
<tr>
<td>Add Parameter</td>
<td>A system-specific additional parameter associated with the alert message</td>
<td>Open-ended text input</td>
</tr>
</tbody>
</table>


FEWER provides the capability for customisation of an alert message through the creation of additional fields that extend the default set. For example, if an administrator wished to issue alerts in Creole instead of English, the Add a Parameter feature may be used to say create a field “Danje kalite” (hazard type) with a value “tan” (weather).

**4.1.15 Can the area affected by a hazard be specified? (A.A, C.A, T.A)**

Yes. You must include a textual description of the affected area and may specify the area affected by the alert in a number of ways as shown in Figure 4.11 and summarised in Table 5. Options are predefined templates for fisher communities, drawing a circle or polygon of the area on a map, specifying a geographic code (“geocode”) or specific coordinates.

![Figure 4.11 Alert Area section of New CAP Alert popup](image)

**Table 5 Fields for Alert Area section of New CAP Alert popup**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select Area Template</td>
<td>Pre-configured area templates to enable selection of affected areas</td>
<td>To be added</td>
</tr>
<tr>
<td>Describe the</td>
<td>The text describing the affected area of the alert</td>
<td>Open-ended text input</td>
</tr>
</tbody>
</table>
The geocode delineates the affected area of the alert message using a variety of national or international standards including Specific Area Message Encoding (SAME) used in NOAA Weather Radio, ZIP codes etc. The coordinates option may be used if the hazard is located at a point rather than an area, or if it is known to be affecting a location, but the scope of the affected area is unknown.

4.1.16 Can any arbitrary person issue a FEWER CAP alert? (A.A, C.A, T.A)
No. CAP Alert creation requires an additional authentication to prevent accidental or unauthorised use.

4.1.17 Can CAP alerts be sent prematurely?
No. Figure 4.12a shows the visual indication that not all required fields have been set. When all fields are correctly configured, the cancel and release alert buttons become available as shown in Figure 4.12b.

4.1.18 How do I update a CAP alert? (A.A, C.A, T.A)
A set of controls is available for the management of each alert. The green edit icon in Figure 4.13 launches the screen used to configure an alert. The system references the unique identifier of the current alert in the specification of the new “Update Alert”. The remaining steps are similar to the process for creating a CAP alert. The system replaces the existing CAP alert with the matching unique identifier.
To cancel a CAP alert, follow the same process as the update then simply select the yellow cancel button instead.

4.1.20 **How do I view how many members have viewed the CAP alert? (A.A, C.A, T.A, R.R)**
To view the delivery confirmation of an alert, select the blue group icon in the menu shown in Figure 4.13. The system will navigate to the delivery confirmation page shown in Figure 4.14.

In the Community Alerts area of the Alerts page, shown in Figure 4.15, select the desired Group from the drop-down menu on the top right.

In the Community Alerts area of the Alerts page, select the group icon to view alert groups.

4.1.23 **How do I view members of an alert group? (A.A, C.A, T.A, R.R)**

Select the Community Alert group of your choice from the listing, as shown in Figure 4.16.

4.1.24 **How do I create a new alert group? (A.A, C.A, T.A)**

After navigating to Alert Groups, select the blue plus button in the top left corner. Complete the popup, shown in Figure 4.17 as necessary.
4.1.25 How do I create a new community alert? (A.A, C.A, T.A)
After navigating to Community Alerts section in the Alert module dashboard, select the blue plus button in the top left corner.

Figure 4.18. Complete the popup shown in Figure 4.19, as necessary.

4.1.26 How do I update a community alert? (A.A, C.A, T.A)
To update a community alert, navigate to the Community Alerts area of the Alerts page, select the edit icon in line with the relevant group as shown in Figure 4.20 and revise as appropriate. You will receive a prompt, shown in Figure 4.21, to confirm the update. When you confirm, you will receive a confirmation, shown in Figure 4.22, that the record has been successfully updated.

4.1.27 Can I construct a CAP alert from a community alert? (A.A, C.A, T.A)
Yes. Select the broadcast option, shown in Figure 4.23, for the alert entry of choice. This will launch the CAP alert creation form, shown in Figure 4.24, for the administrator to provide the additional information required to post a CAP alert to the wider audience, as explained earlier in this manual.
### Community Alerts

<table>
<thead>
<tr>
<th>Content</th>
<th>Severity</th>
<th>User</th>
<th>Location</th>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rough Seas</td>
<td>Kyle E. deFreitas</td>
<td>3 - Severe</td>
<td>10.6410495,-61.4022862</td>
<td>2017-11-24 18:20:07</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 4.23 Community Alerts entry**

- **Status:** Actual
- **Type:** Alert
- **Scope:** Public
- **Hazard Type:** Environmental
- **Protective Action:** Monitor Conditions
- **Message Priority:** Unknown
- **Time to Expiration:** 3 Hours

**Alert Details**

- **Event:** Rough Seas
- **Short-Text Headline:** Rough Seas

**Figure 4.24 Community alert imported into CAP template**


To export the records listed in Community Alerts, we click on the blue button with the “page” icon in the top left corner of the Community Alerts section of the Alerts dashboard as shown in Figure 4.25.
After the button is clicked, the system will generate a report formatted as a comma separated value (CSV) file. The report contains the set of records displayed. The downloaded CSV file can be opened in Microsoft Excel to view the operations within the file. An example of the report viewed in Excel is provided in Figure 4.26.

### 4.2 Damage Reporting

#### 4.2.1 How do I access the Damage Reporting Module? (A.A, C.A, T.A, R.R)

After logging in to the FEWER Administrators’ dashboard using your administrator credentials, click the FEWER drop down in the main menu and select the Damage Reporting module from the list, as shown in Figure 4.27.
4.2.2 How are damage reports organised in FEWER? (C.A, T.A)
FEWER organises damage reports in categories. A report is assigned to only one category. The list of default configured categories is shown in Figure 4.29.
To provide flexibility in reporting and the categorisation of damage reports, the public user can choose either general or specific categories. These categories are represented in a parent-child hierarchical relationship. For example, Environment is a general category and Beach is a specific category. Environment is the parent category of Beach. The hierarchical categorisation provides the opportunity for further analysis of reports as FEWER is utilised by public users.

**4.2.3 How do I create a damage report category? (C.A, T.A.)**

Select the blue plus button illustrated in Figure 4.29. This will launch a window to enter the name of the new category. You can specify if the new category is related to any of the existing categories. Figure 4.30 shows this window. Once the category is created successfully, the system will display a message asking for your acknowledgement as shown in Figure 4.31.
4.2.4 How do I view damage reports? (A.A, C.A, T.A, R.R)
The area on the right of the Damage Reporting dashboard, shown in Figure 4.28, displays the listing of public damage reports made by the public users in the host country. This area is shown on its own in Figure 4.32.

4.2.5 How do I create a damage report? (A.A, C.A, T.A)
Click on the blue button with the “plus” icon (Figure 4.32) at the top left of the Damage Reports dashboard to open a damage report creation form shown in Figure 4.33. The report fields are summarised in Table 6. The report can be created by the public user using the mobile app. Figure 4.34 shows the post on mobile after the report is constructed.
### Table 6: Damage Report Fields

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>The title an author wishes to associate with a report</td>
<td>Open-ended text input</td>
</tr>
<tr>
<td>Category</td>
<td>The category of damage to be reported</td>
<td>Beach, Boats, Buildings, Environment, Equipment, Man Made, Other</td>
</tr>
<tr>
<td>Latitude</td>
<td>Estimated or exact latitude at which damage occurred</td>
<td>The default is automatically filled in as the latitude of the input device</td>
</tr>
<tr>
<td>Longitude</td>
<td>Estimated or exact longitude at which damage occurred</td>
<td>The default is automatically filled in as longitude of input device</td>
</tr>
<tr>
<td>Description</td>
<td>Details of the damage observed</td>
<td>Open-ended text input</td>
</tr>
<tr>
<td>Cost</td>
<td>Estimated cost of damage in EC$</td>
<td>Open-ended text input</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Options</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Date</td>
<td>Date damage occurred</td>
<td>Specification through a choice of calendar or textual date with selection controls for each field: day, month, year</td>
</tr>
<tr>
<td>Audience</td>
<td>Scope of persons who may view this damage report</td>
<td>Public (all FEWER users can view this damage report)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private (only the author of a report can view it)</td>
</tr>
<tr>
<td>Resource Type</td>
<td>Medium used to record evidence of the damage</td>
<td>Text</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Audio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Image</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Video</td>
</tr>
<tr>
<td>Upload File</td>
<td>Upload a file that provides evidence of damage</td>
<td>Upload by selecting file through file explorer</td>
</tr>
</tbody>
</table>

**4.2.6 How do I update a damage report? (A.A, C.A, T.A)**

Click on the green edit button next to a damage report record (Figure 4.32) to open the popup window to update its details. The popup window with details for editing is illustrated in Figure 4.35.
4.2.7 How do I delete a damage report? (C.A, T.A.)

Navigate to the damage reporting dashboard to see the list of reports. The dashboard provides several operations that can be performed on each entry. These are available through icons that appear in the right-most column of the record. The list and operations are illustrated in Figure 4.32.

The set of operations includes delete. This is accessed through the red trash can icon. Clicking the red delete button of the record, will display a confirmation for deleting the record.

Special care must be exercised when deleting and updating records because there is no undo operation within FEWER. After the request is sent the system displays a notification message to confirm whether the operation was successful.
4.2.8  How do I export an administrator report from damage reports? (A.A, C.A, T.A, R.R)
To export the records listed in a damage report, we click on the blue button with the “page” icon in the top right corner of the Damage Reporting dashboard as shown in Figure 4.36.

![Damage Reporting Administrator report button](image)

Figure 4.36 Damage Reporting Administrator report button

After the button is clicked, the system will generate a report formatted as a comma separated value (CS) file. The report contains the set of records displayed. The downloaded CSV file can be opened in Microsoft Excel to view the operations within the file. An example of the report viewed in Excel is provided in Figure 4.37.

![Example of an administrator report using Damage Reporting records](image)

Figure 4.37 Example of an administrator report using Damage Reporting records

4.3  Emergency Contacts
4.3.1  How do I access the emergency contacts module? (A.A, C.A, T.A, R.R)
After logging in to the FEWER administrators’ dashboard using the credentials provided, click the FEWER drop down in the main FEWER menu and select the Emergency Contacts option from the list as shown in Figure 4.38.
4.3.2 How do I view emergency contacts? (A.A, C.A, T.A, R.R)
When the Emergency Contacts option is selected, the system will display its dashboard, Figure 4.39, showing all the emergency contacts in the system for the administrator’s country. There is a standard set of information for each contact as shown in the figure, but additional fields may be included when a new contact is created. The details column identifies the number of additional items of information provided beyond the standard set.

4.3.3 Can fishers see emergency contacts countries other than their own?
Yes. Emergency contact information for all countries is accessible by all FEWER fishers. This enables fishers who drift into territories outside of their own to access the relevant contacts in the event of an emergency.
4.3.4 How do I view emergency contact details? (A.A, C.A, T.A, R.R)

On the Emergency Contacts dashboard, click on the eye icon to open a window displaying emergency contact information as shown in Figure 4.40.

![Figure 4.40 Details of an emergency contact entry]

4.3.5 How do I create an emergency contact? (C.A, T.A.)

Click on the blue plus button at the top left of the Emergency Contacts dashboard to launch a window to enter the specifics of a new emergency contact, as shown in Figure 4.41. Once the contact has been successfully added, the system will display an appropriate message as shown in Figure 4.42.

![Figure 4.41 Add emergency contact details]

![Figure 4.42 Confirmation of successful addition of emergency contact]

4.3.6 How do I update an emergency contact? (C.A, T.A.)

In the Emergency Contacts dashboard click on the green edit icon for the record to be updated, as shown in Figure 4.43. This opens a popup window with the contact details for an existing contact. It will appear as a completed version of the window shown in Figure 4.41. Update fields as appropriate.
4.3.7 **How do I provide additional details for an emergency contact?** (C.A, T.A.)
Click on the “Add Field” button in the *Add New Emergency Contact* window to include an extra field. This is shown in Figure 4.45. The additional fields store information in key-value pairs. The key represents the label of the characteristic about the contact while the value represents the information that is recorded. For example, a common additional detail for the coast guard will be the key “VHF radio” and the value “Channel 16”.

4.3.8 **How do I delete an emergency contact?** (C.A, T.A.)
Click on the red trash can button for the entry to be deleted, shown Figure 4.39. This displays a delete confirmation message, Figure 4.46, before deleting the emergency contact.
Special care must be exercised when deleting and updating records because there is no undo operation within FEWER. After the request is sent the system displays a notification message to notify whether the operation was successful.

4.3.9 **How do I view contacts from another country? (A.A, C.A, T.A, R.R)**

To view contacts from another country, select eye icon 🎬 in the emergency contact dashboard to access the full public listing of all emergency contacts. Select the desired country using the drop-down menu as shown in Figure 4.47.

4.3.10 **How do I export an administrator report from Emergency Contact records? (A.A, C.A, T.A, R.R)**

To export the records listed in Emergency Contacts, we click on the blue page button in the top right corner of the Emergency Contacts dashboard as shown in Figure 4.48.
After the button is clicked, the system will generate a report formatted as a comma separated value (CS) file. The report contains the set of records displayed. The downloaded CSV file can be opened in Microsoft Excel to view the operations within the file. An example of the report viewed in Excel is provided in Figure 4.49.

4.4 Emergency Procedures

4.4.1 How do I access the Emergency Procedures module? (A.A, C.A, T.A, R.R)

After logging in to the FEWER administrators’ dashboard using appropriate credentials, click the FEWER option in the menu and select the Emergency Procedures option from the menu list (Figure 4.50).
This displays the Emergency Procedures dashboard, which is configured as a table whose records show a listing of procedures available for the host country as shown in Figure 4.51.

![Emergency Procedure dashboard](image)

**Figure 4.51 Emergency Procedure dashboard**

### 4.4.2 How do I view the details of an emergency procedure? (A.A, C.A, T.A, R.R)

Click on the blue eye icon on the dashboard, Figure 4.51. The video for the selected emergency procedure will be displayed in a pop-up window.
4.4.3 How do I upload emergency procedures content? (C.A, T.A.)

To upload content to the emergency procedure module, click on the blue plus icon in the top left corner of the dashboard as shown in Figure 4.52.

This opens a popup window to select a zip file containing all the videos to be uploaded for host country’s emergency procedure.

Videos for the Emergency procedures are stored on the phone to allow fisherfolk to access procedures without internet access. Therefore, strong consideration should be given for ensuring that video files are reasonably small for the limited space available on phones.

The following steps are recommended for preparing video files for upload:

1. Using a video compression software. We recommend Handbrake (https://handbrake.fr/), a free and open source software that performs all the needed operations.
2. The Handbrake software has preconfigured options for compression. We recommend that you use the option “Gmail Small 10 minutes”.
   a. This compresses the video file in the MP4 format
   b. Reduces the framerate to 30 FPS
   c. And optimizes the video for the web.
3. Using this setting we were able to compress a 170MB video to only 3MB while maintaining compatibility with majority Android and web browsers.

4.4.4 How do I edit emergency procedures details? (C.A, T.A)

Procedures are packages and downloaded collectively on the fisher’s phone. The videos are compressed and packaged in a zip archive. Editing country procedures requires that the entire set of video resources in the zip archive for the host country be re-uploaded and current procedure videos are replaced. The steps for uploading emergency procedures are given in section 4.4.3.

4.4.5 How do I delete an emergency procedure? (C.A, T.A)

FEWER does not support the deletion of existing emergency procedures. Therefore, no delete option in the list of procedures, as highlighted in Figure 4.51, was provided.

4.5 Local Ecological Knowledge

4.5.1 How do I access the Local Ecological Knowledge (LEK) module? (A.A, C.A, T.A, R.R)

After logging into the FEWER Administrators’ dashboard using your administrator credentials, click the FEWER drop down in the main menu and select the LEK module from the list, as shown in Figure 4.53.
Figure 4.53 Accessing the Local Ecological Knowledge module from the FEWER main menu

FEWER’s Local Ecological Knowledge dashboard displays categories on the left and entries on the right, as shown in Figure 4.54.

Figure 4.54 Local Ecological Knowledge dashboard showing listings and controls

4.5.2 How are LEK reports organised in FEWER? (C.A, T.A)

FEWER organises LEK reports in categories. The list of default categories and its interpretation is shown in Figure 4.55.
4.5.3 How do I create a LEK category? (C.A., T.A)
Select the blue plus button illustrated in Figure 4.54. This will launch a window to enter the name of the new category. Figure 4.56 shows this window. Once the category is created successfully, the system will display a message asking for your acknowledgement and will confirm the success of the operation as illustrated in Figure 4.57.

4.5.4 How do I view LEK reports? (A.A, C.A, T.A, R.R)
The area on the right of the LEK dashboard, shown in Figure 4.54, displays the listing of LEK reports made in the host country. This area is shown on its own in Figure 4.58.
4.5.5 How do I create a LEK report? (A.A, C.A, T.A)

Click on the blue plus icon in the reports area (Figure 4.54) of the LEK dashboard to open a LEK report creation form, shown in Figure 4.59. The LEK report fields are summarised in Table 7.

![Figure 4.58 Listing of LEK reports](image)

![Figure 4.59 Form to create a LEK report](image)
### 4.5.6 How do I delete a LEK report? (C.A., T.A)

To delete a LEK report, click on the red trash can button displayed next to the LEK report in the table displayed in Figure 4.58.

Special care must be exercised when deleting and updating records because there is no undo operation within FEWER. After the request is sent the system displays a notification message to notify whether the operation was successful.

#### Table 7 LEK Record Fields

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>The title an author wishes to associate with a report</td>
<td>Open ended text input</td>
</tr>
<tr>
<td>Category</td>
<td>The category of the event reported</td>
<td>Beach, Coast line, Environmental, Open Seas</td>
</tr>
<tr>
<td>Latitude</td>
<td>Estimated or exact latitude at which event occurred</td>
<td>Default is automatically filled in as latitude of input device</td>
</tr>
<tr>
<td>Longitude</td>
<td>Estimated or exact longitude at which event occurred</td>
<td>Default is automatically filled in as longitude of input device</td>
</tr>
<tr>
<td>Description</td>
<td>Details of the event observed</td>
<td>Open ended text input</td>
</tr>
<tr>
<td>Date</td>
<td>Date damage occurred</td>
<td>Specification through a choice of calendar or textual date with selection controls for each field: day, month, year</td>
</tr>
<tr>
<td>Resource Type</td>
<td>Medium used to record evidence of the damage</td>
<td>Text, Audio, Image, Video</td>
</tr>
<tr>
<td>Upload File</td>
<td>Upload a file that provides evidence of damage</td>
<td>Upload by selecting file through file explorer</td>
</tr>
</tbody>
</table>

### 4.5.7 How do I update a LEK report? (A.A, C.A, T.A)

Click on the green edit button next to a LEK report (Figure 4.58) to open the popup window to update its details shown in Figure 4.60.
Once the report is updated and save button clicked, the system will display a message asking for your acknowledgement as shown in Figure 4.61 and when operation is completed the system will display Figure 4.62.

4.5.8 How do I export an administrator report from LEK records? (A.A, C.A, T.A, R.R)
To export the records listed in LEK, we click on the blue page button in the top right corner of the LEK dashboard as shown in Figure 4.63.
After the button is clicked, the system will generate a report formatted as a comma separated value (CS) file. The report contains the set of records displayed. The downloaded CSV file can be opened in Microsoft Excel to view the operations within the file. An example of the report viewed in Excel is provided in Figure 4.64.

4.6 Missing Persons
After logging in to the FEWER administrators’ dashboard using the credentials provided, click the FEWER option in the menu and select the Missing Persons option from the list as shown in Figure 4.65.
After selecting the Missing Persons module from the FEWER menu, the dashboard displays the listing of missing persons in a table. The list is sorted in order of creation date, with the most recently created appearing first, as illustrated in Figure 4.66.

![Figure 4.66 Viewing Missing Persons](image)

4.6.3 How do I create a Missing Person’s report? (A.A, C.A, C.G, T.A)
In the Missing Persons dashboard, click the plus icon to launch the popup window to create a new missing person’s report. The button can be seen in Figure 4.67. Fill in the new report window, shown in Figure 4.68.
Figure 4.67 Button to add Missing Person report

![Missing Person report form]

Figure 4.68 Missing Person report form

The fields are elaborated in Table 8. Once the operation is successful, the system notifies the user.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Particulars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Description of the physical characteristics of the person</td>
<td>Optional</td>
</tr>
<tr>
<td>Contact</td>
<td>Contact information for person reporting</td>
<td>Required</td>
</tr>
<tr>
<td>Latitude</td>
<td>GPS reading for person making report</td>
<td>Automatically provided by app</td>
</tr>
<tr>
<td>Longitude</td>
<td>GPS reading for person making report</td>
<td></td>
</tr>
<tr>
<td>Additional</td>
<td>Suggestions include contact info for the missing person and the area last seen or last known bearing</td>
<td>Optional</td>
</tr>
</tbody>
</table>

4.6.4 How do I mark a person as missing and found? (A.A, C.A, C.G, T.A)
The administrator can mark a person as missing. In the listing page, the status of the report is displayed in the “status” column. If the report’s status is missing, the record has an additional option to mark the report as found. This “mark as found” icon is indicated as a green button with a tick as shown in Figure 4.69.
If you press the green “mark as found” button, the system will display a prompt for you to confirm the operation. If the operation is successful, then the system will display a confirmation to the user.

4.6.5 **How can I remove a missing person report? (A.A, C.A, C.G, T.A)**

Navigate to the missing persons module to see the list of reports. The dashboard provides several operations that can be performed on each entry. These are available through icons that appear in the right-most column of the record.

The set of operations includes delete. This is accessed through the red trash can icon. Clicking the red delete button of the record, will display a message for you to confirm that you would like to delete the record.

Special care must be exercised when deleting and updating records because there is no undo operation within FEWER. After the request is sent the system displays a notification message. Prompts are presented for operation failure and success.


To export the records listed in Missing Persons, we click on the blue page button in the top right corner of the Missing Persons dashboard as shown in Figure 4.70.
After the button is clicked, the system will generate a report formatted as a comma separated value (CS) file. The report contains the set of records displayed. The downloaded CSV file can be opened in Microsoft Excel to view the operations within the file. An example of the report viewed in Excel is provided in Figure 4.71.

### 4.7 Weather

#### 4.7.1 How do I access the Weather module? (A.A, C.A, C.G, T.A, R.R)

After logging in, click the FEWER drop down in the main menu and select the Weather option from the list, as shown in Figure 4.72.
When the Weather module is selected, the Weather dashboard is displayed. The dashboard comprises a table of weather source entries as shown in Figure 4.73.

4.7.2 **What are weather sources?**
In FEWER a weather source refers to an official organisation from which hydro meteorological (hydro-met) data is retrieved. This includes the local MET services and third party organisations such as [OpenWeatherMap](https://openweathermap.org) and [Accuweather](https://www.accuweather.com).

4.7.3 **What are extractors?**
Extractors are files that are run within the FEWER system to retrieve hydro-met data from a specific weather source. These files can be set to run on a schedule or manually at any time by an administrator. For example, the extractor will parse the websites of the Met Office in Saint Lucia to retrieve the relevant daily weather readings. Further details on the extractors are provided in the Appendix.
4.7.4 What are thresholds?
In the context of the FEWER Weather module, a threshold is a value set for a specific weather parameter that determines if the current value meets warning or emergency criteria. The threshold values are specified by the Met office in each FEWER country and configured by the country or agency administrators for that country.

4.7.5 How do I view weather sources available for my country? (A.A, C.A, R.R)
The weather dashboard displays the list of sources as shown in Figure 4.74. Each entry indicates the country, type of information, format of data electronically accessed from the source, update periodicity (interval), temporal scope (duration), most recent reading and creation date. As for all FEWER administrator dashboards, icons for available management options are displayed.

![Figure 4.74 Weather Source listing](image)

4.7.6 How do I view the details of a weather source? (A.A, C.A, R.R)
To view the details of a weather source, go to the weather dashboard. Click on the weather source of choice to display details as shown in Figure 4.75 for Dominica Met office.

![Figure 4.75 Example Weather Source details in listing](image)
4.7.7 How do I view the readings captured by a weather source? (A.A, C.A, R.R)
To view weather readings, click the green eye icon in the table on the weather dashboard. This will display readings captured by a weather source, as shown in Figure 4.76.

4.7.8 How do I create a new weather source? (A.A, C.A)
To create a new weather source, click on the blue plus icon on the weather sources page. This will display a form to configure the weather source details as shown in Figure 4.77. The fields are elaborated in Table 9.

![Weather Source readings](Image)

![Configure Weather Source window](Image)

**Table 9 Configure Weather Source Options**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>Name to uniquely identify a local (Met office etc.) or external (NOAA, OpenWeather etc.) source of weather information</td>
<td>Open-ended text entry by administrator for FEWER in a particular country</td>
</tr>
<tr>
<td>Source URL</td>
<td>Web address through which the data is accessible from the named weather source</td>
<td>Open-ended text entry</td>
</tr>
<tr>
<td>Weather Data Type</td>
<td>Primary type of data provided by the source</td>
<td>1. Oceanic: tides etc. 2. Weather: wind, rain etc.</td>
</tr>
<tr>
<td>Retrieval Interval</td>
<td>Period over which data is updated</td>
<td>1. Every Hour 2. Every six Hours 3. Once per day</td>
</tr>
<tr>
<td>Data Source Type</td>
<td>Means through which FEWER accesses the weather data from the named source</td>
<td>1. Website 2. Application Programming Interface (API)</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Options</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>Duration</td>
<td>Period over which the weather data is valid</td>
<td>1. Single Day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Forecast</td>
</tr>
<tr>
<td>Is Primary Source</td>
<td>Primary source of information to be used for weather alerts</td>
<td>1. No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Yes</td>
</tr>
<tr>
<td>Select Extractor</td>
<td>Extractor file to be used to programatically extract data from source</td>
<td>Upload by selecting extractor through file explorer</td>
</tr>
</tbody>
</table>

### 4.7.9 How do I edit an existing weather source? (A.A, C.A)

Clicking on the light blue edit icon on a weather source listing opens a window to edit the information of the current weather source shown in Figure 4.77.

### 4.7.10 How do I upload an extractor? (A.A, C.A)

Extractors are used to retrieve weather information for each source as explained in section 4.7.3. To upload an extractor when adding or updating a weather source, click on the “Choose File” button as shown in Figure 4.77. This opens a file explorer window to select the extractor file from the administrator’s computer to upload and associate with the weather source.

### 4.7.11 How do I specify thresholds? (A.A, C.A)

When an extractor file is uploaded, the form in a popup window shown in Figure 4.78 is displayed. The threshold values for the uploaded extractor must be set here.

This popup window can also be opened by clicking on the orange gear icon, shown in Figure 4.79, of an existing weather source. Each extractor has different values that can be configured, so the form displayed will differ for each extractor.

![Set thresholds window](Figure 4.78 Set thresholds window)

### 4.7.12 How do I manually update the weather information from the source? (A.A, C.A)

To manually update a weather source, click the dark blue refresh icon, ![refresh icon], to update the weather information from the weather source. See Figure 4.79.
The system will display a confirmation when the update operation is completed successfully.

4.7.13 How do I view weather details from another country? (A.A, C.A, R.R)
To view weather details from another country, click on the green eye icon next to the blue plus icon in the upper left corner of the window. See Figure 4.80.

This opens the Weather Report page. Select the country of interest to display the details as shown in Figure 4.81. On this page weather information from the Open Weather Map and MET-Office is displayed as shown in Figure 4.82. The page alternates between the two every twenty seconds.
4.7.14 How do I create or modify extractors? (T.A)
Extractors require knowledge of the python programming language and compose of a set of variables and functions that determine where the information is retrieved from and how it is retrieved. To create an extractor, it must inherit from the “WeatherSourceExtractor” class.

An Extractor file contains a python class called “WeatherSourceExtractor” which provides the structure for the creation of extractors. Inheriting the WeatherSourceExtractor class ensures that the programmer adheres to the extractor file’s structure. The most important method is the `extract()` method. The new extractor must implement this in such a way that the extract returns the dictionary of extracted readings from the weather source’s URL. The `extract` method is the one that would be edited to modify an extractor. An example of an extractor file is shown in Figure 4.83. Further information about the representation of an extractor can be found in the extractor manual highlighted in the Appendix.
4.8 mFisheries tasks
As FEWER is built on the mFisheries framework, certain services related to FEWER but not falling directly within FEWER may be accessible. These include tracking and SOS.

4.8.1 Tracking (C.A, T.A, C.G)
4.8.1.1 How do I access the Tracks dashboard? (C.A, T.A, C.G)
After logging in you are taken directly to the Tracks dashboard. You can also click on the Tracks option in the menu bar to the top to be taken to the Tracks dashboard. The dashboard is shown in Figure 4.84 below.
4.8.1.2 How can I check tracking data for different days or months? (C.A, T.A, C.G)
To check the tracking data for a different day by clicking the date on the calendar in the top left corner of the dashboard. To change the month displayed, click the arrows next to the month to change it shown in Figure 4.85.

![Figure 4.85 Date controls for tracks page](image1)

4.8.1.3 How can I see more details about a tracking pin? (C.A, T.A, C.G)
To see more details about a tracking pin, click on the pin on the map this will open a small window displaying more information about the pin as shown in Figure 4.86. Clicking on the “All tracks” button will display all tracks related to that pin seen in Figure 4.87.

![Figure 4.86 Displaying more information for a tracking pin](image2)
4.8.2 **SOS (C.G)**

SOS alerts are sent to the system from users who report that they are in distress while using the application. These alerts are displayed in the tracking screen of the Coast Guard interface as red pins with orange exclamation mark as show in Figure 4.88. The SOS pins are interactable the same way as regular tracking pins but have an additional option to resolve the SOS.

4.8.2.1 *How do I resolve an SOS? (C.G)*

To resolve an SOS, click on the red SOS tracking pin. This will open a menu with more information on the SOS pin as seen in Figure 4.89.
Clicking the “Resolve” button will bring up a window to fill out the relevant information of the SOS this can be seen in Figure 4.90. When the save button is clicked a confirmation message will be displayed and the SOS will be resolved.
5. Country-specific FEWER Configuration

FEWER operation requires the configuration of several parameters that are not specific to any module. These configurations apply to the FEWER country-instance and its users.

5.1 Country Configuration

Country administrators configure FEWER installations for their home country. Configurations include the representative GPS locations of the countries as well as their country listing, area codes and ISO codes. They are also required for data, email and user management.

5.1.1 Where do I set the country configurations? (C.A, T.A)

To set the country configurations, select the "Country" option in the top menu. From here the different configurations can be modified by selecting the green edit button next to the configuration.

5.1.2 What can I configure in the country listing? (C.A, T.A)

In the Country Listing you can modify the name of your home country as well as the Area and ISO codes for your home country. To do this click on the green edit button next to the country listing which will bring up a form to change Country name, Area code and ISO code. When the changes are made, click the blue save button to complete the changes.

5.1.3 What does configuring the country name in the country listing do? (C.A, T.A)

Configuring the name of your home country sets its appearance throughout the FEWER system on both the mobile and web applications. For example, if your home country is Saint Lucia, you may configure it to “Saint Lucia” or “St. Lucia” and it will appear this way to all FEWER users, within and outside of the country. Each country administrator configures his or her own country in the listing:

- Dominica
- Grenada
- Saint Lucia
- St. Vincent and the Grenadines

5.1.4 How are Country ISO Codes used in FEWER? (C.A, T.A)

The Country ISO codes are used to create the folders for each country within the application:

- Dominica: dma
- Grenada: grd
- Saint Lucia: lca
- St. Vincent and the Grenadines: vct

5.1.5 How are Country Locations used in FEWER? (C.A, T.A)

The country locations provide a rough estimate of location to determine weather conditions when a GPS signal is not available to the application:

- Dominica: (15.414999, -61.370976)
- Grenada: (12.262776, -61.604171)
- Saint Lucia: (13.909444, -60.978893)
- St. Vincent and the Grenadines: (12.984305, -61.287228)
5.1.6 Where are Country Area Codes used in FEWER? (C.A, T.A)
The country area codes are used in Emergency Contacts. They are automatically inserted as a prefix to the local phone number if not otherwise specified:

- Dominica: 767
- Grenada: 473
- Saint Lucia: 768
- St. Vincent and the Grenadines: 784

The system will automatically format the entered 3-digit area code to be used for calling contacts across different territories.

5.2 User Management
Country and technical administrators have access to the user management dashboard of the web system. Here users can be added, removed and modified. User passwords can also be changed.

5.2.1 Where can I access the controls to manage user information? (C.A, T.A)
This control can be accessed from the Users option in the main menu and displays as shown in Figure 5.1.

![Figure 5.1 User Configuration Dashboard]

5.2.2 How do I change a user’s password? (C.A, T.A)
To change a user’s password from the user management dashboard, we select the blue key icon in the controls column next to a user record as shown in Figure 5.2. The options highlighted are part of each record displayed in the list of users displayed in Figure 5.1.
When the “change password” button (blue key button) is clicked, the popup window to update the password is displayed. This form is displayed in Figure 5.3. To change the password, the user enters the users’ new password twice and clicks the blue save button. The system will display a confirmation message when operation is completed.
6. Appendices

6.1 Extractor Manual

The weather module of the FEWER system has the following specifications:

- The system allows country administrators to select and configure the hydro meteorological (hydro-met) information that is included in weather module.
- The system retrieves hydro-met information from the following sources:
  - MET Office websites
    - Dominica
    - Grenada
    - St Lucia
    - St Vincent and the Grenadines
  - Tide information: Extracted from site tide-forecast.com
- The Mobile app displays information based on information retrieved from the web service. It is presented in the form of readings. The available readings are configured via country administrator.
- Information is sent between the web services and clients in a structured JSON format.
- Information will be cached (suggested time to live be configured on the back end) using databases for the web services and cached temporarily in the client persistence storage mechanisms.

6.1.1 Add Weather Source

When adding a weather source, a form is displayed to the user as seen in Figure 6.1. The descriptions for each of these forms are shown in Table 10.

![Figure 6.1 Form to configure weather source](image-url)
The system facilitates the uploading of an extractor procedure. For more details on the creation of an extractor see Section 6.1.6. This procedure will be a standard python class to facilitate a pluggable module.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>Name to uniquely identify a local (Met office etc.) or external (NOAA, OpenWeather etc.) source of weather information</td>
<td>Open-ended text entry by administrator for FEWER in a particular country</td>
</tr>
<tr>
<td>Source URL</td>
<td>Web address through which the data is accessible from the named weather source</td>
<td>Open-ended text entry</td>
</tr>
</tbody>
</table>
| Weather Data Type  | Primary type of data provided by the source                                  | 1. Oceanic: tides etc.  
2. Weather: wind, rain etc.                                                                                                               |
| Retrieval Interval | Period over which data is updated                                            | 1. Every Hour  
2. Every six Hours  
3. Once per day                                                                                                                               |
| Data Source Type   | Means through which FEWER accesses the weather data from the named source   | 1. Website  
2. Application Programming Interface (API)                                                                                               |
| Duration           | Period over which the weather data is valid                                 | 1. Single Day  
2. Forecast                                                                                                                                 |
| Is Primary Source  | Primary source of information to be used for weather alerts                | 1. No  
2. Yes                                                                                                                                 |
| Select Extractor   | Extractor file to be used to programmatically extract data from source      | Upload by selecting extractor through file explorer                                                                                      |

### Table 10 Weather Source Form Field Descriptions

#### 6.1.2 Configuring Weather Source Thresholds

After adding the source by completing the form and uploading the extractor, the system will load the extractor file and allow the user to configure the threshold values that the extractor supports. An example of the form for configuring the threshold of an extractor is illustrated in Figure 6.2.

The following are additional characteristics of this step:

1. The system reads the extractor file and displays the configurable thresholds specified in the extractor’s class.
2. The system via the form, allows the administrator to set threshold values to determine if the system should provide highlighted information for the end-user based on the information provided.
3. If no threshold values are provided, the system interprets that the information in the source should not be interpreted as actionable weather notifications.
Configure Weather Source

<table>
<thead>
<tr>
<th>Pressure</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning</td>
<td>Warning Threshold</td>
<td>Pressure Warning Value</td>
<td>hPa</td>
</tr>
<tr>
<td>Emergency</td>
<td>Emergency Threshold</td>
<td>Pressure Emergency Value</td>
<td>hPa</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Visibility</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning</td>
<td>Warning Threshold</td>
<td>Visibility Warning Value</td>
<td>km</td>
</tr>
<tr>
<td>Emergency</td>
<td>Emergency Threshold</td>
<td>Visibility Emergency Value</td>
<td>km</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning</td>
<td>Warning Threshold</td>
<td>Temperature Warning Value</td>
<td>°F</td>
</tr>
<tr>
<td>Emergency</td>
<td>Emergency Threshold</td>
<td>Temperature Emergency Value</td>
<td>°F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wind</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning</td>
<td>Warning Threshold</td>
<td>Wind Warning Value</td>
<td>km/h</td>
</tr>
<tr>
<td>Emergency</td>
<td>Emergency Threshold</td>
<td>Wind Emergency Value</td>
<td>km/h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rel. humidity</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning</td>
<td>Warning Threshold</td>
<td>Rel. humidity Warning Value</td>
<td>%</td>
</tr>
<tr>
<td>Emergency</td>
<td>Emergency Threshold</td>
<td>Rel. humidity Emergency Value</td>
<td>%</td>
</tr>
</tbody>
</table>

The system flow for retrieving information from different sources is highlighted in Figure 6.3. The following are further details explaining the process:

- The scheduling is facilitated using the OS CRON job. Cron jobs allow the operating system to run tasks at configurable time intervals. The system will run the update every 6 hours. Therefore, the time will scheduler will run at the following times:
  - 6:30 am
  - 12:30 am
  - 6:30 pm
  - 12:30 pm
- The triggering process will check with the database to determine what extractors will be executed at this interval.
- Each extractor has knowledge about its source details within the module definition.
- When the time condition is met, the extractor retrieves and stores the weather information to the database and notifies the system that the process was completed successfully.

### 6.1.3 Weather Data Acquisition Process

FEWER uses extractors to retrieve information from various sources configured. The extraction process is executed

![Flowchart for updating information from sources](image)

**Figure 6.3 Flowchart for updating information from sources**

### 6.1.4 Data Format/Schema for Weather Source

Each extractor generates information in the schema highlighted in Figure 6.4 based on its configured weather source. The scheme influences the JSON (dictionary) schema generated to pass information from the extractor to the system and influences the design of the database tables that will store the retrieved information.

Each entry can have one reading, or multiple readings based on the nature of the source. For example, the MET office data will have multiple readings, one for each of the information provided. More specifically, the extractor can have a reading entry for wind, temperature, rainfall etc.
6.1.5 **Weather Extractor Specification**

The extractor module is implemented as a Python class based on standard OOP behavioural design patterns. To access the source code for the extractors, the following link to a git repository containing the source can be used to clone the repository. Once the repository has been cloned, the instructions found in the `README.md` file are to be followed to install the remaining dependencies to run the extractors from the command line interface. The link for the repository is: [https://bitbucket.org/ewer_fish/fewerweatherextractors](https://bitbucket.org/ewer_fish/fewerweatherextractors).

6.1.6 **Extractor File Structure**

Within the repository, there exists a file called `WeatherSourceExtractor.py` that serves as the base class for all weather extractors. Within this file, some key methods can be found. The programmer must implement these abstract methods in their extractor’s class as shown in Figure 6.5. A description of these methods can be found in Table 11.

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>get_poster_url(self)</code></td>
<td>Retrieves the API link where the extracted readings will be sent.</td>
</tr>
<tr>
<td><code>get_extractor_url(self)</code></td>
<td>Retrieves the URL that the data will be extracted from.</td>
</tr>
<tr>
<td><code>get_reading_types(self)</code></td>
<td>This is used to allow the user to configure the threshold readings (JSON format).</td>
</tr>
<tr>
<td><code>extract(self)</code></td>
<td>This function extracts the weather readings from the URL and returns readings in dictionary format.</td>
</tr>
</tbody>
</table>
6.1.7 Extractor Class Creation
To create an extractor the following guidelines should be followed:

1. Located in fewr/modules/weather/parsers/extractors there exist a file named `WeatherSourceExtractor.py`.
2. The file is a python class, which provides the structure for the creation of extractor modules.
3. `WeatherSourceExtractor.py` is an abstract class and the programmer creating the new extractor module must inherit this class in their python extractor module. They must also import some other dependencies such as json, and beautiful soup.
4. Inheriting the `WeatherSourceExtractor` class ensures that the programmer adheres to the extractor file’s structure.
5. The name of the class must be `Extractor` for it to be integrated into the system as it will be used by factory outlines.
6. The most important function is the `extract()`. The new extractor must implement this in such a way that the extract returns the dictionary of extracted readings from the weather source’s URL.
7. The saving of data is covered by the `WeatherSourceExtractor` class.

```
@abstractmethod
def get_poster_url(self):
    pass

@abstractmethod
def get_extractor_url(self):
    pass

@abstractmethod
def toJSON(self):
    pass

@abstractmethod
def get_reading_types(self):
    pass

@abstractmethod
def extract(self):
    pass
```

Figure 6.5 Extractor Core Methods
An example of the creation of an extractor is shown in Figure 6.6.

```
import json
import requests
from bs4 import BeautifulSoup

Extractor = WeatherSourceExtractor

def __init__(self, extract=None):
    self.extract_url = extract
    self.readings = {}

def extract(self):
    # Implementation details...
```

![Figure 6.6 Extractor File Example](image)

As shown in the above figure the programmer has a few dependencies to import into the extractor being created, namely the WeatherSourceExtractor class. When the Extractor class is declared there is also the `__init__(self)` method. This method comes from the `__init__()` method of the WeatherSourceExtractor class which is shown in Figure 6.7.

The `__init__` method of the WeatherSourceExtractor class takes in two arguments, `self` and a string called “extract” which represents the URL from which the data will be extracted from.

![Figure 6.7 __init__ Method of Extractor class](image)

It is also important to note the implementation of the default methods of the WeatherSourceExtractor class. This is how they will be declared in all the weather extractors. Figure 6.8 shows the different methods of an extractor. The only extractor method not shown in Figure 6.8 is the `extract()` method. Further details of the extract method are highlighted in the next section.
6.1.8 Configuring the Extract Method

The extract method will differ for each extractor as it will depend on the structure of the HTML of the website that the weather information is going to be extracted from. We will use the MET Office website for St Vincent as an example as shown in Figure 6.9.

The information we want to extract it shown in the red shape. For us to be able to extract this information easily we need to know how it is structured in the web page first. To do this can right click on the area and select “Inspect Element” from the menu. This will bring up a window showing us the HTML structure of the element we selected as seen in Figure 6.10.
From this we can see that the information we want is within an unordered list tag `<ul>`. Now we can configure the extract method to find all `<ul>` tags and store the information within those tags as seen in Figure 6.11.

```
def extract(self):
    headings = []
    self.readings = {}
    print("Extracting current info from Saint Vincent MET")
    r = requests.get(self.extractor_url)
    print("Retrieved home page")
    soup = BeautifulSoup(r.content, "html.parser")
    data = soup.find_all("ul")
    for row in data:
        # takes the block of text with readings alone. the ul has other unrelated stuff we didn't need
        if "temperature" in row.text:
            save = row.text
            break
```

Figure 6.11 Storing all information between the ul tags

This does not specify the data between those tags but instead stores them all as a list. What we need to do now is go through that list and find the information we want. An example of looking for something specific is shown in Figure 6.12.

```
for row in data:
    # takes the block of text with readings alone. the ul has other unrelated stuff we didn't need
    if "temperature" in row.text:
        save = row.text
        break
```

Figure 6.12 Specifying what we are looking for.

Once we have what we want we store it into a variable containing all the readings. We save it as a json object meaning each reading is stored as a key and a value. Once we have this variable we convert it to
JSON using the `toJSON(self)` method and return the readings as shown in Figure 6.13. Once we have done this we declare the main of the file and call the extract method in it also seen in Figure 6.13.

6.1.9 How the system works
The python APScheduler together with the use of OOP data structure, factory, were used to make this module functional.

- **Python APScheduler** – This is responsible for checking the weather sources frequency time and running the scheduler if the time criteria are met. This runs when the server starts to schedule the extractor to be executed. scheduler.py. An example of the scheduler is shown in Figure 6.14.

- **Factory** – This is simply a python file used to detect all extractor classes for the use of the scheduler. The file name of the extractor e.g. DominicaExtractor.py excluding the python extension, is used by the factory to know which extractor should be scheduled. Once the new extractor files are placed in the extractor folder i.e. fewer/modules/weather/parsers/extractors the factory will automatically configure the scheduler to read them. The `Extractor()` function creates an instance of the object. An example is shown in Figure 6.15.
6.1.10 **Weather Notification**

The weather notification is created based on threshold; the threshold values set by the administrator for the weather readings. A user is automatically subscribed to weather notifications once they install the weather module of the mFisheries mobile application on their device. These notifications are sent to users based on their country’s weather. Notifications are sent once a day regardless of when the user registers on the mFisheries application.

What triggers a notification?

1. A notification is triggered when a new weather reading is greater than or equal to its corresponding threshold value.
2. One day has passed since the old notification was sent and the threshold condition is still met.
3. When the extractor file is executed via the scheduler or the manual run and the weather readings are greater than or equal to their corresponding threshold values.
The CRFM is an inter-governmental organization whose mission is to "Promote and facilitate the responsible utilization of the region's fisheries and other aquatic resources for the economic and social benefits of the current and future population of the region". The CRFM consists of three bodies – the Ministerial Council, the Caribbean Fisheries Forum and the CRFM Secretariat. CRFM members are Anguilla, Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago and the Turks and Caicos Islands.