

FIRMS Steering Committee Meeting
Twelfth Session
Online, 18-21 October 2021
REVIEW OF THE FIRMS ACTIVITIES DURING THE INTERSESSIONAL PERIOD (May 2019 – September 2021)
Secretariat Report on Progress and Issues
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Management Summary	
Author	FIRMS Secretariat
Version	2
Project	FIRMS
Distribution	FIRMS Partners & Technical Group
Created	August 2021
Saved	12 October 2021
Printed	

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ABBREVIATIONS AND ACRONYMS

- ASFIS List of Species for Fishery Statistics Purposes
- CCAMLR Commission for the Conservation of Antarctic Marine Living Resources
- CCSBT Commission for the Conservation of Southern Bluefin Tuna
- CECAF Fishery Committee for the Eastern Central Atlantic
- CLME+ Caribbean and North Brazil Shelf Large Marine Ecosystems
- CNR Consiglio Nazionale delle Ricerche
- COFI FAO Committee on Fisheries
- CPPS Permanent Commission for the South Pacific
- CTMFM Joint Technical Commission of the Maritime Front
- CWP Coordinating Working Party on Fishery Statistics
- EMODNet European Marine Observation and Data Network
- EOSC European Open Science Cloud
- ERCIM European Research Consortium for Informatics and Mathematics
- FAO Food and Agriculture Organization of the United Nations
- FCWC Fishery Committee for the West Central Gulf of Guinea
- FIA Fisheries and Aquaculture Policy and Resources Division
- FIRMS Fisheries and Resources Monitoring System
- FNS Food and Nutritional Security
- FORTH Foundation for Research and Technology - Hellas
- FSC FIRMS Steering Committee
- GFCM General Fisheries Commission for the Mediterranean
- GRSF Global Record of Stocks and Fisheries
- IATTC Inter-American Tropical Tuna Commission
- ICCAT International Commission for the Conservation of Atlantic Tunas
- ICES International Council for the Exploration of the Sea
- ICT Information and Communications Technology
- IFREMER Institut français de recherche pour l'exploitation de la mer
- INGO International non-governmental organizations
- IOTC Indian Ocean Tuna Commission
- IRD Innovation Research Development
- MSC Marine Stewardship Council
- MoU Memorandum of Understanding

- NAFO Northwest Atlantic Fisheries Organization
- NAMMCO North Atlantic Marine Mammal Commission
- NASCO North Atlantic Salmon Conservation Organization
- NEAFC North East Atlantic Fisheries Commission
- NGO Non-governmental organizations
- NPFC North Pacific Fisheries Commission
- OSPESCA Central America Fisheries and Aquaculture Organization
- PSC Pacific Salmon Commission
- RECOFI Regional Commission for Fisheries
- RECOFI WGFM Working Group on Fisheries Management
- RFB Regional Fishery Body
- RFMO Regional Fishery Management Organizations
- RSN Regional Fishery Body Secretariats' Network
- SDG Sustainable Development Goal
- SEAFDEC Southeast Asian Fisheries Development Center
- SEAFO South East Atlantic Fisheries Organizations
- SFP Sustainable Fisheries Partnership
- SIOFA South Indian Ocean Fisheries Agreement
- SLA Service Level Agreement
- SPF South Pacific Forum
- SPRFMO South Pacific Regional Fisheries Organizations
- SWIOFC Southwest Indian Ocean Fisheries Commission
- TWG Technical Working Group
- UNCLOS United Nations Convention on the Law of the Sea
- UUID Universally Unique Identifier
- UW University of Washington
- WCPFC Western and Central Pacific Fisheries Commission
- WECAFC Western Central Atlantic Fishery Commission
- WoRMS World Register of Marine Species
- VRE Virtual Research Environment

1. DEVELOPMENTS ON MARINE RESOURCE AND FISHERY INVENTORIES AND RELATED FIRMS FACT SHEETS

Beyond the regular workflow and dissemination activity by FIRMS partners and Secretariat, main aspects regarding the inventories and the fact sheets are described in the following sections.

Further details of FIRMS partners' activities are available under the document section "Partners' reports" FSC12/2021/2a, b, etc.

1.1 Marine Resource inventories

- CCAMLR: 4 marine resources have been updated based on <http://fisheryreports.ccamlr.org/> and are awaiting final clearance before publication (reporting year 2021).
- CCSBT: The single marine resource entry in the inventory was updated and published (reporting year 2020).
- GFCM: 5 marine resources have been updated, waiting final clearance before publication (reporting year 2019).
- IATTC: Updated and published 8 marine resources (reporting year 2020).
- ICCAT: Updated and published 6 marine resources (reporting years 2017, 2018 and 2019).
- ICES: the ICES-FIRMS inventory is compiled according to the ICES web service "Standard graphs Web Service APIs" (<http://standardgraphs.ices.dk/web/services.aspx>). Additional cleaning and consolidation were made in the inventory due to new entries or no longer monitored assessment units. FIRMS-ICES IDs were also mapped to the GRSF UUIDs and added in the inventory. The production of reports is in progress with 200 fact sheets already published including 56 records published with reporting year 2018, 105 records published with reporting year 2019 and 45 records published with reporting year 2020. Improvements for area references are also in progress, in particular the Functional Units for Sandeel and Norway lobster.
- IOTC: The inventory of 15 marine resources was updated and published (reporting year 2018), a new round of updates is in progress.
- SEAFO: Two rounds of updates have been published for 5 marine resources (reporting years 2019 and 2021).
- SPRFMO: As recent partners to FIRMS, an inventory of 4 marine resources were produced and 4 factsheets were published (reporting years 2017, 2018, 2019).
- SIOFA: As a recent partner to FIRMS, an initial inventory was drafted with 8 marine resources.
- NPFC (FIRMS Observer): 8 marine resource case studies were drafted as example of NPFC-FIRMS stocks inventory.

FAO and its Article VI RFBs:

- WECAFC: The inventory was updated with 27 marine resources and 29 factsheets were published (reporting year = 2016, 2019).
- CECAF: The SSC8 (October 2018) provided new status updates for 102 stocks, of which an update of 34 marine resources was conducted, awaiting clearance before publication.
- RECOFI: following the 11th RECOFI Working Group on Fisheries Management's (WGFM11) agreement to update RECOFI-FIRMS National Focal points list and RECOFI-FIRMS inventory, a data workshop was held online in August 2021. The draft inventory of 92 factsheets for 7 of its member states (Bahrain, Iran, Iraq,

Kuwait, Oman, Qatar, Saudi Arabia) was reviewed by the Secretariat and updated with assessment information (Appendix 6 page 14 from the report of the Eleventh meeting of the RECOFI Working Group on Fisheries Management 2019) <http://www.fao.org/3/ca4304en/CA4304EN.pdf>. The proposed updates are pending review and clearance of the RECOFI Member States.

- SWIOFC: 33 marine resources have been updated (reporting year 2019), with 7 new entries added to the inventory, awaiting clearance for final publication.

1.2 Fishery inventories

- CCAMLR: 4 fisheries have been updated and are awaiting final clearance before publication (reporting year 2021).
- FCWC: An inventory of 38 fisheries were built and 22 factsheets were published (reporting year 2020) amongst the 5 member states (Benin, Cote d'Ivoire, Ghana, Nigeria, Togo), with the others in progress.
- NASCO: An update for the North Atlantic Salmon Fisheries was submitted; it is awaiting the FIRMS secretariat to process it and upload into the system.
- NEAFC: 7 fishery factsheets were updated and published for reporting year 2021.
- SEAFDEC: Results study on the Stock and Risk Assessment of Kawakawa and Longtail tuna (rep. year 2021, ref. year 2018) was submitted for possible upload in the system. The study overlaps fishery resources monitored by IOTC, the evaluation is in progress.
- SEAFO: Two rounds of updates have been published for 3 fisheries for the reporting years 2019 and 2021.
- SPRFMO: An inventory of 4 fisheries was produced and published (reporting year 2018, 2019).
- IATTC: the Tunas and billfishes fishery was updated and published for the reporting year 2020.
- SIOFA: As a recent partner to FIRMS, an initial inventory was drafted with 9 fisheries.
- NPFC (FIRMS Observer): 8 fishery case studies were drafted as example of NPFC-FIRMS fisheries inventory.

FAO and its Article 6 RFBs:

- WECAFC: Of the total of 31 published factsheets, 15 new factsheets have been published during the intersession, which were compiled for 4 countries (Dominica, French Guiana, Saint Kitts and Nevis and Saint Lucia). The focus on this inventory was on the target species Queen Conch, Spiny Lobster and Flyingfish.
- No CECAF fisheries updated, however see updates for FCWC under the new collection "CECAF-FCWC Fisheries Reports" with fisheries for the Gulf of Guinea.
- RECOFI: Similar to the marine resources inventory discussed at the virtual data workshop held in August 2021, the published list of 68 fisheries for the 4 member states (Bahrain, Iran, Oman, Qatar) was presented for review and a draft inventory for the other member states is in progress. UAE submitted for the first time their inventory of national stocks and fisheries in October 2021.

1.3 Indicators on FIRMS Marine Resource and Fishery fact sheets

The following tables and graphs show the total number of units inventoried (**1527** marine resources and **796** fisheries) and the trends regarding the production of fact sheets per partners vs. reporting years.

The FIRMS web site is currently disseminating fact sheets as follows: **1127** current records (i.e., primary observations: 836 marine resources and 291 fisheries) and **928** historical records (i.e., secondary observations: 854 marine resources and 74 fisheries)¹. During the intersession, 306 fact sheets were published (257 marine resources, 49 fisheries). In addition, a total of 84 factsheets are still in a draft stage and are awaiting clearance for publishing by their owner (CCAMLR 8, CECAF 35, GFCM 5, SWIOFC 36).

Regarding the Fishery factsheets, Figure 3a shows the total number of inventoried fisheries, many of which have not been published in particular in WECAFC and to a lesser extent in CECAF. It is proposed to the FIRMS partners to publish the identities of these inventoried fisheries in FIRMS and GRSF. Figure 3b shows the distribution of published fishery fact sheets according to the main Inventory Approach adopted by the various partners (Fishing activity, Fishery resource, Fishery Management).

¹ These figures include case studies not included in the following summary tables and graphs. Specifically the following fact sheets: 3 fisheries BNP (FAO Big Number Project); 2 fisheries DG Mare; and 5 in approved status (not published) BOBLME project marine resource (1) and fisheries (4)

Table 1: FIRMS Marine Resources and Fisheries inventoried units², Reference Observations³ (RO) and number of published fact sheets⁴. (Updated 30th September 2021)

Partner	Inventoried units	Reference Observations		Fact Sheets by Reporting Year									
		Resources	Fisheries	≤ 2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CCAMLR	19	19		18			19						
	19		19	25			19						
CCSBT	1	1									1	1	
FAO	60	22		22									
	41		41	41									
CECAF	287	287		132				96					
	289		198	77	4								
RECOFI	157												
	68		68	68									
SWIOFC	144	144		117									
WECAFC	296	279		48		1		4			27		
	278		52					19	2		3	12	
FCWC	38		22									22	
GFCM	135	80		71		5	31						
IATTC	23	36										8	
	16		1									1	
ICCAT	29	29		18	4	5	3	6	2	2	2		
ICES	327	320		454	1	1	13	62	110	56	105	45	
IOTC	15	15		7				15		15			
NAFO	18	18		78	11	8	7	3	7	7			
	5		5	10	5	2	1						
NASCO	7		1		1			1					
NEAFC	11		11	8					6	7	1		7
SEAFDEC	14		14	7									
SEAFO	12	12		12		5	2	5		5	5		4
	6		3	1							3		3
SPRFMO	4	4							1	2	1		
	4		4							2	2		
Total	2323	1262	435	1214	26	27	95	211	128	96	150	89	14
		1697		2050									

Notes

- IATTC and CCSBT: as per these partners' policies, historical observations are hidden, only the latest reports are available in internet.
- Figures for BNP (FAO Big Number Project) (3 fisheries), DG Mare (2 fisheries), and BOBLME project (1 marine resource and 4 fisheries) are not reported due to their nature of case study or because of their initial status (BOBLME).

² For each Partner, the first row represents the number of Marine Resources and the second row the number of Fisheries; the "inventoried units" are the total number listed in Excel sources (excluding headers and groups). When source inventoried units are validated, one "inventory record" is created in the FIRMS database for each inventories unit.

³ Reference Observations are "inventoried units" loaded in the FIRMS system against the "inventory records", with all the stable/long lived descriptive metadata

⁴ Fact Sheets are inventoried units for which state and trend reports or other qualitative and quantitative information have been loaded in the system. The most recent fact sheet for a given inventoried unit is the primary observation, while older fact sheets have a status of secondary observation, which according to partners' policy remain or not in the public domain.

Table 2: Fact sheets update turn-over expressed in percentage as ratio of number of fact sheets on total number of Reference Observation (RefObs). (Updated 30th September 2021)

Partner	Inventoried units	Reference Observations		Fact Sheets by Reporting Year									
		Resources	Fisheries	≤ 2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CCAMLR	19	19		95			100						
	19		19	132			100						
CCSBT	1	1									100	100	
FAO	60	22		100									
	41		41	100									
CECAF	287	287		46				33					
	289		198	39	2								
RECOFI	157												
	68		68	100									
SWIOFC	144	144		81									
WECAFC	296	279		17		0		1			10		
	278		52					37	4		6	23	
FCWC	38		22										100
GFCM	135	80		89		6	39						
IATTC	23	36											22
	16		1										100
ICCAT	29	29		62	14	17	10	21	7	7	7		
ICES	327	320		142	0	0	4	19	34	18	33	14	
IOTC	15	15		47				100		100			
NAFO	18	18		433	61	44	39	17	39	39			
	5		5	200	100	40	20						
NASCO	7		1		100			100					
NEAFC	11		11	73						55	64	9	64
SEAFDEC	14		14	50									
SEAFO	12	12		100		42	17	42		42	42		33
	6		3	33								100	100
SPRFMO	4	4								25	50	25	
	4		4								50	50	

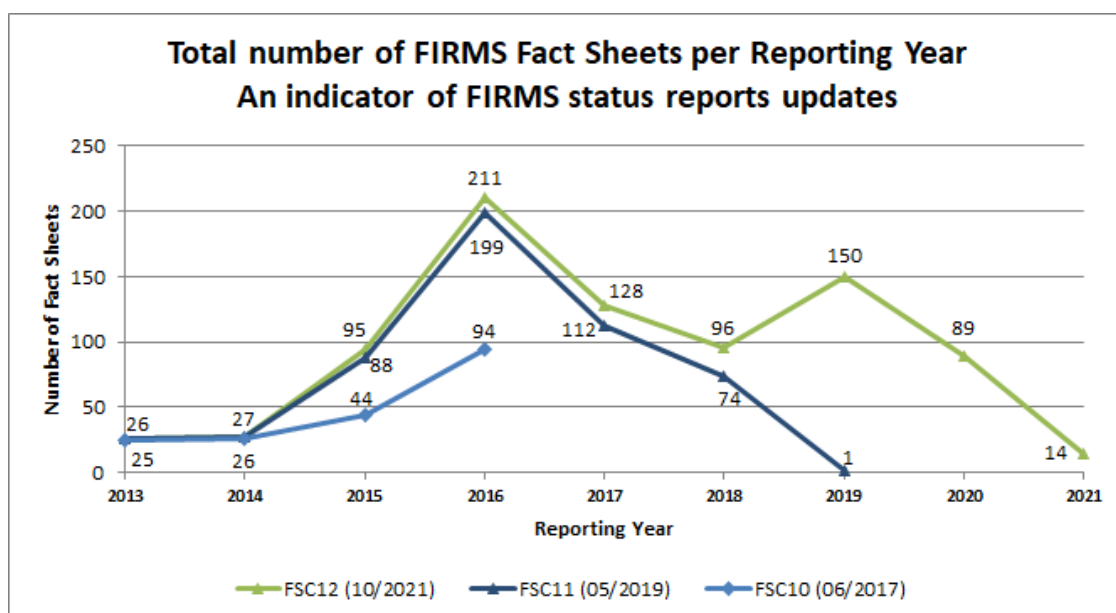


Figure 1: Total number of fact sheets per Reporting Year.

FIRMS Partners Number of Resources Inventoried

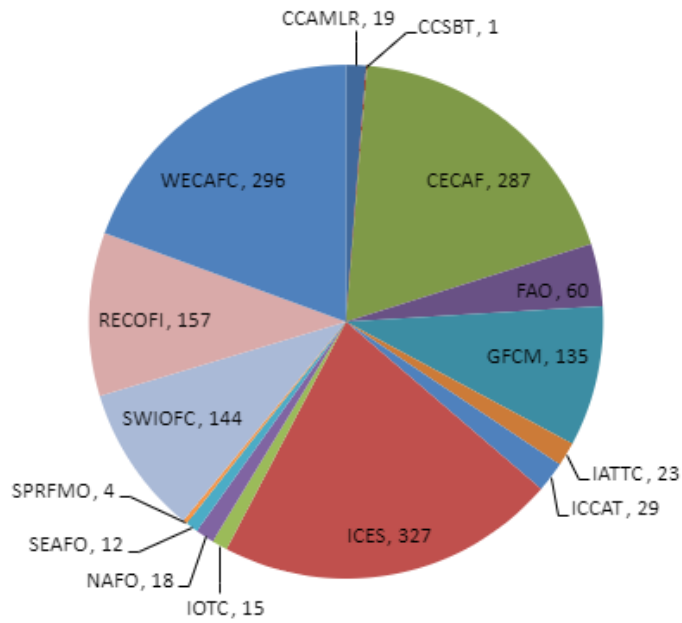


Figure 2: FIRMS Partners Number of Resources Inventoried

FIRMS Partners Number of Fisheries Inventoried

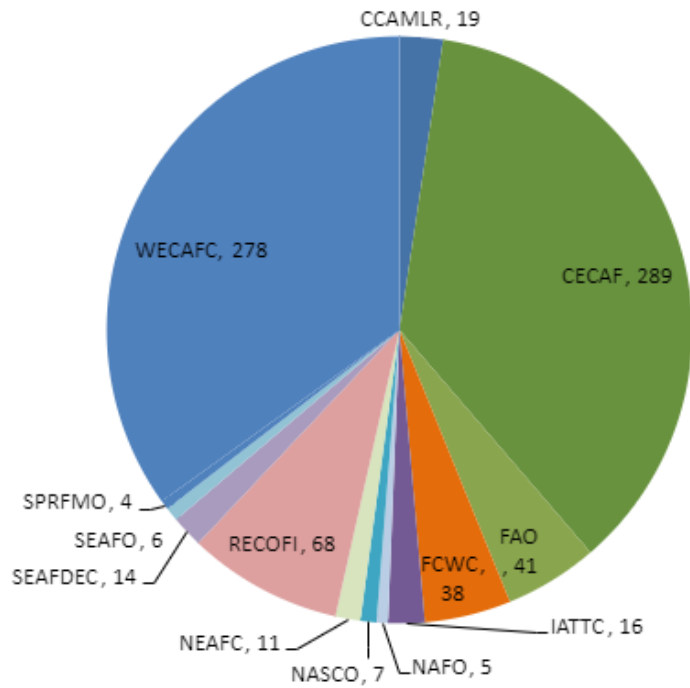
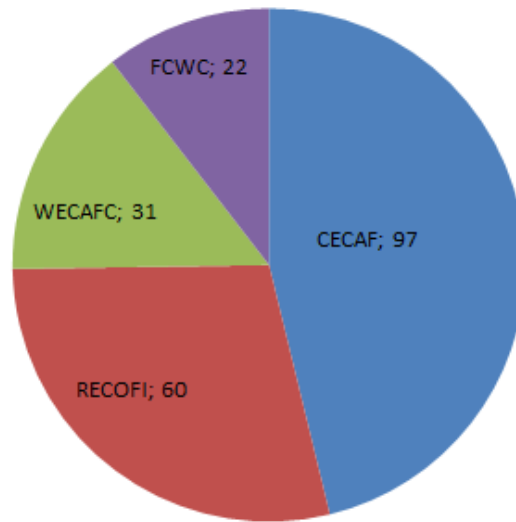
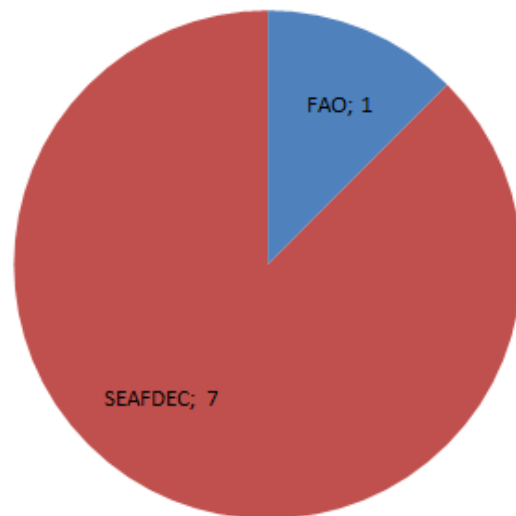


Figure 3a: FIRMS Partners Number of Fisheries Inventoried

FIRMS Partners Number of Published Fishery Factsheets from a Fishing Activity Perspective



FIRMS Partners Number of Published Fishery Factsheets from a Fishery Resource Perspective



FIRMS Partners Number of Published Fishery Factsheets from a Jurisdictional and Management Unit Perspective

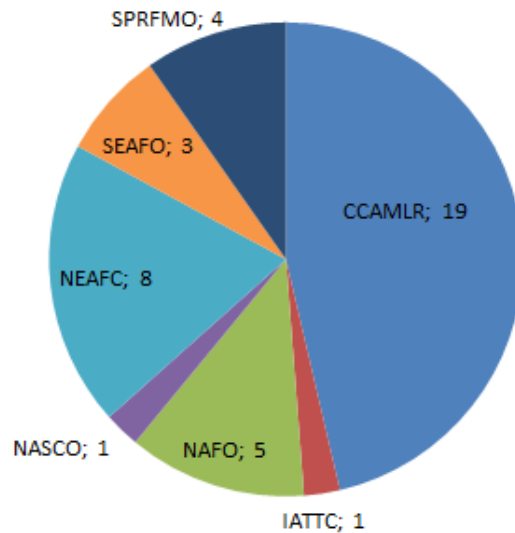


Figure 3b: FIRMS partners number of published fishery factsheets per main Approach (Fishing activity, Fishery resource, Fishery management)

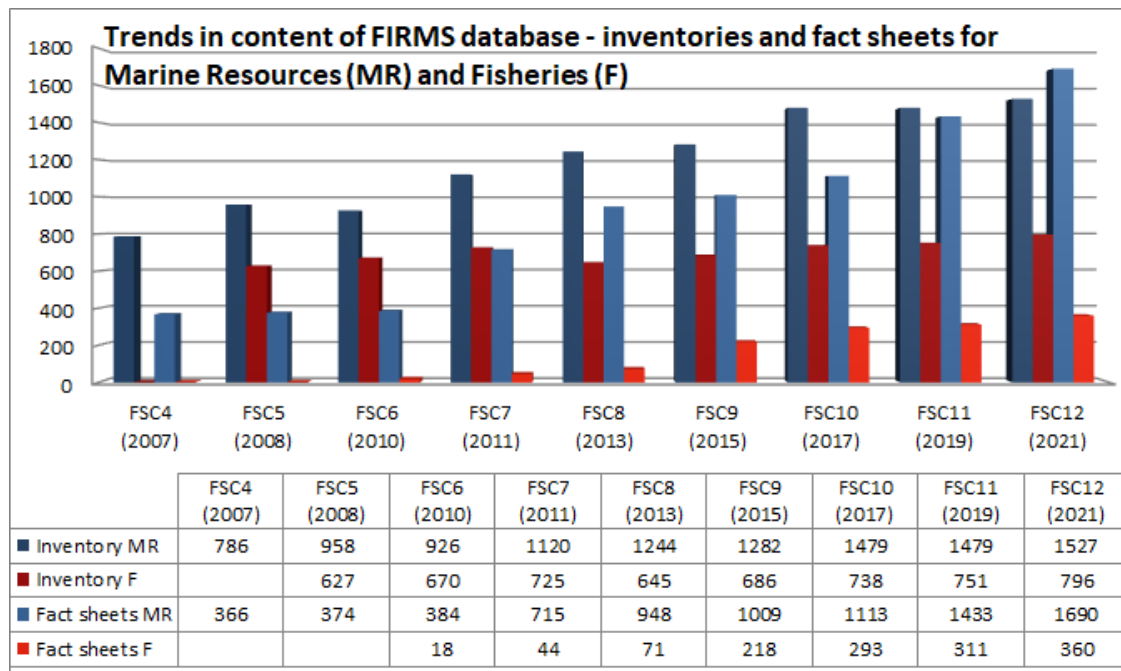


Figure 4: Trends in content of FIRMS database – inventories and fact sheets for Marine Resources (MR) and Fisheries (F)

Figure 4 depicts the growing trend across FSCs of inventoried marine resources and fisheries, and fact sheets published (i.e., status and trends reports) for these inventories. Since the FIRMS launch, the total effort to produce status and trends reports can be calculated as the total number of primary (i.e., “current”) and secondary

(i.e., “past”) observations for both Marine Resource (1690 observations) and Fisheries (360 observations).

2. DEVELOPMENT OF APPLICATIONS

2.1 FIRMS website and related modules

The FIRMS website is currently articulating the following modules:

- Four FIGIS modules for the FIRMS website pages and fact sheets: Topic, Organization, Marine Resource, Fishery
- Web application:
 - Workflow Management System (WMS), including i) on-line Content Management System (CMS) and ii) Word/Excel-to-XML converter tools used to streamline at Partner and Secretariat level the compilation of documents from their native format (Word or Excel) into the XML format for the web dissemination.
 - Dynamic mapping component including: i) stocks geographic extents with species distributions and competence areas and ii) Stocks and Fisheries map viewer;
 - Web services for identity data and summary indicators of stocks and fisheries.
 - New web services provided by the GRSF (Global Record of Stocks and Fisheries), for example to assign unique identifiers (UUIDs).

Regarding application developments, the efforts were directed during the intersession for the migration of the FIGIS factsheet module towards the new FAO corporate reference data system EBX5. FIRMS controlled terms have already been migrated to the new system and further developments are in progress for the new FIRMS website, data model and workflow, and the underlying web services.

Delayed regarding past FSC decisions: The FIRMS website including layout and supporting engine are expected to undergo a major upgrade, taking into account the directions approved by FSC10. This implementation however had to be delayed pending the ongoing upgrade and migration to new technologies.

Marine Resource module

This module did not get any major layout changes.

Delayed regarding past FSC decisions: is still pending the implementation of the alternative layout for no longer monitored marine resources (Monitoring period), and the display of partners’ logo in the fact sheets.

New controlled terms and definitions (e.g., Jurisdictional distribution, Maritime Area, Management Unit) are in progress and will be added in the module once adopted.

Fishery module

This module did not get any major layout changes.

Delayed regarding past FSC decisions: the alternative layout for closed fisheries (Fishery life cycle) and the display of partners’ logo in the fact sheets have not been implemented yet.

Web applications

Workflow Management System (WMS)

During the intersessional period, the Excel/Word-to-XML converter tool was further configured for the ICES-to-FIRMS semi-automated procedure. Specifically, the converter tool is now able to read the ICES web services and extract time series of data from different ICES advices for each fish stock.

Dynamic mapping component

No major developments were carried out in this intersession beyond GIS datasets maintenance and routine improvements. Next developments include the handling in the map viewer of the new descriptors on biological stock, assessment units, and management units, and related filter options.

FIRMS data coverage maps

No changes made to the underlying application.

2.2 Global Record of Stocks and Fisheries (GRSF)

In the context of the extended FIRMS partnership in support to SDG14.4.1 monitoring and for developing strategic knowledge products, a Letter of Agreement (LoA) was signed with FORTH (a collaborative Partner) to secure quality services through a Service Level Agreement, and to accelerate some developments required by FAO for an efficient support to FIRMS partnership objectives, in particular for SDG14.4.1 reporting and monitoring. The following outputs were delivered: upgrading of the Knowledge Base of the GRSF by addition of new services and interfaces in support to GRSF data analysis including synoptic products, APIs and Competency Queries, a facility for upload of new records from the SDG14.4.1 questionnaire, and GRSF identifiers enrichment in support to traceability and certification schemes.

The GRSF take benefits also from the Blue-Cloud project, particularly within the Blue-Cloud demonstrator “Fish, a matter of scales” with the overall objective to “Expand the GRSF with more data sources in support to status assessments of stocks and fisheries (e.g., WECAFC or RECOFI Regional Databases), include data from the Fisheries Atlas (e.g., FishStat, Tuna Atlas) and from other EOSC domains such as fish food composition from the recently funded FNS-Cloud project”.

2.3 Global Tuna Atlas

The upload/harmonization/publishing workflow and the map viewer were further consolidated and developed thanks to the collaboration between IRD and FAO.

3. STATUS OF FIRMS WEBSITE

This section is a concluding statement on the status of the FIRMS website, which highlights what is done and working well, what is not completed, and what should be started. It should be pointed out that several decisions from previous FSC sessions have been implemented regarding the new user interface for stocks and fisheries, while the renewal of the whole infrastructure is in progress along the upgrade and migration under FAO.org offering new features and layouts. (See full status of implementation of FSC decisions in Annex 1, 2 and 3.)

3.1 Database content

During the intersessional period, some new Marine Resource inventory records have been stored in the FIRMS database and the related fact sheets have been produced and disseminated.

FIRMS is presently disseminating state and trends information through 1690 published fact sheets (836 primary and 854 secondary observations).

Concerning the Fishery module, FIRMS is presently disseminating information through 365 fact sheets (291 primary and 74 secondary observations).

The above figure 4 summarizes the total number of units inventoried (**1527** marine resources and **796** fisheries) and the trends regarding the production of fact sheets per partners vs. reporting years.

It should be noted that some partners' policies lead them to unpublish fact sheets in order to avoid the dissemination of historical, or (when the history consists of only one report) of outdated information. For this reason, the overall number of published fact sheets can show a fluctuating trend over the years. One of the most obvious consequence of such policies is the loss of any information related to those marine resources or fisheries at FIRMS public site level. However, most of this information still resides in the FIRMS database with an unpublished status.

Following FSC9 endorsement on minimum data requirement, catch time series has been gradually added by Partners in their marine resource fact sheets. At this stage, about 43% of the published stocks fact sheets have Catch or Landing data. Additionally, fishery reports/fact sheets also contain Cath and Landings data and are in general connected to Stocks. To ensure all partners easily provide catch information, a different workflow is required including new templates for data submission. The coming FIRMS website migration and upgrade is the opportunity for such improvement.

3.2 Website shell

The main pages of the FIRMS web site are in three languages, English, French and Spanish. The system is also configured to support fact sheets in the three languages. Since FSC10, the FIRMS website shell now offers a new World map in the FIRMS home page and links to the Stocks and Fisheries map viewer.

The About FIRMS page is up to date with new maps produced to better display the coverage of the FIRMS partners including the recent incoming ones (FCWC, SIOFA, SPRFMO), actualized content, and all relevant links to the essential documentation of the FIRMS partnership.

3.3 Marine Resource and Fishery dissemination modules

The Traffic light approach is today active for the published fact sheets of selected partners (i.e., IATTC, ICCAT, ICES, NAFO, and SEAFO). Here, a traffic light icon complements the state and trend description of the marine resources, providing a visual indication: red for overfished and green for not overfished. More information can be found in the Information Management Policy (IMP) document <http://www.fao.org/3/ax530e/ax530e.pdf>.

3.4 Mapping module

- The mapping module is integrated within FIGIS, and includes following features: The FIRMS “Stocks and Fisheries Map viewer” was published by FSC10 as part of the FIRMS website (<http://firms.fao.org/firms/stocks-fisheries-map-viewer>). With this new interface, users are able to access information on marine resources and fisheries through a global map, browsing icons by area. Stock status and fishing activities information, as well as links to source fact sheets, are provided in pop-ups. In addition, a free text search tool enables quick access to FIRMS data with export facilities. The viewer can be also embedded in partners’ websites with focus on selected areas of competence. The Maps viewer is compatible with mobile and tablet devices;
- The FIRMS fisheries/marine resources data layer displayed in the map viewer are regularly updated through a semi-automated data processing flow, and available for retrieval through the FAO GeoNetwork (<https://www.fao.org/fishery/geonetwork>); and
- Additional layers can be potentially exploited in the FIRMS Stocks & Fisheries map viewer. For example, ICES functional units for Sandeel and Norway lobster, and CCAMLR areas. Similar to ICCAT or IATTC such layers would be also displayed in the CCAMLR or ICES fact sheets.

3.5 Services offered by the FIGIS infrastructure to the Partners

Following services are regularly available:

- Marine Resource or Fishery fact sheets can be returned in HTML, or in XML format. The later enables a partner to reformat it for another purpose (e.g., as PDF to include as part of a paper report, or as HTML as part of a partner website);
- State and Trend Summaries can be downloaded as Excel files for further analysis
- Web-services are available enabling Partner’s websites or systems to query and retrieve specific subsets of factsheets given an area or a species.
- Two new web services were developed to retrieve selected information from the Marine Resource and Fishery module with focus on state and trend indicators and on key components of fisheries (target species, fishing gear type etc.). These services are also functional for the update of the FIRMS stocks and fisheries map viewer and for the ICES-to-FIRMS semi-automated fact sheets production workflow.

- Geospatial web services are also available for embedding maps in partners' websites including a customizable version of the new Stocks and Fisheries map viewer.
- UUIDs are returned with a dedicated API available to the public for all published FIRMS stocks and fisheries records in the GRSF.
- The GRSF Admin is accessible to FIRMS partners through a Catalogue service for review of GRSF content.
- The Global Tuna Atlas is ready to publish with a Maps viewer, a Metadata catalogue, and DOIs

3.6 Web trends statistics

The detailed and illustrated analysis of web trends statistics during years 2007-2020 is available in document FIRMS FSC12/2021/Inf.7⁵. Here follow some conclusions based on the above-mentioned document. The analysis conducted is based on the web trends provided by Google Analytics and refers to the period January 2007 - December 2020.

Slightly accelerating growth in web trends: there is a constant increase in overall FIRMS usage, indicated by an upward trend in 2019-2020, compared with the previous increase in 2015-2017.

Main pathways to access FIRMS equally distributed between search engines (43%, mostly Google) and referral sites (36%, notably Fao.org, Fishbase, and Wikipedia) , and to lesser extent direct traffic (21%).

The analysis of bounce rate suggests that fact sheets continue to trigger interest as authoritative sources of information on status of fishery resources: bounce rate spans from 60% for the map viewer, to less than 50% for the home page and for the search interfaces, and down to around 30% for the fisheries browser. The bounce rate is more variable for fact sheets with higher and lower values.

A growing trend for users with mobiles vs tablets and desktops, reaching 17% of the total sessions according to an analysis for the period 2016-2020. Instead, the use of desktop (81%) and tablet (2.5%) devices have slightly decreased in comparison with the previous analysis made for FSC11. Mobiles will be further supported in the coming FIRMS migration.

Visitors come from all over the world, however the highest percentages is by US, Italy and UK.

Preferred pages are the regional syntheses, the fishery and marine resource search pages, and concepts and definitions. A growing trend is observed also for the map viewer.

Despite the main pages of the site are available in three languages, the English is by far the most used.

These figures together with the analysis made for the previous FSC bring to the following considerations:

⁵ Doc. FIRMS FSC12/2021/Inf.7 is accessible at https://www.fao.org/fileadmin/user_upload/faoweb/FI_Meetings/FIRMS/FSC12/Inf.7e.pdf

- users are interested by an authoritative source of information on the state of resources;
- in spite of the observed growth of mobile and tablets vs. desktop, these figures are not aligned yet along the overall trend of mobile usages vs. desktop (about 50% or even more), this suggests the need of an improved compatibility of FIRMS website for mobile devices so as to be better ranked by Google.
- the preliminary assessment on key words suggests that more efforts should be allocated for the search engine optimization, possibly concurrently with the new fact sheets module developments.;
- the ongoing migration of FIRMS under FAO.org should result in an increase of the overall web trends.
- although global /regional syntheses respond to users' interest the developed thematic pages on Tuna or Deep seas did not grow as expected;
- the referral traffic is still confirmed as an important source of accessing FIRMS and the addition of specific links, not only the home page but also the fact sheets, from partners websites would bring additional traffic and consequently the visibility to partners' reports;
- the high referral traffic is also due to the web site cross-referencing, e.g., the addition of relevant FIRMS fact sheets (i.e., country related ones) to the FACP fact sheets contribute to raise awareness of FIRMS as authoritative source of information; FishBase and Wikipedia are also contributing as important sources of referral traffic);
- generally, a need to proceed with a stronger communication plan agreed upon and supported by all FIRMS partners.

4. FIRMS TECHNICAL WORKING GROUP (TWG) MEETINGS

Three TWG activities were held during the intersessional period:

- the TWG on Tuna Atlas was led by a core group and involved five t-RFMOs through online meetings (22, 25 and 26 February 2021)
- the TWG on GRSF was led by a core group and involved X FIRMS Partners (30 September 2021 and 1 October 2021).
- The TWG on terminologies and definitions consisted of an on-line survey.

The meeting documents FIRMS FSC12/2021/3 "Report of the TWG7 on Tuna Atlas" and FSC12/2021/4 "Report of the TWG7 on GRSF", and FIRMS FSC12/2021/5 "Report of the FIRMS Consultation on Terminology" summarize the main themes and recommendations which were presented and discussed during the two sessions.

The information documents FIRMS FSC12/2021/Inf.8 and FIRMS FSC12/2021/Inf.9 contain the presentation delivered at the GRSF TWG meeting.

5. TRAINING OR SKILLS DEVELOPMENT

A] Regular support to FIRMS Partners: the FIRMS Secretariat ensured a continuing remote technical support to partners in their information contributions to FIRMS, or in the development of their inventories or reporting templates.

The turn-over of focal points is indeed a factor requiring support from the Secretariat, and during the intersession, focussed assistance for data submission included liaising with CCAMLR, CECAF, GFCM, FCWC, ICCAT, ICES, IOTC, NASCO, NEAFC,

RECOFI, SEAFO, SEAFDEC, SPRFMO, SWIOFC, and WECAFC. IATTC and CCSBT submitted their updates in completely autonomy.

B] Specific focused capacity building projects were led with three RFBs (WECAFC, FCWC, RECOFI), with the common overarching objective to develop their capacity concurrently with that of their Member States towards a streamlined reporting from statistical data collection through to a regional database of catch and effort closely harmonized with the inventory of fisheries, eventually used to disseminate fisheries status and trends.

WECAFC - Joint capacity development work was conducted for the Western Central Atlantic Fishery Commission (WECAFC), whereby the FIRMS Secretariat contributed to the 2nd Meeting of the WECAFC-CRFM-OSPESCA Fisheries Data and Statistics Working Group (FDS-WG) convened virtually in two sessions in mid-October 2020 and May 2021. The main outputs of the FDS-WG include the Data Collection Reference Framework (DCRF) to be used for the collection and transmission of fisheries statistics data to the WECAFC Regional Database. Facilitation of the update of the WECAFC-FIRMS inventories of stocks and fisheries continued virtually in 2020-2021, through liaising with regional and national representatives.

FCWC - Following the FCWC signature of the FIRMS Partnership (FSC11, May 2019), capacity building activities were organized in order to enable FIRMS and its member countries to initiate their fisheries inventory contributions to FIRMS. An initial FIRMS and fishery statistics training for FCWC staff was held at FAO Headquarters in Rome in early February 2020, followed – due to the pandemic - by further engagement through online sessions for data harmonization of the national FIRMS fisheries inventories with the FCWC Regional Database of catch and effort of small-scale fisheries. The exercise concluded with the FIRMS and fishery statistics capacity development data workshop held virtually in October 2020. In May-June 2021, six capacity building Data Collection and Management Workshops were organised virtually for each FCWC Member State with the goal to finalize the pending inventories and to expand the FCWC regional database to industrial fisheries, under a Technical Cooperation Project (TCP/RAF/3709) funded by FAO Regional Office for Africa for FCWC. The outcome of these activities is a continued collaboration expected to strengthen the knowledge and expertise within FCWC member states in terms of fisheries data collection systems required for successful data reporting at national, regional and global level. Moreover, it is aimed to achieve a streamlined workflow for the FCWC regional fisheries database, and to provide support to CECAF – Fishery Committee for the Eastern Central Atlantic and its working groups. As a result of these capacity building activities, an inventory of 38 fisheries were built with 22 factsheets currently published (reporting year 2020) amongst the 5 member states, and the others in progress. The FCWC Regional Database on small scale fisheries is operational and currently hosts time series of data for the recent year (2020, 2019, 2018) and for most of the FCWC Member States. Its structure is ready for reception of industrial fisheries statistics on catch and effort.

RECOFI – Following the 10th session of the RECOFI Commission (July 2019), and in close collaboration with the RECOFI Secretariat, a “RECOFI-FIRMS Data Call Workshop: updating stocks and fisheries inventories” was virtually conducted on the 3-4 August 2021. The focus was on the update of the stocks and fisheries inventories and a brief training on the FIRMS inventory templates. Nominations for regional and national focal points for the region were also addressed. This was part of a series of three workshops for the region, the others being the “Minimum Data Reporting Regional Database Workshop” and “An introduction to SDG 14.4.1 and its regional application”. Recommendations of these three workshops were conveyed at the

RECOFI WGFM12 who endorsed the propositions with comments and forwarded to the RECOFI Commission.

C] Awareness raising and training to prepare the accession of new RFBs to the FIRMS Membership.

NPFC - Following an introduction of FIRMS to the NPFC Scientific Committee (Nov. 2020), draft inventories of stocks and fisheries for the North Pacific were prepared. The NPFC Secretariat is expected to present the material and further discuss the possible FIRMS Partnership at the next NPFC SC session (Dec. 2021).

CTMFM – Few email exchanges and on-line meetings were conducted in September and October 2021 to help CTMFM and its two Member countries (Argentina and Uruguay) to better understand the Partnership requirements and type of information contributions.

The list of past training sessions is available in FIRMS website – members' area at <http://firms.fao.org/firms/training/en> (Login required).

6. PROMOTIONAL AND OUTREACH ACTIVITIES – NEW PARTNERS

The promotional and outreach effort proceeded according to FSC8/FSC9/FSC10/FSC11 recommendations to work towards increasing the number of partners and promoting FIRMS through partner's websites.

During the intersession, FIRMS had intense outreach activity and overall attended about 25 meetings including RFB statutory meetings, conferences, and project meetings. See Annex 5 for the details of the activities carried out.

Following FSC11 decision, the GRSF was publicly released in November 2019 at the FAO International Symposium on Fisheries Sustainability held at FAO headquarters in Rome. Since then, numerous outreach events took place including the Blue-Cloud webinar on Fisheries Data Management, a video published in YouTube and two TCom meetings held in 2020. The aim of these webinars is to relay the latest developments in the GRSF as well as to inform the general public about the initiative. As per FSC11 decisions, the FIRMS partners were informed of the UUIDs addition. Some partners are considering the addition of the UUIDs in their databases.

New Partners:

Following the FSC10 and FSC11 where emphasis was brought on the expansion of the partnership, the FIRMS Secretariat reached out to RFBs through RSN7 and RSN8 and sent invitations to RFBs to join FIRMS as new members. Invitations were sent to eight RFBs: CPPS, CTMFM, FCWC, NAMMCO, NPFC, SIOFA, SPRFMO and WCPFC/SPC. This outreach resulted in:

- Two new RFBs (SPRFMO and FCWC) signing the FIRMS Partnerships agreement at FSC11;
- One RFB signing the FIRMS Partnership during the intersessional period preceding FSC11 (SIOFA);
- Two RFBs responding positively (CTMFM, NPFC), have proposed the FIRMS membership at their statutory meetings and discussions are ongoing with inventories in progress for NPFC; and

- The Collaborative Arrangement, a new FIRMS instrument endorsed at FSC11 (May 2019), led to the signatures of the following institutions:
 - Foundation for Research and Technology-Hellas (FORTH) - Oct. 2019
 - Institut de Recherche pour le Développement (IRD) - Apr. 2020
 - Sustainable Fisheries Partnerships (SFP) - Oct. 2019

Functional to FIRMS is also the signed MoU between FAO and National Research Council of Italy - Institute for Computer Science and Technologies (CNR-INSTI) for iMarine in support to sustainable fisheries (Nov. 2019).

7. SECRETARIAT RESOURCES IN SUPPORT TO FIRMS

Similar to previous reports, the overall effort spent by the FIRMS Secretariat on various aspects of FIRMS activities has been monitored during the 29 months of the intersession (May 2019 – Sept 2021), and the corresponding cost is compiled by major activity in Table 5. References to the previous intersessional periods are provided in Table 6.

The human effort and financial figures for this intersession reflect the particular characteristics of this 2019-21 intersession: following the major efforts of the previous intersession 2017-19 in increasing the partnership and adapting the FIRMS framework, this intersession focused effort on the new investments in Global Tuna Atlas and GRSF along with the increased amount of data to manage and the capacity building support to new partners. This intersession also occurred in the context of the pandemic which reduced significantly the number of travels and allowed to reallocate this budget partly in more effort for an increasing number of meetings on-line, and partly in LOAs where the effort is assigned to non-FAO actors. In the context of the pandemic, resources from projects usually mostly directed to support travels decreased but were maintained as part of the Blue-Cloud project supporting investments in software. Importantly also, the collaborative partners have contributed their in-kind effort to the new objectives notably Tuna Atlas, and GRSF.

The Total estimated budget dedicated to FIRMS in the 29 months of the intersession (May 2019 – September 2021) amounts to 492,843 USD, for an equivalent of 203,935 USD when normalized to a yearly budget. If we except the massive investment made in 2005-2007 for developing the foundations of FIRMS, this budget is the highest of the time series since January 2007 (FSC6) representing a general growth of 6% over the previous period. However, for the reasons explained above, it is the investment in Human resources funded from the RP which has recorded a major increase of 31% with 435,500 USD (of which 47,500 of LOAs) over the 29 months (or 181,000 USD when normalized over a one-year period). This increase reaches 34% if also integrating the project funded human resources.

The total time (along the 29 months) invested in FAO human resources (excluding LOAs and partners in-kind contributions) across RP and Trust Funds amounts to 5.4 man-years for an equivalent of \$423,000. Normalised to a 1-year period, we obtain 2.25 man-year effort for an equivalent of \$175,000, considerably above in respect of the previous intersessional period 2017-2019 (1.37 man-years for an equivalent of \$ 145,500).

Comparison to the past intersessional periods tells that the costs of this intersession has grown due to the new FIRMS products, specifically the Tuna Atlas and the GRSF

including the work towards the addition of national SDG14.4.1 data. While the usual human resource activities (RP+TF) are within the average fluctuations between 1.33 man-year (a low in 2007-2008) and 2-man years (highs in 2008-2009 and 2013–2015) for corresponding budgets between 120,000 and 150,000 USD per year (RP+TF).

The distribution of costs of human effort by main type of activities are as follows:

- 71% of the effort for information contributions (against 61% in 2017-2019 and 2016-2017, 75% in 2014-2015, 61% in 2011-2013, 67% in 2010-2011, 58% in 2009, 30% in 2007/8 and 44% in 2006): i.e., FAO inputs or assistance to Partners inputs including through training, and regular maintenance of FIRMS infrastructure, and the new activities on data analysis for FIRMS database, Tuna Atlas and GRSF;
- 25% of the effort for software design and development (against 18% in 2017-2019, 33% in 2016-2017, 17% in 2013-2015, 33% in 2011-2013, 27% in 2010-2011, 34% in 2009, 44% in 2007/8 and 73% in 2006): the recent growth is essentially due to the investment dedicated to the developments of Tuna Atlas and GRSF (19%), while the other areas of software improvement or maintenance mentioned in paragraph 2 required a relatively low share of effort (6%);
- 4% of the effort for management and marketing (against 22% in 2017-2019, 6% in 2016-2017, 8% in 2014-2015, 7% in 2011-2013, 6% in 2010-2011, 8% in 2009, 23% in 2007/8 and 13% in 2006).

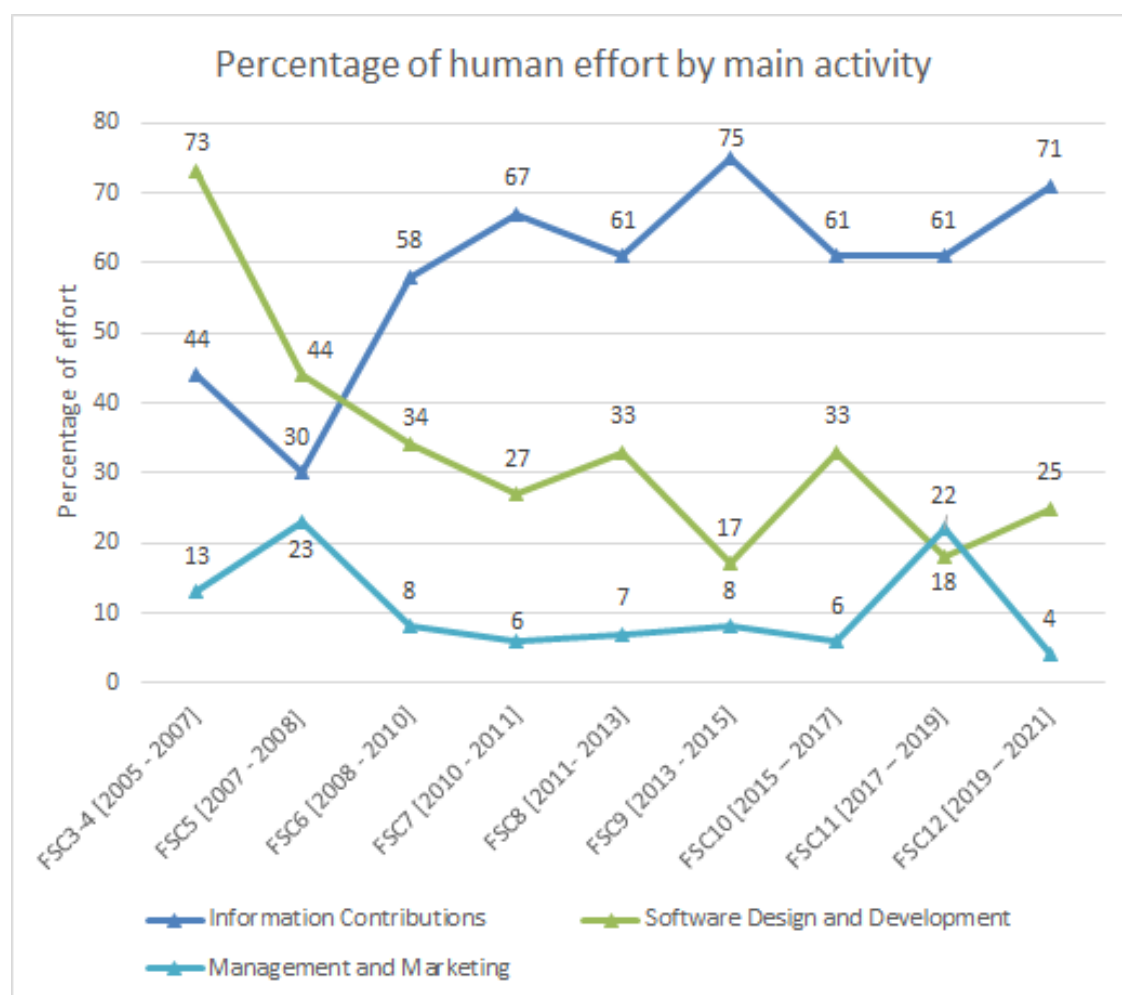


Figure 5: Distribution of costs of human effort by main type of activity.

It should also be noted the in-kind contribution of NOAA with the part-time assignment of Ms. Nancie Cummings as FIRMS Chairperson and coordinator of the TWG on GRSF and her very active contribution to the regional WECAFC-FIRMS project. As well the in-kind contribution of IOTC with the very active role of Mr. Fabio Fiorellatto as coordinator of the Tuna Atlas TWG.

Other in-kind contributions are regularly provided by the Collaborative Partners (IRD, FORTH, SFP), specifically for the Tuna Atlas and the GRSF. As specified in the Annex 2 of their arrangements, the effort is both for the maintenance/upgrade of the applications and for content provision and updates. UW, as mentioned in their Letter of Intent, is also contributing to the GRSF with provision of data and time in the validation process.

In addition:

Trust Fund contribution to this effort during the 29 months period was mainly consisting of:

- EU Blue-Cloud project which funded 35,000 USD of human resources for the development of software
- The CLME+ project with 4000 USD of travel for a workshop in Nov. 2019, and the FAO TCP for travels of FCWC staff in 6 countries in May-June-July 2021

This analysis shows that while stepping into the new FAO Strategic Framework, the Regular Programme support to FIRMS has been strengthened and primarily to support information contributions, while extra support for FIRMS growth was maintained through a mix of Regular programme and extra-budgetary sources mobilized by the Secretariat.

Table 5: Effort in [man x days] spent on FIRMS by major activity during period 05/2019 – 09/2021 (29 months).

	Application requirements and Software development (days)									Information contributions (days)						Total	
	Web site upgrade and technical support	Marine Resource module	Fishery module	Dynamic mapping tool -thematic pages - FIRMS data coverage	Word/Excel-To-XML	Tuna Atlas (Blue Cloud)	GRSF (Blue Cloud)	Tuna Atlas (RP)	GRSF (RP)	Training / Assistance to Partners (including inventories & meetings)	Direct Data update (FAO)	Data Analysis	Tuna Atlas	GRSF	Routine maintenance website and Wiki		Management and marketing/outreach
M. Taconet									10		3	5	10			39	67
A. Gentile				5	19		44		50	162	5		4	20	10	5	324
T. Berger		7	6														13
K. Viparthy	2																2
O. Liberatori																5	5
T. Cantarelli									30								30
B. van Niekerk	10									253	162			104	2	2	533
E. Blondel				4		28	6	40	10								88
J. Santamaría Fernandez					4												4
D. Ramm										4							4
A.E. Nieblas								59			37						96
A. Muñoz											28						28
TOTAL effort (days)	12	7	6	9	23	28	50	40	119	459	167	68	9	134	12	51	1194
% time/activity	1	1	1	1	2	2	4	3	10	38	14	6	1	11	1	4	100
Total HR \$US	\$3,039	\$4,582	\$3,928	\$4,019	\$11,568	\$8,288	\$26,722	\$11,840	\$52,430	\$151,705	\$30,861	\$20,263	\$6,963	\$38,721	\$6,016	\$42,100	\$423,043
Total Travels \$US							\$1,900	\$600	\$12,800								\$20,300
Others																\$2,000	\$2,000
Total LOAs									\$17,500	\$30,000							\$47,500

Table 6: Historical trends of total effort and costs.

	Software development	Training/Assistance – Data update/Analysis	Management and Maintenance	
TOTAL RP+TF effort May 2019 – September 2021 (29 months)	294 d.	837 d.	63	1194 d.
				\$423,043
TOTAL RP effort June 2017 – April 2019 (23 months)	101 d.	338 d.	140 d.	568 d.
TOTAL \$US				\$ 263,959
TOTAL RP effort February 2015 – May 2017 (28 months)	266 d.	441d.	88 d.	795 d.
TOTAL \$US				\$300,281
TOTAL RP effort February 2013 - January 2015 (24 months)	112 d.	463 d.	69 d.	644 d.
TOTAL \$US				\$233,336
TOTAL RP effort December 2011- January 2013 (14 months)	169 d.	291 d.	58 d.	533 d.
TOTAL \$US				\$175,288
TOTAL RP effort 2010-11 (22 months)	179 d.	400 d.	70 d.	649 d.
TOTAL \$US 2010-11				\$211,118
TOTAL RP effort 2009 (21 months)	231 d.	375 d.	73 d.	646 d.
TOTAL \$US 2009				\$205,000
TOTAL RP effort 2007/8	159 d.	108 d.	83 d.	360 d.
TOTAL \$US 2007/8				\$180,000
TOTAL RP effort 2006	668 d.	182 d.	98 d.	948 d.
TOTAL \$US 2006				\$440,000

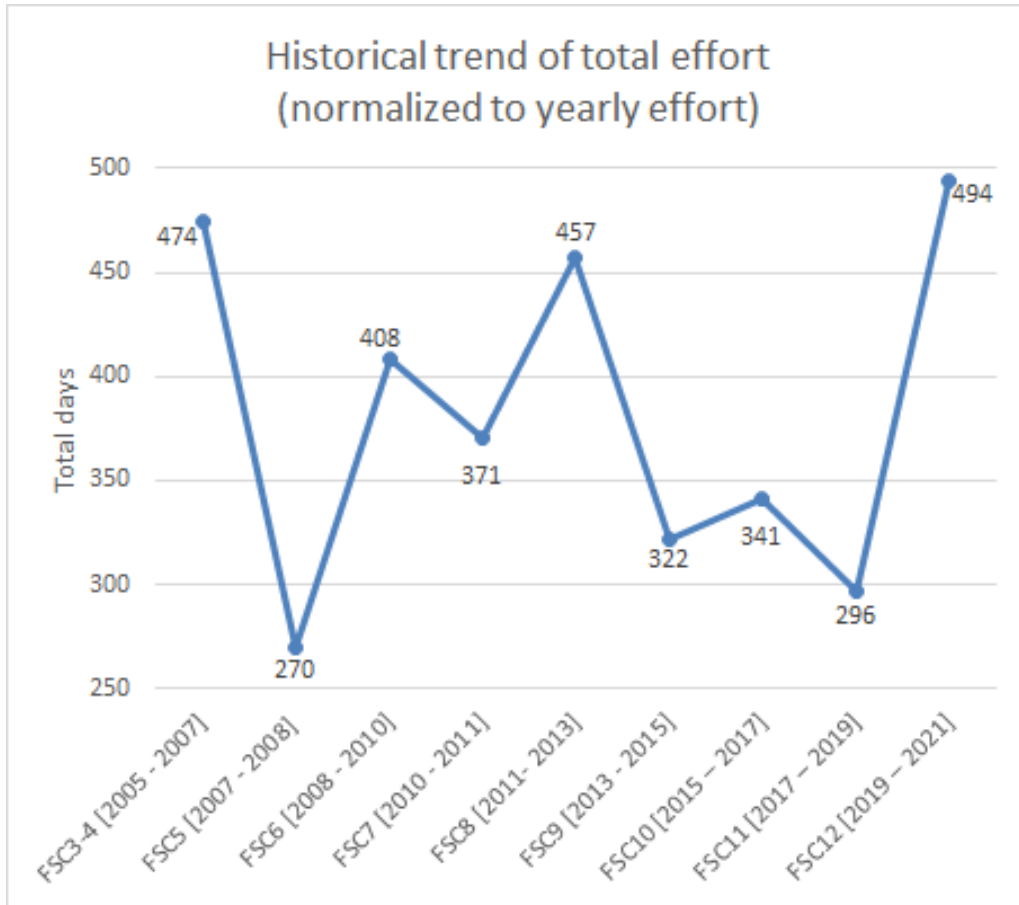


Figure 6a: Historical trend of total human effort (normalized to yearly effort).

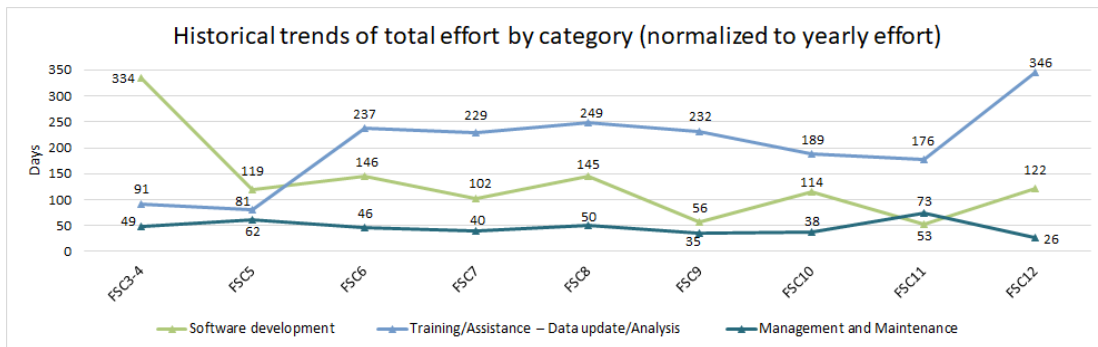


Figure 6b: Historical trend of total human effort by main category (normalized to yearly effort).

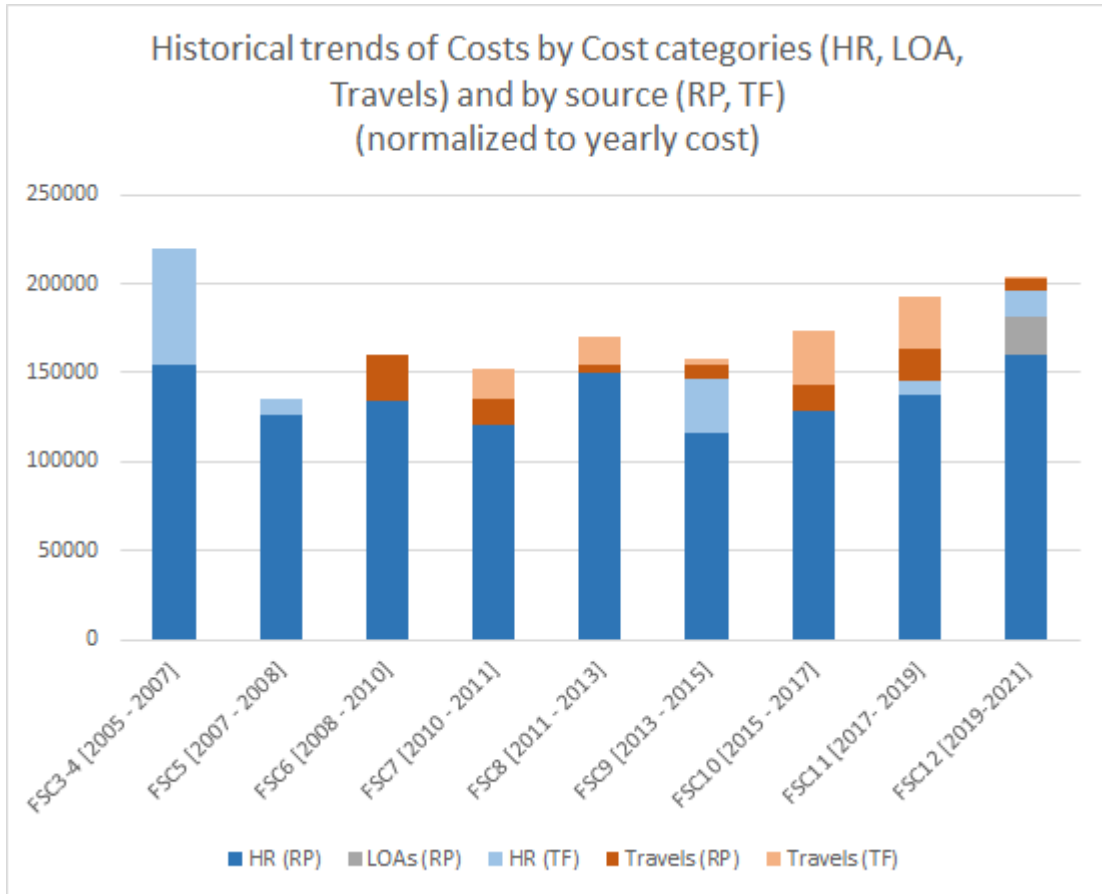


Figure 6c: Historical trend of cost by main cost category (normalized to yearly cost).

8. STATUS ON FIRMS RESOURCES, PROCESSES, AND ISSUES ENCOUNTERED DURING THE INTER-SESSIONAL PERIOD, AND PERSPECTIVES.

Financial resources: The above Resources chapter indicates that there were no real budgetary constraints on both Regular Programme allotments and Project funding support. Normal maintenance of the FIRMS programme has remained a priority area for the Fisheries and Aquaculture Division and has become integral part of the FAO Strategic Objective 2 “Sustainable use of natural resources”. In the context of the pandemic which freed-up significant financial resources usually assigned to travels, budget was reallocated on the necessary investments related to the new tools and expanded data scope.

During the forthcoming intersession, it is expected that the Regular Programme will continue to support content updates including the national SDG14.4.1 questionnaire cycle. The RP will also dedicate some resources to support the upgrade and migration of the underlying FIRMS software. EBF resources will continue to be necessary in support to regional uptake of FIRMS in various regions including BOBLME, WECAFC, CECAF-FCWC, RECOFI. GRSF and Tuna Atlas are promising in terms of FIRMS coverage expansion including the SDG14.4.1 national data, but additional EBF resources and/or partnerships will be necessary for fully supporting this extension.

Human resources: Ms Bracken van Niekerk was hired for the whole intersession period with focus on information management and reference data configuration in the new system EBX5.

Ms Anne Elise Nieblas was hired to support capacity building for the national SDG14.4.1 questionnaire, and she contributed to all aspects related to SDG14.4.1 data analysis and flow in the context of FIRMS and GRSF.

Mr Arturo Munoz Albero aided the FIRMS team as an intern, contributing data analysis in regards of a possible dashboard for the monitoring of FIRMS data content and work relating to the SDG indicator 14.4.1 and the GRSF.

Software maintenance/development: No major development could take place to upgrade the FIRMS software, waiting for an on-going major upgrade of the FIGIS system with priority allocated to the NFI website in 2020-21. The migration and upgrade FIRMS are planned for 2022.

Scheduling: Some delays took place with partners, and in some cases, stock/fishery status reports are still awaited or awaiting clearance for publishing. However, the minimum data requirement approach in force since FSC10 contributed to a faster workflow and a lighter workload while focusing on key information of the marine resource and fishery modules. The semi-automatic procedure supported by web services, put in place with ICES, has also proved its effectiveness for such massive updates of information.

See Annex 1, 2 and 3 for pending activities from FSC9, FSC10 and FSC11.

9. POTENTIAL ACTIVITIES DURING THE COMING INTERSESSIONAL PERIOD.

Besides the normal assistance to Partners and the maintenance of FIRMS website, this section presents Secretariat's view point on the developments which should logically follow from the progress made during this intersession. These developments should be prioritized and the accomplishment of some of them will depend upon the capacity to mobilize additional project resources.

General directions:

With the Partnership and tools consolidated during the past intersession, FIRMS should pursue its efforts towards a key role in the reporting, monitoring and dissemination of SDG14.4.1. Key aspects are to complete the validation of stocks UUIDs along with better geographic references, integration of national reference list of stocks from SDG 14.4.1 questionnaires in GRSF, exploring the mapping of FishStat data with GRSF stocks, capacity building to Partners in selected regions including efforts to develop regional databases of catch and effort, or to help identify existing literature or datasets in data poor regions/countries, a dialogue among partners for more efficient use of resources through better complementarity of data coverage. The FIRMS website and underlying engine will be upgraded with new tools to facilitate data submission in particular Catch data.

T-RFMO partners are expected to adopt the CWP reference harmonization specifications which will allow smooth yearly data calls, and they would work towards a higher value added Level1 product.

The continued collaboration with SFP will lead to informing through pilot field projects about feedback from countries and other stakeholders on the practical use of UUIDs along the value chain.

In more details, these developments can be articulated around four main areas:

- Expanding FIRMS coverage and timeliness of reporting;
- Pending FSC12 decision on GRSF and Tuna Atlas, contribute to the further development and maintenance of the two systems;
- Support SDG 14.4.1 requirements and FIRMS national pilot activities;
- Renewal of FIRMS website, along with upgrade/migration of underlying FIGIS software;
- Progressing FIRMS standards in certain areas;
- Publish the FIRMS inventories which are still in Excel format;
- Promotion of FIRMS.

For some of these activities, FSC12 might decide to convoke a Technical Working Group (e.g., through e-Meetings). FSC12 will establish priority areas of development.

9.1 Expanding FIRMS coverage and timeliness of reporting

Expanding FIRMS geographic data coverage thanks to new Partners:

In those areas where the FIRMS coverage is weak or absent, RFBs are invited to interact with the FIRMS Secretariat in order to expand the FIRMS data coverage, through development and validation of inventories and generation of reports (fact sheets) on status and trends. Such activity can build on the capacity building experience matured through the work done with FCWC, RECOFI, and WECAFC.

The South Pacific Ocean still represents a necessary area for expansion of data coverage for which the SPRFMO partnership arrangement (FSC11) is already a big step towards.

Representatives of the Western and Central Pacific Fisheries Commission (WCPFC), The Pacific Community (SPC), and the North Pacific Fisheries Commission (NPFC) were further engaged by the FIRMS Secretariat to join the partnership.

The expansion of the FIRMS geographic coverage is also expected through the data collated and disseminated in the Global Record of Stocks and Fisheries (GRSF). A significant increase in coverage is also expected from the SDG 14.4.1 national questionnaire.

The FAO's ongoing review of the global SOFIA indicators is also another important opportunity for FIRMS and the GRSF to contribute to the global stock status monitoring with innovative approaches and more granular data. Among others, efforts will be dedicated to link FishStat or other regional catch/effort statistics databases with the GRSF Stock UUIDs.

Finally, pilot projects are envisaged to explore innovative approaches aimed at gathering local knowledge in terms of grey literature or datasets in support of stock status. Such approach would build on the published UUIDs and mobilize the ASFA partnership and FIRMS partners in data poor regions such as Southeast Asia.

Improving the content coverage, in particular contribution of Catch data: the Secretariat will continue to encourage Partners through liaison with them to contribute their Catch time series.

Improving reporting timeliness: the Data call policy adopted by FSC11 will be pursued.

Since FSC9, some partners have expressed the need of streamlining the process of data contribution for reducing the workload and improving the reporting timeliness.

Progress is being made both by the Secretariat and these partners:

- With RECOFI, an effort is being made to simplify the Fisheries inventory template, and this is being extended to other partners.
- With partners more advanced with new technologies (i.e., web services) new solutions are being explored and already well working (e.g., for ICES), and the Secretariat will further adapt similar capacities for SPC for WCPFC tuna stock status reporting, or for GFCM as identified during the TWG on GRSF.

Other areas of development will depend upon the intentions of the existing partners and the newly appointed observer organizations.

9.2 Renewal of the FIRMS user interface

Similar to what was assessed in FSC11, objective for FSC12 would be to improve the stocks and fisheries map viewer and the release of the new FIRMS website.

Integration of GRSF unique identifiers within the FIRMS fact sheets and related services should be also made available.

The layout of FIRMS fact sheets could be tailored to regional needs.

So far FIRMS managed to consolidate a big amount of data (today more than 2 000 fact sheets) organized in the two original stocks and fisheries modules in a stable and well-structured way and accessed through specific search interfaces.

9.3 Promotion of FIRMS

As per usual FSC recommendations, different strategies will be adopted for FIRMS promotion. Priorities agreed in the past sessions were the following:

- to seek participation of more RFBs;
- to develop and adopt a communication plan shared by FIRMS Partners; what role for FIRMS in SDG14.4.1; a modest step would be to finalize the new FIRMS brochure
- to promote links to the FIRMS website from national agencies websites;
- to increase the dissemination of FIRMS fact sheets from Partners' website, while tailoring the layout and content for use by e.g., fishery managers;
- To promote GRSF and Tuna Atlas as innovative new sources of data in support to research and analysis;
- to communicate on FIRMS progress at Partners' meetings;
- to report on FIRMS progress at COFI and to organize a side event for raising awareness of the ongoing activities.

FIRMS partners are expected to promote FIRMS in their regional context, good examples arise from recent activities conducted with, FCWC, RECOFI and WECAFC.

In these regional contexts, promoting the role of FIRMS in SDG14.4.1 as done in RECOFI would also be a good opportunity for FIRMS visibility.

FIRMS benefits from the regular communication activities at FAO including through social media coverage.

ANNEX 1 - STATUS OF IMPLEMENTATION OF FSC11 DECISIONS

	Done
	In progress
	Not yet tackled

The following summary of FSC11 decisions is extracted from the Section 11 (Intersessional work plan) of the FSC11 report (page 30).

• FIRMS Protocol and standards (Agenda item 9)

TWG to review the use of the coloured lights as a stock status Indicators (FSC11/D9.1).	
TWG to review definitions related to jurisdictional areas (<i>‘Highly Migratory’</i> and <i>‘Straddling between high seas and EEZ’</i>) (FSC11/D9.2).	
Secretariat to include agreed definitions in IMP standards (<i>‘Biological stock’</i> , <i>‘Assessment unit’</i> , <i>‘Management unit’</i> , and <i>‘Spatial scale’</i>) (FSC11/D9.3).	

• Revised FIRMS Governance structure (Agenda item 10)

FSC endorsed the Collaborative Arrangement (with a termination period to 6 months) and related amendments of the Rules of Procedure (FSC11/D10.1).	
FSC endorsed the proposed Collaborative Institutions (namely IRD for the Tuna Atlas; and UW, SFP and FORTH for the GRSF) (FSC11/D10.2).	
FSC endorsed the GRSF value proposition and agreed to associated actions (FSC11/D10.3).	
TWG to review Partners’ steps to review and validate GRSF UUIDs, and consider holding a physical meeting during the first half of 2020 (FSC11/D10.4).	
FSC agreed to publicly launch the pilot GRSF during suitable future events, noting associated tasks (FSC11/D10.5)	
FSC agreed to broadly disseminate information on the GRSF (FSC11/D10.6).	
FSC endorsed the work on the Tuna Atlas (FSC11/D10.7).	

• Planning for the next session of FSC (FSC12) (Agenda item 12)

FSC agreed to hold its next meeting in June 2021 (FSC11/D12.1).	
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• Any other business (Agenda item 13)

The Secretariat agreed to consider that the GRSF pilot be presented during the COFI meeting in 2020 (FSC11/D13.1).	
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- **Election of Chairperson and Vice-Chairperson (Agenda item 14)**

FSC requested nominations for the vice-chairperson position (FSC11/D14.1).	
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ANNEX 2 - STATUS OF IMPLEMENTATION OF FSC10 DECISIONS

The following summary of FSC10 decisions is extracted from the Annex 4 (Agreed Work plan for the intersession) of the FSC10 report.

• Progress on the development of FIRMS Partnership (Agenda item 4a)

The Secretariat will work towards expanding FIRMS coverage, in particular with the need to improve coverage in the Pacific Ocean area. The Secretariat will invite the following Regional Fishery Bodies to become Partners: IPHC, NPFC, CPPS, SIOFA, BCC, PSC, SPRFMO, WCPFC (FSC10/D4.1).	
Mr Campanis will help in this process liaising with BCC and SIOFA (FSC10/D4.2).	
The Secretariat will evaluate the eligibility of the Cephalopods International Advisory Council (CIAC) in FIRMS and report to Partners (FSC10/D4.3).	

• Proposed modifications by existing Partners (Agenda item 5b)

The Secretariat will evaluate the eligibility of the Cephalopods International Advisory Council (CIAC) in FIRMS and report to Partners (FSC10/D4.3).	
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• Review of FIRMS activities during the intersession (Agenda item 6)

The Secretariat will continue updates to FIRMS inventories, and seek for timely updates from Partners including through Data calls. For FAO RFBs (CECAF, RECOFI, SWIOFC, WECAFC) and in order to improve cohesion and timeliness, concerned focal points are requested to work liaise closely with the respective RFB Secretariats and FIRMS Secretariat. The RFB Secretariat representatives will be invited to attend the TWG meetings (FSC10/D6.1).	
The Secretariat will seek participation of more RFBs and will continue the promotion of FIRMS (together with all partners) through capacity building activities with selected RFBs upon availability of extra-budgetary funding resources, currently WECAFC, and FCWC have secured such EBF (FSC10/D6.2).	
A workshop is planned in the FCWC area with a focus on fisheries inventories in the subregion, with the aim to monitor fisheries trends and the state of the art regarding SDG 14.4.1 in the involved countries. Mr Sedzro is expected to liaise with the FIRMS and FCWC Secretariats to prepare this workshop (FSC10/D6.3).	
The Secretariat will provide metrics of its effort in updating the inventories and the fact sheets for each Partner (FSC10/D6.4).	
Regarding completing FCS8 and FCS9 decisions, the following are still pending: i) alternative layout for no longer monitored marine resources (Monitoring period), ii) the display of partners' logo in the fact sheets, and iii) the indicator for data reliability.	

- **A role of FIRMS in support of SDG 14.4.1 “Proportion of fish stocks within biologically sustainable levels.” (Doc 2017/4d) (Agenda item 8a) and**
- **Global Record of Stocks and Fisheries (GRSF) – BlueBRIDGE project (Agenda item 8c)**

The Secretariat will continue towards the finalization and ultimate release of the Global Record of Stocks and Fisheries (FSC10/D8.1).	
The FIRMS Partners will be involved in testing the logic of the unique identifier standards and of the validation workflow during the intersession (FSC10/D8.2).	
The Secretariat was tasked to continue working towards a fully-fledged proposal for the FIRMS governance and business model by presenting and getting feedback on this above model at various forums, including the FAO SDG 14.4.1 Capacity Building workshop (end 2017) demonstrating the kind of support that FIRMS could offer in this regard, the final BlueBRIDGE EAB-TWG (with FIRMS partners invited to participate), with the goal to eventually table an elaborated proposal at an extraordinary session of FSC involving RFB Executive Secretaries which could take place back-to-back with COFI33 in July 2018 (FSC10/D8.3).	

- **Traffic light in support to SDG 14.4.1 (Agenda item 8d)**

FSC10 agreed that partners’ mapping rules for state and trends should be displayed within a dedicated section of the FIRMS website, and that the relevant mapping rules should also be readily accessible from each fact sheet (FSC10/D8.4)	
FSC10 agreed that a table of marine resources Globally and by Partner informing on the total number of stocks inventoried, and for those informed with status reports with associated traffic light icons would be a beneficial addition on the website. The Secretariat will submit a proposal at the TWG (FSC10/D8.5).	

- **Enabling more timely and comprehensive information (Agenda item 8e)**

Work will continue towards enabling the harvesting of data from ICES in a fully automatic process. The Secretariat will liaise with the Partners to identify if similar solutions can be applied elsewhere (e.g. CCAMLR, SEAFO) (FSC10/D8.6).

- **Review of the FIRMS Partnership Arrangement and proposals for amendments (Doc. FIRMS FSC10/2017/4b) (Agenda item 8f)**

The Secretariat will follow-up with the legal office to propose final amendment to the Partnership Arrangement and Rules of Procedures. It was suggested to investigate whether the FAO bodies would legally fall in the category of FIRMS Associated Members and thus finalize the amendments to the partnership agreement (FSC10/D8.7).	
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- **The new FIRMS data services and Website (Agenda item 8g)**

The Secretariat will conduct an online survey amongst external users of FIRMS information (FSC10/D8.8).	
The Secretariat will work on refinements to the Stocks and Fisheries map viewer (FSC10/D8.9).	

FSC10 endorsed the design proposal of the new FIRMS website, and encouraged the Secretariat to further develop this proposal for review and feedback from Partners through the TWG (FSC10/D8.10).	
A renewal of the communicational material (e.g. brochure, poster) will be addressed together with the release of the new website (FSC10/D8.11).	

- **FIRMS Protocol and standards (Agenda item 9)**

The Information Management Policy (IMP) will be finalized with the corrections agreed upon by FSC10 (FSC10/D9.1).	
The group concluded that a more extensive review of the proposed modifications to the FIRMS standard descriptors and relative controlled terms be conducted during the next intersession by the Technical Working Group (FSC10/D9.2).	

ANNEX 3 - STATUS OF IMPLEMENTATION OF FSC9 DECISIONS

- **FIRMS membership (Agenda item 3) - Review of new prospective Partners (Agenda Item 3b)**

Send letters to inactive partners to encourage participation (FSC9/D3.1)	
Open up the partnership to LME projects and organizations in order to broaden coverage (FSC9/D3.2)	
Send letters to prospective partners to clarify their intentions (FSC9/D3.3)	

- **Review of Annex 2 (Agenda item 4) - Proposed modifications by existing Partners (Agenda item 4b)**

The FIRMS Secretariat should examine how to enable linkages between the VME DataBase and FIRMS fact sheets. (FSC9/D5.1)	
Further discussions concerning possible inclusion of VME governance within the scope of FIRMS will take place at the VME meeting 2–4 March 2015. (FSC9/D5.2)	
The deep-seas RFMOs at FIRMS and participating in the VME meeting agreed to recommend that the planned inventory of deep-seas fisheries should be implemented, taking into account inclusion in FIRMS. (FSC9/D5.3)	
The deep-seas RFMOs at FIRMS and participating in the VME meeting agreed to recommend that the planned inventory of deep-seas fisheries should be implemented, taking into account inclusion in FIRMS. (FSC9/D5.3)	

- **Report of e-Technical Working Group 4 (Summary Report of e-TWG 4, Doc. FIRMS FSC9/2015/3 and Related Info Documents inf. 7.a, b, c, d) (Agenda item 7)**

Displaying state and trend standard descriptors (TWG 4.1) – FSC9 agreed that a table showing the standard descriptors would be displayed, using both the contributor’s descriptions and FIRMS descriptions where available, and, where not, only the FIRMS descriptions. (approved as FSC9/D7.1)	
During this meeting, it was agreed to move towards the “traffic light approach” where possible. NAFO will lead this work and it will be referred to an intersessional TWG (to be held in late June) for further elaboration. (approved as FSC9/D7.2)	
Inventory template improvement (TWG 4.3) – indicator of data reliability: addition of a new free text field. This was agreed. (approved as FSC9/D7.3)	
Fishery importance, viewpoint and description: addition of two new free-text fields. This was agreed. (approved as FSC9/D7.4)	
For reference year, the definition agreed is: “The last year considered in the stock assessment and/or fishery status.” (approved as FSC9/D7.5)	
For reporting year, the definition agreed is: “The publication year of the source of the information.” (approved as FSC9/D7.6)	

- **FIRMS Information Management Policy (IMP) (Agenda item 8)**

The proposed modifications to IMP (version FSC8) can be applied and the new version published. (FSC9/D8.1)	
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- **Review of Strategic Aspects – Enabling More Timely Information, Broadening Geographic/Thematic Coverage; Target Audience/Communication and Partnerships (Agenda item 9)**

The chairperson concluded that the FSC9 supported the project idea and that the proposal for a face-to-face TWG would be made once and if the project funding were confirmed. (FSC9/D9.1)	
FSC9 reiterated the conclusions of FSC8 regarding guidance on proper credit and maintenance of the integrity of FIRMS reports. (FSC9/D9.2)	
FSC9 asked the FIRMS Secretariat to send letters, where applicable and affordable in terms of resources, for membership of LME institutions or collaboration with LME projects (FSC9/D9.3)	
[Direction of FIRMS website revision (agenda item 9c)] The FSC9 approved the directions and the above schedules (FSC9/D9.4).	
[A role for FIRMS in the iMarine initiative (agenda item 9d) (FIRMS FSC9/2015/4b)] The FIRMS Secretariat will ensure that FAO, through its position on the iMarine advisory board, will represent the interest of FIRMS and its partners, and will communicate relevant information and strategic decisions back and forth. (FSC9/D9.5).	

- **Any Other Business (Agenda item 12)**

The Steering Committee felt that a strong statement to the FAO was warranted. The following was agreed: Recognizing FIRMS as a partnership between FAO and various Regional Fishery Bodies, it was felt that using a subdomain web name http://firms.fao.org was the most appropriate address to use for FIRMS. (Refer to Article 3 of the FIRMS Partnership Arrangement). Future discussion on this could take place if and when needed. (FSC9/D10.1)	
Executive summary: Noting that a full report can be a daunting task for readers, it was agreed that an executive summary of the full report highlighting the tone of the meeting and the main decisions could be included both as a part of the report and pasted in the body of the e-mail notification. (FSC9/D10.2)	

ANNEX 4 - WEB TRENDS STATISTICS OVER THE PERIOD 2007-2020

Meeting document FIRMS FSC12/2021/Inf.7, accessible at
http://www.fao.org/fileadmin/user_upload/faoweb/FI_Meetings/FIRMS/FSC12/inf7e.pdf

ANNEX 5 - LIST OF OUTREACH ACTIVITIES DURING THE INTERSESSION

- The FIRMS Secretary presented the “FIRMS Secretariat Report of Activities” at the Twenty-sixth session of the Coordinating Working Party on fishery statistics, Rome, Italy, 15-18 May 2019.
- The FIRMS Secretariat attended the Tenth session of the Scientific Advisory Group (SAG), Western Central Atlantic Fishery Commission (WECAFC), Electronic SAG, 4 June 2019.
- The FIRMS Secretariat introduced the FIRMS Partnership at the Sixth Meeting of the Parties to the Southern Indian Ocean Fisheries Agreement (SIOFA), Mauritius, 1-5 July 2019.
- The FIRMS Secretariat introduced FIRMS at the Eleventh WIOMSA symposium, Mauritius, 1-6 July 2019.
- FIRMS Secretary presented FIRMS and the latest developments at the Tenth Session of the Regional Commission for Fisheries, RECOFI side event, Rome, Italy, 10 July 2019.
- FIRMS Secretariat presented FIRMS and the status of WECAFC-FIRMS inventories at the Seventeenth session of the WECAFC, Florida, USA, 15-18 July 2019.
- FIRMS Secretary initiated the Fisheries and Resources Monitoring System (FIRMS) Training and Dissemination Workshop, Online, Kenya Marine and Fisheries Research Institute KMFRI-Dolphin Hall, Kenya, 4 September 2019.
- FIRMS Secretary presented the “Review of information on status and trends of marine resources” at the Fishing Data East Africa (FIDEA) Inception Workshop, Dar es Salaam, Tanzania, 16-17 September 2019.
- FIRMS Secretariat presented FIRMS and the “Summary report of the 11th FIRMS Steering Committee meeting” at the Twenty-second session of the Fishery Committee for the Central Eastern Atlantic (CECAF) Coordinating Working Party on Fishery Statistics (CWP), Gabon, 17-19 September 2019.
- FIRMS Secretariat presented FIRMS at the Workshop on Biennial Review of Indian Ocean Rim Association (IORA) Fisheries & Aquaculture Sector, Muscat, Sultanate of Oman, 29-30 October 2019.
- FIRMS chairperson attended the 72nd Annual Gulf & Caribbean Fisheries Institute, Punta Cana, Dominican Republic, 4-8 November 2019.
- FIRMS Secretariat launched the GRSF at the International Symposium on Fisheries Sustainability, Rome, Italy, 18-21 November 2019.
- FIRMS Secretariat presented the “Update on the WECAFC-FIRMS inventories and data needs” at the Third Meeting of the WECAFC/ Caribbean Regional Fishery Mechanism (CRFM)/ French Research Institute for Exploitation of the Sea (IFREMER) Working Group on Shrimp and Groundfish of the North Brazil-Guianas Shelf Paramaribo, Suriname, 26-27 November 2019.
- FIRMS Secretary conducted a FIRMS and fishery statistics training to FCWC staff members and to the CECAF SC Chairperson, FAO Headquarters, Rome, Italy, 17-19 February 2020.
- FIRMS Secretariat presented the status of the WECAFC-FIRMS project at the 18th meeting of the Caribbean Fisheries Forum, online, 6-8 May 2020.
- FIRMS chairperson presented FIRMS at the Second meeting of the WECAFC-Caribbean Regional Fishery Mechanism (CRFM)-OSPESCA Fisheries Data and Statistics Working Group (FDS-WG), online, 12-16 October 2020.
- FIRMS Secretariat led the FCWC - FIRMS and Fishery Statistics Capacity Development Data Workshop, Online, 26-30 October 2020.

- The FIRMS Secretariat delivered updates at the Southern Indian Ocean Fisheries Agreement (SIOFA), 7th Meeting of the Parties of the South Indian Ocean Fisheries Agreement (MoP7), online, 17-20 November 2020.
- FIRMS Secretariat presented FIRMS and the “Status of FIRMS inventories for the WECAFC region” at the 4th Meeting of the WECAFC/CRFM/ French Research Institute for Exploitation of the Sea (IFREMER) Working Group on Shrimp and Groundfish of the North Brazil-Guianas Shelf, Online, 18-19 November 2020.
- The FIRMS Secretariat presented FIRMS and the new developments at the 5th Scientific Commission Meeting of the North Pacific Fisheries Commission (NPFC), Online, 24-27 November 2020.
- FIRMS Secretariat provided updated materials relating to the FCWC-FIRMS Marine Resources and Fisheries Inventories at the 6 FCWC TCP-RAF meetings held for each FCWC Member State (April – June 2021).
- FIRMS chairperson/FIRMS Secretariat delivered materials at the Extended session of the 2nd meeting of the WECAFC-CRFM-OSPESCA Fisheries Data and Statistics Working Group (FDS-WG), Online, 25-28 May 2021.
- FIRMS Secretariat conducted the RECOFI-FIRMS data call workshop on updating stocks and fishery inventories, Online, 3-4 August 2021. Outcomes of the meeting were presented at the RECOFI WGFM (Oct. 2021).
- FIRMS Secretariat delivered an introduction to FIRMS and the stocks and fisheries inventories at the FAO Online training in fisheries and aquaculture statistics (13-20 September 2021).