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## **REGIONAL COMMISSION FOR FISHERIES**

**Report of the**

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**SIXTH MEETING OF THE WORKING GROUP ON AQUACULTURE**

**Muscat, Oman, 21–23 October 2014**



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## PREPARATION OF THIS DOCUMENT

This document is the final report of the sixth meeting of the Working Group on Aquaculture (WGA) of the Regional Commission for Fisheries (RECOFI) held from 21 to 23 October 2014 in Muscat, Oman.

This report was prepared by the WGA Secretariat and endorsed by the WGA. The opening statement and other matter in the appendixes are reproduced as submitted.

Many thanks are due to the Ministry of Agriculture and Fisheries Wealth, the Sultanate of Oman, and particularly to the Department of Aquaculture Development for the support and excellent hosting of the meeting.

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### ABSTRACT

The sixth meeting of the Working Group on Aquaculture (WGA) of the Regional Commission for Fisheries (RECOFI) was held in Muscat, Oman, from 21 to 23 October 2014 and was attended by representatives from seven member countries. The WGA reviewed the outcome and recommendations of the sixth and seventh sessions of the Commission. The WGA noted the importance of the timely collection, submission and sharing of accurate aquaculture statistics and other relevant aquaculture information. A draft recommendation on the minimum reporting of aquaculture data and information was discussed. The meeting agreed that RECOFI members would provide their comments at the next session of the Commission, when the recommendation will be presented for adoption. In the event the recommendation is adopted, it was agreed that the aquaculture data and information would be best submitted by the individual countries through specifically designed and dedicated templates accessible from the Regional Aquaculture Information System (RAIS) website. The meeting discussed the RAIS following the presentation of the web analysis report, which indicated a steady interest in the information system particularly among the Arabic-speaking countries. Actions to further consolidate and expand the system were discussed, along with the need to improve the overall communication outputs at the national and regional levels. The WGA finalized its proposed programme of work for the next intersessional period, based also on the WGA programme adopted by the Commission at its seventh session. The main activities identified for the next work plan include: a training workshop on aquaculture risk analysis; a technical workshop on aquaculture recirculation technologies; a training workshop on aquaponics; hands-on training in marine hatchery technologies; and a technical meeting to share regional experiences in the use of GIS and spatial analysis in coastal zone management and marine aquaculture planning and development. In view of emerging aquatic animal health issues, the WGA further agreed that, during the implementation of the workshop on aquaculture risk analysis, the technical experts from the member countries would also discuss priority issues related to aquatic animal biosecurity and identify activities that required action. The WGA recognized that the Commission, based on its current level of financial contribution, might not have the required budget to implement a comprehensive aquaculture programme, and it recommended that some activities could be implemented with extrabudgetary funds. The WGA Alternate Focal Point of Oman was nominated as the new WGA Chairperson, while the WGA Focal Point of Bahrain was nominated as the new WGA Vice-Chairperson.



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**ABBREVIATIONS AND ACRONYMS**

COFI	FAO Committee on Fisheries
EMS	early mortality syndrome
FIRA	Aquaculture Branch, FAO Department of Fisheries and Aquaculture
GFCM	General Fisheries Commission for the Mediterranean
GIS	geographic information system
IsDB	Islamic Development Bank
NALO	National Aquaculture Legislations Overview
NASO	National Aquaculture Sector Overview
NENA	Near East and North Africa
PAAF	Public Authority of Agricultural Affairs and Fish Resources
RAIS	Regional Aquaculture Information System
RAS	aquaculture recirculation technologies
RECOFI	Regional Commission for Fisheries
SCA	COFI Sub-Committee on Aquaculture
WGA	Working Group on Aquaculture
WGFM	Working Group on Fisheries Management
WSS	white spot syndrome

## **OPENING OF THE MEETING**

1. The sixth meeting of the Regional Commission for Fisheries (RECOFI) Working Group on Aquaculture (WGA) was held in Muscat, Oman, from 21 to 23 October 2014. The meeting was attended by 11 delegates from seven members of the Commission. The list of participants is attached as Appendix 2.
2. The meeting was officially opened with a welcoming statement delivered by Dr Ahmed bin Mohammed Al-Mazrooie, General Director of Fisheries Resources Development, Ministry of Agriculture and Fisheries Wealth, on behalf of H.E. Dr Hamed bin Said Al-Oufi, Undersecretary of the Ministry of Agriculture and Fisheries, Oman, that emphasized the importance of regional collaboration and sharing of technical expertise in the RECOFI region. The opening remarks reiterated that the WGA is recognized as the main intergovernmental forum in the RECOFI area and that Oman will continue to support the WGA so as to ensure that it adequately fulfils its terms of reference and provides the services expected. The opening statement is attached in Appendix 4.
3. The opening session was also attended by the following officials from the Ministry of Agriculture and Fisheries: Mr Salim Al-Rasbi, Director General of Fisheries Marketing, Mr Abdulaziz Al-Marzouqi, Director of Marine Science and Fisheries Centre, Ms Nashwa Al-Mazrooie, Director of Fish Quality Control Centre, Mr Ibrahim Al-Qartoobi, Director of Fisheries Extension and Social Committees, Mr Ahmed Al-Hidabi, Director of Fisheries Development in Muscat, and Mr Mansour Al-Sinawi, Head of Fisheries Extension Section.
4. In his welcoming remarks, Mr El-Zein M. El-Muzamil, FAO Representative to Oman, noted with appreciation the level of attendance at the meeting. He further noted that institutional support and private sector interest in aquaculture development were growing in the region and, hence, commented on the important role assigned to the WGA in providing an effective regional discussion and action forum. He noted that, in view of declining fisheries resources, aquaculture was in a strong position to provide valuable fish into the regional markets where much of the fish traded and consumed is imported. Moreover, he stressed that sustainable aquaculture development would certainly contribute to job creation and help tackle long-term food insecurity issues in the region. He concluded that the aquaculture sector was contributing significantly to the world fish supply and that the sector deserved due attention and investment.
5. The WGA Technical Secretary, Mr Alessandro Lovatelli, Aquaculture Officer, Aquaculture Branch (FIRA), FAO Department of Fisheries and Aquaculture, Rome, welcomed the WGA Focal Points and delegates. On behalf of the Secretariat, he expressed his appreciation to Oman for hosting this session of the WGA. He recalled that this session of the WGA should have been held in Tehran, Iran (Islamic Republic of), in September 2012, but that owing to a number of technical difficulties, including the late confirmations from the various RECOFI member countries, the meeting had had to be cancelled. He further recalled that, at its seventh session held in Tehran, from 14 to 16 May 2013, the Commission had agreed to the offer by Oman to host the sixth meeting of the WGA.
6. In order to proceed with the adoption of the meeting agenda and initiate technical deliberations, the WGA Focal Points and delegates indicated the need to nominate a new WGA Chairperson at the start of the session. The participants duly acknowledged the decisions taken at the fifth meeting in Doha, Qatar, in October 2010, where it was agreed that the outgoing WGA Chairperson would automatically be replaced by the first Vice-Chairperson of the WGA. In the absence of the first WGA Vice-Chairperson, the WGA Focal Point of Iran (Islamic Republic of), the WGA delegates agreed to elect a new Chairperson

and further agreed that the WGA would no longer require the nomination of two Vice-Chairpersons.

7. The WGA Technical Secretary recalled the important role played by the WGA Chairperson, particularly during the intersessional periods, and recalled that the Chairperson was effectively the link between the RECOFI Secretariat and the member countries. The meeting participants were reminded that the terms of reference of the WGA, adopted by the Commission at its fourth session (Jeddah, Saudi Arabia, 7–9 May 2009), guided the work of the WGA and responsibilities of the Chairperson. The terms of reference of the WGA are reproduced in Appendix 5.

8. The WGA proposed and unanimously nominated the Alternate Focal Point of Oman, Mr Dawood Suleiman Al-Yahyai, as the new WGA Chairperson, and Mr Adly Abdel Rahman Al-Ansari, WGA Focal Point of Bahrain, as the new Vice-Chairperson. The participants also agreed that there was no need to nominate a second Vice-Chairperson and that the current Vice-Chairperson would not necessarily become the Chairperson once the term of the current Chairperson was over. It was agreed that the next WGA Chairperson would be elected at the end of the seventh meeting of the WGA.

9. The meeting participants acknowledged the work carried out by the departing Chairperson, Mr Mohammad Al-Abdulla, WGA Focal Point for Qatar.

#### **ADOPTION OF THE AGENDA**

10. The meeting adopted the agenda with a few minor changes. The agenda and the list of documents before the meeting appear in Appendixes 1 and 3, respectively.

#### **REVIEW OF THE FIFTH MEETING OF THE RECOFI WORKING GROUP ON AQUACULTURE**

11. In view of the unforeseen time lapse between the current meeting and the previous one, the WGA Technical Secretary reviewed the discussions held and decisions taken at the fifth meeting of the WGA. He recalled that the proposed work programme that included six priority activities had been presented and discussed at the sixth session of the Commission (Rome, Italy, 10–12 May 2011).

12. At its sixth session, the Commission noted that the WGA and the Working Group on Fisheries Management (WGFM) had proposed a robust list of activities, which, although deemed important and relevant, could not all be supported with the limited funds available and allocated by the Commission through its annual contributions.

13. The activities proposed by the WGA at its fifth meeting, and agreed by the Commission at its sixth session included the joint WGA/WGFM activity on capacity building for spatial planning and management, and the training activity on aquaculture risk analysis and on environmental monitoring in cage aquaculture. The Commission did acknowledge the other three proposed activities but decided that their implementation should be postponed.

14. With regard to reviewing the status of aquaculture development in the region, it was noted the WGA Focal Points had discussed the importance of updating country reports (i.e. the National Aquaculture Sector Overview – NASO) and agreed to undertake NASO updating every two years prior to the biannual session of the Commission. It was further agreed that the report on the status of aquaculture in the region, prepared by the RECOFI

Secretariat as a standard working document for presentation at Commission sessions, should be uploaded on the Regional Aquaculture Information System (RAIS) website.

15. The WGA Technical Secretary also recalled that the WGA strongly recognized that the WGA Technical Workshop on Aquatic Animal Health (Jeddah, Saudi Arabia, 6–10 May 2008) and the report produced provided a roadmap for the development of both national and regional aquatic animal health programmes and strategies. It was however recognized that much needed to be implemented in the region, including the development of regional standards for imports/movements of non-endemic aquatic species, and that further technical assistance would be required, including closer interregional collaboration.

16. The meeting participants were informed that the FAO workshop report “Aquaculture in desert and arid lands: developmental constraints and opportunities” (Hermosillo, Mexico, 6–8 July 2010) as announced at the Fifth WGA meeting had been distributed to all the WGA Focal Points.

### **MAIN OUTCOMES OF THE SIXTH AND SEVENTH SESSIONS OF RECOFI**

17. At the sixth session of RECOFI, the Commission noted the development opportunities in aquaculture in the region and acknowledged the importance of further strengthening regional collaboration among its members to ensure that the sector is promoted and developed in a responsible and sustainable manner.

18. The Commission further recognized the limited data entry in RAIS and recommended that the WGA Focal Points ensure efficient national data collection and timely data entry and validation. In order to strengthen RAIS, the Commission agreed that additional training on RAIS functions and operations should be provided to the WGA Focal Points as and when required but preferably back-to-back with the regular WGA meetings.

19. The Commission noted the outcome of the joint WGA and WGFM “RECOFI Workshop on Special Planning for Marine Capture Fisheries and Aquaculture” (Doha, Qatar, 24–28 October 2010) and underscored the necessity for improving the availability of information on spatial planning among members. It agreed to provide the necessary support for follow-up action by prioritizing the proposed joint WGA/WGFM activity on capacity building for spatial planning and management.

20. At its seventh session, the Commission noted the need to revitalize the WGA and for it to hold its next meeting as soon as possible in order to prioritize and implement the actions needed to fulfil the WGA mandate to support and promote the development of the aquaculture sector in the region.

21. Finally, the WGA Technical Secretary reported that the Commission noted that the rich programme of work proposed by the two working groups could be sustained through the current annual contributions and identified the need to re-evaluate its financial arrangements. The Commission reaffirmed the decision made at its sixth session that members’ annual contributions would be increased to USD15 000 on the condition that current and outstanding contributions would be settled at the earliest. The meeting participants were informed that the RECOFI members had been kept informed of past payments and that a review on the status of members contribution would be reported to the Commission on the occasion of the eighth session in May 2015.

## **REVIEW OF THE OUTCOMES OF THE TRIPARTITE MEETING ON FISHERIES MANAGEMENT COOPERATION IN THE NORTHERN AREA OF RECOFI AND PROGRESS**

22. The WGA Technical Secretary informed the participants that the “Tripartite Initiative on Fisheries Management Cooperation in the Northern Area of RECOFI” project document had been endorsed by the three countries involved (Iran [Islamic Republic of], Iraq and Kuwait) and that the Secretariat had been able to engage the Islamic Development Bank (IsDB) in funding the project. It was noted that the project had an aquaculture component.

23. At the seventh session of the Commission, the three beneficiary countries had been urged to follow up on their joint request for financial support, requesting their respective IsDB national focal points to communicate with the financial institution. At the time of the meeting, two countries had officially contacted the IsDB and were waiting for an official response, while the delegate from Iraq indicated that approval from its Central Bank was still pending. The meeting participants also viewed this initiative as an effective subregional mechanism to exchange knowledge and agree on common development and management actions.

24. The participants noted that a similar mechanism could be adopted in other subregions of RECOFI if necessary. The delegate for Oman invited the Secretariat to distribute the tripartite initiative project proposal, noting that it had already been distributed as an information document at the seventh session of the Commission.

## **STATUS REVIEW OF AQUACULTURE DEVELOPMENT BY COUNTRY**

25. The meeting participants provided selected country information on recent aquaculture developments, including emerging issues and national priorities (see table below) noting, however, that they had not prepared structured presentations or summary reports. It was agreed that at the following meetings of the WGA short country presentations on recent developments in the aquaculture sector would become a standing agenda item. It was also agreed that these presentations would be prepared following the NASO template.

26. The Secretariat presented the current update status of the NASOs for all of the RECOFI countries. The participants recognized the usefulness of these overviews as a concise and informative product and commended FAO’s collaboration with the members of the Commission. The importance of regularly updating the aquaculture overviews was reiterated, noting that the last update had been undertaken in October 2010 on the occasion of the fifth meeting of the WGA, when the WGA Focal Points had agreed that updating of the sector overviews should be carried out every two years prior to the biannual session of the Commission.

27. The meeting decided to proceed immediately with updating the NASOs. The Secretariat distributed to all of the participants a CD-ROM containing the latest version of the NASO documents. It was agreed that all member countries would return to the RECOFI Secretariat, and copying Mr Valerio Crespi, FAO Aquaculture Information Officer, the updated documents by the end of November 2014. The Secretariat reminded the meeting that updating of the production data was done directly from the RAIS website and not in the NASO document itself.

28. The WGA Focal Points agreed to submit to the Secretariat every two years the updated NASO data six months prior to the WGA meeting. The WGA Focal Points would be

reminded by the WGA Chairperson eight months ahead of the deadline as well as by the staff of the RAIS regional centre in Kuwait,

Bahrain	The National Mariculture Centre operates a marine hatchery and is a leader in the region for the production of selected marine finfish species, including rabbitfish ( <i>Siganus canaliculatus</i> ), sobaity bream ( <i>Sparidentex hasta</i> ), orange-spotted grouper ( <i>Epinephelus coioides</i> ), and exotic gilthead seabream ( <i>Sparus aurata</i> ). The facility is actively engaged in stock enhancement programmes, releasing large quantities of commercially valued fish juveniles into national waters. The centre also runs a small production operation, selling farmed fish to the local market. Part of the facility grounds will be rented out for commercial aquaculture activities. Sections of the centre are currently being renovated, including its water intake system. The centre will offer opportunities for hands-on training for members of the Commission.
Iran (Islamic Republic of)	One national priority is the development of cage aquaculture, particularly in the Gulf, and this needs a boost in marine fish seed production. Latest production figures: cold freshwater aquaculture (338 877 tonnes), warm freshwater aquaculture (131 000 tonnes), shrimp aquaculture (10 152 tonnes) and sturgeon farming (456 tonnes). The country considers that increased interregional cooperation on technical issues related to marine fish aquaculture is necessary to promote the expansion of the subsector.
Iraq	The country lacks the technical capacity and infrastructure to sustain previous fish production levels. The aquaculture industry is based on the farming of the carps in ponds and cages, the latter employed in water reservoirs. A number of government and private freshwater fish hatcheries are in operation. Currently, no marine aquaculture operations exist although the government and regional authorities (Basra Governorate) are investigating the potential of marine aquaculture in the Shatt Al-Arab and in the northern reaches of the Gulf.
Oman	The Aquaculture Centre used to handle all aquaculture matters on behalf of the Ministry of Agriculture and Fisheries Wealth. However, the new Directorate of Aquaculture Development has been established, leaving the centre to focus on research. A specific committee has also been set up to monitor existing fish farms under the supervision of the Fish Quality Control Centre. Ten tilapia farms have been established farming three different strains. Oman is facing problems with salinization of groundwater. Currently, the Aquaculture Centre is working on aquaponic systems in collaboration with the private sector.
Qatar	Construction work on the new Aquatic and Fisheries Research Centre <sup>1</sup> under the Ministry of Environment has started, and the facility should be in full operation by September 2015. Collaborations with a number of universities in Qatar are being established. The centre will initially target research on eight commercially valuable and endemic marine species: rabbitfish ( <i>Siganus canaliculatus</i> and <i>S. javus</i> ), yellow-finned seabream ( <i>Acanthopagrus latus</i> ), sobaity seabream ( <i>Sparidentex hasta</i> ), golden trevally ( <i>Gnathanodon speciosus</i> ), diamond mullet ( <i>Liza</i> spp.), orange-spotted grouper ( <i>Epinephelus coioides</i> ) and green tiger shrimp ( <i>Penaeus semisulcatus</i> ). The licences for operating a pearl oyster and tilapia farms have recently been approved.
Saudi Arabia	The Gulf side of the country contributes very little to national aquaculture production, with the majority of existing commercial activities operating along the coast of the Red Sea to the west. Biosecurity and aquatic animal health

	issues are priority work areas. A Department on Biosecurity Monitoring has been established in the Ministry of Agriculture. Saudi Arabia is currently negotiating, with the support of FAO, the creation of a fisheries and aquaculture commission covering the Red Sea and Gulf of Aden. Latest aquaculture production figures: freshwater (4 497 tonnes), marine fish (2 521 tonnes) and shrimp (9 058 tonnes). The country has an ambitious aquaculture production target of about one million tonnes within the next two decades.
United Arab Emirates	Aquaculture production contributes an estimated 1 percent towards the total seafood production in the United Arab Emirates. The construction of the Sheikh Khalifa Research Center has been commenced, and the first phase – a fish hatchery – will soon be in full operation. The centre will provide technical assistance to the fishing community, engage in stock enhancement programmes, and conduct aquaculture research and development activities.

<sup>1</sup> Link to a video of the Aquatic and Fisheries Research Centre posted on YouTube:  
<http://youtu.be/eviRVPKOpzs>

## **REVIEW OF WGA INTERSESSIONAL PROGRAMME OF WORK AND BUDGET FOR THE BIENNIUM 05/2011–05/2013**

29. The WGA participants noted that the WGA programme of work as approved by the sixth session of the Commission had only been partly implemented with the organization of the approved joint RECOFI WGA/WGFM workshop Spatial Planning Development Programme for Marine Capture Fisheries and Aquaculture, held in Cairo, Egypt, from 25 to 27 November 2011.

30. The organization of the other two approved training activities on aquaculture risk analysis and environmental monitoring in cage aquaculture had not been organized, mainly owing to a lack of funds.

31. The WGA Technical Secretary reported that at its seventh session the Commission had noted that the financial constraints had hampered the implementation of agreed WGA activities, noting, however, that important initiatives had been undertaken by individual countries during the intersessional period. At the same time, the Commission recognized the benefit of conducting such initiatives through the RECOFI mechanism in order to involve other countries in the region and, hence, strengthen cooperation.

32. The WGA Focal Points were informed that at its seventh session, the Commission had revised the work programme of the WGA and agreed on the top three priority activities as follows: Priority 1) a planning workshop on the development of a national strategy on aquatic animal health; Priority 2) a technical workshop on aquaculture recirculation technologies; and Priority 3) a training workshop on aquaculture risk analysis.

33. A technical presentation on fish cage site selection in Saudi Arabia was presented by Mr Francesco Cardia, FAO Project Manager of the FAO/KSA UTF project on strengthening and supporting further development of aquaculture in Saudi Arabia (UTF/SAU/048/SAU). It was noted that this presentation had been delivered to report on a national initiative in the spirit of the discussions and recommendations that emerged from the spatial planning workshop held in Cairo, Egypt, in November 2011.

34. The representatives from Iran (Islamic Republic of) and Oman informed the meeting that their respective countries were conducting similar activities. A proposal was made to conduct a regional meeting to share experiences in fish cage culture site selection with support by three countries (Iran [Islamic Republic of], Oman and Qatar). Oman offered to host this consultative workshop.

35. With regard to activities related to the RAIS, the Secretariat informed the meeting that a training activity had been conducted in Kuwait in 2011 to upgrade the RAIS management system and to consolidate and reinforce the technical capacity for the staff of the RAIS centre.

## **REGIONAL AQUACULTURE INFORMATION SYSTEM (RAIS)**

36. The Secretariat introduced agenda item 7 covering issues related to the maintenance and updating of the RAIS. It presented the latest RAIS Web analysis report elaborated by the RAIS Regional Centre in Kuwait (Appendix 11). The report clearly indicated that there was a steady and growing interest in RAIS with a global geographical coverage particularly from all the Arabic-speaking countries (North Africa and the Gulf Region).

37. The meeting recognized, however, that several factors had, over the past two intersessional periods, limited the original scope of the system, which had been conceived as a tool for the timely dissemination and retrieval of aquaculture information. It was noted that insufficient attention from the RECOFI member countries along with an inadequate management of the system had been responsible for stalling the consolidation and effectiveness of RAIS as an updated and reliable regional source of aquaculture. The WGA Focal Points were reminded that each country was responsible from its own data reporting.

38. It was further noted that poor data inputs in all of the RAIS directories had occurred since the last WGA meeting. In particular, the delay in reporting national aquaculture production statistics had made it impossible to adequately monitor aquaculture status and trends at the national and regional level. This, along with the outdated information in some of the other RAIS directories, risked negatively affecting the reputation and reliability of the system as well as reducing the number of regular users.

39. During the ensuing discussion, a number of improvements of the information system were proposed, including the use of social media, such as Facebook and WhatsApp Messenger, to streamline communication and information sharing among the WGA Focal Points and others regional aquaculture stakeholders. It was also agreed that the aquaculture statistics query panel should be modified so as to display information on aquaculture technology (e.g. cage, pond). The Secretariat confirmed that the changes suggested and agreed would be implemented in a timely manner in cooperation with the staff of the RAIS Regional Centre in Kuwait.

40. The WGA Focal Points reiterated the importance of a functional RAIS and agreed on a series of steps to be taken to enhance the information system. More specifically, the following points were agreed: to update aquaculture production statistics up to 2013; to revise/update the data set for each directory in the system; to update the national centre pages, verifying the correctness of the WGA Focal Points' contact details; and to increase communication between the WGA Focal Points in Arabic and in posting items on the news and events pages of RAIS. The WGA Chairperson proposed, and all countries agreed, to update the RAIS contents and databases before the end of the year.

41. The Secretariat highlighted the necessity to regularly and effectively promote RAIS at the national and regional levels through the implementation of the adopted RAIS communication strategy. The meeting participants agreed that insufficient promotion actions had been taken since the launching of the RAIS and agreed that the necessary actions would be taken. The WGA Focal Points were further invited to make better use of the promotional material so far produced (flyers, press releases, RAIS user manual, etc.).

42. The WGA participants invited the RAIS Regional Centre in Kuwait to ensure that its coordinating services were secured and reinforced, if necessary, and that adequate technical IT support was continuously provided to the Commission members. The Secretariat informed the participants that a third and final training session for the staff of the RAIS Regional Centre had been organized in March 2011 to upgrade the Typo3 Content Management System and to discuss the management and maintenance issues encountered by the staff since the launching of the system. A template for the generation of Web analysis reports had been elaborated and agreed.

43. The WGA Focal Points approved the terms of reference of the staff of the RAIS Regional Centre, which had been drafted by the Secretariat in collaboration with the staff of the centre. The terms of reference appear in Appendix 6.

44. The participants further agreed that each member country should start to establish a network of national experts, from both public and private sectors, authorized to enter data in RAIS. It was noted that this issue had been discussed and agreed at previous meetings as it would increase the visibility of the system and the services offered.

45. The Secretariat delivered a presentation on the FAO NASO map collection, consisting of Google maps showing the location of existing commercial aquaculture sites and characteristics at the farm and/or administrative level (i.e. state, province and district). It was noted that the availability of the latter information was dependent on the degree of aquaculture development, the resources available to complete the NASO map data collection form, and the level of clearance provided by the country. It was further recalled that the above activity was part of the FAO Fisheries and Aquaculture Department regular programme undertaken in collaboration with its Members.<sup>1</sup>

46. The participants acknowledged that Google maps could assist member countries with the establishment of a geospatial inventory and a monitoring tool of aquaculture projects. Moreover, the collection could assist in addressing issues related to site selection and zoning. The representative of Iran (Islamic Republic of) presented the work currently being done in the country using Google maps.

47. The WGA Focal Points agreed to prepare NASO maps for their respective countries. The Secretariat distributed the MS Excel forms along with the NASO maps user manual<sup>2</sup> to assist the WGA Focal Points with the collection and storage of the data needed for the elaboration of the Google maps. Upon completion of the Excel forms, these would need to be sent to the Secretariat (Mr V. Crespi) for validation and migration into the FAO NASO maps website.

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<sup>1</sup> NASO maps website: [www.fao.org/fishery/naso-maps/naso-home/en/](http://www.fao.org/fishery/naso-maps/naso-home/en/)

<sup>2</sup> Aguilar-Manjarrez, J. & Crespi, V. 2013. *National Aquaculture Sector Overview map collection. User manual. Vues générales du secteur aquacole national (NASO). Manuel de l'utilisateur*. Rome, FAO. 65 pp. (also available at [www.fao.org/docrep/018/i3103b/i3103b00.htm](http://www.fao.org/docrep/018/i3103b/i3103b00.htm)).

48. The representative of Iran (Islamic Republic of) suggested that the RAIS website should include links to the existing online FAO National Aquaculture Legislations Overviews (NALOs)<sup>3</sup> of the RECOFI countries. The Secretariat invited those RECOFI members without a NALO to consider preparing one in consultation with the FAO Legal Office, and for those countries with one, to have theirs updated. The WGA participants noted that the availability of NALOs for the countries in the region would be an important source of information for existing and potential national and foreign aquaculture investors.

## **AQUACULTURE PRODUCTION REPORTING IN THE RECOFI REGION**

49. The WGA noted that the importance of the timely collection, submission and sharing of accurate aquaculture statistics and other relevant aquaculture information had been repeatedly raised by the WGA and endorsed by the Commission. It was further noted that, following a presentation by the Secretariat, the RECOFI aquaculture statistics available in FAO did not adequately correspond to real aquaculture production in the countries.

50. The WGA Technical Secretary invited the participants to review a draft recommendation prepared on reporting of minimum aquaculture data and information. The meeting participants were reminded that the Commission had recently adopted the binding Recommendation on Minimum Data Reporting (RECOFI/6/2011/1) for capture fisheries, which had entered into effect on 1 January 2012. This recommendation was discussed and drafted by the WGFM.

51. The full draft text of the proposed recommendation on reporting RECOFI aquaculture data and information appears in Appendix 7. The WGA Focal Points and experts were informed that the text and structure of the drafted recommendation was based on the recommendation adopted by the General Fisheries Commission for the Mediterranean (GFCM) on reporting of aquaculture data and information (Recommendation: GFCM/35/2011/6).

52. The WGA participants preliminarily reviewed the draft recommendation, but concurred that additional time would be required by the individual members to evaluate the drafted text before such draft recommendation could be submitted to the Commission and for it to agree on the mandatory collection of the aquaculture data and information. The participants agreed to revise the recommendation and suggested that possible amendments and approval could be taken up by the Commission at its next session in May 2015. It was agreed that each member would submit its comments to the relevant national authorities well in advance so that the delegates attending the next RECOFI session would be in a position to discuss, adopt or reject the proposed recommendation.

53. It was further proposed that, in the event of the recommendation being adopted by the Commission, the collected aquaculture data and information could be submitted by the individual members through specifically designed and dedicated templates accessible from the RAIS website. The RAIS would also be the tool through which the data and information submitted would be processed and made accessible to the public in an appropriate format. The WGA participants recognized that reengineering of selected RAIS web pages would be required along with the development of specific data and information reporting templates. The need to agree on standard terminology definitions was also noted.

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<sup>3</sup> NALO website: [www.fao.org/fishery/nalo/search/en](http://www.fao.org/fishery/nalo/search/en)

54. The WGA expressed its appreciation for the work undertaken by the Secretariat in drafting the recommendation.

### **APPRAISAL OF THE WGA'S WORK, INCLUDING OPTIONS TO MAKE IT MORE USEFUL TO THE NEEDS OF RECOFI MEMBERS**

55. The WGA participants discussed a series of issues that require regional attention to strengthen dialogue among the RECOFI members and consolidate the advisory services of the WGA.

#### **Emerging aquatic health issues of regional concern**

56. Considering the relevance of aquatic animal health issues of regional concern (including early mortality syndrome [EMS] in farmed shrimp) and the risk of disease introduction through live animal movements, the WGA meeting recommended that it would be important at future WGA meetings to clearly and regularly report on emerging issues and trends focusing on the species cultured in the region. Biosecurity, transboundary aquatic animal diseases along with other issues, such as technological developments, would fall into this category.

57. The Secretariat announced that an interregional FAO project had been funded to look into issues related to EMS and that Iran (Islamic Republic of) was a participating country. The meeting was also informed that Saudi Arabia would participate as a self-funding country and that this option was open to other RECOFI members. It was agreed that the Secretariat would inform all members through the WGA Chairperson on the modalities and conditions for participating in the project activities as well as share the project document. If participation proved difficult, it was noted that the project results and technical reports would be made available.

58. The WGA Chairperson acknowledged Saudi Arabia for its work on aquatic animal health biosecurity measures following the recent outbreak of the shrimp viral white spot syndrome (WSS) and encouraged other RECOFI countries to learn from this experience and improve their own biosecurity regulatory procedures. The participants from Saudi Arabia agreed to circulate the draft biosecurity guidelines, welcoming constructive technical comments.

#### **Promoting aquaculture development through network building and expertise sharing**

59. The meeting considered the need for planning additional regional activities to reduce duplication of effort, share experiences and strengthen collaborations in the development of aquaculture. The Secretariat suggested these might include: (i) regular workshops to discuss key aquaculture issues and make field visits to research facilities and commercial aquaculture operations, with the location on a rotating basis between the eight countries; (ii) establishing an Internet discussion forum for technical aquaculture issues; (iii) member countries offering training courses in their particular areas of aquaculture expertise to national staff of RECOFI countries; and (iv) national experts, in particular aquaculture specialties, making visits to other partner countries to offer technical support, backed up as needed by international experts.

60. The members considered that the above were already core aims of the RECOFI WGA and could be considered for inclusion in the next work plan. The representative of Bahrain offered to initiate an activity under items (ii) and (iii) above, by opening its facilities for technical visits and by hosting a training course in marine finfish hatchery and nursery

production starting in early 2016. The representative of Iran (Islamic Republic of) informed the participants that the National Shrimp Research Institute would be hosting an International Shrimp Symposium in Bushehr from 29 to 30 April 2015.

61. The representative of Iran (Islamic Republic of) also invited all RECOFI members to visit that country's aquaculture facilities and assured them that its aquaculture experts would be willing to share technical knowledge. He welcomed the offer of Bahrain as training in marine finfish hatchery techniques was a top priority for his country.

### **Establishing regional aquaculture centres of excellence**

62. The meeting considered the desirability of establishing regional aquaculture centres of excellence to serve the RECOFI countries. The members considered that aquaculture training and seed production centres were better developed on a national basis, with strong regional linkages.

### **WGA PROPOSED PROGRAMME OF WORK AND BUDGET FOR THE BIENNIUM 05/2015–05/2017**

63. The WGA participants discussed the programme of work for the next intersessional period, taking into account that one limiting factor would be the availability of funds from the Commission. In this regard, the WGA Technical Secretary invited the WGA Focal Points to consider funding regional activities of interest through extrabudgetary funding.

64. In addition to the activities prioritized by the Commission at its seventh session, the meeting agreed to several others as listed below.

#### ***Training in aquaculture risk analysis***

65. The WGA participants were informed that the planned aquaculture risk analysis training workshop could not take place that year owing to previous commitments of FAO staff and of the experienced consultants identified. It was agreed that the workshop would be organized in early April 2015 and held prior to the RECOFI session.

66. It was agreed that a minimum of two participants from each member country should attend this highly technical workshop and have a specific background on aquaculture or aquatic animal health or animal health. This requirement would be clearly reflected in the invitation letter requesting the countries to send to the Secretariat a short biography of the participants identified to attend the workshop.

67. As for the translocation scenario, it was agreed that the workshop should develop its work programme using the following two commercially important marine species: whiteleg or Pacific white shrimp (*Penaeus vannamei*) and European gilthead seabream (*Sparus aurata*). Barramundi or Asian seabass (*Lates calcarifer*) could be an additional species to consider.

68. It was noted that the workshop would make use of the FAO training manual *Risk Analysis for Movements of Live Aquatic Animals: An Introductory Training Course* (downloadable from the FAO website at: [www.fao.org/docrep/015/i2571e/i2571e00.htm](http://www.fao.org/docrep/015/i2571e/i2571e00.htm)).

69. The WGA Focal Points proposed and agreed that, during the organization of this workshop, the opportunity should be taken by the RECOFI participants to discuss priority issues related to aquatic animal biosecurity (with special focus on EMS and implementation

of aquatic animal health strategies at national and regional levels) and to identify, in collaboration with the FAO experts, activities that should be included in the work plan of the WGA. Time allocation would have to be considered for these discussions during the planning of the training workshop.

### ***Technical workshop on aquaculture recirculation technologies (RAS)***

70. In discussing the organization of the technical workshop on aquaculture recirculation technologies (RAS), the WGA participants reconfirmed that the Secretariat should select and invite experts from four commercial companies that provide such technology.

71. It was further agreed that each company would present its specific technology as well as provide information on production economics based on real and operating commercial facilities. It was finally suggested that it would be important for the commercial operations presented to cover different commercial species present or of interest in the region.

72. The representative of Saudi Arabia informed the meeting that the Ministry of Agriculture, with the support from the Embassy of the Netherlands, was planning a two-day seminar in Jeddah in November on RAS systems and integrated saline aquaculture, in collaboration with the Centre for Research and Innovation in Aquaculture of Wageningen University. In the spirit of regional collaboration, the participant of Saudi Arabia extended an invitation to all of the RECOFI countries to attend the seminar.

### ***Training workshop in aquaponics***

73. The WGA participants discussed fish and plant production through aquaponic systems and agreed that the interest in these production techniques was increasing in the region, particularly in Oman and Qatar. The WGA Technical Secretary informed the meeting that the FAO Fisheries and Aquaculture Department had just finalized a manual on small-scale aquaponics and that it would be available on the FAO website in December 2014.

74. The WGA Focal Point for Oman informed the meeting that the National Aquaculture Centre had been working in aquaponics and offered to host a regional training workshop on aquaponics, covering organization expenses and the cost of hiring two external experts. The offer was gratefully acknowledged by the meeting. It was agreed that the Secretariat would liaise with the WGA Focal Point of Oman and eventually inform the RECOFI members on the dates of the workshop.

### ***Training on marine fish reproduction***

75. The need for technical training on marine finfish hatchery technologies was specifically expressed by selected countries of the Commission. The WGA Focal Point of Bahrain confirmed that its hatchery research facilities could start offering short hands-on training course in early 2016, when the renovation works had been completed. The course would be offered free of charge, with the understanding that the trainees would be responsible for their travel, food and accommodation expenses.

### ***Advancement of the RAIS***

76. The WGA noted that a budget allocation would be needed to further strengthen the information system and to provide technical support to the RAIS Regional Centre in Kuwait. Such funds would also enable the Secretariat to improve the system and to develop the data and information submission templates should the Commission endorse the recommendation

on the minimum reporting of aquaculture data and information drafted by the WGA, as well as create NASO maps.

### ***Technical meeting on GIS in aquaculture***

77. Following a presentation on the use of geographic information systems (GIS) and spatial analysis in coastal zone management and marine aquaculture planning and development by Mr F. Cardia, FAO/KSA UTF Project Manager, the WGA Chairperson offered to host a regional technical meeting in Oman to discuss technical GIS applications and to share experiences in fish cage culture site selection. The initiative was supported by Iran (Islamic Republic of) and Qatar. The WGA Chairperson would initiate arrangements with the Saudi Arabia, through the FAO/KSA UTF Project, and communicate the dates of the meeting to the WGA Focal Points.

<b>Activity</b>	<b>Location</b>	<b>Dates/duration (days)</b>	<b>Indicative budget (USD)</b>
Training workshop on aquaculture risk analysis	Oman	Mid-April 2014 4–5 days	18 000
Technical workshop on aquaculture recirculation technologies (RAS)	Iran (Islamic Republic of) or Qatar	End 2015 Early 2016	2 000
Training workshop on aquaponics	Oman	TBD 4–5 days	Funded by Oman
Training on marine fish reproduction	Bahrain	March 2016	Funded by Bahrain
Workshop on the development of a regional biosecurity strategy for aquaculture <sup>1</sup>	TBD <sup>2</sup>	TBD	–
Advancement of the Regional Aquaculture Information System	Kuwait	2015–16	15 000
Technical meeting on GIS in aquaculture	Oman or Saudi Arabia	Early 2015 1–2 days	–

<sup>1</sup> Details of this activity to be discussed during the risk analysis training.

<sup>2</sup> To be determined.

## **ANY OTHER MATTERS**

### **Regional aquaculture developmental priorities**

78. The Secretariat informed the meeting that the FAO Committee on Fisheries (COFI) Sub-Committee on Aquaculture (SCA) at its seventh session (Saint Petersburg, the Russian Federation, 7–11 October 2013) had debated the role of the COFI–SCA in advancing aquaculture development. At that session, the SCA recommended that regional aquaculture development priorities be determined through regional workshops, networks and/or other mechanisms. The SCA Secretariat would then analyse and synthesize the outcomes and share the results with Members for discussions prior to the next session of the SCA.

79. The WGA meeting participants agreed to submit electronic copies of related documents containing major decisions, recommended agreements and priority-setting exercises on aquaculture development issues and targets of technical and policy issues as identified by the national authorities or regional organizations. It was further agreed that the RECOFI members would also submit, by the end of November 2014, the duly completed questionnaire prepared by FAO as an assessment instrument for national aquaculture priority setting. The WGA noted that it would have been preferable to receive the questionnaire written in Arabic. The questionnaire is reproduced in Appendix 8.

80. The WGA Focal Points were informed that FAO would review all of the questionnaires received along with the other documentation submitted, and prepare a regional aquaculture priorities and mapping synthesis document covering all the Near East and North Africa (NENA) countries. This document will be shared with all RECOFI members.

81. The Secretariat expressed its appreciation to the WGA Focal Points for their assistance and collaboration in mapping the aquaculture priorities for the region.

### **WGA Focal Points**

82. The Secretariat noted that there was a need for the RECOFI member countries to reconfirm the nominations of the WGA Focal Points and Alternate Focal Points as some changes had occurred in the past few years but the new names had not been communicated. The meeting agreed that nominations of the WGA Alternate Focal Points were no longer needed.

83. The following countries confirmed or nominated their new WGA Focal Points: Bahrain (Adly Abdel Rahman Al-Ansari); Iraq (Musaddak Delphi Ali Al-Shammari); Oman (Dawood Suleiman Al-Yahyai); Qatar (Mohammad M. Al-Abdullah). The WGA Focal Point from the United Arab Emirates indicated that the new WGA Focal Point would be Mr Mustafa Abdulqader Al-Shaer, Ministry of Environment and Water, and that the Secretariat would be officially notified after the meeting.

84. The meeting representatives of Iran (Islamic Republic of) and Saudi Arabia indicated that the Secretariat would be officially informed of the new WGA Focal Point for their respective countries by the end of November.

85. The Kuwait WGA delegates being absent, the Secretariat indicated that it would contact the officials of the Public Authority of Agricultural Affairs and Fish Resources (PAAF) to confirm the name of its WGA Focal Point. Once the information was available, the WGA Chairperson would be notified.

86. The WGA Technical Secretary indicated that only the terms of reference for the RECOFI National Focal Points had been developed and adopted by the Commission, but not the specific terms of reference for the WGA Focal Points. The WGA meeting reviewed and adopted the terms of reference for the WGA Focal Points drafted by the Secretariat. The terms of reference of the RECOFI National Focal Points and those newly adopted of the WGA Focal Points appear in Appendixes 9 and 10, respectively.

### **Other**

87. The representative of Saudi Arabia indicated the difficulties of having RECOFI reports circulated and reviewed internally as many are only available in English. The WGA

agreed to propose to the Commission the allocating of funds for the translation into Arabic of at least the reports of the annual WGA meetings.

88. The WGA Focal Points further requested and agreed that the WGA Chairperson, when communicating with the WGA Focal Points, would draft all communications in both English and Arabic.

89. The WGA Chairperson reminded the Secretariat that the draft agenda of the WGA meetings should be circulated well in advance to the WGA Focal Points to allow adequate time for consultation and preparation of meeting inputs. The WGA Chairperson further noted that it would be preferable to draft annotated agendas clearly indicating inputs expected by the WGA Focal Points, as done in the past.

90. The WGA Focal Point from Oman invited the other Focal Points to improve communication within the WGA. Several participants proposed the creation of a WhatsApp WGA Focal Point Group to enhance timely communications on issues related to the working group. The proposal was accepted and the messenger group was created.

### **Field trip**

91. On the third day of the WGA meeting, a field trip was organized for the participants to visit a tilapia hatchery<sup>4</sup> located in Manah Wilyat in the Governorate of Al-Dakhalia. The facility, owned by Mr Essa Al-Sultani, commenced operation in 2010 in close collaboration with the Aquaculture Centre of the Ministry of Agriculture and Fisheries Wealth.

### **DATE AND PLACE OF THE SEVENTH MEETING**

92. The WGA participants took note that, at the seventh session of RECOFI, the United Arab Emirates had offered to host the seventh meeting of the WGA. The offer was appreciatively endorsed by the Commission.

93. It was suggested and tentatively agreed that the next meeting should be held in October/November 2015. The proposed dates and city of the venue will be discussed with the WGA Focal Point of the United Arab Emirates and communicated in good time to all the WGA Focal Points.

### **ADOPTION OF THE REPORT**

94. The WGA Technical Secretary thanked all the participants for their contribution in the discussions, particularly towards the drafting of the work programme for the next biennium. The report of the meeting was subsequently adopted through email exchanges on 12 December 2014.

95. The meeting noted with appreciation the kind support from the Sultanate of Oman in hosting and providing administrative and logistic support to the meeting.

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<sup>4</sup> Link to a video (in Arabic) of the tilapia hatchery: [www.youtube.com/watch?v=bCTpqeOJI0Y](http://www.youtube.com/watch?v=bCTpqeOJI0Y)

**Agenda**

1. Opening of the Meeting
2. Adoption of the Agenda and arrangements of the meeting
3. Review of the Fifth meeting of the RECOFI Working Group on Aquaculture
4. Main outcomes of the Seventh session of RECOFI
5. Review of the outcomes of the Tripartite Meeting on Fisheries Management Cooperation in the Northern Area of RECOFI and progress
6. Status review of aquaculture development by country
7. Review of WGA intersessional programme of work and budget for the biennium 05/2011–05/2013
8. Regional Aquaculture Information System (RAIS)
9. Aquaculture production reporting in the RECOFI Region
10. Appraisal of the WGA's work including options to make it more useful to the needs of RECOFI Members
11. WGA proposed programme of work and budget for the biennium 05/2015–05/2017
12. Any other matter
13. Date and place of the Seventh meeting
14. Adoption of the report

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**List of documents**

RECOFI:WGA/VI/2014/1 Rev.3	Annotated Agenda
RECOFI:WGA/VI/2014/2	Draft Terms of Reference of the RAIS Regional Centre Staff
RECOFI:WGA/VI/2014/3	Draft Recommendation on Minimum Reporting of RECOFI Aquaculture Data and Information
RECOFI:WGA/VI/2014/4	Appraisal of the WGA's work including options to make it more useful to the needs of RECOFI Members
RECOFI:WGA/VI/2014/5	Draft Strategic Framework for Strengthening the Role of the Sub-Committee on Aquaculture in Advancing Aquaculture Development. The questionnaire
RECOFI:WGA/VI/2014/Inf.1	List of documents
RECOFI:WGA/VI/2014/Inf.2	List of participants
RECOFI:WGA/VI/2014/Inf.3	Report of the Sixth Session of the Regional Commission for Fisheries, Rome, Italy, 10–12 May 2011. FAO Fisheries and Aquaculture Report No. 982. Rome. 46 pp
RECOFI:WGA/VI/2014/Inf.4	Report of the Seventh Session of the Regional Commission for Fisheries, Tehran, Islamic Republic of Iran, 14–16 May 2013. FAO Fisheries and Aquaculture Report No. 1052. Rome. 51 pp
RECOFI:WGA/VI/2014/Inf.5	Report of the Fifth Meeting of the RECOFI Working Group on Aquaculture, Doha, Qatar, 27 October 2010. FAO Fisheries and Aquaculture Report No. 954. Rome. 70 pp
RECOFI:WGA/VI/2014/Inf.6	Report of the Joint RECOFI WGA/WGFM Workshop on Spatial Planning Development Programme for Marine Capture Fisheries and Aquaculture, Cairo, Egypt, 25–27 November 2011. FAO Fisheries and Aquaculture Report No. 1039. Rome. 127 pp
RECOFI:WGA/VI/2014/Inf.7	Report of the Regional Technical Workshop on Aquatic Animal Health, Jeddah, Kingdom of Saudi Arabia, 6–10 May 2008. FAO Fisheries and Aquaculture Report No. 876. Rome. 119 pp
RECOFI:WGA/VI/2014/Dma.1	Project document "Initiative on Fisheries Management Cooperation in the Northern Area of the Regional Commission for Fisheries (RECOFI), FAO, 2012
RECOFI:WGA/VI/2014/Dma.2	Report of the Seventh session of the FAO Committee on Fisheries (COFI) Sub-Committee on Aquaculture (SCA), St Petersburg, Russian Federation, 7–11 October 2013
RECOFI:WGA/VI/2014/Dma.3	Report of the Special Meeting on RECOFI Consolidation and Development, Rome, Italy, 11–12 May 2010. FAO Fisheries and Aquaculture Report No. 960. Rome. 37 pp

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- RECOFI:WGA/VI/2014/Dma.5      State of the World Fisheries and Aquaculture, FAO, Rome, 2014
- RECOFI:WGA/VI/2014/Dma.6      Commercially Important Sea Cucumbers of the World, FAO Species Catalogue for Fishery Purposes No. 6, FAO, Rome, 2012
- RECOFI:WGA/VI/2014/Dma.7      Risk Analysis for Movements of Live Aquatic Animals: An Introductory Training Course. FAO SAP, Samoa. 2012. 167 pp.

**Opening statement**  
by  
**Dr Ahmed bin Mohammed Al-Mazrooie**  
**General Director of Fisheries Resources Development**  
**Ministry of Agriculture and Fisheries Wealth**  
**Sultanate of Oman**

*“In the name of God, Most Gracious, Most Merciful”.*

*Praise be to God, and blessings and peace be upon our Prophet Mohammed the guiding and the faithful and upon his relatives and followers.*

H.E. Dr Hamed bin Said Al-Oufi, Undersecretary, Ministry of Agriculture and Fisheries Wealth,  
Mr El-Zein El-Muzamil, FAO Representative in Oman,  
Distinguished Delegates from RECOFI Member States,  
Ladies and Gentlemen,

A’Salaam Alaikumm.

On behalf of the Ministry of Agriculture and Fisheries Wealth, I would like to welcome all the delegates from the RECOFI Member countries participating in this Sixth meeting of the Working Group on Aquaculture (WGA) and wish you all a very successful meeting.

Aquaculture in Oman is an important and growing economic area. The Ministry of Agriculture and Fisheries Wealth considers it as one of the main pillars for the development of the fisheries sector with an estimated production target of 200 000 tonnes by 2040. In order to achieve this goal, the Ministry has undertaken several initiatives starting with the formulation of an Aquaculture Master Plan prepared in collaboration with the FAO. This output marked the main step forward in the development process of the sector. In this regard, we would like to thank the FAO for their continuous support to the Sultanate of Oman in its efforts to sustainably develop their fishery industry including aquaculture. Other initiatives, including the publication of the national aquaculture potential site atlas, the aquaculture by-law, the aquaculture investment guidelines, and many more have been supported by the Ministry in order to create an enabling environment for the development of this promising industry. Thus, Oman strongly supports all regional aquaculture forums such as the WGA and is committed to ensure their success.

The Working Group on Aquaculture was established in 2003 with clear aims and objectives among which the provision of advice to the Regional Commission for Fisheries (RECOFI) on technical and policy matters related to aquaculture. The Working Group on Aquaculture is an important forum for discussing foremost issues and trends related to regional aquaculture development and, an effective platform for technical cooperation, coordination and information sharing among the Member countries of the Commission. Since its establishment, the WGA has been active and executed numerous and valuable initiatives in support of the aquaculture sector in the RECOFI area. Some of these initiatives, among many others, included the establishment of the Regional Aquaculture Information System (RAIS), and the organization of technical workshops on aquatic health, marine cages and spatial planning in fisheries and aquaculture. This WGA is considered and recognized as the main intergovernmental forum in the RECOFI area for aquaculture matters, and hence, it should be adequately supported for it to adequately fulfil its terms of reference and provide the services expected.

It is most important that the Working Group on Aquaculture is supported to enable it to better respond to the needs of the region, particularly through the implementation of focused and strategic activities discussed and identified through a clear vision of the long-term regional aquaculture developmental potential. Furthermore, we encourage the active involvement of private sector in the activities and

deliberations of the WGA, as an important stakeholder in the development of this food production industry. The WGA is also invited to further enhance the bilateral and regional exchange of experiences and knowledge. We, in the Sultanate of Oman, recognize the importance of a functional RAIS as the only regional aquaculture sector information tool. We therefore recommend and invite all RECOFI Members to adequately maintain and further expanded this web-based information system by providing the necessary and regular inputs. The role of the WGA in further improving the system is acknowledged.

We believe that Working Group on Aquaculture has considerable work ahead of it and should actively engaged in discussions focused on the identification of regional activities that would promote its technical advisory role and the sustainable development of aquaculture in the region. We, therefore, call on the WGA participants of this meeting to succeed in their deliberations, to focus on practical recommendations and to draft a concise and productive work plan for the next intersessional period (May 2015 to May 2017). The Sultanate of Oman will continue to encourage and support the efforts of this vital regional working group including all endorsed activities supporting the development of a sustainable aquaculture industry in the region.

Finally, I would like to express our appreciation to Dr Hamed bin Said Al-Oufi, Undersecretary of the Ministry of Agriculture and Fisheries Wealth, for his presence and patronage at this opening ceremony. On behalf of my colleagues in the Ministry of Agriculture and Fisheries Wealth, I would also like to show appreciation to the RECOFI Member countries that have positively responded to the invitation of this meeting. Finally, we wish to extend our sincere thanks to the RECOFI Secretariat and FAO HQ and regional staff engaged in supporting the work of the Commission and of its two technical working groups.

Thank you and best wishes for a successful meeting.

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بسم الله الرحمن الرحيم

والصلاة والسلام على سيدنا محمد وعلى آله وصحبه أجمعين

سعادة الدكتور/ حمد بن سعيد العوفي، وكيل وزارة الزراعة والثروة السمكية للثروة السمكية

الفاضل/ مصطفى الزين المزمّل، ممثل الفاو في سلطنة عمان

ضيوفنا الاعزاء من البلدان الاعضاء في الهيئة الاقليمية لمصائد الاسماك

ايها السيدات والسادة

السلام عليكم ورحمة الله وبركاته

يسرني وفي البداية ونياية عن زملائي واخواني في وزارة الزراعة والثروة السمكية ان ارحب بالوفود المشاركة من البلدان الاعضاء في الهيئة الاقليمية لمصائد الاسماك (الريكوفي) في الاجتماع السادس لمجموعة العمل المعنية بتربية الاحياء المائية في العاصمة مسقط متمنيا النجاح والتوفيق لاعمال هذا الاجتماع.

يعتبر قطاع الاستزراع السمكي من القطاعات الاقتصادية الهامة وهو من الاعمدة الرئيسية في تنمية قطاع الثروة السمكية في السلطنة. وتهدف وزارة الزراعة والثروة السمكية الى الوصول الى انتاج يبلغ حوالي 200 الف طن بحلول عام 2040 من الاستزراع السمكي. ولتحقيق هذا الهدف، قامت الوزارة بالعديد من المبادرات منها إعداد الخطة الاستراتيجية لتطوير قطاع الاستزراع السمكي بالتعاون مع منظمة الفاو والتي تعتبر الخطوة الابرز في مسيرة تنمية القطاع. وفي هذا الاطار، نود ان نتقدم بجزيل الشكر الى منظمة الفاو على دعمهم المستمر للسلطنة في جهودها الرامية الى تطوير قطاع الثروة السمكية بطريقة مستدامة. ومن المبادرات الاخرى ايضا التي قامت بها الوزارة هي إعداد

أطلس للمواقع المناسبة للاستزراع السمكي، وإعداد لائحة الاستزراع السمكي، وإعداد الدليل الاستثماري لتنمية الاستزراع السمكي وغيرها من المبادرات التي تهدف الى توفير بيئة مساعدة لتنمية هذا القطاع الواعد.

تأسست مجموعة العمل المعنية بتربية الاحياء المائية في عام 2003 مع أهداف واضحة أهمها تقديم النصيحة للهيئة الاقليمية لمصائد الاسماك فيما يتعلق بالقضايا الفنية والسياسات الخاصة بتربية الاحياء المائية. وتعتبر المجموعة منتدى عام لمناقشة القضايا الرئيسية والاتجاهات المرتبطة بالتطوير الاقليمي لتربية الاحياء المائية ومنصة فعالة للتعاون الفني، والتنسيق وتبادل المعلومات بين البلدان الاعضاء في الهيئة. ومنذ إنشائها في عام 2003، كانت مجموعة العمل فعالة، وقامت بالعديد من المبادرات القيمة في إطار دعم قطاع تربية الاحياء المائية في منطقة الريف. ومن بين هذه المبادرات، ومن ضمن مبادرات كثيرة، تأسس النظام الاقليمي لمعلومات تربية الاحياء المائية (RAIS)، وتنفيذ ورشة عمل حول صحة الكائنات المائية، وورشة عمل حول الاستزراع السمكي بطريقة الاقفاص العائمة، وورشة عمل حول التخطيط المكاني في قطاع الثروة السمكية والاستزراع السمكي. ويمكن النظر الى مجموعة العمل على انها المنتدى الرئيسي شبه الحكومي في منطقة الريف لمناقشة قضايا تربية الاحياء المائية. ولذلك، فإنه يجب دعمها بشكل كافي لتحقيق مهام العمل المطلوبة منها وتقديم الخدمات المتوقعة منها.

إنه من المهم جدا دعم مجموعة العمل وذلك لجعلها قادرة أكثر على الاستجابة لمنطلقات البلدان الاعضاء، وبالاخص من خلال تطبيق استراتيجية ومركزة يتم مناقشتها والاتفاق عليها من خلال رؤية واضحة طويلة المدى لاهداف عملية تطوير قطاع تربية الاحياء المائية في المنطقة. وأكثر من ذلك، فإننا نشجع بشكل أكبر المشاركة الفعالة للقطاع الخاص في أنشطة وفعاليات مجموعة العمل وذلك كونهم من أصحاب الشأن الرئيسيين في تنمية قطاع الانتاج الغذائي. كما ندعو مجموعة العمل الى ان تعمل بفعالية أكثر في تحسين التبادل الثنائي والاقليمي للخبرات والمعرفة.

ونحن في سلطنة عمان، ندرك بشكل كبير أهمية تفعيل عمل النظام الاقليمي لمعلومات تربية الاحياء المائية كأداة وحيدة لتبادل المعلومات حول هذا القطاع. وعليه، ندعو جميع البلدان الاعضاء في الهيئة الاقليمية لمصائد الاسماك الى القيام بدورها في المحافظة على هذا النظام وتوسيعه من خلال التحديث المستمر للبيانات. ونحن نقدر الدور الكبير الذي تقوم به المجموعة في التحسين المستمر لهذا النظام. ونحن نعتقد ان هذه المجموعة لديها أعمال كثيرة تنتظرها، ويجب ان تشارك بفعالية في المناقشات التي تركز على تحديد الأنشطة الاقليمية والتي بلا شك سوف تفعل دورها الرئيسي كجهة استشارية فنية. كما انها ستساهم في التنمية المستدامة لقطاع تربية الاحياء المائية في المنطقة. وعليه، فإننا ندعو المشاركين في هذا الاجتماع للتركيز على ايجاد توصيات عملية، وايضا اقتراح برنامج عمل مثمر ومركز للفترة القادمة (مايو 2015 - مايو 2017). وسوف تستمر سلطنة عمان في تشجيع ودعم جهود هذه مجموعة العمل المهمة وتتضمن جميع الأنشطة التي يتم الاتفاق عليها والتي تدعم التنمية المستدامة لقطاع تربية الاحياء المائية.

وأخيراً، فإنني اتقدم بجزيل الشكر والتقدير الى سعادة الدكتور/ حمد بن سعيد العوفي، وكيل وزارة الزراعة والثروة السمكية للثروة السمكية لتفضله بالحضور وافتتاح أعمال هذا الاجتماع. وبالنيابة عن زملائي في وزارة الزراعة والثروة السمكية، فإنني اود ان اتقدم بجزيل الشكر والتقدير الى البلدان الاعضاء في الهيئة الاقليمية لمصائد الاسماك على استجابتهم الفعالة للمشاركة في هذا الاجتماع. وأخيراً، فإننا نود ايضا ان نشكر سكرتارية الهيئة والمكتب الرئيسي لمنظمة الفاو وموظفي المكاتب الاقليمية للفاو في المنطقة على دعمهم لأعمال الهيئة ومجموعتي العمل التابعتين لها.

واتمنى لكم اجتماعاً موفقاً بإذن الله، والسلام عليكم ورحمة الله وبركاته.

**Terms of reference<sup>1</sup>  
of the  
RECOFI Working Group on Aquaculture (WGA)**

The Terms of Reference for the RECOFI Working Group on Aquaculture (WGA) shall be to:

- Advise RECOFI on technical and policy matters related to aquaculture.
- Identify and discuss major issues and trends in regional aquaculture development.
- Identify and establish national focal points.
- Encourage technical cooperation and coordination among the Member countries.
- Monitor development and trends of aquaculture practices in the region.
- Establish a system for regular collection, up-dating and dissemination of aquaculture information.
- Review existing legislations in Member countries and encourage regional coordination with a view to promote harmonization, as appropriate.
- Form ad hoc aquaculture working groups, as and when required.
- Carry out other duties related to aquaculture promotion and development that may be referred to it by RECOFI.

The regular activities of RECOFI Secretariat related to the function of the Working Group on Aquaculture will be:

- The organization of the annual meeting of the Working Group on Aquaculture.
- The participation of a member of the Secretariat in the annual meeting of the Working Group on Aquaculture.
- The overall coordination and supervision of ad hoc working groups through nominated chairpersons.
- The preparation, publication and dissemination of the Working Group on Aquaculture meeting reports.

In addition to the regular activities of the Working Group on Aquaculture, indicated above, there could be additional activities which would require extra-budgetary resources which could take the form of specific projects, or a direct financial coverage of the activities by the countries hosting or participating in them, and which would be discussed by the Working Group on Aquaculture and RECOFI on a case-to-case basis. Example of these extra activities could be:

- Special reports on aspects of aquaculture development.
- Surveys linked to the development of aquaculture and to the generation of information.
- Training courses, seminars and workshops.
- Technical consultations on an ad hoc basis.
- Organization of study tours.

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<sup>1</sup> The Commission endorsed the recommendation to establish a standing Working Group on Aquaculture (WGA) and its Terms of Reference at its second session held in Muscat, Oman, from 18 to 21 May 2003.

**Terms of reference  
of the  
Regional Aquaculture Information System (RAIS)  
Regional Centre Staff**

The RAIS Regional Centre staff will be responsible for the management, maintenance, assessment and exchange of aquaculture related data and information among all RECOFI Member countries and networking with national governmental institutions, scientific and non-governmental organizations, regional and specialised agencies, for the effective information dissemination and implementation of network activities. The staff should accomplish the following tasks:

- Liaise with all WGA Focal Points to implement and ensure an efficient data and information flow in RAIS.
- Encourage the WGA Focal Points to submit data and news on a regular basis.
- Prepare and distribute news releases and technical reports, as appropriate, and produce a brief annual report on the status, trends and perspective of aquaculture development in the region.
- Carry out regular revision and validation of submitted data to ensure correctness and consistency.
- Ensure the regular maintenance of the information system, supervising ongoing publishing activities and administration of the system including backups and security patches.
- Conduct web analysis to assess the impact of RAIS on aquaculture stockholders, and prepare bi-annual standardized web analysis reports to be presented during the annual meetings of WGA and RECOFI sessions.
- Handle relevant correspondence and reply to inquiries for public information materials;
- Liaise with public/private organizations which may support the RAIS Network.
- Participate when possible in national and regional events (e.g. meetings, conferences, workshops, fairs) and deliver presentations for promoting the services of RAIS in the region.

Man-power requirements:

- Aquaculture Officer: with university degree or equivalent in aquaculture science with at least 5 years of experience in the Gulf region.
- Information Officer: University degree or equivalent in information or communications sciences with at least 5 years of practical experience in information and communication.
- IT Officer: University degree or equivalent in computer science with at least 5 years of practical experience in information architecture of web sites, content management and maintenance tools.

All should satisfy the following criteria:

- Excellent and proven communication skills with government officials, scientific organizations and other stakeholders engaged in the Gulf aquaculture sector.
- Fluency in written and spoken Arabic and English.
- Excellent team working skills.

**RECOFI draft recommendation  
on  
minimum reporting of aquaculture data and information**

The Regional Fisheries Commission (RECOFI),

*RECALLING* the FAO Code of Conduct for Responsible Fisheries which calls for sustainable development and responsible aquaculture practices;

*RECALLING* the RECOFI's role in promoting the sustainable development of aquaculture in the marine areas defined in Article IV of the RECOFI Agreement;

*RECALLING* the Article III(g) of the RECOFI Agreement in which Contracting Parties agree to promote programmes for aquaculture enhancement and to regularly collect and disseminate information on aquaculture production and other data relevant to the function of the Working Group on Aquaculture (WGA) and as defined in the endorsed Terms of Reference of the WGA;

*CONSIDERING* the development of the Regional Aquaculture Information System (RAIS) to promote aquaculture in region as endorsed by RECOFI at its third Session;

*RECOGNIZING* the need of the Working Group on Aquaculture to have reliable data available to undertake its work effectively;

*RECALLING* that standards in aquaculture data collection and statistics should be established in line with guidelines set by the FAO Coordinating Working Party on Aquaculture Statistics;

*NOTING* that the Regional Aquaculture Information System has been established as the aquaculture data collection scheme through which RECOFI Member States can regularly submit national data on aquaculture;

*NOTING* that RECOFI endorsed that the responsibilities of the RAIS national coordinators be formally endowed with a national institution;

*ADOPTS*, in conformity with the provision of paragraph 1 (b) and (h) of Article III and Article V of the RECOFI Agreement, the following:

1. Contracting Parties shall submit the data for all the parameters listed below on an annual basis to the RECOFI Secretariat through the RAIS website:

**PRODUCTION STATISTICS**

- CWP<sup>2</sup> Statistical Areas;
- Culture environment (brackish, marine and freshwater);
- Cultured species (scientific and common name; including capture-based species);
- System of culture (extensive, semi-intensive, intensive);
- Type of culture (cages, ponds, raceways, hatchery, etc.);
- Type of product (ongrowing, eggs, fingerlings, etc.);
- Capture-based aquaculture input (seed quantity: eggs, wild fingerlings, wild fish, etc.);

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<sup>2</sup> See *The Coordinating Working Party on Fishery Statistics: Its Origin, Role and Structure*. FAO Fisheries Circular. No. 193. December 1995.

- Production quantity (tonnes/units);
- Production value (currency);

#### PRODUCTION CENTRES

- Unit (segment) of production (hatcheries, ongrowing farms);
- Number of production centres per unit (segment);
- Cultured species per unit (segment);
- Total volume (m<sup>3</sup>) of facilities of production centres per segment;
- Destination of product per segment (consumption, ongrowing, restocking, ornamental).

#### MARKET

- Feed, fishmeal and fish oil:
    - Domestic production (tonnes)
    - Feed prices for major farmed species (per tonne)
    - Domestic prices (per tonne)
  - Trade and consumption:
    - Import and export of aquatic products (weight and value)
    - Import and export of major farmed species (weight and value)
    - Main export destination for farmed species
    - National per capita consumption of aquatic products
2. The deadline for submissions is xx (day) xxxxx (month), with the reference year for the data submitted being the preceding year.
  3. Members shall nominate a national focal point responsible for the submission of aquaculture data.

**Draft Strategic Framework for Strengthening  
the Role of the Sub-Committee on Aquaculture  
in Advancing Aquaculture Development**

**Priority Setting Questionnaire**

The FAO Committee on Fisheries (COFI) Sub-Committee on Aquaculture (SCA) met for its Seventh session in St. Petersburg, Russian Federation, from 7 to 11 October 2013. It debated, among others, the *Draft Strategic Framework for Strengthening the Role of the Sub-Committee on Aquaculture in Advancing Aquaculture Development*, and recommended the following way forward<sup>3</sup>:

“In support of the Strategic Framework and the GAAP, the Sub-Committee agreed to the identification of cross cutting and other leading global priorities and proposed the following sequence:

- a. Hold consultations through regional workshops, networks and/or other mechanisms such as reviewing previous existing knowledge from previous priority settings to determine the regional priorities linked to the FAO Strategic objectives for the work of the Sub-Committee;
- b. The Secretariat should analyze and synthesize the outcomes of the regional consultations and share the results with Members for discussion at least six months before the next session of the Sub-Committee.”

In response, an FAO Secretariat with staff from FAO-HQ and decentralized offices, considering the scope of the task and resources available, agreed on the following process of compilation and analysis/synthesis:

1. Grouping Member countries following a regional approach (Europe, Asia-Pacific, Sub-Saharan Africa, **Near East and North Africa**, Latin America and the Caribbean, and Northern America)

For each region:

Compile, review, organize and reference all key documents containing major decisions, recommendations agreements and priority setting exercises on aquaculture development issues and targets of technical and policy nature during the past 5-10 years, especially as identified by regional organizations (IGOs and INGOs) on the basis of governments’ and other stakeholders’ inputs<sup>4</sup> [*output: annotated list of relevant regional documents on aquaculture development issues and targets*]

2. Identify, select and usefully group the contents of those major decisions, recommendations and agreements on aquaculture development issues, processes and targets [*output: consolidated list of regional priority issues, processes and targets*]
3. Group, reference and synthesize the major decisions, recommendations and agreements on aquaculture development issues and targets for presentation in one document listing the priority issues, processes and targets for aquaculture

<sup>3</sup> COFI:AQ/VII/2013/4: para 33. Available at <http://www.fao.org/cofi/34736-07e58c52b91e7460ec7ea5bfa63e6fa21.pdf>

<sup>4</sup> Where regional priorities are unavailable, or where regional priorities do not cover all countries of a region, national priorities will be compiled/added, clearly identified as such.

development, as highlighted by key references [*output: pre-final draft of regional aquaculture priorities*]

4. Review of the pre-final draft of compilation of regional aquaculture priorities and mapping against FAO's strategic objectives, major areas of work and regional initiatives by the FAO Secretariat, and preparation of final drafts [*output: Six SCA Information Documents*].
5. Preparation of draft analysis and synthesis document and sharing with Members via SCA website and other electronic means six months before the next SCA Session [*output: SCA Working Document*]
6. Compilation of feedback from Members [*output: Annex of SCA Working Document*]
7. Posting of documentation on the SCA website [*output: SCA Working Document with Annex*].

## **1. ASSESSMENT INSTRUMENT FOR SUB-REGIONAL PRIORITY SETTING**

### ***1.3 Assessment of Capacities for Management and Science and Technology Support to Development***

The pursuit of the global goals of food security, poverty alleviation and environmental sustainability is enabled by five global strategies, which are in effect, the current global advocacies, namely:

1. achieving blue growth,
2. sustainable intensification of aquaculture,
3. ensuring decent livelihoods and employment,
4. ensuring market access and responsible trading, and
5. infusing climate change resilience and adaptive capacity.

It is assumed that all five occupy high priorities in the development of aquaculture in all the sub-regions. In this light, this section is aimed at setting the priority areas for support. The instrument of assessment is the attached questionnaire, essentially a checklist. The questionnaire aims to broadly assess the capacities of the sub-regions for aquaculture development.

There are two capacity areas being assessed: (1) Management of aquaculture development and (2) Science and Technology support to aquaculture development. The indications from the assessment will be as much the strengths as the weaknesses. The assumption is that the strengths will be focused on the priority or priorities to which they are matched. The weaknesses are opportunities for support.

Specifically what the results will hope to indicate are:

- Sub-regional capabilities for management of aquaculture development
- Sub-regional capacity for science and technology to support management of aquaculture development
- Gaps in management capacity
- Gaps in science and technology support
- Opportunities for improvement in management capacity
- Opportunities for investments in science and technology

**The checklist seeks to assess the following capacities:**

**1. Governance/Management Support**

1. Command and Control - Policy, Regulations, Institutions, Monitoring and Evaluation
2. Market based - green tax, eco labels, social labels?
3. Voluntary - BMPs, COCs, GAPS, etc.
4. Stakeholders participation - co-management, PPPs.

**2. Science and Technology Support**

1. Breeding and genetics
2. Feed and nutrition
3. Health management/biosecurity
4. Biotechnology
5. Information technology
6. Nanotechnology
7. Socio-economics

**Governance mechanisms to be assessed are:**

**Command and control**

1. Presence and status of implementation of a Strategy and Action Plan for Aquaculture
2. Capacity for planning and implementation of Strategy and Action Plan (SAP)
3. Capacity for monitoring and evaluation of the SAP
4. Capacity for surveillance and enforcement
5. Capacity for zoning, site selection and area management guidelines

**Market-based**

1. Quality and Safety standards and certification
2. Eco-labelling
3. Social-labelling
4. Environmental or green tax

**Voluntary or self-management**

1. Develop and Promote Better Management Practices
2. Develop and Promote Codes of Conduct
3. Promote organizations of farmers
4. Promote a regional federation of aqua farmers

**Participatory governance**

1. Develop and organize co-management schemes
2. Promote the formation of industry alliances
3. Promote the formation of science and technology clusters
4. Promote public-private participation

**Science and Technology Support capacities to be assessed are those for:**

**Input production and supply**

1. Domestication of species for culture
2. Broodstock development and seed production and supply
3. Genetics and selective breeding
4. Feed development and manufacture

**Production**

1. Feed and nutrition
2. Health management
3. Soil and water management

4. Integrated farming systems
5. Integrated multi-trophic aquaculture
6. Recirculation aquaculture systems
7. Offshore aquaculture

#### **Post-harvest and processing**

1. Food safety and quality assurance
2. Waste reduction and utilization
3. Product value-addition
4. Niche products
5. Novel applications of wastes and by products

#### **Market access and trade**

1. Food safety and quality standards and certification
2. Quality inspection and assurance mechanism
3. Market Information
4. Trade promotion
5. Product development and innovation

#### **Value chain management**

1. Removal of sources of inefficiencies along the chain
2. Process efficiency in supply chain management
3. Creation of values and employment along the chain
4. Life-cycle analysis
5. Public Private Participation in value chain management

#### **Resource management and environmental and biodiversity protection**

1. Waste management and utilization
2. Renewable energy
3. Quarantine measures
4. Introduction and movement of live aquatic animals
5. Substitutes for fish meal and oil in feed
6. Development of marginal lands for aquaculture

#### **Climate change resilience and adaptation**

1. Vulnerability assessments and mapping
2. Early warning systems
3. Insurance
4. Risk assessment and management

## **2. ASSESSMENT METHODOLOGY**

### **2.1 *Level of capacity***

1. Very High - can support rapid and sustainable growth
2. High - can support rapid growth
3. Moderate - can support steady but slow growth
4. Low - sufficient to maintain the status quo
5. Very low - none to rudimentary

#### **Example for Governance**

- **Minimum requirement:** an aquaculture policy and strategy adopted; planning tools are in place - i.e. statistics and information.

- **Ideal:** All mechanisms of governance are present: regulations, market based, voluntary, stakeholder participation.

### Example for Science and Technology Support

- **Minimum requirement:** institutional and manpower capacity to borrow, adapt, diffuse and adopt technology.
- **Ideal:** capacity for basic, applied, adaptive, farming systems research; technology development and innovation; capacity for training at all levels; and capacity for rapid technology transfer.

## 3. ASSESSMENT FRAMEWORK

### 3.1 *Indicative Priorities*

Relative importance of 7 development thrusts WITHIN each sub-region.

Please indicate their relative importance in your sub-region by ranking them 1 to 5 (1 as the most important. Do not duplicate rankings; there should not be for example two 1s and three 2s!).

Development Thrusts	Country: .....
Achieve blue growth	
Sustainable intensification	
Generate opportunities for secure and decent livelihood/employment	
Create values along the value chain	
Conserve biodiversity and assure sustainability of production assets	
Responsible Marketing and Trade	
Mitigate all kinds of risks	

### 3.2 *Overall capacity level*

#### Overall capacity for AQUACULTURE GOVERNANCE within each sub-region

Please make an overall assessment of the capacity for these governance mechanisms in your sub-region. Use this guideline:

1. **Very High** - can support rapid and sustainable growth
  2. **High** - can support rapid growth
  3. **Moderate** - can support steady but slow growth
  4. **Low** - sufficient for maintaining status quo
  5. **Very Low** - none to rudimentary
- **Minimum requirement:** an aquaculture policy and strategy adopted; planning tools are in place - i.e. statistics and information.

- **Ideal:** All mechanisms of governance present: regulations, market based, voluntary, stakeholder participation.

Governance Mechanisms	Country: .....
Command and Control	
Market based governance mechanism	
Voluntary management	
Stakeholders participatory management	

### Overall capacity for SCIENCE AND TECHNOLOGY support for aquaculture management and development within each sub-region

Please make an overall assessment of the capacity for S and T in your sub-region. Use this guide:

1. **Very High** - can support rapid and sustainable growth
  2. **High** - can support rapid growth
  3. **Moderate** - can support steady but slow growth
  4. **Low** - sufficient for maintaining status quo
  5. **Very Low** - none to rudimentary
- **Minimum requirement:** institutional and manpower capacity to borrow, adapt, diffuse and adopt technology.
  - **Ideal:** capacity for basic, applied, adaptive, farming systems research; technology development and innovation; technology transfer and training at all levels from vocational to scientific skills.

Science and Technology Areas	Country: .....
Breeding and genetics	
Feed and nutrition	
Health management/biosecurity	
Biotechnology	
Information Technology	
Nanotechnology	
Socio-economics	

### 3.3 Capacity levels in specific AQUACULTURE MANAGEMENT MECHANISMS and TOOLS

1. **Very High** - can support rapid and sustainable growth
2. **High** - can support rapid growth
3. **Moderate** - can support steady but slow growth
4. **Low** - sufficient for maintaining status quo
5. **Very Low** - none to rudimentary

Assessment guide:

- policies and regulations that are in line with international agreements (especially the CCRF) have been enacted, formulated or realigned;

- environmental regulations and standards have been instituted or their enforcement strengthened;
- certification schemes on food safety, environmental and social responsibility of farms and hatcheries and in processing and trading are promoted and widely adhered to;
- environmental and social codes of practices and BMPs have been widely promoted;
- organization of farmers into clusters and associations;
- stakeholders participation is a norm in policy making and decision making.

Management Mechanism	Country: .....
<b>COMMAND AND CONTROL</b>	
Strategy and Action Plan	
Planning and implementation of Strategy and Plan	
Monitoring and evaluation of SAP	
Surveillance and enforcement	
Zoning, site selection and area management	
<b>MARKET-BASED</b>	
Quality & safety standards and certification	
Eco-labeling	
Social labeling	
Environmental or green tax	
<b>VOLUNTARY/SELF MANAGEMENT</b>	
Better management practices	
Codes of Conduct	
Farmers' organizations at various levels (cluster, local, national, regional)	
Industry alliances, professional societies	
Science and technology/innovation clusters	
<b>PARTICIPATORY GOVERNANCE</b>	
Co-management	
Public Private Participation	
Stakeholders consultative mechanism	

### 3.4 *Capacity levels in Specific Areas of SCIENCE & TECHNOLOGY SUPPORT for aquaculture management and development*

1. **Very High** - can support rapid and sustainable growth
  2. **High** - can support rapid growth
  3. **Moderate** - can support steady but slow growth
  4. **Low** - sufficient for maintaining status quo
  5. **Very Low** - none to rudimentary
- **Minimum requirement:** institutional and manpower capacity to borrow, adapt, diffuse and adopt technology.

- **Ideal:** capacity for basic, applied, adaptive, farming systems research; technology development and innovation; capacity for training at all levels; and capacity for rapid technology transfer.

Science and Technology Area	Country: .....
<b>1. INPUTS - Seed</b>	
1.1. Domestication	
1.2. Broodstock development	
1.3. Hatchery/seed production and supply	
1.4. Genetics and selective breeding	
<b>2. INPUTS - Feed</b>	
2.1. Natural foods	
2.2. Feed and nutrition research	
2.3. Feed development and formulation	
<b>3. ENERGY</b>	
3.1. Renewable energy	
3.2. Energy-efficient systems	
<b>4. PRODUCTION</b>	
4.1. Feed management	
4.2. Health management	
4.3. Soil and/water management	
<b>5. PRODUCTION SYSTEMS</b>	
5.1. Polyculture	
5.2. Integrated farming systems	
5.3. Integrated Multi-Trophic Aquaculture	
5.4. Aquaponics	
5.5. Recirculation aquaculture systems	
5.6. Offshore aquaculture	
<b>6. POST HARVEST and PROCESSING</b>	
6.1. Food safety and quality assurance	
6.2. Waste reduction and utilization	
6.3. Product value addition	
6.4. Niche products	
6.5. Novel application of wastes & by-products	
<b>7. MARKET ACCESS AND TRADE</b>	
7.1. Food safety & quality standards and certification	
7.2. Market Information	
7.3. Trade promotion	
7.4. Product development and innovation	

<b>8. VALUE CHAIN MANAGEMENT</b>	
8.1. Removal of sources of inefficiency along the chain	
8.2. Process efficiency in supply chain management	
8.3. Life cycle analysis	
8.4. Creation of values and jobs along the chain	
<b>9. RESOURCE AND ENVIRONMENTAL MANAGEMENT and BIODIVERSITY PROTECTION</b>	
9.1. Pollution control and waste management	
9.2. Introduction and movement of species	
9.3. Substitutes of fish meal and oil	
9.4. Ecological approach to aquaculture management	
9.5. Renewable energy development and use	
9.6. Management and use of adverse soils and marginal lands	
<b>10. CLIMATE CHANGE RESILIENCE AND ADAPTATION</b>	
10.1. Vulnerability assessment and mapping	
10.2. Early warning systems	
10.3. Application of insurance	
10.4. Risk assessment and management	

**Please review your ratings. Next, please rank THE STATUS OF IMPLEMENTATION within the sub-region of the following tasks (see next section).**

Status of implementation of these recommended tasks.

The rating scheme is as follows:

1. It is being done in **all or most countries** of the sub-region (“We are there!”)
2. It is being done in **70 percent of the countries** of the sub-region (“We are almost there.”)
3. It is being done in **at least half** the countries in the sub-region (“We are half-way there.”)
4. It has been **started in at least 1 country/territory** in the sub-region (“We have just started.”)
5. **Nothing has been done** anywhere in the sub-region (“We are doing what we can.”)

<b>Recommended tasks</b>	<b>Status in Sub-Region</b>
<b>1. Improve governance and management practices in aquaculture</b>	
1.1. Promote the application of complementary aquaculture planning and management tools (e.g. zoning tools, carrying capacity and impact monitoring) for sustainable development and support the required capacity building.	
1.2. Develop and implement a regional training program on aquaculture governance based on the necessary country level assessment and documentation of governance practices within and beyond the region.	
1.3. Promote the implementation of good aquaculture standard and certification as the vehicle for sectoral improvement and encourage the cluster/group/zone approach in the process where possible.	

1.4. Promote zoning and aquaculture area management under the ecosystem approach (EAA) and facilitate conducive government policies including promotion of Public-Private Partnership in both the development and implementation processes. Capacity building is needed to support EAA adoption and implementation	
<b>2. Strengthen the biosecurity control and animal health management in aquaculture</b>	
2.1. Establish strong national/regional industry stakeholder groups/associations, through which governments/regional organizations can effectively interact with the private sector in strengthening biosecurity control and animal health management.	
2.2. Recommend zonal approach in managing bio-security both in terms of environmental resource management and disease management. Government to develop guidelines for implementation at local levels.	
2.3. Need to establish a regional industry watching system-mechanism to monitor, report and publicize the industrial performance on disease and health management in the region.	
2.4. Establish sub-regional and national emergency response systems and operational mechanisms for tackling major disease problem in the region, including establishing a special fund for emergency response.	
2.5. Strengthen capacity building for applying bio-security measures at different levels (e.g. farm, watershed, national, regional levels). Farmer group approach is recommended (farmers sharing the resource help each other for win-win).	
<b>3. Facilitate small aquaculture farmer to market their products effectively</b>	
3.1. Evaluate the performance of existing farmer (business) organizations and their operation in the region with reference to successful business organizations and management models effective in empowering smallholders in long supply chains in the rest of the world, document and demonstrate the successful organization operational models/practices identified inside and outside the sub-region.	
3.2. Support the development of national and regional aquaculture standards through an inclusive consultation process that ensures effective participation of all stakeholders, particularly private sector.	
3.3. Support governments and IGO's to establish regulatory systems/mechanisms that will ensure/facilitate a fair share of value for primary producers in the profit distribution along the aquaculture value chain.	
3.4. Promote public awareness on how consumers can benefit from certified aquaculture products and lobby the different stakeholders, particularly the consumers to share the added costs.	
3.5. Strengthen the capacity of smallholders for doing aquaculture as business training and other activities.	
<b>4. Promote responsible production and use of quality feed and seed</b>	
4.1. Support a regional and national dialogue on production and use of responsible feed ingredients (particularly fishmeal and oil) in aquaculture feed production with multi-stakeholder participation.	

4.2. Support the development of alternative protein sources for production of more cost-effective aqua-feed and ensuring food security. (Industry, academic institutions, government)	
4.3. Promote good feed management practices (including “farm made feed”) at farm level and dissemination of available information on feed and feed ingredients and additives, including relevant FAO data being constructed.	
4.4. Establish a joint industry/government working group including fisheries and aquaculture stakeholders to implement the APFIC trawl guidelines.	
4.5. Establish a regional expert group for assessing the genetic improvement and management programs in the region, to promote sharing of information and products from the national genetic breeding programs, including addressing intellectual property right issue and guide the regional collaboration on genetic breeding work. Support private sector involvement in national genetic breeding and management programs. (NACA lead).	
4.6. Strengthen the regulation on aquaculture seed production and distribution, promote the implementation of good hatchery practices and guide the farmers not to use poor quality seed from “copy” hatcheries.	
<b>5. Increase the resilience of farmers in confronting climate change and other risks</b>	
5.1. Develop a regional strategy to assess and address the vulnerability and risks in aquaculture due to climate changes and variability (e.g. ocean acidification).	
5.2. Develop a regional policy support platform on climate changes using available information to address specific risks with conduction of country level case studies.	
5.3. Conduct regional assessment to address weaknesses and gaps in national capacities within fisheries and aquaculture to address climate changes including increased communication and information sharing among different government line ministries/ departments (e.g. between fisheries and environmental departments) to ensure inclusion of fisheries and aquaculture into the NAPA’s).	
5.4. Assess and promote awareness of potential positive contribution and opportunities of aquaculture in addressing climate changes.	

**3.5 To end the exercise, indicate which task you would put your financial resources most...least.**

Use this rating scheme:

1. **Huge** investment in financial resources
2. **High** investment in financial resources
3. **Some** investment in financial resource
4. **Little** investment
5. **No** investment

<b>Capacity building areas</b>	<b>Intensity of investment in financial resource</b>
1. Improve governance and management practices in aquaculture	
2. Strengthen the biosecurity control and animal health management in aquaculture	
3. Facilitate small aquaculture farmer to market their products effectively	
4. Promote responsible production and use of quality feed and seed	
5. Increase the resilience of farmers in confronting climate change and other risks	
6. Promote responsible, ethical trade	
7. Train technical and scientific personnel	
8. Train farm management and extension personnel	
9. Train farmers	
10. Develop and promote renewable sources of energy	
11. Promote recirculation aquaculture systems	
12. Develop and promote offshore aquaculture	
13. Promote integrated multi trophic aquaculture	
14. Strengthen quarantine system	
15. Develop and promote product quality standards and certification	
16. Develop and promote eco-labels	
17. Develop and promote social-labels	
18. Develop new cultivable species	
19. Genetics and selective breeding	
20. Biotechnology in processing	
21. Fish nutrition research and feed formulation	
22. Zoning and carrying capacity assessments	
23. Assessments of the cost-benefit of biosecurity measures	
24. Pollution control and waste management	
25. Alternative use for aquaculture of marginal lands	
26. Feed quality control and inspection	
27. Aquaponics	
28. Risk analysis and management	

**Thank You**

**Terms of reference<sup>5</sup>  
of the  
RECOFI National Focal Points**

In accordance with the mandate of the Regional Commission for Fisheries (RECOFI, henceforth referred to as the “Commission”), the National Focal Point is designated by the relevant national authority to promote and give advice on the Commission's activities to participate in the formulation of the Commission’s work plans and to contribute to the implementation of those plans.

The National Focal Point shall have an advisory and liaison function with respect to the programme of work and to its relevance in the national policy of fisheries development and management. The National Focal Point is a high level, experienced fishery scientist/manager who has access to his/her country’s main fishery information. He/She will be:

- Kept in direct contact with the RECOFI Secretariat.
- Informed the RECOFI Secretariat about the most important Commission activities planned and implemented at the regional level.
- Placed at the top of the RECOFI Secretariat mailing list and provided with all the technical output.
- Informed on all the activities carried out at national level.

The function of the National Focal Point is to participate in the overall Commission’s research and development programme. Specifically, the functions of the National Focal Point are:

- To advise the Commission about appropriate scientific research programmes, including possible annual revisions, within the limits of the available project budget.
- To review and discuss the annual work plans offering proposals for and planning of scientific training courses and seminars in the context of the RECOFI framework of activities.
- To assist the Commission, to make conclusions and recommendations, on the basis of the technical work conducted, for appropriate action in fisheries research and management.
- To support scientific liaison and coordination with relevant fisheries organizations or related projects and with appropriate institutions and interested scientists in the RECOFI member countries or outside the RECOFI region.
- To coordinate, at the national level, specific activities and initiatives of the Commission, and to provide all the necessary support in the acquisition of data.
- To ensure effective flow of communications regarding the RECOFI activities to and from national scientific and institutional counterparts, and from relevant stakeholders.

The Commission may review these terms of reference from time to time and amend them as appropriate.

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<sup>5</sup> The Commission endorsed the Terms of Reference of the RECOFI National Focal Points at its fifth session held in Dubai, United Arab Emirates, from 12 to 14 May 2009.

**Terms of reference<sup>6</sup>  
of the  
RECOFI WGA Focal Points**

The national RECOFI Working Group on Aquaculture (WGA) Focal Points will:

- Promote and support the activities of the Working Group, especially in the intersessional periods.
- Disseminate information concerning aquaculture nationally and in the region.
- Facilitate the exchange of information related to aquaculture.
- Facilitate the collection of national data and information for publication in the RAIS website.
- Promote and enhance regional cooperation among Members.
- Bring national aquaculture development issues of regional interest to the attention of the Working Group on Aquaculture.
- Advise on, and assist in the formulation of, inter alia, work programmes, projects and other activities.
- Act to support the implementation of activities consistent with the above responsibilities.
- The RECOFI-WGA Chairperson will be the main interface between the RECOFI-WGA Focal Points and the Commission Secretariat.

Furthermore, the RECOFI-WGA Focal Points will ensure that the RECOFI national focal points are briefed fully on the activities of the Working Group on Aquaculture and, as appropriate, provide advice on the Commission's programme of work and budget and other activities, including on their relevance to national policy.

To ensure that the national RECOFI-WGA Focal Points are in a position to undertake these responsibilities, they should be experienced aquaculture officers with ready and regular access to RECOFI National Focal Points and other national policy makers.

The Working Group on Aquaculture may review these terms of reference from time-to-time and make recommendations for their amendment.

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<sup>6</sup> The Commission endorsed the Terms of Reference of the RECOFI National Focal Points at its fifth session held in Dubai, United Arab Emirates, from 12 to 14 May 2009.

**RAIS web analysis summary report  
(period from 01-03-2013 to 18-10-2014)**

The RAIS web analysis report was prepared by the RAIS Regional Centre staff in Kuwait by using the Google analytic tool. The report covering the period from 1 March 2013 to 18 October 2014 shows that there was a steady increase in the use of RAIS with a global geographical coverage including all Arabic speaking countries (Northern Africa countries and Gulf Region).

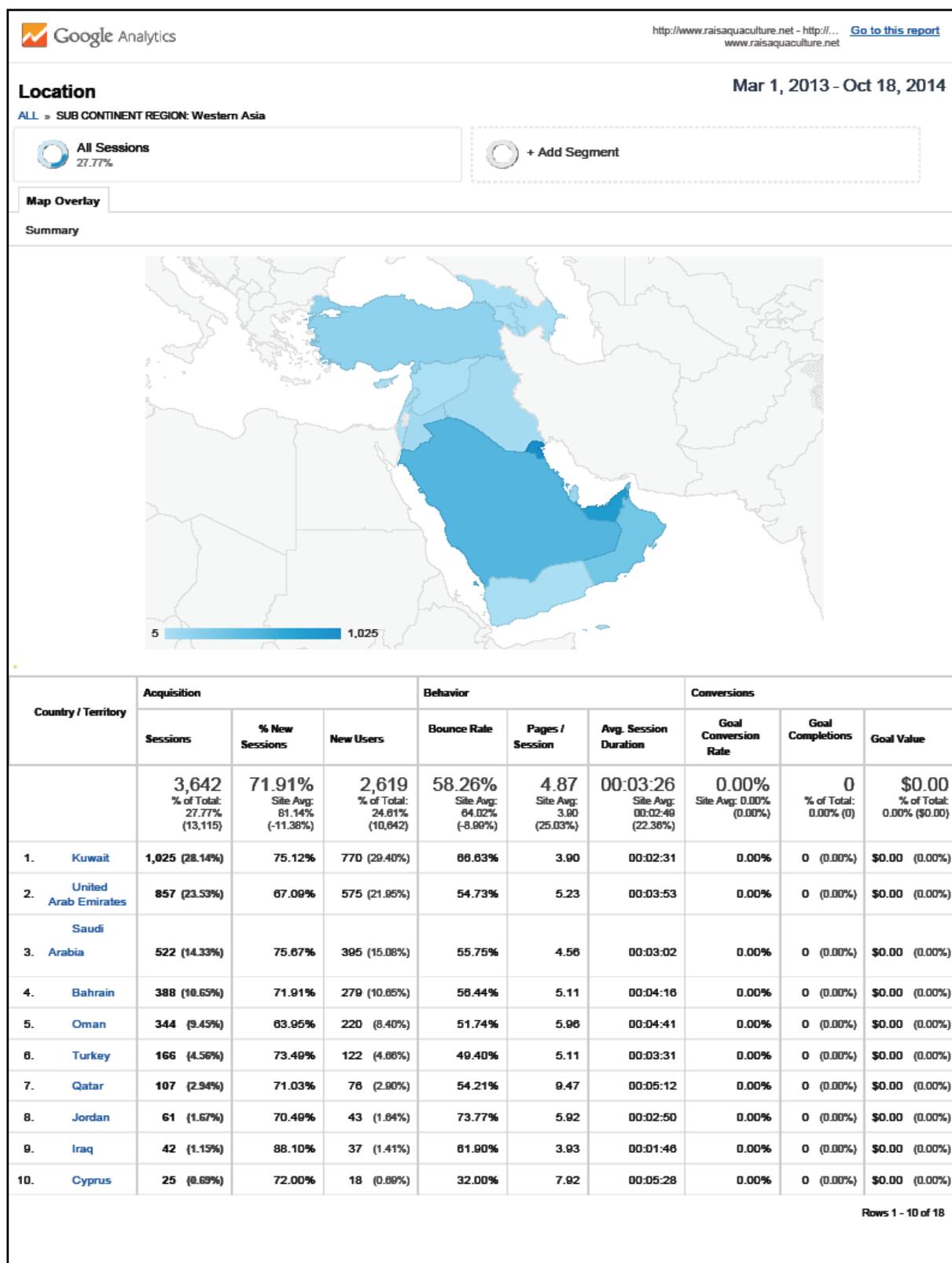
The website has received a stable number of visits with some peaks. The earlier report (1 March 2011 to 28 February 2013) was submitted in concomitant with the Seventh session of RECOFI held in Tehran, Islamic Republic of Iran, from 14 to 16 May 2013. The data indicated that the number of people (*number of unique visitors*) who visited the website since 1 March 2013 was 10 759 or about 78 percent less compared to the absolute unique visitors of 19 123 in the previous assessment period (NB: the duration of the previous assessment period was of 2 years while the present assessment period covered just under eight months).

Concerning *pages view per visit* for RECOFI Countries, the analysis value (in descending order) was recorded for visitors from the Islamic Republic of Iran, Kuwait, United Arab Emirates, Kingdom of Saudi Arabia, the Kingdom of Bahrain, the Sultanate of Oman, the State of Qatar and Iraq. The overall average of page view per visit was 3.90 pages. The *bounce rate* throughout the whole period was 64 percent (NB: the bounce rate is the percentage of simple page visits, i.e. visits in which the person left the site from the entrance page without interacting with the page).

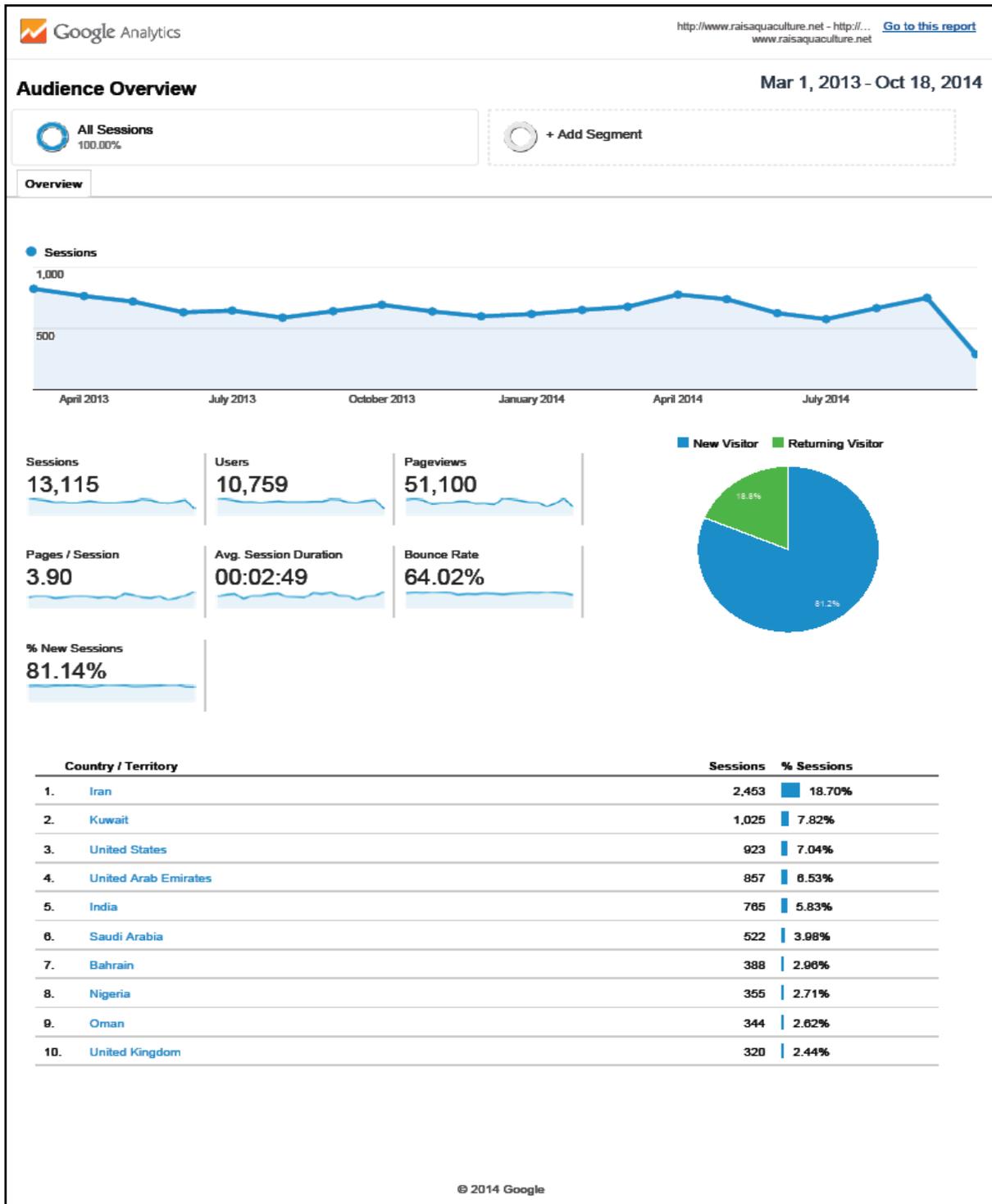
For RAIS, the *average time on site* for the whole period and all visitors was estimated to be two minutes and 49 seconds in average, which is quite low. It is anticipated that the RAIS website would have more visitors and be more useful if the aquaculture data and information, provided by the Member countries, is updated more frequently. This will certainly attract and retain a wider number of visitors.

The results show that 43 percent of the visitors were from the RECOFI Member countries while 66 percent of the visitors were from other countries. The RAIS website is visited by 81 percent of new visitors (10 654 persons) and about 19 percent of returning visitors (2 461 persons).

## MAP OVERLAY: EMPHASIS ON RECOFI MEMBER COUNTRIES

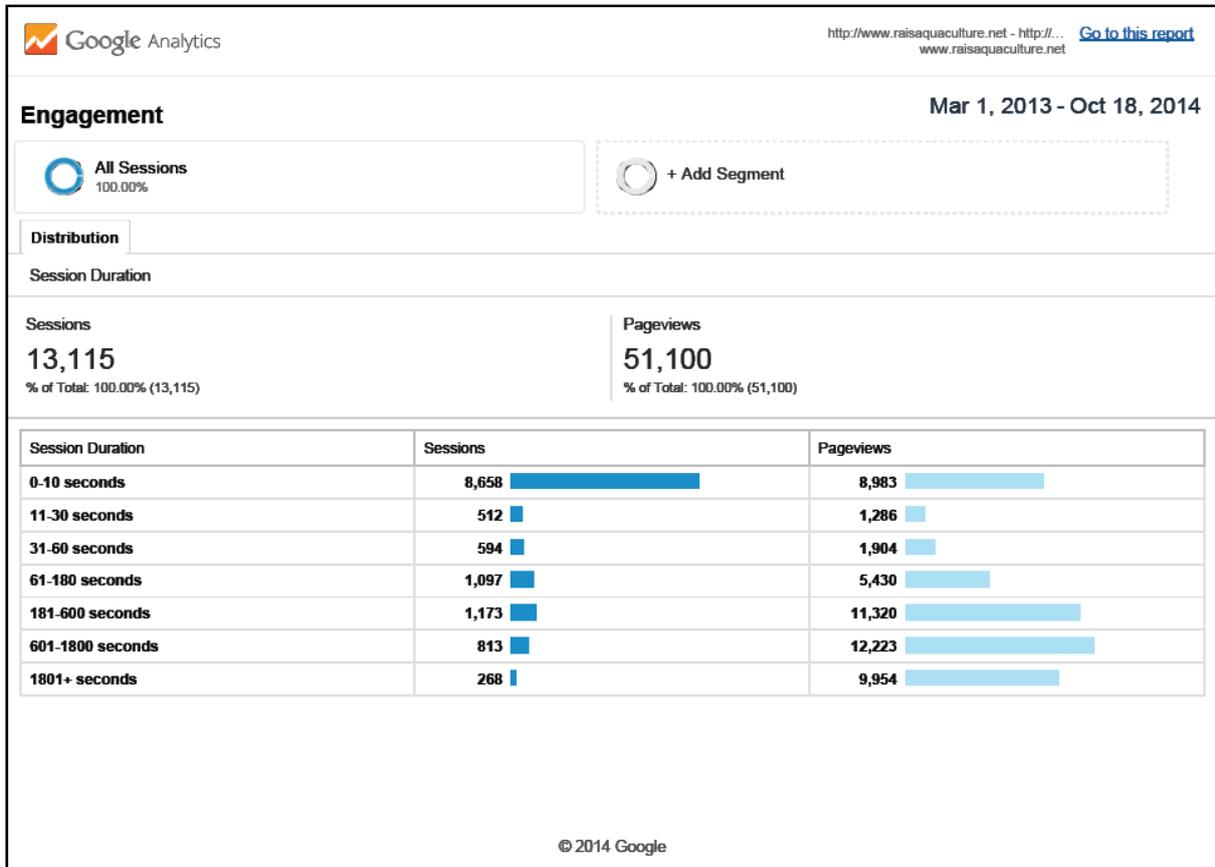


## RAIS VISITOR TRENDS

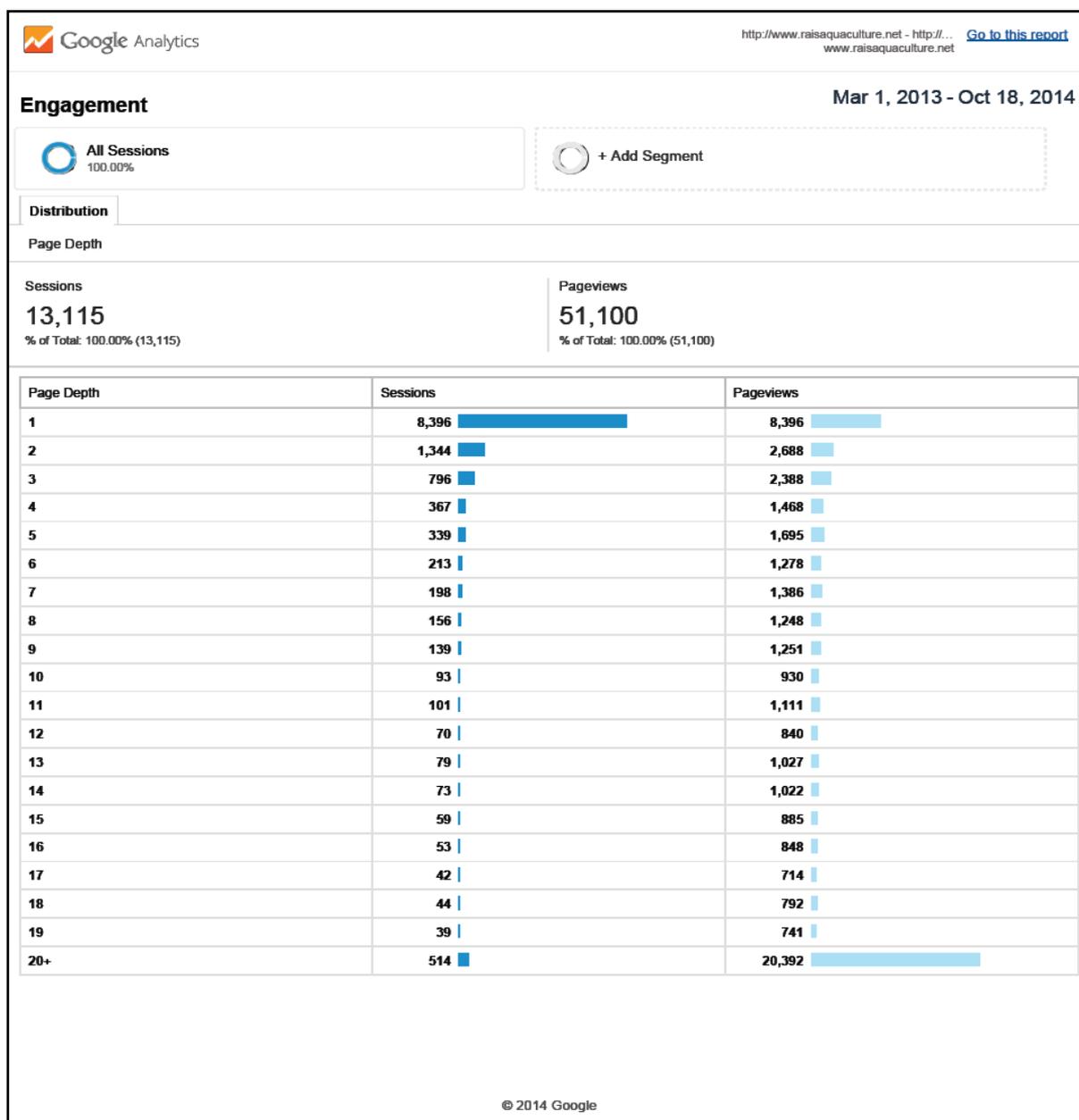


## VISITOR LOYALTY

## Length of visit

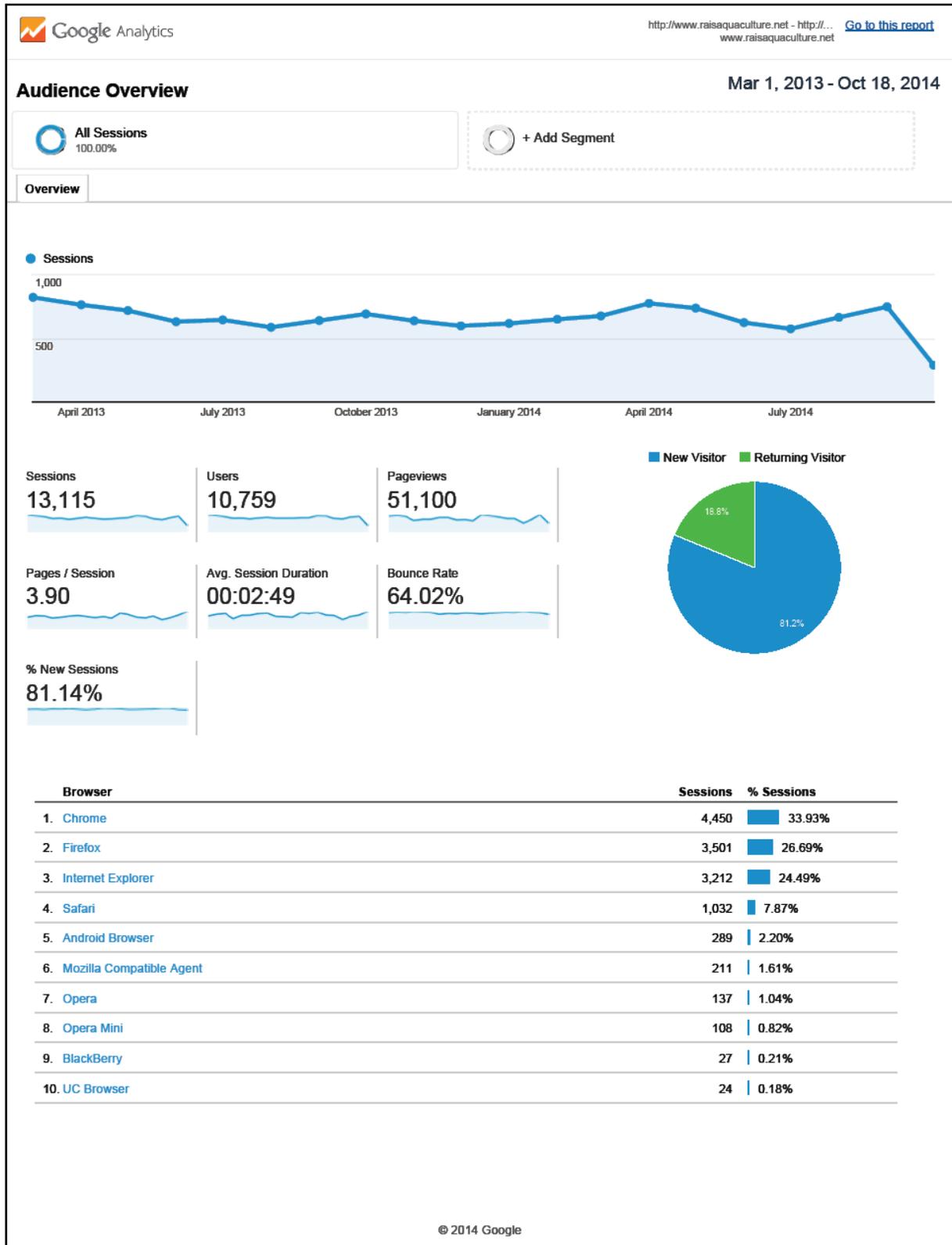


## DEPTH OF VISITS

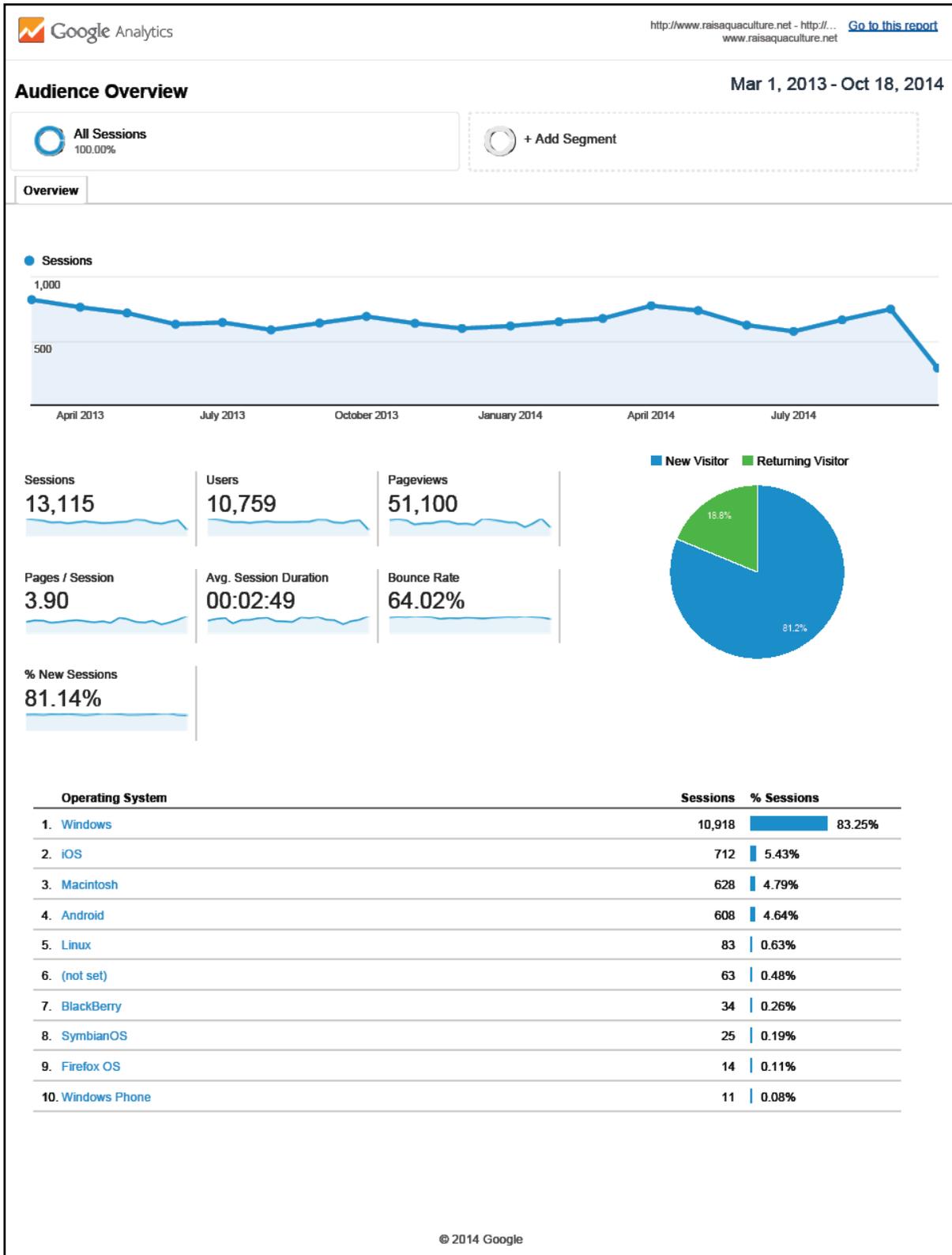


# BROWSER CAPABILITIES

## Browsers



# OPERATING SYSTEM



The sixth meeting of the Working Group on Aquaculture (WGA) of the Regional Commission for Fisheries (RECOFI) was held in Muscat, Oman, from 21 to 23 October 2014 and was attended by representatives from seven member countries. The WGA reviewed the outcome and recommendations of the sixth and seventh sessions of the Commission. The WGA noted the importance of the timely collection, submission and sharing of accurate aquaculture statistics and other relevant aquaculture information. A draft recommendation on the minimum reporting of aquaculture data and information was discussed. The meeting agreed that RECOFI members would provide their comments at the next session of the Commission, when the recommendation will be presented for adoption. The meeting discussed the Regional Aquaculture Information System (RAIS) following the presentation of the web analysis report, which indicated a steady interest in the information system particularly among the Arabic-speaking countries. Actions to further consolidate and expand the system were discussed along with the need to improve the overall communication outputs at the national and regional levels. The WGA finalized its proposed programme of work for the next intersessional period, based also on the WGA programme adopted by the Commission at its seventh session. The WGA recognized that the Commission, based on its current level of financial contribution, might not have the required budget to implement a comprehensive aquaculture programme, and it recommended that some activities could be implemented with extrabudgetary funds. The WGA Alternate Focal Point of Oman was nominated as the new WGA Chairperson, while the WGA Focal Point of Bahrain was nominated as the new WGA Vice-Chairperson.

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REGIONAL COMMISSION FOR FISHERIES - REPORT OF THE SIXTH MEETING OF THE WORKING GROUP ON AQUACULTURE

FAO