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REGIONAL COMMISSION FOR FISHERIES (RECOFI)

Seventh Session

Tehran, Islamic Republic of Iran, 14–16 May 2013

Aquaculture in the RECOFI Area

Executive Summary

This document provides an overview on the current development of the aquaculture sector in the RECOFI Region highlighting recent key advances. The document furthermore expands on the more important developmental needs that call for regional action, particularly on policy and regulatory matters, but also on technical matters such as species diversification, human capacity, technology transfer and information exchange. The current and future role of the RECOFI Working Group on Aquaculture (WGA) as an entity established to assist regional exchanges and cooperation is presented and discussed.

The Commission is invited to:

- consider the issues raised and discussed in the working document and provide guidance on how to re-vitalize and re-focus the work of the WGA to better respond to the needs of the Region and effectively assist in promoting aquaculture development through concrete contributions.
- agree and evaluate the future work activities of the WGA and the expected deliveries against the availability of financial resources, strong collaboration among all the RECOFI Members, unequivocal engagement of the authorities concerned and its staff, and timely follow-up on the technical recommendations made by the WGA and endorsed by the Commission.

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AQUACULTURE PRODUCTION OVERVIEW

1. A brief review of the recently released FAO global aquaculture production statistics (1950–2011), indicate that the world aquaculture production of food fish reached 62.7 million tonnes in 2011, up by 6.2% from 59 million tonnes in 2010. The estimated value of farmed food fish is USD 130 billion. Farmed aquatic algae production in 2011 was 21 million tonnes, worth USD 5.5 billion. The 2011 world production is lower than the production reported in 2010, due largely to the downward adjustment of 2010 production by India, the world's second largest aquaculture producer (Tables 1 and 2). In 2011, Thailand and Japan suffered from great losses caused by catastrophic natural disasters including disease outbreaks. Thai aquaculture production dropped by 0.28 million tonnes (22%) from its 2010 level, and Japan by 0.16 million tonnes (23%). A few other global major producers (e.g. Myanmar, United States of America, Malaysia) and regional major producers (e.g. Uganda) also experienced negative growth in aquaculture output in 2011 due to various reasons. But in general, most countries and regions around the world enjoyed positive growth in aquaculture in 2011.

Table 1. World aquaculture production of food fish* by continent (million tonnes) (*Source:* FAO World Aquaculture Production Statistics, 1950–2011)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Share in 2011
Africa	0.4	0.5	0.5	0.6	0.6	0.8	0.8	0.9	1.0	1.3	1.4	2.2%
Americas	1.7	1.8	1.9	2.1	2.2	2.4	2.4	2.5	2.5	2.6	2.9	4.7%
Asia	30.3	32.4	34.2	36.9	39.2	41.8	44.2	47.0	49.5	52.4	55.5	88.5%
Europe	2.1	2.0	2.2	2.2	2.1	2.2	2.4	2.3	2.5	2.5	2.7	4.3%
Oceania	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3%
Total	34.6	36.8	38.9	41.9	44.3	47.3	49.9	52.9	55.7	59.0	62.7	
Annual growth rate	6.8%	6.3%	5.8%	7.7%	5.7%	6.8%	5.6%	6.0%	5.2%	5.9%	6.2%	

* Food fish= fishes, crustaceans, molluscs, amphibians, reptiles (excl. crocodiles) & other aquatic animals (e.g. sea cucumber, sea urchin) for human consumption.

Table 2. Contribution of aquaculture to the world total fish production* (million tonnes, excl. aquatic plants) (*Source:* FAO World Aquaculture Production Statistics, 1950–2011)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Aquaculture (M. tonnes)	34.6	36.8	38.9	41.9	44.3	47.3	49.9	52.9	55.7	59.0	62.7
Contribution to total (%)	27.6%	28.8%	30.6%	31.1%	32.4%	34.4%	35.5%	37.0%	38.2%	39.9%	40.1%
Capture (M. tonnes)	90.7	91.0	88.3	92.7	92.5	90.2	90.7	90.1	90.0	89.0	93.5
Contribution to total (%)	72.4%	71.2%	69.4%	68.9%	67.6%	65.6%	64.5%	63.0%	61.8%	60.1%	59.9%
Total fish production	125.4	127.8	127.2	134.6	136.8	137.5	140.7	143.0	145.7	148.0	156.2

* Total fish production includes production destined for human consumption and non-food uses (e.g. reduction for fish meal/oil).

2. The number of cultured species registered as “species items” in the new FAO data increased from 541 in 2010 to 559, includes 346 finfish species, 62 crustacean species, 102 mollusc species, six amphibian and reptile species, 34 aquatic algae species and nine other aquatic invertebrate species. Such increase is more of the result of data quality improvement and reporting by Member countries other than the species diversification at the real production level.

3. Within the Asia region the overall aquaculture production contribution from the countries grouped under the Western Asia region (which includes all RECOFI Member countries excluding the Islamic Republic of Iran) is considerably smaller, amounting to only a mere 0.5% of the total Asian aquaculture production in 2011. Most of this production comes from the Turkey (Table 3). The total aquaculture production recorded by FAO for all eight RECOFI Member countries in 2011 amounted to 295 045 tonnes with the Islamic Republic of Iran producing the bulk of it (i.e. 247 262 tonnes or almost 84%) (Table 4).

Table 3. Aquaculture production in tonnes of food fish from Western Asian countries (2004–2011) (*Source:* FAO World Aquaculture Production Statistics, 1950–2011)

Country	2004	2005	2006	2007	2008	2009	2010	2011
Western Asia	156 994	189 085	198 003	214 504	235 865	244 642	256 033	279 037
Asia Total	36 894 138	39 187 383	41 814 928	44 221 185	46 999 585	49 538 047	52 438 757	55 489 035
World	41 908 244	44 296 903	47 291 774	49 939 430	52 947 740	55 716 915	59 022 185	62 700 301

Table 4. West Asia and the Islamic Republic of Iran aquaculture production in tonnes by country (2004–2011) (*Source:* FAO World Aquaculture Production Statistics, 1950–2011)

Country	2004	2005	2006	2007	2008	2009	2010	2011
Turkey	94 450	119 567	129 333	140 743	152 896	159 639	167 721	188 890
Saudi Arabia	11 172	14 375	15 586	18 497	22 353	26 120	26 374	26 755
Iraq	13 947	17 941	14 867	15 810	19 246	18 732	20 320	20 300
Israel	22 303	22 409	22 117	21 434	20 017	19 177	19 895	20 107
Syrian Arab Republic	8 692	8 533	8 902	8 425	8 595	8 697	8 610	8 000
Armenia	813	739	1 056	3 650	5 100	5 240	5 000	6 300
Cyprus	2 445	2 436	2 787	2 450	2 887	3 416	4 116	4 745
Lebanon	795	813	813	818	975	1 080	1 180	1 280
Georgia	72	72	75	180	466	470	470	650
Jordan	487	561	560	509	540	440	541	575
Azerbaijan	350	500	600	900	1 000	1 000	1 000	517
Kuwait	375	327	568	348	360	360	360	360
Palestine, Occup.Tr.	...	10	17	37	65	115	280	189
United Arab Emirates	570	570	570	570	1 206	-	-	172
Oman	515	218	114	96	121	118	127	157
Qatar	0	11	36	36	36	36	36	36
Bahrain	8	3	2	1	2	2	3	3
Sub-total	156 994	189 085	198 003	214 504	235 865	244 642	256 033	279 037
Iran IR	104 330	111 761	129 468	158 549	154 726	179 552	220 034	247 262
TOTAL	261 324	300 846	327 471	373 053	390 591	424 194	476 067	526 299

4. Aquaculture production in the RECOFI countries has continued to increase steadily since the reporting at the Sixth session of the Commission (Rome, Italy, 10–12 May 2011). At the Sixth session the production statistics reported were up to 2008. In 2008 the total aquaculture production of 198 202 tonnes represented a share of 26 percent of the total fisheries production. In 2011 the share increased to 33 percent with a total fish production estimated at around 845 000 tonnes clearly indicating a positive growth trend in this production sector.

5. Among the RECOFI countries, the Islamic Republic of Iran continues to lead by far the overall aquaculture production (incl. marine and freshwater) with almost a quarter million tonnes

produced in 2011. In the same year the Kingdom of Saudi Arabia ranked second with only about a tenth of the production in the Islamic Republic of Iran, while Iraq rank third with an estimated production of around 20 000 tonnes. The other Member countries of the Commission produce substantially lower outputs ranging into the several hundred tonnes for the United Arab Emirates, Oman and Kuwait while considerably less from Qatar and Bahrain.

6. The production from the freshwater environment in 2011 amounted for approximately 90 percent of the total aquaculture production of the RECOFI region with only 10 percent deriving from the marine and brackish water environments. Among the freshwater species, three species of carps (silver, common and grass carps) and the cold water rainbow trout (*Oncorhynchus mykiss*) make up the bulk of the production, with tilapia accounted only for 1.5 percent of this production. The Islamic Republic of Iran and Iraq are the major carp producers (87% produced by the former country) followed by Saudi Arabia with a minor production; the entire output of the rainbow trout comes from the Islamic Republic of Iran.

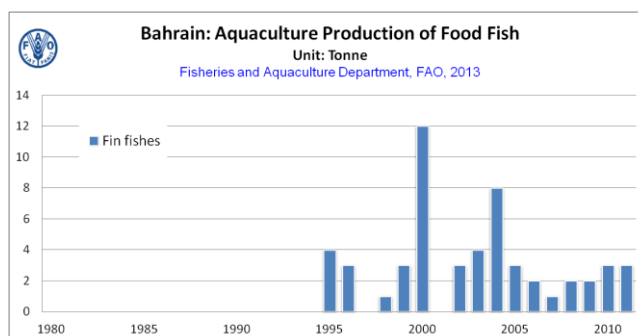
7. Production from the marine environment (incl. brackish water) has been growing at a relatively slow pace and production output in 2011 (and most probably those for 2012) has dropped over the past couple the years probably due to the drop in shrimp production in the Region following the negative effects of the white spot syndrome virus (WSSV) and the reduced production of finfish from marine cages. It is worth noting here that there are no production statistics specific to the production in the RECOFI waters (i.e. in the geographical area of the RECOFI Agreement), but these include production figures from the Arabia Sea (i.e. Oman) and those from the Red Sea (i.e. from Saudi Arabia). Much of the production marine and brackish water production from the Kingdom of Saudi Arabia currently comes from its western coast. Unfortunately, also the aquaculture statistics available in the Regional Aquaculture Information System (RAIS (see www.raisaquaculture.net)) does not permit any geographical separation.

8. Based on the available statistics the top marine species produced in the Region are the penaeid shrimp (*Peneaus indicus* and *Penaeus vannamei*) with the latter species being produced mainly in the Islamic Republic of Iran (now being considered as an alternative species in other countries in the region following the outbreak of WSSV). In terms of marine finfish species the statistics available seem not to provide a clear picture of what are the real regional production figures for the farmed species. Among the farmed species in the Region, are the endemic sobaity seabream (*Sparidentex hasta*) and the introduced gilthead seabream, *Sparus aurata*, from the Mediterranean. For these two species, and particularly for the latter one, the hatchery technology for mass production of fingerlings is well known and hence there is a relatively easy availability of the seed material, although, worth noting there are few commercial hatcheries in the Region with the public administration hatchery at the National Mariculture Center in Bahrain being one of them. Apart from these two important aquaculture species, considerable attention is being focused on groupers with some success with the orange-spotted grouper (*Epinephelus coioides*) and to a lesser extent with the greasy grouper (*Epinephelus tauvina*). Other species of interest and where some degree of success has been achieved is with the White-spotted spinefoot (*Siganus canaliculatus*). Research on several species of groupers and other commercially valuable finfish species is ongoing in a number of countries and private facilities (e.g. the work being conducted by the National Prawn Company – NPC – in Saudi Arabia on the greater amberjack, *Seriola dumerilii*). It should be noted here that the NPC has started farming the Asian seabass (*Lates calcarifer*) with broodstock provided by the Fish Farming Centre – now the Fisheries Research Institute – in Jeddah, following the poor progress made with the greater amberjack).

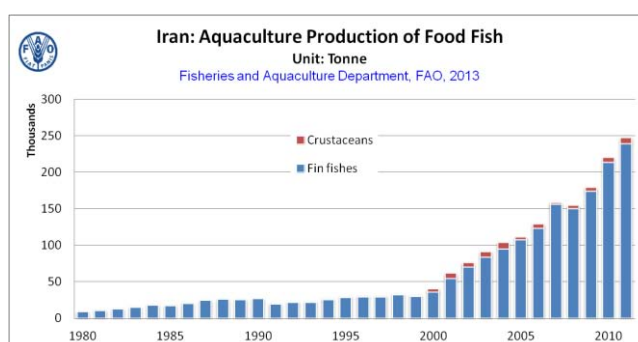
9. In addition to the work focused on marine finfish species some of the countries in the region are increasingly placing attention to alternate aquaculture species other than finfish, including echinoderms – sea cucumbers and sea urchins (e.g. the sandfish *Holothuria scabra*) and gastropods (e.g. the Omani abalone *Haliotis mariae*). So far little attention has been channeled by the Region on molluscan bivalve species although some countries realize that this group of marine organisms offers an opportunity to expand the output of the sector.

COUNTRY HIGHLIGHTS

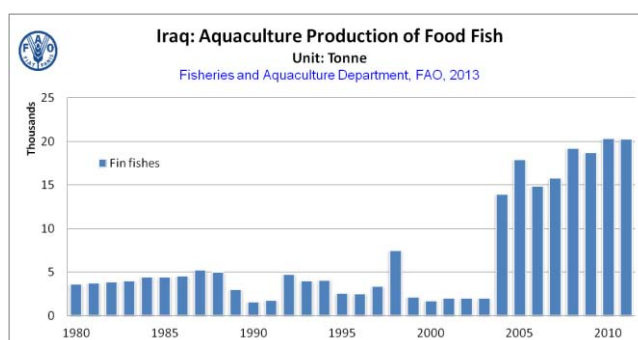
10. *Bahrain* – With only 1–3 tonnes of farmed marine fin fishes produced annually, there are currently no real commercial fish farming operations, but there are opportunities and local interest for aquaculture development, particularly considering the high market price of fish species such as groupers and breams. In the last three years the government has received numerous applications for fish farming projects. The National Mariculture Centre (NMC) has continued to focus on hatchery operations and production of fish seed for stock enhancement and fish farming operations (also exported in the Region), as well as providing applied training. There is a potential for shallow netcage fish farming in selected areas, but measures for protection of cages against natural elements need to be considered. The successful juvenile fish production at the NMC is a positive asset that may encourage future cage farming projects in the country. There are few but insufficient laws and regulations for mariculture activities including cage farming. There is a need to develop these regulations and establish clear guidelines for environmental impact assessments and monitoring programmes for mariculture.



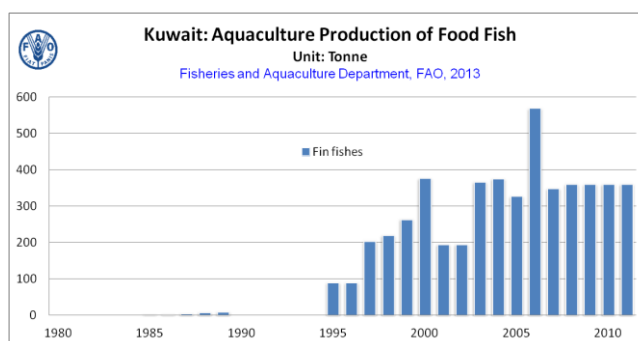
11. *Islamic Republic of Iran* – The country is the largest fishery producer in the Region, with a 2 440 km coastline along the Gulf and Oman Sea. Aquaculture production has been dominated by Chinese carps and rainbow trout grown in freshwater. Mariculture is still small and is focusing on shrimp culture in coastal ponds. Aquaculture hatchery and nursery production also contribute meaningfully to culture based fisheries and stock enhancement. The Fifth Iranian Fisheries Development Programme, with a focus on developing and strengthening sustainable aquaculture, started in April 2011. With successful implementation of this programme, the final production of aquaculture is expected to reach 430 150 tonnes in 2014. To achieve this goal, stringent regulations and responsible management of aquaculture are essential.



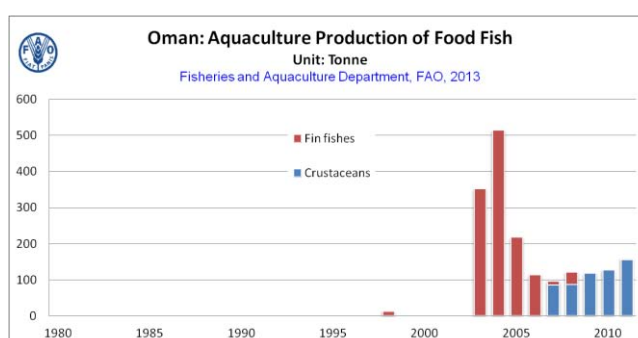
12. *Iraq* – The country has a short coastline (59 km) that borders the Gulf. The aquaculture sector is operated both at the public and private sector level and is mostly active in the central and southern regions of the country (freshwater). According to more recent statistics from the General Board of Fish Resource Development, aquaculture production has increased in the past six years to a record high of 20 300 tonnes in 2011. Under the *aegis* of FAO/RECOFI, Iraq is an active Member of the tripartite initiative on fisheries management cooperation in the Northern area of the Gulf involving also the Islamic Republic of Iran and Kuwait, the field programme of which is currently being developed. The draft project proposal “Initiative on Fisheries Management Cooperation in the Northern Area of RECOFI” has been endorsed by the participating countries in November 2012. The project, once funded, will be implemented over a 2-year period and aims at stimulating cooperation among the three countries and addressing real and significant issues that are presently facing fisheries and aquaculture in the sub-region.



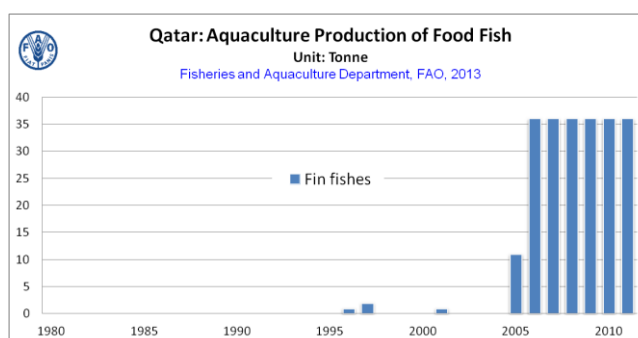
13. *Kuwait* – Kuwait, situated in the northwestern corner of the Gulf, has extreme meteorological and hydrological conditions, very high evaporation rates and high salinities in summer months. Under the *aegis* of FAO/RECOFI, Kuwait is one of the members of the tripartite initiative on fisheries management cooperation in the Northern area of the Gulf. Kuwait's aquaculture production remains rather low (see Table 4), but compared to other RECOFI member countries it is ranked fourth. The sector is now reasonably well-established, as far as the farming of tilapia in association with agriculture, and small marine fish culture operations using floating net cages is concerned.



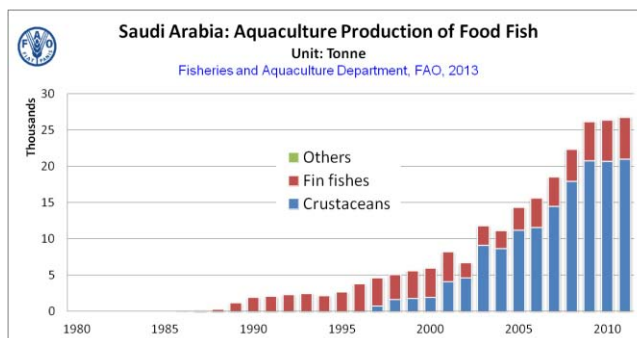
14. *Oman* – The Sultanate of Oman has a long coastline and is one of the largest fish producers in the region and a net exporter of fish and fish products. Aquaculture is still in its infancy, producing about 350–500 tonnes of seabream annually in 2003 and 2004 which is now replaced with production of Indian white prawn of about 120 tonnes. However, Oman's environmental advantage provides a high potential for the development of aquaculture and there is a strong commitment from the government to developing this sector in a competitive and sustainable manner that is in harmony with the social, economic, cultural and historic values of the country. The main regulation of the aquaculture sector is the by-law for aquaculture and quality control of aquaculture products issued in 2004 by the then Ministry of Fisheries. This by-law has been recently updated and further improved and it is in the final stage of approval. The Ministry of Agriculture and Fisheries Wealth has recently placed the development of aquaculture as an important national priority and in 2011 launched comprehensive Investment Guidelines for Aquaculture development in the Sultanate of Oman.



15. *Qatar* – Qatar has a relatively short coastline (563 km). Its coastal waters are characterized by extreme meteorological and hydrological conditions. Commercial marine aquaculture has not started and existing aquaculture activities have been conducted by researchers in small-scale freshwater facilities using tilapia. A general interest has been expressed in developing aquaponics (similar to the tilapia/hydroponics farms in Abu Dhabi and Dubai, UAE). Production levels are still very low, with only 36 tonnes of Nile tilapia produced in freshwater in 2010. Qatar is nevertheless encouraging investments in mariculture, albeit the challenges, mainly due to limited land availability for land-based operations and in the use of underground freshwater water for the integrated production of agriculture products and fish. The country has prepared an aquaculture development strategy, but may require technical support and exchange for its implementation. The project to establish an aquaculture research centre has moved forward and may soon materialize following many years in the planning.

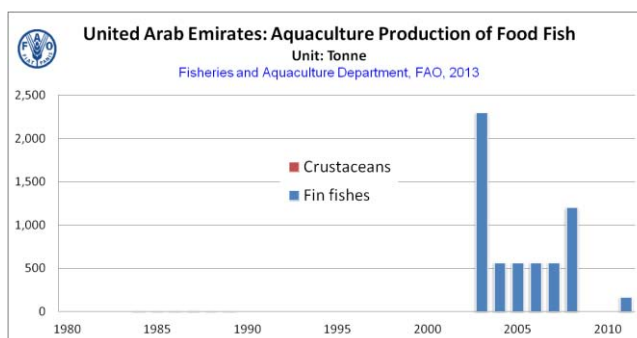


16. *Saudi Arabia* – Aquaculture production increased steadily to 26 755 tonnes in 2011. Aquaculture contributed around 30 percent of the total fish production in 2011 up from 10 percent in 2000. The total value of aquaculture production increased over the same period due to the increased farming of the high-priced Indian white shrimp. This shrimp species accounted for 78 percent of the total aquaculture production in 2010 by quantity



and 91 percent by value, replacing Nile tilapia as the dominant species since 2001. Nile tilapia production started recovering in recent years and reached 3 400 tonnes in 2009, worth USD 10.1 million. Marine cage culture is a relatively new development with several large farms established along the coast of the Red Sea, farming mainly the exotic gilthead seabream. The interest in finfish cage farming using other species, including grouper and amberjack, is increasing. The relevant authorities in the Kingdom of Saudi Arabia have recently agreed that the aquaculture sector is a national developmental priority and viewed as a potentially major contributor to food security, employment and economic growth. The Ministry of Agriculture deems important to develop national capacity in all aspects of the sector from planning, development, operations and technical issues (including specifically bio-security given the recent shrimp disease crisis; transfer of technology for the farming of a wider range of native species than the current pool).

17. *United Arab Emirates* – The United Arab Emirates (UAE) has a relatively long coastline (1 318 km). Although contributing little to the economy, fisheries provide an important supply of fish to local communities and urban areas and are considered as having a heritage value. The fisheries of the UAE are almost entirely small-scale. There is no major aquaculture industry in the country. An increasing number of fishermen and private entrepreneurs are and will be lured into this sector as the country is a net importer of fish.



With the technology and fish imported from Germany, the country established in 2011 what was claimed to be the world largest recirculation aquaculture system (RAS) for sturgeon culture in Abu Dhabi. With heavy capital investment, the investors expect to produce the luxury products of caviar at over 30 tonnes per year locally, plus sturgeon meat in the near future. Other critical issues of the UAE fisheries sector are the overlap between local and federal management authorities. There is increasing interest in the UAE to develop the country's aquaculture potential and there are already a number of farms in the country producing shrimp, marine and freshwater fish. The UAE has one shrimp farm (Al-Jarraf Farm) in operation on Barmid Island that has so far avoided disease impacts through prudent bio-security measures. Several local companies are in the process of planning or establishing shrimp farming operations. It is important for the future of the industry in the UAE that they follow bio-secure practices, particularly in the sourcing of seed stock and broodstock. There are also risks to the growing finfish farming sector from any import of disease carrying stocks. Many of the small tilapia farms in the Emirates are facing constraints in broodstock husbandry (including genetics management), fingerling and feed supply and market access. Some local entrepreneurs have been approaching large companies so to see if they could supply 1 000–1 500 kg/day for their staff canteens. Most of the farms currently do not have such capacity. Going into much larger production scale will require the optimisation in the use of the limited water resource availability. Tilapia production can be integrated with those agricultural and horticultural crops with only a small net increase in water consumption. Recently the UAE have commissioned the preparation of a national development policy and strategies for aquaculture. The document is currently under review.

KEY REGIONAL DEVELOPMENT NEEDS

18. The most common factor driving the growth of aquaculture in the region has been, and probably will continue to be, the need to increase the domestic food supply, partly because the wild catch may be unstable or decreasing particularly for some commercial species. From within the sector, technical and organization progress, and improvements in infrastructure, are also important driving forces. Suitable funding (government and/or private), investment, and an organized legal framework (including effective certification and licensing) are still crucial to support aquaculture development across the region.

19. Following the implementation of regional activities, meetings and discussion groups under the *aegis* of the RECOFI Working Group on Aquaculture (WGA) and other national and regional organizations it is evident that addressing production technology issues, marketing and processing, bio-security issues (animal health and diseases), and policies and regulations still require substantial attention at both national and at regional levels to ensure a continued and sustainable growth of the aquaculture sector.

20. The limited availability of suitable sites with favorable environmental conditions (both physical and chemical) for new aquaculture activities remains a problem in the Region, due to shortage of land, insufficient freshwater, insufficient tidal fluctuation for land-based culture and few marine sites suitable for current marine farming practices. Further challenges for some countries, particularly those with a developing aquaculture sector, is adequate supply of finfish fry/fingerlings of existing commercial species and reliance on imported fish feed. Furthermore, there is recognition that more research is needed to identify local endemic species (e.g. grouper spp.) particularly of finfish that are suitable for aquaculture in order also to avoid the introduction of exotic species to ensure customer acceptability of the products produced.

21. Effective policies and legal frameworks are necessary prerequisites to support the sustainable development of aquaculture by the private sector. Some countries in the Region have or are progressing in this regards, but it appears that certain policies and regulations that should have a regional scope are lagging behind particularly what concerns the movement and introduction of species. The need to strengthen institutional aspects regulating the industry was taken by the WGA on several meetings including at workshops on aquatic animal health (Jeddah, Saudi Arabia, 6–10 April 2008)¹ and on cage aquaculture development (Muscat, Oman, 25–26 January 2009)².

22. The introduction of tested aquaculture technologies and in particular the diversification of the species farmed remains an important priority in the Region. The RECOFI WGA “Regional technical workshop on sustainable marine cage aquaculture development” in 2009 was organized in this regard. The adoption of this farming technology among the countries in the Region may vary depending on the availability of suitable physical sites. There is a need to introduce alternative farming technologies such as recirculation systems (including aquaponics) in view of the prevailing geographical conditions and limitations of specific resources and to ensure that the operations can be economically operated. It is important to recognize that the large supply of seed material of commercial finfish species remains an obstacle in the growth of the sector with only few existing hatcheries operating (e.g. Bahrain).

ROLE OF THE RECOFI WORKING GROUP ON AQUACULTURE

23. Since the formal establishment by the Commission of the Working Group on Aquaculture (WGA) a series of technical issues of regional interest have been analysed and discussed through the

¹ FAO/Regional Commission for Fisheries. Report of the Regional Technical Workshop on Aquatic Animal Health. Jeddah, Kingdom of Saudi Arabia, 6–10 April 2008. FAO Fisheries and Aquaculture Report. No. 876. Rome, FAO. 2009. 119 pp

² See RECOFI/V/2009/Inf.7 – FAO/Regional Commission for Fisheries. Report of the Regional Technical Workshop on Sustainable Marine Cage Aquaculture Development. Muscat, Sultanate of Oman, 25–26 January 2009. *FAO Fisheries and Aquaculture Report*. No. 892. Rome, FAO. 2009. 135 pp.

organizations of technical workshops. Some of these covered marine cage aquaculture, aquatic animal health and spatial planning for aquaculture. A key recommendation from all such workshops has been the importance of developing national policies and strategies under an overall regionally agreed and adopted strategy. The importance of such regional policies and strategies is best understood in terms of preventing actions from any single nation that may involuntarily jeopardize and/or potentially cause severe detrimental effect to the sustainable operation and further development of the aquaculture sector in the Region (e.g. the introduction of diseased animals from outside the Region).

24. Regrettably, many of the recommendations put forward through the RECOFI-WGA technical workshops, which have a true regional scope, have not been adequately followed-up, but only to some extent by single Members of the Commission. There appears to be a general tendency for individual countries in the Region to tackle aquaculture developmental issues (be them policy, legislative or technical in nature) within its legislative borders without considering the advantages and importance of dealing with certain issues for the benefit of the Region. A practical example is the recommendation on the “Establishment of an *ad hoc* regional working group on aquatic animal health legislation”. This recommendation has not been taken up, while individual RECOFI Members are still working independently on fish health an issue which in fact requires strong regional cooperation and communication considering that all the Member countries share the same water body.

25. The main function of the WGA is essentially to look into issues of regional interest and to ensure strong synergies among its Members and to the advantage of all. Over the past few years the WGA has certainly tackled issues of common interest and developmental importance, but the benefits to the Region have not adequately materialized. This is probably due to insufficient follow-up of the WGA recommendations either under the *aegis* of the Commission itself or directly and in collaboration among the relevant authorities in the Member countries.

26. The limitation of the financial resources available to the Commission, the deficient and poorly consolidated intraregional work linkages among all the national authorities dealing with aquaculture, and the possible view that the work of the Commission is somewhat independent and disconnected from the mandate of such national authorities, may have all contributed in decreasing the importance placed by RECOFI on the role and purpose of the WGA and hence undermining the support that such entity could effectively deliver.