



UNITED ARAB EMIRATES
MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT

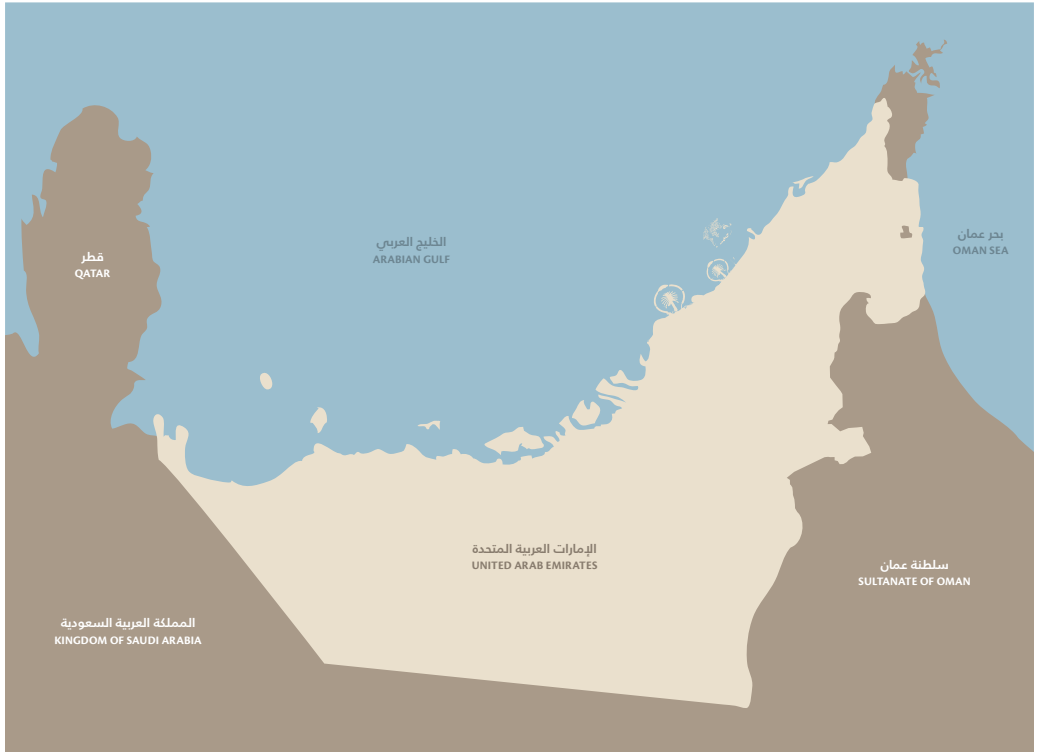
AQUACULTURE GUIDE

UNITED ARAB EMIRATES

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The United Arab Emirates



**This guide is a concise reference on aquaculture
in the United Arab Emirates.**

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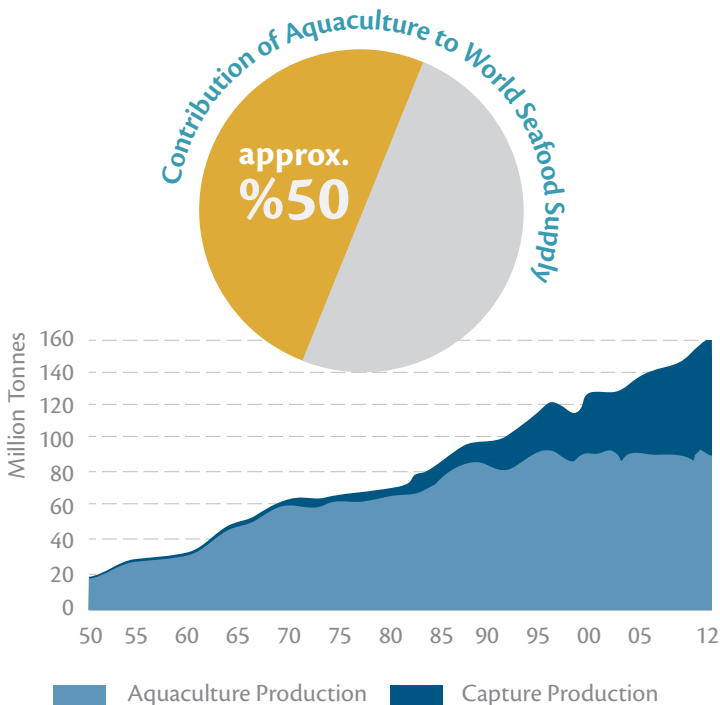
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Global aquaculture perspective

Aquaculture now accounts for almost %50 of the world's food fish. It is perceived as having the greatest potential to meet the growing demand for aquatic food. Given the projected population growth it is estimated that at least an additional 47.5 million tonnes¹ of aquatic food will be required globally by 2050.

Between 1980 and 2012, world aquaculture production volume increased at an average rate of %8.6 per year. World food fish aquaculture production more than doubled from 32.4 million tonnes in 2000 to 66.6 million tonnes in 2012.

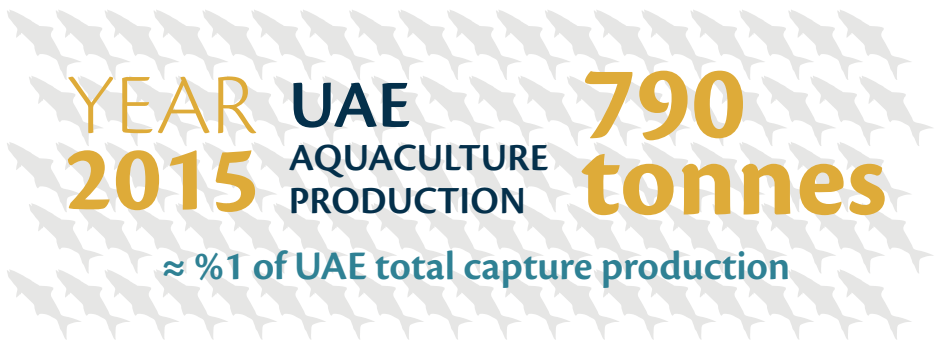
World capture fisheries & aquaculture production



1 The State of World Fisheries and Aquaculture 2014

Current status of aquaculture in the UAE

The establishment of the Marine Environment Research Department (MERD) in Umm Al Quwain in 1984, under the Ministry of Climate Change and Environment, marked the beginning of aquaculture in the UAE. The initial target was to commercialize production techniques of a few local fish species. Shrimps were added later to the former crop. MERD commenced producing fingerlings to support aquaculture projects and initiated release of juveniles as part of stock enhancement program.



In 2015, total aquaculture production in the UAE was 790 tonnes of various fin fish and crustacean species. The production is likely to cross 1000 tonnes in 2016. In comparison to the total catch from sea (73,203 tonnes)² in the United Arab Emirates, aquaculture contributes approximately 1%. The overall demand for seafood has outstripped the current supply from the local sea catches as well as aquaculture production and the gap is expected to widen and increase further in the future. Since contribution from fish catch has already reached its threshold level and is not expected to increase because of declining biomass, there is a great room for growth and substantially increasing local aquaculture production, to achieve the food security.

² National Bureau of Statistics report 2013, United Arab Emirates (Renamed to Federal Competitiveness and static authority)

Location of Farms in the United Arab Emirates



UAE commercial aquaculture production in 2015

S. NO.	CULTURE SPECIES	SCIENTIFIC NAME	PRODUCTION (TONNES)
1	Sea Bream	<i>Sparus aurata</i>	270
2	Sturgeon	<i>Acipenser baerii</i>	20
3	Black Tilapia/ Nile Tilapia	<i>Oreochromis placidus</i> / <i>Oreochromis niloticus</i>	70
4	Indian white prawn	<i>Penaeus indicus</i>	370
5	Red Tilapia	<i>Oreochromis sp.</i>	60

Aquaculture Guide



Sea Bream



Black Tilapia



Red Tilapia



Indian white prawn



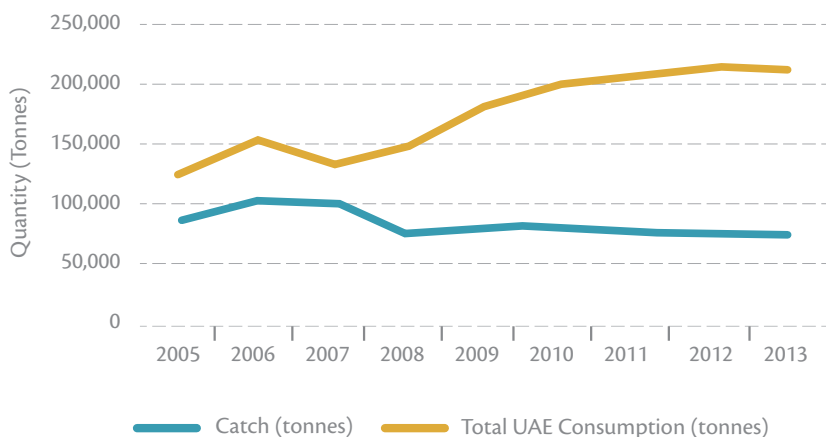
Nile Tilapia



Sturgeon

Seafood supply and demand gap in the UAE ³

The seafood market is exponentially growing because of the increase in population, the flourishing tourism industry, the increase in retail space and the increase in awareness among consumers about the nutritional benefits of seafood.



Henceforth, aquaculture appears to have the potential to make a significant contribution to meet this increasing demand for seafood in the UAE and the region. However, in order to achieve this goal, the industry needs a boost and requires increased recognition in future investment policies.

³ National Bureau of Statistics 2013 report, United Arab Emirates (Renamed to Federal competitiveness and statistic authority)

The current focus of the farmers/companies is mainly on the production (grow-out) of the most common culture species. The culture systems being used, in most cases, are extensive culture systems, with only few companies using intensive culture systems.

Major segments of the aquaculture industry still unexplored and can be further investigated for investment are:

1. Aquaculture technology and equipment
2. Feed formulation and production
3. Hatchery production
4. Consultancy
5. Research and Development
6. Broodstock development and production

Aquaculture prospects in the UAE

The growth and investment opportunities in these segments and the (grow-out) farms are significant. There are several factors that make investment in aquaculture in the UAE attractive:

- No income tax
- A widening supply and demand gap
- Little competition
- Trade opportunities within the region are large
- The market is well developed with a high demand for farmed seafood
- Availability of world-class logistics infrastructure
- Exceptional increase in the tourism industry
- Fast increase in retail space

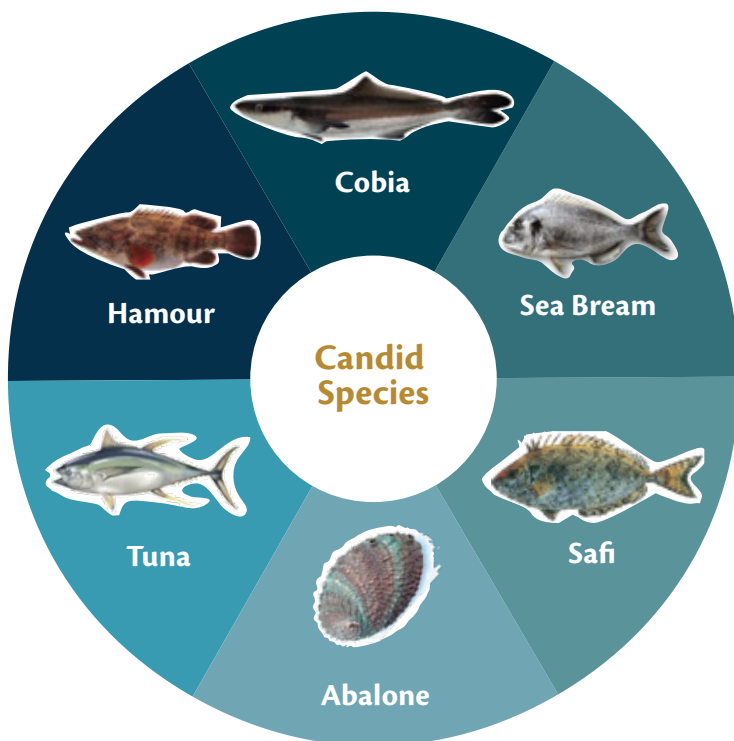
An investor can take the benefit of these elements and utilize this opportunity to:

- Fill the gap and tap the growing market demand
- Take advantage of the current minimal competition
- Emerge as the market leader and trend-setter in the aquaculture industry
- Cater to the growing demand with multi-species culture

Prospective species for aquaculture in the UAE

There are several species of marine fin fishes, crustaceans and molluscs which can be cultured using different culture systems in the UAE. Some of these species are already being cultured commercially while some are still at the pilot stage. Other than these marine species, there are also certain key fresh water species that can be cultured. If produced using sustainable technologies i.e. through culture system with minimal loss of fresh water or if water discharge is utilized for agricultural produce such as the case in aquaponics, this can boost aquaculture production in the UAE.

Prospective Species



Prospective locations for aquaculture in the UAE

Site selection is a key factor in any aquaculture operation, affecting both success and sustainability. Internationally, planning has been carried out using GIS-based site selection methodology which is widely used by the FAO.

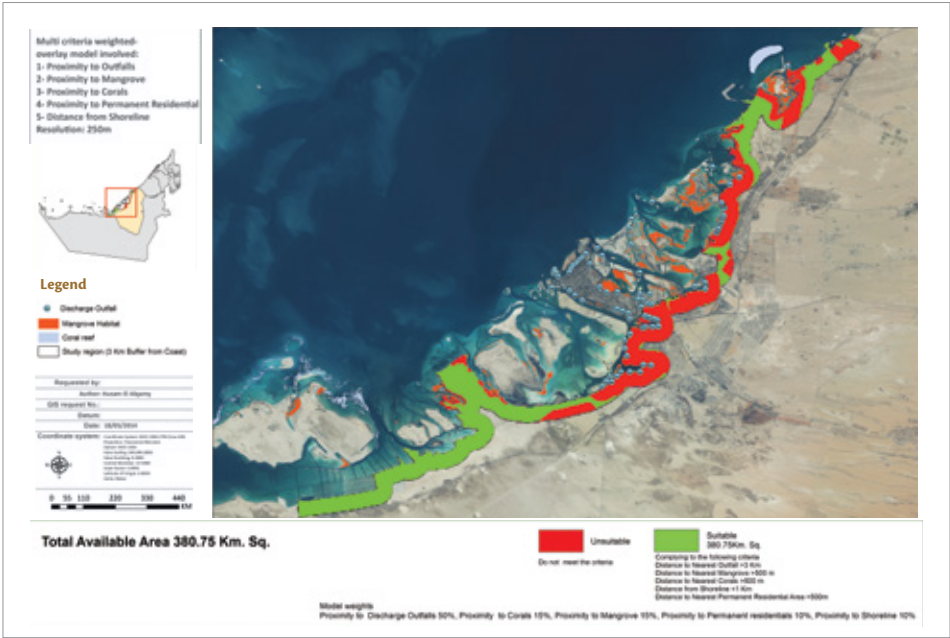
Geographical Information System (GIS) offers the capability to integrate and analyse various data and to carry out a multi-criteria analysis in order to identify possible sites for aquaculture development.

During the past few years, the UAE has taken the initiative to specify suitable locations for establishing different types of aquaculture systems. The initiative was started by the Environment Agency - Abu Dhabi (EAD) to fill the gaps and complement the GIS-based portal for the Emirate of Abu Dhabi. Using the necessary data, prospective locations for different culture systems have been worked out in detail.

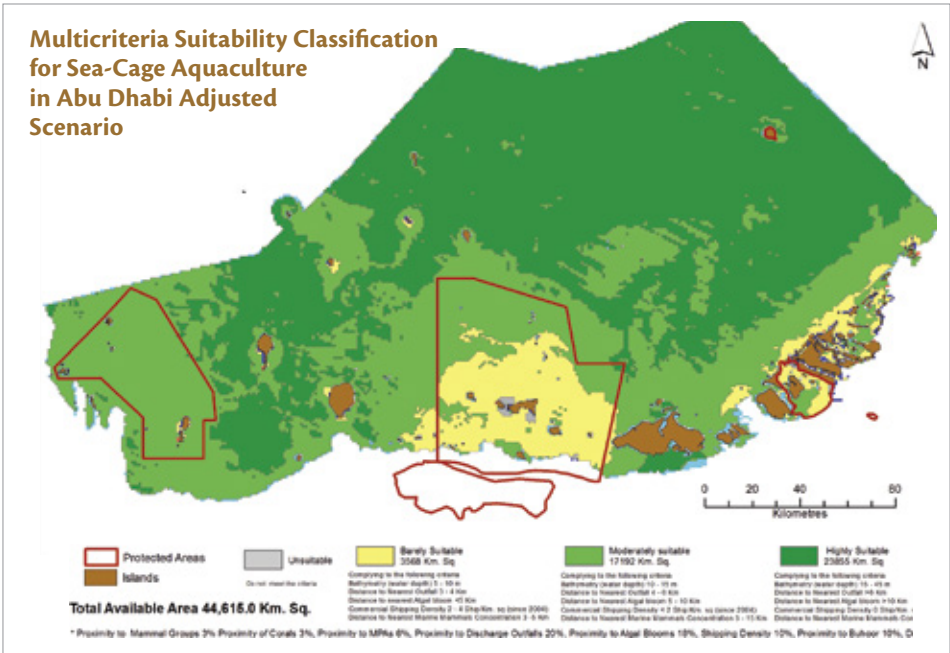
Based on these criteria in the table below, suitable locations have been worked out. Currently, only the Emirate of Abu Dhabi has been covered, however, progress is underway to study prospective locations in other Emirates as well.

S. NO.	TYPE OF CULTURE SYSTEM	CRITERIA WEIGHTAGE	CRITERIA
1	Sea Cage	Multi Criteria-Adjusted Weighted Scenario	<ul style="list-style-type: none">- Bathymetry- Distance to nearest outfall- Distance to nearest algal bloom- Distance to shipping density- Distance to nearest marine mammal concentration
2	RAS System (Coastal Capital Area)	Multi Criteria-Adjusted Weights	<ul style="list-style-type: none">- Proximity to discharge outfall- Proximity to mangrove Habitat- Proximity to corals- proximity to shoreline- Proximity to permanent residents
3	In Land Aquaculture	Multi Criteria-Water Conservation Scenario	<ul style="list-style-type: none">- Depth to hardpan- Ground water salinity- Ground water depletion- Distance to residential zones
4	Intertidal	Multi Criteria-Adjusted Weights Scenario	<ul style="list-style-type: none">- Bathymetry- Distance to nearest outfall- Distance to nearest coral reef- Distance to nearest turtle nesting

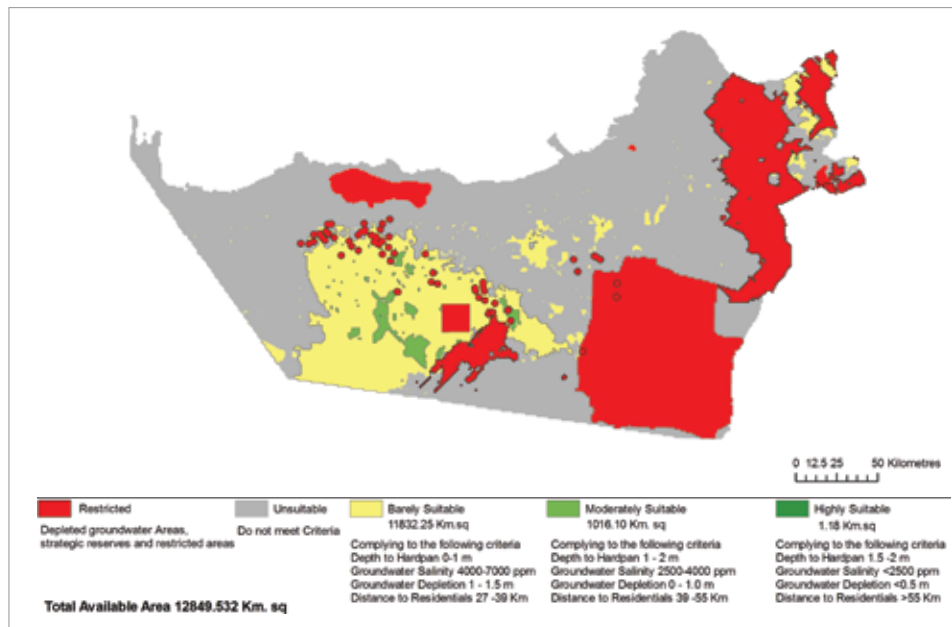
Site Suitability of RAS Aquaculture Systems in Coastal Capital Region - Abu Dhabi



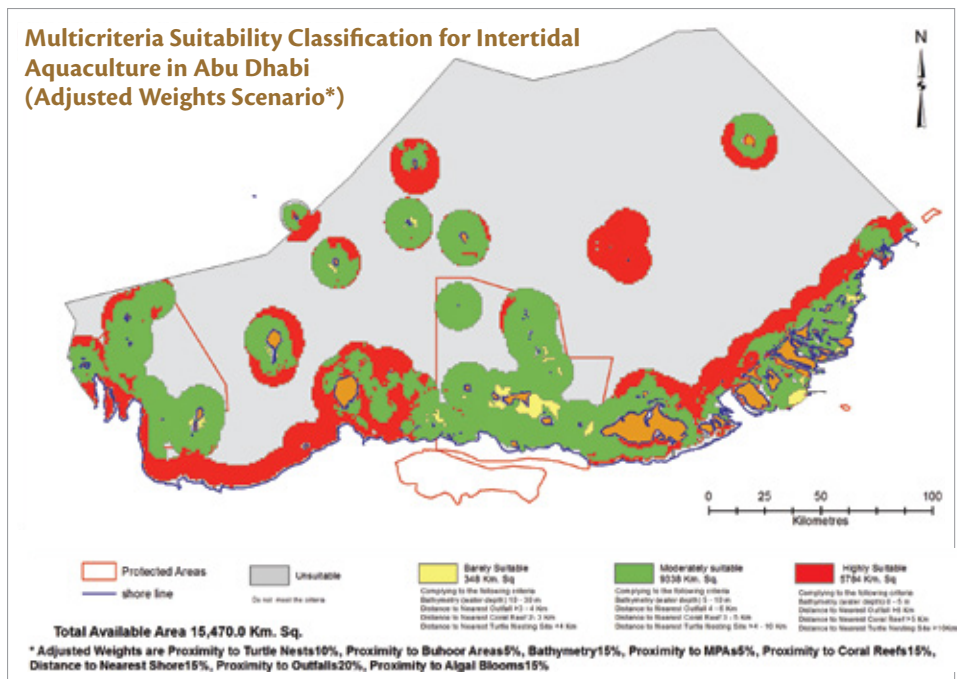
Multicriteria Suitability Classification for Sea-Cage Aquaculture in Abu Dhabi Adjusted Scenario



Multicriteria Suitability Classification for in-land Aquaculture Systems in Abu Dhabi (Wated Conservation Scenario)



Multicriteria Suitability Classification for Intertidal Aquaculture in Abu Dhabi (Adjusted Weights Scenario*)



The ministry's initiatives to develop aquaculture in the United Arab Emirates

The Ministry of Climate Change and Environment supports sustainable aquaculture in the UAE to enhance food security in the country and the sustainability of local production. In line with its strategy, the ministry has taken several initiatives to promote the UAE's aquaculture industry such as:

1. Identifying commercial species most at risk of overexploitation
2. Developing a breeding program for the commercialization of local fish species production
3. Initiating a stock enhancement program for commercially exploited local species
4. Promoting public private partnerships (PPPs) to develop hatchery and grow-out technologies
5. Providing technical know-how services to local small scale farmers

Since its establishment in 1984, the Marine Environment Research Department (MERD) has continuously worked to achieve sustainable development of aquaculture. The achievements and contributions of MERD to aquaculture are:

- Successfully completing lifecycle culture of more than 10 local commercial species
- Releasing more than 2 million fingerlings of various local species
- Supporting local fishermen by providing juveniles at no cost
- Initiating public private partnerships (PPPs) to develop UAE's first commercial hatchery

Sheikh Khalifa Marine Research Centre

Type of culture system

**Recirculating
Aquaculture
System (RAS)**

Cost of project

75 MILLION
AED

Production

10 MILLION
JUVENILES

Production started by

APRIL
2015



In line with the strategic goal of enhancing, food safety and sustainable local production, under the guidance and directive of the visionary leadership of the UAE, Sheikh Khalifa Marine Research Centre was established, with the following objectives:

- Stock enhancement
- Promoting aquaculture in the UAE
- Stimulating aquaculture and marine research The project is located next to the existing hatchery near the Old Town of Umm Al Quwain, and has been designed to be completed in several phases.

Work Phase 1 :



The phase I of Sheikh Khalifa Marine Research Centre consists of a hatchery complex which can produce 10 million fingerlings per year of a variety of local and exotic fish species in a bio-secure environment. One of the objectives of the hatchery facility is to have the capacity along with the task of developing new technologies for juvenile production of local species. The juvenile fish produced are to be used for local restocking programs and for the sustainable development of aquaculture by providing fingerlings for on growing sites in the U.A.E.

Cultured Species in Sheikh Khalifa Marine Research Centre’s hatchery



Sparidentex hasta
Subaity



Epinephelus coioides
Hamour



Rhabdosargus sarba
Gabet



Acanthopagrus latus
Shaeim

Fish species successfully cultured during pilot study

S. NO.	SCIENTIFIC NAME	COMMON NAME	ARABIC NAME
1	<i>Epinephelus coioides</i>	Orange spotted grouper	Hamour
2	<i>Sparidentex hasta</i>	Silvery black porgy	Subaity
3	<i>Siganus canaliculatus</i>	White-Spotted Rabbit fish	Safi Arabi
4	<i>Liza macrolepis</i>	Large scale mullet	Biah Sfeti
5	<i>Rhabdosargus sarba</i>	Gold lined Sea Bream	Gabet
6	<i>Acanthopagrus latus</i>	Yellow fin Sea Bream	Shaeim
7	<i>Plectorhinchus schotaf</i>	Minstrel sweetlips	Yanam
8	<i>Lethrinus nebulosus</i>	Spangled emperor	Sheri
9	<i>Penaeus indicus</i>	Indian white shrimp	Robian
10	<i>Penaeus Semisulcatus</i>	Green tiger prawn	Um Neira

Future Plans & Vision

1. To utilize Sheikh Khalifa Marine Research Centre's hatchery to support the industry by providing juveniles of commercial species.
2. To continue the stock enhancement program to negate the negative effects of fishing.
3. To encourage fishermen to practise fish farming.
4. To update related legislations for sustainable aquaculture development.
5. To develop commercial production techniques for local species through research and development.
6. To develop a detailed atlas for prospective aquaculture sites throughout the UAE.
7. To increase cooperation with the private sector to help develop new advanced techniques of fish farming and develop the aquaculture sector in the UAE.



Aquaculture legislations and regulations in the United Arab Emirates

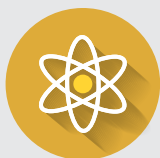
Aquaculture in the UAE is governed by Federal Law 23 of 1999 concerning exploitation, protection and development of living aquatic resources in the United Arab Emirates and the bylaws and ministerial decrees issued thereafter.

Federal Law No. (23) of the year 1999	Concerning exploitation, protection and development of living aquatic resources in the State of the United Arab Emirates
Ministerial Resolution No. (302) of 2001.	The executive bylaw of the Federal Law No (23) of the year 1999 concerning the exploitation, protection and development of living aquatic in the United Arab Emirates.
Ministerial Resolution No. (277) of 2001.	Concerning fish farms in fresh, brackish and seawater subject to the UAE state sovereignty
Federal Law No. (24) of 1999 and Cabinet Resolution No. (37) of 2001. (executive bylaw)	Concerning the Protection and Development of Environment
Ministerial Resolution No. (395) of 2007	Reformation of an aquaculture committee for inspection and development of aquaculture Re-formation of a working group to inspect fish farms, monitor residues of veterinary medicines and environmental contaminants
Cabinet Resolution No. (14) of 2014	Concerning of service fees for the Ministry of Environment and Water
Ministerial Resolution No. (116) of 2014	Concerning import of unregistered veterinary drugs
Ministerial Resolution No. (194) of 2010	Concerning the permitted maximum limits of heavy metals, Aflatoxins and Dioxins in animal feed

Establishing commercial aquaculture in the UAE

The United Arab Emirates in its effort to promote the aquaculture industry, has taken several steps to simplify the licensing procedures and to develop sustainable aquaculture.

Who can establish an aquaculture farm?



**Scientific
authorities**



**Corporate bodies owned
by citizens at not less
than 51% percent.**



**Fishermen
Cooperative
Societies**



Nationals

To obtain an aquaculture farm license, follow the procedure as explained below:

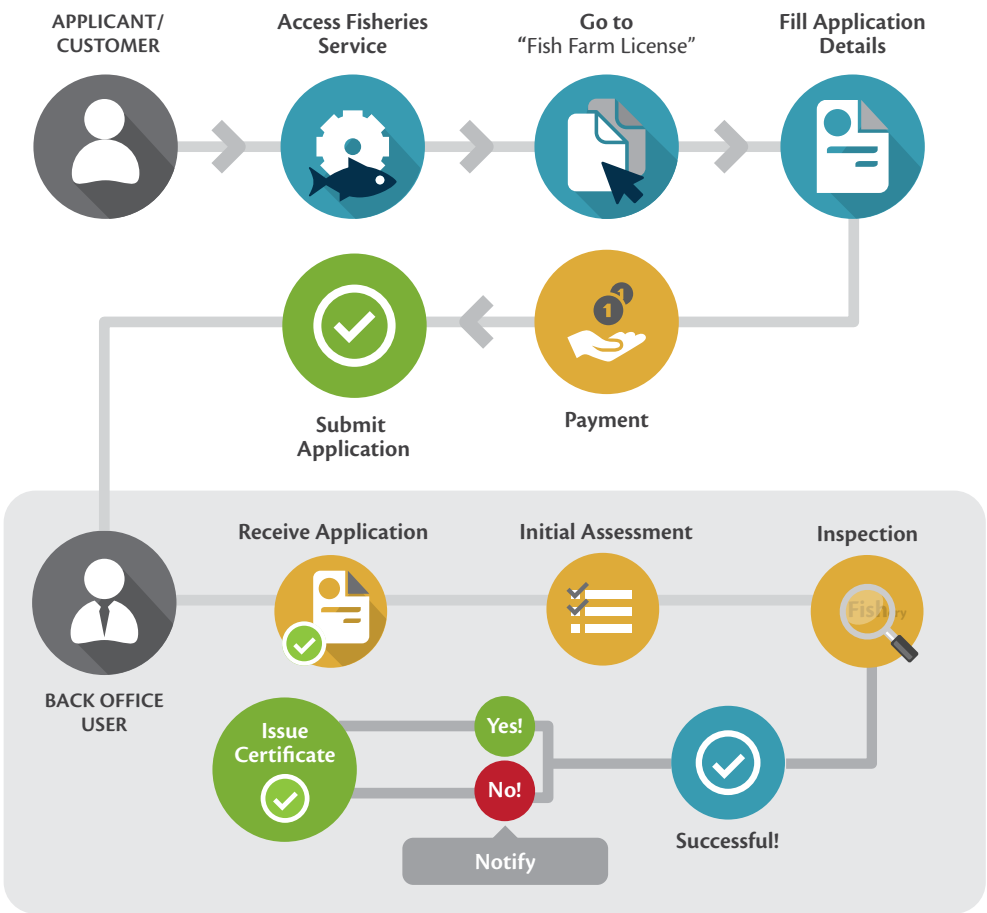
1. The current licensing process starts at the Department of Economic Development or equivalent authority in the respective emirate, where an applicant applies for commercial license to practice aquaculture activities
2. After receiving initial approval and securing a site, the applicant is required to obtain environmental permit from the competent local authority
3. After securing environmental approval for the proposed site, the application for aquaculture license has to be submitted to the federal authority which is the Ministry of Climate Change and Environment
4. All aquaculture projects must also obtain a license from the competent local authority after receiving the ministry's approval.

The application for an aquaculture farm license should be submitted online via (My aquafarm package) service from the ministry's website along with required documents.

Scan barcode to visit the Application Page on **moew.gov.ae**



Aquaculture license workflow steps





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