UNITED ARAB EMIRATES
MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT

الإمارات العربية المتحدة
وزارة التغير المناخي
والبيئة

SEAWATER ENERGY AND AGRICULTURE SYSTEM IN COOPERATION WITH MASDAR INSTITUTE OF SCIENCE AND TECHNOLOGY

Strategic Goal:	Sustainability of Ecosystems
Thematic Area:	Integrated Aquaculture/Agriculture
Geographic Scope:	United Arab Emirates Coastal Area
Timeline:	**2015 - 2018**
Purpose:	To establish knowledge base for aquaculture production of food, energy biofuels and carbon storage and conservation of sustainable marine ecosystem that is suitable for the United Arab Emirates environment.
Project Lead:	Ministry of Climate Change and Environment (MOCCAE)
Partner:	Masdar Institute of Science and Technology

Project Brief

With the increasing population and high demand for the food , the UAE has to exploit its non-arable and marginal lands like the coastal areas that can be used for an integrated aquaculture/ agriculture for the sources of food and bioenergy. Therefore, the Ministry of Climate Change and Environment (MOCCAE) in partnership with Masdar Institute of Science and Technology would like to establish the Seawater Energy and Agriculture System (SEAS) which is an Integrated Food and Energy System (IFES) designed to produce food and bioenergy and take advantage of the synergies and interactions that exist between several integrated desert ecosystems.
There will be three main biological processes, as shown on the diagram: **1)** Aquaculture will serve to ensure the food supply; **2)** Halo-agriculture, Salicornia a halophyte plant will be cultivated using the aquaculture affluent as irrigation as source of biofuels, bio-chemicals at food supplements, and **3)** Mangrove agroforestry, managed in a silviculture scheme.

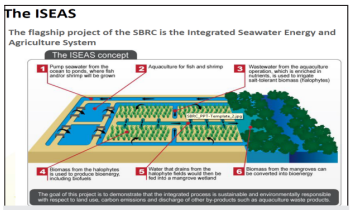

Figure 1.1
Diagram from Masdar Institute of Science and Technology

Activities and Outcome

- Design the field experiments, including fish farming and cultivation of desert plants such as Salicornia and mangroves. Preparation of ponds, agricultural fields and irrigation system.
- Periodical monitoring , assessment and analysis of the results
- Preparation of a report on the production of biofuels, fish and sustainable carbon storage from the desert plants irrigated with seawater

Figure 2.1
Project site at Masdar Institute of Science and Technology.
(Source: Marine Enviroment Research Department)

Future Directions

After the production of biofuels, fish and desert plants using the integrated energy and agriculture system, the project scale can be scaled up from 20,000 square meters to 2,000,000 square meters for the production of biomass and biofuels on a commercial scale.