

# Environmental troubles growing in Mid-East Gulf region due to rapid coastal development

November 16 2011

---

The rapid, large scale coastal development underway in the Middle East must be better planned and managed to avoid aggravating already "severe" degradation and losses in the fragile marine ecosystems shared by eight Gulf countries – Bahrain, Kuwait, Iran, Iraq, Oman, Qatar, Saudi Arabia, and the United Arab Emirates – warns a new report today by the United Nations University.

The report, by UNU's Canadian-based Institute for Water, Environment and Health, says fisheries and a broad range of other valuable resources and services provided by the Gulf's ecosystems are at risk of being lost because of inadequate environmental management.

Launched at UN headquarters in New York, the report is based on direct research and experience in the Gulf, and published literature. It says [coastal development](#) in wealthy Gulf countries has been so extensive and swift that "there has not been enough time to develop adequate regulatory, technical, and monitoring capacity to guide this growth appropriately."

Consequences include "severe loss and [degradation](#) of important habitats, including mangroves, seagrass beds, and coral reefs," greater pollution, and other environmental setbacks, says the report, warning of potential health problems and "the permanent loss of nursery grounds for commercial shellfish and fish species," among the troubles foreseen.

"Though focussed on the Gulf region, with its enormous new artificial

islands and waterways, waterfront cities, ports and marinas, the report is relevant to other parts of the [Middle East](#), to China, parts of South-East Asia, and elsewhere in the world where rapid coastal development is also underway," says co-author Peter F. Sale, Assistant Director of UNU-INWEH, citing UNEP predictions that as much as 91% of all temperate and tropical coasts will be heavily impacted by development by 2050.

Says the report: "The physical characteristics and semi-enclosed nature of the Gulf provide ideal conditions for accumulation of pollutants and may create the 'pollutant trap' common in other enclosed and semi-enclosed seas. Insufficient or unreliable data exist to be able to accurately estimate the impacts of increased pollution on the Gulf's marine environment."

"Relatively little information exists on the short and long-term environmental effects of coastal mega-projects," says lead author Hanneke Van Lavieren of UNU-INWEH. "Without good planning and careful consideration of existing coastal features, hydrodynamics and offshore seafloor conditions, the consequences of such developments could be severe and long lasting."

"It is unwise to continue this pace and scale of development without careful consideration of the likely impacts on the health of marine ecosystems and their capacity to continue to provide environmental goods and services that directly support human wellbeing. If care is not taken, the economic cost of losing valuable coastal ecosystems will be extremely high."

### **Needed in the region, according to the report:**

Integrated, forward-looking management programs that protect vital coastal ecosystems, and adapt to a changing climate, while permitting economic growth and ensuring a better quality of life for all coastal

dwellers.

An Environmental Impact Assessment (EIA) process that is scientifically rigorous, transparent, and applied by regulatory agencies with the capacity to enforce decisions and ensure compliance by the development industry -- an approach which recognizes that such assessments take time and that development must not proceed more quickly than the EIA process.

Faster scientific capacity development in the region. Over the past several years, among efforts underway by others, UNU-INWEH initiated a variety of training events in the region but substantial additional improvement is needed in terms of the number and calibre of national scientists and researchers, research institutions, available equipment and funding to sustain research and development. Greater scientific knowledge, including regional environmental databases, and greater capacity in coastal environmental management are also necessary to create sound national and regional strategies for development.

**\* Additional legislation, at regional and national levels, directly linked to coastal development.**

Says Ms. Van Lavieren: "Several agreements may relate in some way, but coverage is incomplete and incoherent. Current management strategies in the Gulf are ineffective and insufficient to ensure the future health of its marine and coastal resources."

She adds that communication and public awareness can be vital components of successful coastal management because they help build consensus and support for sustainable management initiatives while also ensuring that governments are responsive to environmental needs.

Dr. Sale notes that several Gulf countries "are in a unique position to provide a leadership role in this region given the availability of financial resources and the commitment towards environmental sustainability expressed by current leaders."

The report offers a wealth of information related to the region's growth and environmental conditions:

## **Growth**

Countries bordering the Gulf have an annual population growth rate of 2.1%, roughly double the world average.

Pressure on coastal ecosystems is especially high in the smaller Gulf countries of Bahrain, Kuwait, Qatar and the UAE, where residents either live entirely or almost entirely within 50 km of the coast. Some countries in the Gulf region have already developed more than 40% of their coastline.

Bahrain has expanded its land area by 91 km<sup>2</sup>, an 11% increase of its original land area, for industrial, recreational and residential purposes.

From 1999 to 2010, the coastline of Qatar doubled from 563 to 1239 km.

In the United Arab Emirates (UAE), four man-made coastal mega-islands (Palm Jebel Ali, Palm Jumeirah, Palm Deira and The World) will add 439 km of shoreline and approximately 120 km<sup>2</sup> of land.

## **Wastewater and other pollution**

Untreated and unused treated wastewater is frequently dumped directly

into the Gulf or riverbeds and wetlands where it then infiltrates into shallow aquifers and eventually enters coastal waters.

Enormous quantities of industrial, agricultural and domestic effluents substantially heighten the risk of contamination.

The high concentration of offshore oil installations, tankers and terminals have made the Gulf's marine and coastal ecosystems some of the most threatened in the world by oil pollution. The region experiences "persistently high levels of hydrocarbon pollution throughout the Gulf, predominantly along the Iranian coastline."

Meanwhile, between 70 and 90% of the freshwater supply of the Gulf's fast-growing population depends on desalination plants, which delivers toxic brine into the Gulf.

## **Fisheries and reefs**

Some 70% of the Gulf's original 3,800 km<sup>2</sup> reef cover is considered lost; all but 3% of what remains is either threatened or at a critical stage of degradation. Remaining reefs in the Gulf "are likely to degrade or disappear entirely within the next decade unless aggressive steps are taken to ameliorate the impacts of development."

After oil and gas, fisheries represent the region's most important natural resource, and the most important renewable resource. In the Gulf, trade in fish products accounted for US\$ 996 million in 2007 and fishing (including aquaculture) employs some 250,000 people while accounting directly or indirectly for the livelihoods of 1 million residents.

Despite existing fishing regulations, poor enforcement has meant that the effort has not been controlled and many fishery species are in peril due to overexploitation.

"Inadequate enforcement of law, ineffective management practices and lack of effective trans-boundary collaboration or global catch limits all contribute to fishery failure. Given the multitude of threats facing the Gulf's fish populations, a paradigm shift in the approach to fisheries management is needed," says Dr. Sale.

An expanding marine aquaculture industry will place increasing pressure on already vulnerable ecosystems and native species. The fact that this industry is not yet fully developed in this region provides a unique opportunity for Gulf countries to adopt responsible and sustainable aquaculture methods. In moving forward, countries should adopt a Gulf-wide strategic and collaborative approach.

The Gulf environment is low in fish species diversity, many of which are in peril due to overexploitation, pollution and the introduction of invasive species. Further environmental degradation and habitat loss caused by coastal development are compounding this threat.

## **Climate change**

The highly populated and predominantly sandy, easily erodible and low lying coastal Gulf countries are especially vulnerable to the impacts of sea level rise through direct inundation, erosion and salt water intrusion. Studies predict that most of the Gulf's coastal areas will be extensively inundated and large parts of shorelines will migrate inland; Qatar and the UAE will be particularly susceptible and other small Gulf countries (Bahrain and Kuwait) are also at risk.

The report urges Gulf countries to take urgent action to prepare for the potential impacts of climate change on [coastal](#) areas and resources, including adoption of national energy efficiency and renewable energy targets, promotion of the 'green building' concept and development and use of alternative and renewable energy sources. Furthermore, increased

scientific knowledge and greater capacity within the field of climate change is needed to create sound national and regional strategies for adaptation which in turn are incorporated into national and regional development plans.

Provided by United Nations University

Citation: Environmental troubles growing in Mid-East Gulf region due to rapid coastal development (2011, November 16) retrieved 6 May 2024 from <https://phys.org/news/2011-11-environmental-mid-east-gulf-region-due.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.