

**ECONOMIC IMPACT ASSESSMENT FOR
MANIFA FIELD DEVELOPMENT (NAFD/L-001-06):
CAUSEWAY CONSTRUCTION AND DREDGING**

Final Report to

**Center for Environment and Water
Research Institute
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Summary

This report estimates the economic value of impacts to the Manifa/Tanajib Bay fishery and breeding area following construction of a causeway across the mouth of the bay. The on-site survey team and Dr. Vivekanandan have estimated that the only species which will experience a reduction in catch is shrimp. Fishing vessels formerly based at Manifa may relocate, but their presence in other waters is not expected to depress catch of any species there.

A model is developed to estimate the primary and secondary effects of a reduction in catch of a particular species in a given area. The full impact of this reduction includes the effect of diversion of fishing to other areas, and changes in targeted species and gear type, as well as the changes in cost associated with the changes in catch rates. The model is simplified for this case since relocation was not a major concern.

The correct economic measurement of losses to a fishery is lost profits rather than the value of lost catch. The value of lost catch generally would exceed lost profits, because labor and equipment could be reallocated profitably. However, in the present case, the on-site survey team expects no reduction in effort—the numbers of trips, vessels, or fishermen are expected to remain the same with and without the causeway construction. In this case, the value of lost catch is equal to lost profits.

Reduction in shrimp catch is expected in the first three years following construction of the causeway, with the initial year's depression the greatest, at 235 metric tons in 2007, with recovery during the subsequent two years, to a loss of 117 metric tons in 2008 and 58 metric tons in 2009. By 2010, shrimp catch is projected to have recovered completely to the level it would have been in the absence of construction. No allowance has been made for the possibility that the construction of the causeway would foster an increase in shrimp stock and a consequent increase in catch.

The present value of lost shrimp catch from 2007 through 2009, which equals the present value of lost fishing profits over that period, is SAR 54,196.

The vast majority of the valuation of seagrass derives from its use value in supporting commercially-exploitable species. Adding the total value of seagrass losses to the value of reduced fish catch would double count most of the value of seagrass losses. An estimate of the portion of seagrass losses that are independent of commercial fish catch is based on the non-nutrient value of seagrass and comes to SAR 1,436 per square kilometer per year. The estimate of seagrass loss is 6.63 square kilometers. Assuming it recovers at the same rate as shrimp catch gives a PDV of the non-nutrient component of seagrass losses of SAR 16,320.