

CASE STUDY 2

Deciding between alternative land options when trade-offs must be made: Vietnam (DO 2007⁴⁰)

The problem and trade-offs involved:

This case study was carried out on Tram Chim National Park in Vietnam. The park is enclosed by a dyke that was built in 1985, and was intended to retain water during the dry season in an effort to restore wetlands damaged during the Vietnam War. In 1996, local authorities raised the height of the dyke to prevent any fires, which has had two consequences: first, that the water level in the park is now consistently higher than the ecologically optimal level, leading to degradation in the wetland ecosystem, and second, that the higher dykes now protect many farms from flooding, allowing farmers to grow more rice and thus earn a higher income.

This study investigated the impact of proposals by the Park Management Board to reduce the height of dykes in Vietnam's Mekong River Delta. Changes in the park dyke will change water levels in farms in adjacent areas, and hence have impacts on farmers. It is estimated that a reduction in water level in the park by one meter can lead to an increase of 0.2–0.3 m of water in adjacent farms. This will have considerable impacts on farmers' farm dykes, cropping, and livelihood due to prolonged flood durations. The changes in wetland management will involve improved vegetation control, increased hydrological and biological monitoring, and stronger enforcement against illegal encroachments.

Method for valuation of economic impact:

In this study, the cost of the dyke conversion is the local farmers' reduced income from rice production, and was estimated using the production function approach and market values. The benefits derived from the improvements in environmental quality (wetland biodiversity) that the proposals should produce were estimated using an environmental choice modelling technique (non-market values).

Two scenarios were considered: one with a reduction in the height of park dykes and one with a reduction in the height of farm dykes. The park dykes surrounding the wetland protected areas were built by local authorities to maintain a high water level in the dry season for fire fighting and prevention. Farm dykes surround villages and paddy fields were constructed by local farmers with support from local governments to protect

agricultural land, villages, and other infrastructure from annual flooding.

Results:

The study finds that far from being a 'trade-off' between conservation and rural development, proposed changes could produce both an improvement in the Delta's ecology and a net benefit to society.

Scenario 1 (park dykes): It was found that the conversion of park dykes in Tram Chim would reduce rice yields by 0.03 tonnes/ha/year or 1,500 tonnes/ha/year for local farmers in an adjacent area of 50,000 ha around the park. This income loss of about USD 91,875 per year, together with compensation paid by the government for "farmer changing livelihood" costs (costs of adapting to new conditions/jobs after the dyke conversion) and engineering costs, brings the total costs of the proposed five-year programme to USD 3.4 million. On the other hand, respondents were willing to pay for increased biodiversity values of Tram Chim that would result from the changes proposed in the dyke and wetland management. The aggregated non-market values ranged from USD 3.94–5 million, suggesting that park dyke conversion can generate a net social benefit.

Scenario 2 (farm dykes): It was found that the conversion to lower farm dykes would reduce rice yields by 0.24 tonnes per ha per year, or VND 0.98 million per household per year. It would also reduce the income from livestock rearing. The estimated cost of the dyke conversion would be VND 15.4 million per household per year, and VND 614 billion or USD 38.4 million for the whole MRD. On the other hand, the biodiversity values of all wetlands in the MRD were estimated between USD 41.7–53 million. Therefore, the net social benefits would range from USD 3.3–14.6 million.

Possible options for action:

The proposed plans represent a win-win for both nature and people. Since society as a whole benefits, there is a rationale for making money available to individual farmers to compensate them for any income losses. The maximum level of compensation to be provided should be equal to the net social benefits.

