

Sustainable Regional Development

Case Study: the Hula Project (Israel)

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Abstract

The dilemma of creating sustainable jobs is a major problem in regional development. This objective lead to opposite policies: in the early 1950's to draining of a marsh and in the mid 1990's to re-creating the marsh. In both cases the environmental arguments and the job situation were leading to what seemed as 'the sustainable solution'.

In the early 1950's the Hula, a wetland in the Upper Galilee (in Northern Israel) was drained. It was hoped that besides solving the environmental ill effects of mosquitoes it would provide many jobs in agriculture. The forty years that passed showed that the solution of one environmental problem created others, not less severe, and has not solved the employment problem. The environmental problems encountered include nitrification of Lake Kinneret, the main source of drinking water in Israel, a loss of endemic species, etc.. The quick deterioration of land caused agriculture to become not profitable, and the employment opportunities in the region decreased.

In the mid 1990's the area was partly re-flooded. The recreated marsh includes islands and is designated to become a tourists' and recreationists' attraction: safari, birds' sanctuary, hotels, etc.

We studied the recreational patterns in the area, and expect recreation to generate impacts on the economic situation in the area at large. The paper discusses expected recreation in the Park, the region, and impact on demand for hotel stays.

Regional development and environmental quality must be balanced, otherwise the growth will be short termed. A sustainable impact requires to consider both environment and economic development..

Introduction

Too often, in the process of development, we are facing the dilemma of (economic) development vs. maintaining the environmental assets. This dilemma brought environmentalists to advocate 'sustainable growth'. There are many definitions of 'sustainable growth'. Among the alternatives we can mention the definition offered by the World Commission on Environment and Development: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). We can argue against this definition that it is too general and does not refer specifically to the environment.

Kahn (1998) proposes an alternative definition. He claims that growth in income (or in Domestic Product), that reduces the ability of environmental resources to produce ecological services, is inherently unsustainable. He also claims that the focus of sustainable development policies should be the conservation of environmental resources and ecological services. This definition seems too demanding but proper for aspirations. The paper discusses a case study in Israel where regional sustainable development is a challenge to planners, environmentalists, economists, etc.

In the early 1950's the Hula, a wetland in the Upper Galilee (in Northern Israel) was drained. It was hoped that besides solving the environmental ill effects of mosquitoes, it would provide many jobs in agriculture. The forty years that passed showed that the solution of one environmental problem created others, not less severe, and has not solved the employment problem. The drainage resulted in a global loss of seven animal species out of 12 that were endemic. In terms of the *region*, 119 (20%) species were not recorded in the region after the drainage (Safriel, 1997, pp. 22-23).

The environmental problems encountered include nitrification of Lake Kinneret, the main source of drinking water in Israel. The deterioration of land caused agriculture to become not profitable, and employment opportunities in the region decreased.

In 1994 part of the previous wetland was re-flooded. Canals were dug, a lake was recreated and as a result the water level increased. Shortly after re-flooding (in 1996) the number of bird species increased to 153. Altogether, 95,000 birds were recorded in 1996 (Oron and Shai, 1997). It is suggested that the recreated marsh, referred to as Hula Project, will become a safari, birds' sanctuary, and an area for recreational activities.

We analyze the impact of the Project in two dimensions:

- (a) Impact on the benefits to visitors in the park (discussed in Section 2);
- (b) Impact on demand for accommodation facilities (discussed in Section 3).

We argue that flooding the wetland will contribute to the environment by recreating an environmental asset, and at the same time, is expected to generate benefits to the general population and employment opportunities in the region. If the forecasts materialize, we expect a sustainable path of development

1 Recreational Patterns in the Upper Galilee

The Upper Galilee area is characterized by different attractions: nature reserves, national parks, archeological sites, forests etc. The area is attractive to Israeli recreationists who enjoy the abundance of water and the region's unique characteristics. The Israeli recreation is characterized by day visits, and staying overnight is relatively a new phenomenon increasing in volumes. The tourists who visit the area are mostly attracted to an archeological site, the Banias Reserve, and do not stay overnight in the area.

The area is in a process of constructing accommodation facilities to lengthen the average stay in the area, and to increase the employment opportunities. Our interest is in the impact of the Hula Project on recreation and tourism, and on employment opportunities in the area. If the visit is characterized by day visits we expect mostly a non-monetary impact, an increase in benefits to the participants (but not a lot of employment opportunities). If recreationists stay in accommodation facilities, use restaurants, or purchase commodities, there is an 'export' of services from the host region, and we observe monetary impact.

In the period 1994-99 the five major recreation sites in the Upper Galilee region attracted 600-690 thousand Israeli recreationists, and 160-190 thousand tourists. The number recorded is actually of visits and not visitors. Some of the visitors were counted more than once (a few times in the same visit, if moving from one park to another, or on different visits in the same year). Despite the inaccuracy, we shall use both terms (visitors and visits) in the rest of the paper.

The total number of Israeli visitors in the area including visits to museums, forests, rafting and smaller parks is estimated at 1.5 million visitors per year (Fleisher and Saati, 1994). It

is estimate that 26 percent of the urban Jewish population visited Upper Galilee in 1994 for recreation purposes. The respective percentages for non-Jews and for the rural population are unknown.

We studied the recreational patterns in the area, and interviewed recreationists in the major parks in different periods in 1995-96 (in four different seasons). The effective size of the entire sample was 799 observations. We asked about their recreational patterns in the region. The major questions are how can we describe the visitors' behavior: is it a visit to the area or to a specific park, is it a recurrent phenomenon, for how long do the visitors come to the region, which accommodation facilities are they using? An important issue was the reaction to a planned new park, the Hula Project in terms of willingness to visit and to pay. The survey allows us to answer these questions and more.

The socio-economic characteristics of the recreationists were compared to the Israeli population. The visitors are more educated, 32% have a university degree vs. 18% in the Israeli population. They are better off in terms of car ownership, 83% own a car vs. 50% in the Israeli population. They are younger than the general population, Only 8% are 50 years and older vs. 31% in the population. They tend to have larger families: 38% are from families with 5 members and more vs. 30% in the population.

2 Expected Demand for a New Park, the Hula Project

The Hula Project in the north of Israel aims at recreating a marsh that was drained in the early 1950s. The re-flooding aims at solving environmental problems such as nitrification of Lake Kinneret, level and quality of water, dust, spontaneous fires, non-productive soil and also regional unemployment. Recreating the marsh landscape is achieved by digging canals and a lake (1000 dunams), "creating" islands, populating the area with wild animals, planting characteristic vegetation, and attracting birds (to recreate the role of the marsh in the birds' migration route). The planners hope that this landscape will be attractive for recreation, fostering safaris, bird watching, boating, picnicking, etc.

The park has the potential of becoming an international attraction to ornithologists in terms of diversity of birds and their number, especially in the migration period. It is likely to attract the increasing number of tourists interested in wildlife (eco-tourism).

We shall inquire what is the potential of the project in terms of recreation, and what are the expected social benefits to the recreationists and the region.

2.1 Willingness to Visit

Forecasting future visits in the Hula Project is based on hypothetical questions about willingness to visit. To clarify the hypothetical 'commodity', the questionnaire described to the respondents the main features of the proposed park: artificial lake, safari park, bird sanctuary, etc., and then asked respondents to indicate their willingness to visit such a park. 87% of the interviewees responded positively, 12% were not sure or did not know, and only less than 1% of the respondents answered negatively. Given current level of visits to parks in the Upper Galilee (we assume 0.7 million visits annually), if these intentions were realized, they might result in 600,000 visitors to the park.

These results should not be accepted literally, as one would expect a discrepancy between intentions, which do not involve an actual commitment and allocation of time and money resources, and realization. The results do indicate, however, a large potential demand that could be realized, at least in part, through proper marketing.

2.2 WTP Entrance Fee

In order to learn more about the expected visits, we used Contingent Valuation Method (CVM, see Mitchell and Carson, 1989) to see how sensitive is the demand to the entrance fee. In our surveys, interviewees were induced to state the maximum sum of money (their Willingness To Pay, WTP) they would be willing to pay as an entrance fee to the Hula park, as if they were able to 'purchase' the park's amenities on a hypothetical market. In eliciting WTP, the first steps are to describe the hypothetical commodity (market) and the 'bid vehicle' of collecting payment. After describing the planned park, the commodity, the interviewees were asked about their willingness to pay an entrance fee per adult.

We found that 13.2% of the expected visitors to the park were willing to pay NIS50 (the exchange rate was NIS 3 per \$1) per visit. We interpret this to mean that 13.2% out of 600,000 are expected to visit the park if the entrance fee is NIS 50, i.e., 78,000 future visitors. The same method allows us to calculate the number of visitors expected to pay NIS 40 per visit or higher (this figure includes the visitors who consent to pay the higher

sum, i.e., NIS 50, as well as those willing to pay NIS 40). 63% were willing to pay NIS 30 and more. The mean payment was NIS 30 per individual (the median is the same). “The Program for Development of Tourism - Hula Project” refers to NIS 30 as the recommended entrance fee in operating the project. If this price is charged, 380,000 visitors will visit the park annually in the first year of operation. This number is expected to increase in the future, as discussed below.

Unlike previous studies on recreation in Israel (Shechter and Baron, 1976; Nevo, Zaitsev, Shechter and Reiser, 1997), 99% of the respondents were willing to pay a positive amount, and 88% were willing to pay NIS 20 and more. By contrast, in previous studies a relatively high percentage refused to pay anything. Possible explanations are that our survey was conducted in parks with an entrance fee, and in general most parks in Israel have at present an entrance fee; in 1974 entrance into most parks was free. While the entrance fee to nature reserves in 1995-96 was NIS 12, people were willing to pay more for the Hula, and the mean, as mentioned, is NIS 30. A possible explanation for the high WTP values is the unique activities and attractions described to the interviewee (see Section 2.3).

2.3 Logistic Regression Analysis of WTP

To explain the factors affecting the WTP, we used econometric methods.

We analyze the amounts people were willing to pay using logistic regression. This method required transforming the dependent variable into a set of discrete (binary) dependent variables. The new dependent variable can be interpreted as, ‘Are you willing to pay a certain sum of money (e.g. NIS 30), and you refuse to pay a higher sum?’

The hypothesis is that a person’s WTP is a function of that individual’s characteristics. We examined the WTP, the dependent variable, as a binary variable that gets the value 1 when the individual is willing to pay a certain value or higher and otherwise 0. Alternative WTP values were used ranging from 20 to 50, and each was run separately.

The results show that three activities affect WTP: safari affects positively, whereas swimming and horse riding affect negatively. This shows that visitors are willing to pay high sums as entrance fee *only* for activities which are *unique*, while activities which are

available at alternative sites (i.e., swimming and horse riding) have a negative effect on WTP.

Income has a positive effect on WTP. An increase in income as reflected in one's moving from one quintile to another, will increase the odds of paying the specified sum or a higher value. This result is reasonable and was found in previous studies (Enis et al., 1974), since recreation is a normal good.

Family size affects negatively, which means that large families find it difficult to pay the large sums for the new park. An increase of one member of the family decreases the likelihood of willingness to pay a certain value or higher. This result is significant for determining policy on the entrance fee for big families.

Another variable that affects positively is distance. An increase in 1 km will increase the odds by 0.4%, which means that the further away one resides, the more is one willing to pay high sums vs. not willing.

2.4 Expected Benefits of the project

We estimated the benefits to visitors from the construction of the park. The expected benefits were derived from the WTP elicitation that enabled to estimate the demand curve for the park.

We estimate that in the 'base year' the total number of visitors would be 380,000. The entrance fee is assumed as NIS 30, which results in revenues to the entrepreneurs of NIS 11.4 million (equals to \$3.8 million). The area under the demand curve, which measures the total revenues to the entrepreneurs plus the consumers' surplus (for details see Baron, Zaitsev and Shechter, 1997), would be NIS 14.1 million (equals to \$4.7 million). We shall discuss only the benefits, however, they are composed of revenues (about 80%) and of consumers' surplus (about 20%).

We are not concerned with the benefits in a single year, but over a longer period, since the park is expected to generate benefits over time.

To translate the base year values into expected benefits we assume:

1. An annual increase in the number of visitors and in consumer benefits by 2, 4 and 6%, alternatively (reflecting the increase in the size of population, income levels and leisure time);
2. All the calculations refer only to Israeli visitors, disregarding overseas tourists;

3. All the calculations are performed assuming that the political situation remains unchanged. Peace relations with Lebanon and Syria will probably attract visitors from these countries to Upper Galilee due to the proximity, and will probably increase the overall number of tourists. It will also affect the behavior of Israeli visitors who avoid the region in periods of tension.
4. The real interest rate is assumed alternatively as 5, 8, and 10 % in real terms.
5. We assume 25 years of operation.

Table 1: Expected Benefits of the Hula Project under Alternative Assumptions

Real Interest Rates	2% Increase of Visitors	4% Increase of Visitors	6% Increase of Visitors
5%	247.0	311.9	400.0
8%	178.8	224.7	278.9
10%	152.3	183.7	225.7

Benefits vary according to the assumptions regarding the expected increase in the annual number of visitors, and according to the interest rate, see Table 1, and vary between 152 and 400 million NIS.

The present value of revenues (not presented here) has to be compared with the investment in the construction of recreational facilities and their expected maintenance costs. If the net present value is positive, it means that the entrepreneurs will have profits. The recreational benefits, and especially the consumers' surplus, provide an additional justification to the government's expenditure on the construction of the canals and the islands, though, the government's investments were justified by preventing environmental degradation, as discussed.

3 Expected Demand for Accommodation Facilities

The demand for accommodation facilities plays an important role in evaluating the regional impact of a project in recreation, since it affects employment opportunities. We expect the Hula Project to contribute to the total number of days of visit in the region

and consequently to the stays in accommodation facilities, and specifically to stays in zimmers, hotels and guesthouses, the more expensive facilities. Results of the surveys are described and then forecasts are presented.

3.1 Demand for Accommodation Facilities

The number of nights spent in accommodation facilities depends on the number of recreationists staying overnight, the duration of stay, and whether people stay with friends or in commercial facilities. According to our surveys the behavior of recreationists in the Upper Galilee is as follows:

56% of the respondents came to the area for a single day, while 44% of the visitors stayed a few days (in the area itself or nearby). The percentage of the visitors who spent a few days in Upper Galilee depends on the season of interview: 64% of the respondents went there for a few days in August compared with 51% in October. In winter and spring a minority went for a few days, 31% in winter and 29% in spring. The questions of seasonality and the impact of the Hula Project on seasonality are addressed below (see Section 4).

Interviewees, who stayed overnight, were asked about their accommodation arrangements. They can be divided into four groups:

- (a) Staying with friends and family, 14%;
- (b) Staying in tents and bungalows, 16.6%;
- (c) Staying at less expensive commercial facilities – zimmers (bed & breakfast), or rural tourism 33.4%. Zimmers were \$30 per night in 1998;
- (d) Staying at hotels and guesthouses, 32% (the rate per night \$70 in 1998).

As expected, the relationship between length of stay and distance traveled from place of residence is positive. The farther you reside, the more likely you are to stay overnight, since you spend more money and time on travel. The probability of staying overnight rises from 7% for those who traveled 50 km or less, to 81% for those residing 150-km away or more.

3.2 Expected Demand for Accommodation Facilities

We expect the Project to increase the number of visitors to the region, and consequently it will affect the demand for accommodation facilities. We did not ask specifically on future use of accommodation facilities, but we can infer from current behavior to the

future. We assume that the current patterns reflected in our survey regarding the use of accommodation facilities will prevail.

We assume that 700,000 visits that would be recorded in the region's parks without the Project's opening, would turn into 770,000 in the 'base year', year of opening of the Project. We attribute the 10% increase to the impact of the Project on the number of visits. We expect this change due to the attractiveness of the Hula to new recreationists who don't visit parks or the region at present, and to an increase in the number of visits per year for those visiting parks at present.

To calculate the expected number of nights in zimmers, hotels and guesthouses we refer to recorded data (CBS, 1999). The values recorded in the Upper Galilee facilities in 1996 – 1998, are 350-400 thousand nights. Our hypothesis is that the number of stays in facilities will increase due to the Hula Project in 10% in the 'base year'

Table 2 presents the expected number of visits in the regions' parks, the stays in accommodation facilities and specifically in zimmers in different periods. The number expected in zimmers is calculated assuming that 51.3 of stays in commercial facilities is in zimmers (and the other 48.7% in hotels and guesthouses). Forecasts were calculated assuming an annual increase in 4% in the values.

In this analysis we discuss only the demand-side and not the supply-side. We ignore any possible changes towards more expensive facilities, or on the reverse, a change to more basic means (less likely).

Table 2: Expected Number of Visitors Staying in Accommodation Facilities in Different Periods (thousands)

Expected Values	Base year	In 10 years	In 20 years	In 25 years
Number of Visits	770	1,140	1,687	2,053
Overnight Stays	385-440	570-651	844-964	1,026-1,173
Demand for Zimmers	197-226	292-334	433-495	526-602

The number of nights spent in zimmers, hotels and guesthouses is expected to increase from 400 to 850-950 thousands within 20 years. Is it reasonable? Yes, since the population is increasing (Central Bureau of Statistics, 1992), at an annual rate of 1.0-1.3%, and is expected to reach 8 million people. Recreation is a normal good, and the demand is increasing with the increase in income and leisure.

4 Discussion and Conclusions

Projects are very often examined whether they generate additionality or substitution. If the visits to one park substitute for a visit to another park, then in terms of the social net benefit (the increase on one hand less the decrease) it may be positive or negative. If the construction of the Hula Project will decrease the number of visits in existing parks, then the net benefits are dubious. In the case of the Hula Project we expect additionality to the region. The Project offers characteristics that are unique and have no substitutes in the region or elsewhere in the country (these characteristics are reflected in the analysis of the WTP values).

From our survey, people move from one park to another. Therefore, not all the visitors to the park are an addition to the region, but we expect that some of the visitors expected in the Hula will visit additional parks, and will spend longer time in the region, or will come more often.

Besides the unique characteristics, the Project potentially has an additional advantage: it will contribute in making visits in the region more uniform throughout the year. At present, the distribution of visits in the region over the year is not uniform and most of the visitors are in the summer. The Hula Park offers attractions that are suitable mostly in the fall winter and spring. These are the months when the birds are abundant, and the microclimate in the park is very attractive.

The contribution of the Hula Project to the region is not the total number of visitors in the region, but the additional number of visitors resulting from the construction of the park. We expect that in twenty years about 150,000 visits will be added to the region annually, since new visitors will visit the area, and the visitors will visit more often.

Another facet is the additionality in terms of stays in accommodation facilities.

At 'base year' the Project is expected to increase the number of nights recorded in accommodation facilities from 350-400,000 to 385-440,000, an increase of 35-40 thousand, and in twenty years the expected increase in the number of nights will be 76-87,000 stays.

The question of sustainable development is still unresolved. On the one hand we need to create jobs and employment opportunities, but on the other hand we need to sustain the environmental resources. The Hula wetland in the North of Israel fits Kahn's (1998) definition that growth in income, that reduced the ability of environmental resources to

produce ecological services, was inherently unsustainable. As discussed in the paper, the draining of the wetland was not a solution to employment, and resulted in the disappearance of seven endemic species, which is a global loss. Kahn claims that the focus of sustainable development policies should be on the conservation of environmental resources and ecological services.

As described, in the case of the Hula, the environmental problems resulted in re-creating part of the wetland. Our research investigates whether it can generate sustainable development.

Based on a large survey, we estimate the expected visits to the Project, and the expected benefits. The analysis shows that visitors are willing to pay high sums for the unique experience offered. We expect the Hula Project to generate ‘externalities’ in terms of increase in the number of visits in the region (though we cannot estimate the new benefits that will result).

The implications of this Project on employment seem to be crucial for the region. We investigated the impact on the demand for accommodation facilities, but we should also look upon the demand for restaurants, the extra use of services, etc. The Project is expected to have sustainable impact on employment, and seems promising, but only in the long run we shall know whether a wetland is reversible, and whether such a re-creation generates sustainable regional development.

However, the major worry should be the impact of visitors: will they endanger the environmental resources. We expect that with the increase in population, income and leisure, recreation and tourism will become more demanded. Is this becoming an additional threat on the environment? Sustainable development requires that we worry on the environmental capacity of the Hula and the region, and develop policies to limit the number of visitors.

We should insist on the OECD’s recommendation, “development...without compromising the ability of future generations to meet their own needs” (WCED, 1987).

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