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## ANALYSIS

# Economic value of cedar relics in Lebanon: An application of contingent valuation method for conservation

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## ABSTRACT

The cedar forests in Lebanon give shelter to a rich biodiversity and they constitute important mountainous relic habitats harboring a wide range of endemic, rare and threatened species, and species with economic potential. These forests, once covering the Eastern and Western mountain chains, have been the providers of quality timber for the region in historical times. The ancient practices have left the country with only 12 forest relics distributed on the Mount Lebanon chain. Even though recognized worldwide as flagship species and sites of cultural, religious and historical values, these forests have attracted limited international funds for their conservation. These funds proved not to be sustainable for long-term conservation plans; therefore a system for securing local funds for the protection of cedar forest is needed. In this context, this research study was designed having three main objectives which are firstly to illustrate the differences in the value of cedar forests between citizens and villagers, users and non-users. Secondly to identify the best ways to collect local funds and design other tools (involving for example public participation) needed in setting out a sound strategy for the conservation of the cedar forests. Thirdly to use the findings of this study as a tool to investigate in further studies and to inform and influence decision makers about the importance of a long-term conservation and sustainable use program as well as to consider a strategic approach for its sustainable use. Using an open-ended questionnaire, contingent valuation method is applied to highlight the importance of well informed population, to obtain the Willingness to Pay (WTP) for a scenario to conserve cedar forests in Lebanon; to increase their surface areas; to promote sustainable activities and to explore the degree of importance of their attributes and of the option, bequest and existence values as perceived by the Lebanese population. The WTP is tested by using a regression model relating WTP to all socio-demographic variables. The questionnaires (416) were performed in three main cities in Lebanon and in villages surrounding two nature reserves. The difference in the individual WTP value for users and non-users was approximately US\$20 per household for both villagers and city dwellers. The frequency of the zero WTP value was higher for non-users. The results obtained encouraged a national initiative to create a national trust fund and to integrate symbolic fees on the amenity services associated with cedar forests.

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## 1. Introduction

The natural range of *Cedrus libani* A. Rich. in the eastern Mediterranean region extends over a great area from the mountains southwest of Antalya in Turkey to about the latitude of Sidon in Lebanon (Mikesell, 1969). Cedar in Lebanon extends along a continuous band between 1400 and 2000 m above sea level on the Mediterranean slopes of Mount Lebanon. The surviving stands of cedar are confined to areas on the western slope of the Mount Lebanon chain, facing the Mediterranean, where fog and cloudiness compensate evaporation during the summer months (Beals, 1965; Mikesell, 1969; Khouzami and Nahal, 1983; Talhouk et al., 2001). Nowadays, only 12 scattered remnants (Fig. 1) survive of the once extensive stands of cedar, fir and juniper (Baltaxe, 1965; Khouzami and Nahal, 1983; Barteau et al., 1999). They shelter

high diversity and occupy only 0.86% (1135 ha) of the total forest cover in Lebanon (Lichaa El-Khoury and Bakhos, 2003). Their estimated area was 500,000 ha before 5000 years of exploitation (Alptekin et al., 1997).

These forests have been assigned diverse direct and indirect use values not only for Lebanese but also for worldwide communities, both ancient and recent. In the mid nineties, the threat faced by the cedar forests and the symbolic and cultural value the tree represents encouraged national efforts to seek external funds for the conservation of these forests. A nationwide project entitled “Strengthening of National Capacity and Grassroots in situ Conservation for Sustainable Biodiversity Protection” was started in November 1996. The project was financially supported by the Global Environmental Facility and the Government of Lebanon. It was supervised by the United Nations

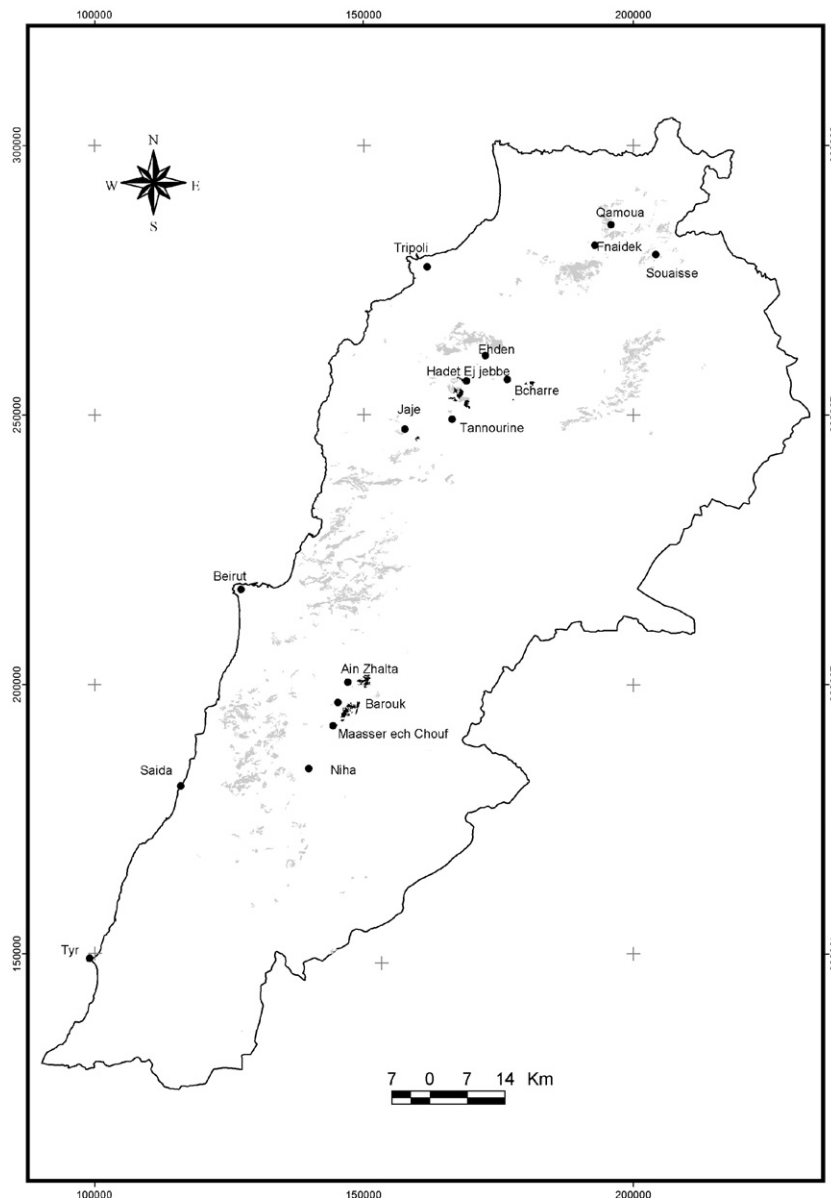


Fig. 1 – Distribution of Cedar forest stands in Lebanon (Lichaa El-Khoury and Bakhos, 2003).

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