

Economic Valuation And Accounting Of Forest Resources In Malaysia

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Introduction

Forest resources provide multitude of direct and indirect benefits to human such as timber, rattan, bamboo, clean environment, amenity, biological diversity, eco-tourism opportunities, water, wildlife, and so forth. The extent and magnitude of these benefits, particularly indirect benefits are still largely unknown or undervalued in terms of monetary terms. This is due to non-existence of conventional market to price the indirect benefits. As such, it is commonly believed that tropical forests are undervalued or underestimate of its potential resource rent (Gillis, 1980; Page, Pearson, and Leland, 1976; Vincent, 1992; Awang Noor, 1994; Repetto and Gillis, 1988; Ruzicka, 1979; IIED, 1997). Studies in Malaysia regarding economic valuation of Malaysian forest goods and services are still lacking although many attempts have been made in the past (Awang Noor, Vincent, and Yusuf, 1992; Awang Noor and Mohd. Shahwahid, 1997; Vincent, 1990; Benson, Chee, and Chin, 1996). Undervaluation of Malaysian forest will result the followings: (1) less revenue to the government, (2) unequal distribution of resource rent, (3) bias against conservation, and (4) increase environmental damage and resource depletion. The estimate of economic value of forest goods and services is one of the important tasks in many applications such as Assessment of Biological Diversity, Sustainable Forest Management, Resource Accounting, and Project Planning & Appraisal. This will also facilitate an analysis of trade-off between alternative forest landuse options (IIED, 1997) and in conducting comprehensive environmental economic study for development projects as required in environmental impact assessment (EIA).

Materials and Methods

The methods used in this study involved four main stages: (1) literature review on previous studies and valuation methods, (2) development of theoretical framework and problem formulation, (3) identification of research site and ranking of forest goods and services, and (4) data collection and analysis. Literature review on previous studies and collection of literature related to the study was conducted to get basic information on the link between the roles of forest ecosystem and its impact on the environment and economic. Relevant secondary data were also identified and collected. The framework of the study was done to determine in order to approach needed. In this study, the total economic valuation framework was adopted. However, impact analysis was also included as part of the model development. The research sites for this study include several areas: Air Hitam Forest Reserve (AHFR), Selangor; Frasers Hill, Pahang; and Kedah. Data collection was carried out using survey technique. The quantitative estimates of economic values was carried out based on the type of forest goods and services identified at these sites using appropriate valuation method.

Results and Discussion

Results of the study comprise three main projects: (1) Conservation value of Frasers Hill for Bird Watching Activities. The study was conducted in Frasers Hill which is one of the most famous highland areas for bird watching activities. The area consists of more than 900 species of seed plants belonging to 120 families. It also includes 36 endemic species. In terms of avifauna, more than 260 species of birds representing 41% of the peninsula's total have been recorded. The contingent valuation method (CVM) was adopted and carried out on 209 respondents who visit Frasers Hill using a structured questionnaire developed in this study. The willingness to pay (WTP) was solicited from the respondents based on double bounded dichotomous choice elicitation format. The results show that the majority of the respondents were middle age (mean age 34 years old) with average income of RM2,993 per month. This shows that the respondents (bird watchers) were mostly from the middle-income level. The respondents also were mostly professionals, having college or university education. The results of CVM indicate that the WTP of the visit is RM12/visiti/year. Based on 49.910 visitors/year, the economic value is estimated at RM574,920.year and the net present value (NPV) is RM5.5 million.

(2) The economic value of medicinal plants, in particular tongkat ali (*Eurycoma longifolia*) was conducted in several areas in Gunung Raya, Bukit Perak and Gunung Jerai Forest Reserves, Kedah. The Kedah and Terengganu. From the industrial and collectors survey, the economic value of medicinal plants per hectare in Gung Raya, Bukit Perak and Gunung Jerai Forest Reserve was estimated at RM7, 609, RM16,945 and RM4,335 perhare, respectively. The value was estimated using the residual value technique. The economic value of tongkat ali was found to be RM1,974, RM321 and RM210 per hectare in Gunung Jerai, Gunung Raya and Bukit Perak, respectively. The results show that the economic value of medicinal plants is substantial and maybe higher than the value of timber resources. The value also varies by site. (3) The conservation value of

AHFR was estimated using CVM on 500 respondents living in various housing estates and villages in Puchong, Seri Serdang and Kinrara. The willingness to pay (WTP) was solicited from the respondents in these housing estates based on double bounded dichotomous choice elicitation format. The results of CVM indicate that the WTP to conserve AHFR was estimated at RM16 per person per year. The regression results show that the WTP depends on the level of education. Other variables included in the model (income, race, and age) were not significant at the 5 percent level.

Conclusions

The economic value of forest goods and services is important for sustainable forest management and for making decision in the alternative land use options. The results from this research reveal that the economic value of nonmarket forest goods and services is substantial and significant. If these values are ignored in forest landuse planning, it might provide wrong decision to policy makers and would result in policy failure. The failure of the market to reflect true economic value would undermine the growth and development of forestry sector for environmental protection. Future research should focus on how the distribution of economic value of nonmarket goods and services be captured by various stakeholders.

Benefits from the study

The economic values of forest goods and services were determined and several methods for valuing these were or developed or improved. This information can be used in project planning where the value of nonmarket goods and medicinal plants are taken into account in the benefit cost analysis. Currently these values are largely ignored in the preparation of cash flow in project planning and benefit cost analysis.

Patent(s), if applicable :

Nil

Stage of Commercialization, if applicable:

Nil

Project Publications in Refereed Journals:

Nil

Project Publications in Conference Proceedings

1. Awang Noor, AG., Mohd. Shahwahid, HO, Rusli M, Shukri M, Faridah Hanum I, Mohamed Zakaria H. 2000. Economic valuation of forest good and services of Air Hitam Forest Reserve, Puchong, Selangor: Implications on landuse. In: Proceedings of the Langat Basin Research Symposium, 2000; p 84-102.
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4. Awang Noor, A.G. and Mohd. Shahwahid, H.O. 2001. Economic valuation of watershed services. Paper Presented at the Workshop on Non-Timber Forest Products and Services, 1-2 November 2001, Kuala Lumpur.
5. Awang Noor Abd. Ghani. 2002. Conceptual and Analytical Framework for Economic Valuation of Reduced Impact Logging (RIL). Paper Presented at the Seminar on "Penyelidikan Sistem Penuaian Hutan," 17 July, 2002, Sandakan Sabah.
6. Awang Noor, A.G. 2002. Managing Socio-Cultural and Economic Aspects Pertaining Usage of Forests. Paper Presented at the 7th Annual Conference on Asia Timber and Forestry, 25-26 November, 2002, Kuala Lumpur.
7. Awang Noor, A.G., Khamuruddin, M.N., Mohd. Shahwahid, H.O., and Rusli, M. 2001. Forestry and Environmental Management in the Forestry Sector: Market-Based Instruments and Research Priority Areas. Paper Presented at the Second Conference for Resource and Environmental Economists, Seremban, August 10-11, 2001, Seremban, Negeri Sembilan

Graduate Research

Name of Graduate	Research Topic	Field of Expertise	Degree Awarded (e.g. M.SC/Ph.D.)	Graduation Year (or expected)

Mohd Muhammed Idris	Azmi	Economic Valuation <i>Eurycoma longifolia</i> (Tongkat ali) and other medicinal plants in Peninsular Malaysia.	Forestry of Economics	MSc	2003	
Puan Leong	Chong	Economic Valuation perception Visitors Protection Fraser's Hill Wildlife	& of on of Hill for	Wildlife	MSc	2004

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