



UNIVERSITI PUTRA MALAYSIA

**WILLINGNESS TO PAY FOR WATERSHED CONSERVATION AT
HULU LANGAT, MALAYSIA**

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FPAS 2013 12



**WILLINGNESS TO PAY FOR WATERSHED CONSERVATION AT HULU
LANGAT, MALAYSIA**

By

NORFASHAH BIN MOHAMED

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
In Fulfillment of the Requirements for the Degree of Master of Science**

July 2013



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This thesis is dedicated to my beloved wife, Nik Nor Rahimah and my son, Abid Zahran.

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science

WILLINGNESS TO PAY FOR WATERSHED CONSERVATION AT HULU LANGAT, MALAYSIA

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July 2013

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Watershed is the one of the many goods and services provided by tropical forests in Malaysia. Among the variety of watershed protection benefits, domestic water supply from watershed is crucial, particularly in Hulu Langat district. Hulu Langat watershed is one of the environment sensitive areas that need to be protected. This area supply domestic fresh water to the Hulu Langat communities.

The essence of this study is to evaluate the economic benefit for conserving watersheds services to sustain domestic water supply at Hulu Langat, Selangor. This valuation is envisaged to yield the value of willingness to pay (WTP) of the communities for the conservation of the watershed. Besides, this study also intends to evaluate the communities' awareness towards watershed conservation. The contingent valuation method (CVM) was conducted to estimate communities' WTP for the conservation. The primary data obtained from questionnaire survey through personal interview. About 500 respondents have been interviewed in six sub districts that utilize water supply from Hulu Langat watershed area. In CVM, payment vehicle used was increment of monthly water bill of Hulu Langat communities for the proposed watershed conservation program. The questionnaire design was based on dichotomous choice format. The data analyses used was binary logit model to estimate the basic single bounded model and double bounded model. In this study, WTP relies on the socioeconomic variables which are bid amount, income, number of year attainment in education and residential area (urban or suburban) of the respondents.

The results from single bounded model show that the communities are willing to pay RM10.13 per person monthly with mean WTP of 23.10 percent increment in monthly water bill per household. In double bounded dichotomous choice model, the

results revealed that the mean WTP value is 19.25 percent increment in monthly water bill. Parallel to the WTP results, the communities also have awareness to protect the watershed for sustainable fresh water supply.

Therefore, an increment in monthly water bill could be implemented in Hulu Langat district area to assist watershed conservation initiatives. Firm policies for conservation can be executed like reforestation, increase in regular patrol, monitoring activities in the forest and effective forest management to ensure reduction in illegal logging, forest fire and wildlife poaching.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Master Sains

KESANGGUPAN MEMBAYAR UNTUK PEMULIHARAAN KAWASAN TADAHAN AIR DI HULU LANGAT, MALAYSIA

Oleh

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Kawasan tadahan air merupakan salah satu perkhidmatan yang diperolehi daripada hutan tropika di Malaysia. Kawasan tadahan air mempunyai banyak fungsi, dimana fungsi terpentingnya adalah membekalkan air domestik, khususnya kepada komuniti di Hulu Langat. Kawasan tadahan air Hulu Langat merupakan salah satu kawasan alam sekitar yang sensitif dimana ia perlu dipelihara. Kawasan ini membekalkan air domestik bersih kepada masyarakat di Hulu Langat.

Tujuan kajian adalah untuk menilai manfaat ekonomi bagi pemuliharaan kawasan tadahan air untuk mengekalkan bekalan air domestik di Hulu Langat, Selangor. Penilaian ini dijangka untuk menghasilkan nilai kesanggupan untuk membayar oleh masyarakat setempat untuk pemuliharaan kawasan tadahan air berkenaan. Selain itu, kajian ini juga bertujuna untuk menilai kesedaran masyarakat terhadap pemuliharaan kawasan tadahan air. Kaedah penilaian kontingen (CVM) telah dijalankan untuk menganggar kesanggupan masyarakat untuk membayar bagi pemuliharaan kawasan tadahan air. Data primer yang diperolehi daripada kajian soal selidik melalui temubual peribadi. Kira-kira 500 orang responden telah ditemubual di enam kawasan di sekitar daerah Hulu Langat yang menggunakan bekalan air daripada kawasan tadahan air Hulu Langat. di dalam CVM, kaedah bayaran yang digunakan adalah kenaikan bil air bulanan bagi masyarakat di daerah Hulu Langat untuk pembiayaan program pemuliharaan kawasan tadahan air seperti yang dicadangkan. Rekabentuk soal selidik adalah berdasarkan format pilihan *dichotomous*. Analisis data yang digunakan adalah model *binary logit* untuk menganggar model asas *single bounded dichotomous choice* dan model *double bounded dichotomous choice*. Di dalam kajian ini, nilai kesanggupan untuk membayar bergantung kepada pembolehubah iaitu nilai

tawaran, jumlah pendapatan, bilangan tahun dalam pendidikan dan kawasan kediaman (bandar atau pinggir bandar).

Hasil daripada model asas *single bounded dichotomous choice* menunjukkan bahawa masyarakat sanggup membayar RM10.13 sebulan iaitu kenaikan 23.10 peratus dalam bil air bulanan untuk setiap isi rumah. Dalam model *double bounded dichotomous choice*, hasil menunjukkan bahawa nilai min kesanggupan membayar ialah kenaikan 19.25 peratus dalam bil air bulanan dengan nilai median sebanyak 18.40 peratus kenaikan dalam bil air bulanan. Selari dengan hasil nilai kesanggupan untuk membayar, masyarakat juga mempunyai kesedaran untuk memulihara kawasan tadahan air untuk bekalan air bersih yang berpanjangan.

Oleh itu, kenaikan bil air bulanan boleh dilaksanakan di kawasan Hulu Langat untuk membantu pelaksanaan program pemuliharaan kawasan tadahan air di Hulu Langat. Polisi untuk pemuliharaan boleh dilaksanakan seperti penanaman semula hutan, peningkatan rondaan, pemantauan aktiviti di hutan dan pengurusan hutan yang berkesan untuk memastikan pengurangan dalam pembalakan haram, kebakaran hutan dan pemburuan hidupan liar.

ACKNOWLEDGEMENTS

First and foremost, I would like to express my sincere appreciation and deepest thanks to Prof Datuk Dr Mad Nasir Shamsudin, chairman of supervisory committee, for his precious advice, ideas and guidance throughout my research and this thesis writing.

My appreciation also goes to the committee member, Prof Dr Awang Nor Abd Ghani, who helped me greatly by giving suggestion and comment throughout my study and his patience in following my progress. He also gave the idea in selection of study area and guided me in term of forestry valuation. My sincere greatest thanks also go to Associate Prof Dr Alias Radam, for his suggestion and guidance in the statistical analysis.

My special thanks to Universiti Putra Malaysia for providing funding and necessary materials throughout my study. I also thanks to all Faculty of Environmental Studies' officers for the help during my study.

My loving thanks to my wife, Nik Nor Rahimah binti Nik Ab Rahim for being so patient and supportive, and my son Abid Zahran. Without their encouragement and understanding it would have been impossible for me to finish this study. Thanks for all the patience, care, sacrifices and huge love for me.

I certify that a Thesis Examination Committee has met on 30 July 2013 to conduct the final examination of Norfashah bin Mohamed on his thesis entitled "Willingness to Pay for Watershed Conservation at Hulu Langat, Malaysia" in accordance with the Universities and University College Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The committee recommends that the student be awarded the Master of Science.

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