Cuong ND, Volker M, Köhl M (2019).
Facilitating objective forest land use decisions by site classification and tree growth modelling: a case study from Vietnam
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Supplementary Material

Tab. S1 - Questionnaires for suitability classes determination for *A. mangium* and pair wise comparison.

This interview is undertaken as part of a PhD research project conducted at the World Forestry Center, Biology Department, University of Hamburg, Germany.

The objective of this study is to improve the understanding of the selection of suitable locations for growing *A.mangium* plantations.

The aim of these questions is to evaluate the importance of ecological factors related to *A.mangium* growth. The ecological factors including soil, topographic and climatic factors are determined based on available data sources in the study area and the ecological requirements of tree species. The questions are designed to help experts in the assessment process by a combination between experts' judgments and AHP (Analytic hierarchy process).

The information that you provide will be used in my PhD thesis and published in paper in English. I would like to record this interview using an audio recorder. That way, I can listen to the recording afterwards and make sure that I did not miss anything during the interview. Do you give me permission to record? [__] Yes [__] No

Interviewee Name: _____

Institution: _____

Interviewer: _____

I. Assignment of ecological factors for suitability classes

1. Based on the FAO approach in land suitability assessment**,** how many suitability classes should be determined for growing *A.mangium* plantations in Thai Nguyen province?

2. Based on tree species requirements and site conditions, and classes of suitability determined as above; please assign ecological factors to respective suitability classes?

II. Pairwise comparison

Description of scale for pairwise comparison

Intensity of importance	Definition	Explanation
1	Equal importance	Two factors contribute equally to the objective
3	Moderate importance	Experience and judgment slightly favor one over the other.
5	Strong importance	Experience and judgment strongly favor one over the other.
7	Very strong importance	Experience and judgment very strongly favor one over the other. Its importance is demonstrated in practice.
9	Extreme importance	The evidence favoring one over the other is of the highest possible validity.
2,4,6,8	Intermediate values between adjacent scale values	Sometimes one needs to interpolate compromised judgment numerical

Source: (Saaty 2008)

For example:

a. Tick (x) in soil properties, which means ‘soil properties’ is more important than climate. If you say ‘more important’ with value of 3, which means ‘soil properties’ is 3 times more important than climate.
b. Similarly, Tick (x) in soil properties, which means ‘soil properties’ is more important than topography. If you say ‘more important’ with value of 5, which means ‘soil properties’ is 5 times more important than topography.
c. Tick (x) in climate, which means ‘climate’ is more important than ‘topography’. If you say ‘more important’ with value of 3, which means ‘climate’ is 3 times more important than topography.

1. Which factor is more important than the other? (Please tick x)

Soil properties	
Climate	

By how much?

1	
2	
3	
4	
5	
6	
7	

8	
9	

2. Which factor is more important than the other? (Please tick x)

Soil properties	
Topographic	

By how much?

1	
2	
3	
4	
5	
6	
7	
8	
9	

3. Which factor is more important than the other? (Please tick x)

Climate	
Topography	

By how much?

1	
2	
3	
4	
5	
6	
7	
8	
9	

In soil properties:

4. Which criterion is more important than the other? (Please tick x)

Soil type	
Soil depth	

By how much?

1	
2	
3	
4	
5	
6	
7	
8	
9	

5. Which criterion is more important than the other? (Please tick x)

Elevation	
Slope	

By how much?

1	
2	
3	
4	
5	
6	
7	
8	
9	

From your judgment, please arrange the results as the following table:

	Soil properties	Climate	Topography
Soil properties			
Climate			
Topography			

Tab. S2 - Pair-wise comparisons for factors by experts and aggregation of individual judgments.

Expert 1: Prof. Dr Do Dinh Sam

	Soil	Topographic	Climate	row sums	Normalized row sum (eingenvector)
Soil	1.000	2.000	3.000	6	0.529
Topographic	0.500	1.000	2.000	3.5	0.309
Climate	0.333	0.500	1.000	1.833	0.162

(CR: 0.085; CI = 0.004)

Expert 2: Prof. Dr Do Dinh Sam

	Soil	Topographic	Climate	row sums	Normalized row sum (eingenvector)
Soil	1.000	2.000	3.000	6	0.529
Topographic	0.500	1.000	2.000	3.5	0.309
Climate	0.333	0.500	1.000	1.833	0.162

(CR: 0.085; CI = 0.004)

Expert 3: Dr Nguyen Thi Thu Hoan

	Soil	Topographic	Climate	row sums	Normalized row sum (eingenvector)
Soil	1.000	2.000	3.000	6	0.529
Topographic	0.500	1.000	2.000	3.5	0.309
Climate	0.333	0.500	1.000	1.833	0.162

(CR: 0.085; CI = 0.004)

Expert 4: Bach Tuan Dinh

	Soil	Topographic	Climate	row sums	Normalized row sum (eingenvector)
Soil	1.000	3.000	3.000	7	0.600
Topographic	0.333	1.000	1.000	2.333	0.200
Climate	0.333	1.000	1.000	2.333	0.200

(CR: 0.0006; CI = 0.0003)

Tab. S3 - Weights of each attribute and each factor to create a map of land suitability.

Factor	Weight 1	Attributes	Weight 2	Overall weight = (W1 *W2)
Soil property	0.556	Soil types	0.31	0.172
		Soil depth	0.69	0.384
Climate	0.172	Rainfall	1	0.172
Topographic	0.272	Elevation	0.29	0.079
		Slope	0.71	0.193
Sum				**1**