



New Educational Tools for sustainable Management of Peatlands in the Humid Tropics/ "PEATWISE"

Curriculum Development on the Management of Tropical Peatland Market Survey

**University of Malaysia,
Sarawak,
Malaysia**

2003

PEATWISE is a joint project of:

- Wageningen University and Research Centre, Wageningen, The Netherlands
- University of Leicester, Leicester, United Kingdom
- University of Malaysia Sarawak, Sarawak, Malaysia
- University of Palangka Raya, Palangka Raya, Central Kalimantan, Indonesia.

PEATWISE project is co-sponsored by the EU Asia-link programme, the Department of Science and Knowledge Transfer of the Netherlands' Ministry for Agriculture, Nature and Food Quality and the participating universities.

University of Malaysia Sarawak - Market Survey

Introduction

The greater proportion of the world's 11 million hectares of tropical peatlands occurs in the coastal regions of South-east Asia. Many of these regions, including those in Sarawak are earmarked for agricultural development. Being some of the largest remaining areas of lowland forest in South-east Asia, these peatlands have global ecological significance because of their unique and diverse ecosystem having vital roles as reservoirs of biodiversity, as carbon stores and as hydrological buffers. They also play an important regional economic role by providing forest products and land for settlement. Owing to a lack of awareness and understanding about sustainable land management practices, however, many peatland development projects fail to achieve their declared objectives, leading to serious environmental degradation and impoverishment of local communities.

In response to the above, PEATWISE, an EU funded education project undertaken by a consortium of two South-east Asian universities (University of Malaysia Sarawak and the University of Palangka Raya, Kalimantan, Indonesia) and two European universities (Wageningen University and Research Centre, The Netherlands and the University of Leicester, U.K.) have developed a curriculum on the management of peatlands, focusing on the peat-covered lowlands of Borneo. This unique curriculum uses innovative educational methods and tools to make available course materials and training modules that incorporate up-to-date research results and advice for enhancing skills and expertise needed to promote the sustainable use of natural resources in socio-economic development, particularly in the areas of Sarawak and Central Kalimantan.

The curriculum consists of six modules, five of them of equal weight and the sixth (field course and research project) having twice the weight of the others. Designed as a post-graduate programme, it can be completed in ten months of weekend classes, at the end of which successful candidates will be conferred the Post-graduate Diploma in Peatland Management.

We believe your organization, being an important agency directly involved or having interest in land development, would find this programme particularly relevant to the needs of professionals dealing with planning, implementation and evaluation/monitoring. And it is also with this in view that we are sending you the accompanying **Market Survey Questionnaire**. The market survey, as you are probably aware of, is part of the Ministry of Education's procedural requirement for the approval of new academic programmes to be offered by universities in Malaysia. We will be most grateful if you or your representative could kindly complete the questionnaire and return to us in the self-addressed envelope before 20 February 2004. We believe your valuable inputs can help us improve and correct whatever deficiency there is in the proposed curriculum.

We thank you in anticipation of your response.

Post graduate diploma programme in peatland management

Course Title	Credit Hours*
1. Ecology, Natural Resources and Environment	4
2. Water Resources and Hydrology for Peatland Catchments	4
3. Human Dimensions and Resource Economics in Peatland Management	4
4. Peat Soils and Land Use	4
5. GIS and RS for Peatland Management	4
6. Field Course and Research Project in Peatland Management	8
Total Credit	28
Hours	

* 1 Credit hour = 14 contact (lecture) hours or 3 hours of laboratory work.

Course Outlines

Course 1: Ecology, Natural Resources and Environment (NRM)

- Ecology: Basis for environmental management
- Biodiversity; introduction to ecological biogeography
- Ecological hierarchy; major ecosystems, communities, populations
- Environmentally sensitive areas; assessment for conservation and protection
- Environmental degradation, carrying capacity and new ecology, degradation and change, deforestation, and soil erosion
- Aquatic biodiversity and conservation: Bioindicators, biomonitoring, habitat management
- Introduction to sustainability and criticality concepts in land use and NRM
- Competing land use systems
- Water rights and governance
- Global and regional conventions (UNCED, Ramsar, Dublin, WWForum etc); Agenda 21: Environmental politics and reality.
- The Federal Constitution and legal framework for environmental management.
- The National Policy on the environment.
- Institutional framework for environmental management.
- Principles of environmental enforcement and compliance.
- Environmental Acts, Regulations/Orders, guidelines and standards
- Paradigm Shift in Natural Resource and Environmental Management
- Environmental Impact Assessment (EIA)

Course 2: Water Resources and Hydrology of Peatland Catchments

- Hydrological cycle; Precipitation; Evaporation; Transpiration; Infiltration
- Climatology; Hydrograph
- Geohydrology
- River basin and catchment area

- River flow
- Fundamentals of fluid mechanics and hydraulics
- Water quality classification, standards and guidelines
- Cleanwater treatment, storage and reticulation
- Wastewater treatment and recycling
- Impacts of engineering works on peatland rivers, estuaries and coastal areas
- Optimisation of water use
- Protection areas for drinking water
- Ethics in water resources management
- Concepts in modelling and modelling tools
- Model set-up, data collection, calibration, verification
- Model interpretation
- Case studies for surface, groundwater water and watershed/river basin modelling using MIKE-SHE, MIKE-11, MODFLOW, REPEAT and others packages.

Course 3: Human Dimension and Resource Economics in Peatland Management

- Nature and scope of development planning
- Projects, plans, and development objectives
- Project cycles and planning processes
- Appraisals and human elements / issues in project evaluations
- Environmental and social impact assessment in development planning
- Project planning and management for the future
 - Public health issues in peatland ecosystem
- Availability, distribution and uses of peat resources
- Natural resource accounting (NRA)
- Economic consideration in peat resource planning
- Potential Conflicts to Cooperation Potential (PCCP)
- Case studies: analysis of local project plans.

Course 4: Peat Soils and Land Use

- Introduction to peat soil genesis.
- Evolution and application of peat soil taxonomy.
- Basic principles of peat soil mapping.
- Basic principles of land evaluation.
- Soil performance and soil capability.
- Basic concepts in sustainable land resource management.
- Impact of peat soil degradation, spatial variability and soil diversity on sustainability.
- Soil quality and soil remediation.
- Significance of remote sensing techniques and GIS in precision land use.
- Impact of land use on quality of soils and natural waters – qualitative and quantitative considerations.
- Agricultural Systems.
- Land tenure and social institution.

- Tropical forestry and Agroforestry.
- Animal production in the tropics.
- Tropical crop production.
- Agricultural land and water management on peatland
- Integrated soil conservation and management.

Course 5: GIS and Remote Sensing for Peatland Management

- Decision support systems
- Introduction to mapping & surveying
- Environmental and landuse parameters for mapping
- Earth observation (Eo) technology & system
- Principles of GIS and basic GIS operations
- Elevation and spatial modelling and manipulation
- GPS for Eo and GIS
- Development of integrated water resource management system and system maintenance
- Data/collection and storage/archive and dissemination
- Web based technology for information sharing

Course 6: Field Course and Research Project in Peatland Management

- Technical writing: organisation, illustrations/visuals, language, style, references (prints, on-line), exercises.
- Natural science methodologies
- Statistical methods
- Peat soils monitoring, sampling and analysis
- Biological methods and indices
- Water sampling and analysis
- River classification
- Social science methodologies
- Study population, sample & sampling procedures
- Interviews and etiquette in social inquiry
- Questionnaires & Household Surveys
- Participatory Action Research (PAR) & Participatory Rural Appraisal (PRA)
- Preparation and presentation of proposals for field course
- 10-14 days Field Course followed by report preparation and presentation
- Dissertation projects.

Questionnaire

Kindly return to us only this questionnaire (completed) using the self-addressed envelope

UNIVERSITI MALAYSIA SARAWAK

**MARKET SURVEY FOR POST-GRADUATE DIPLOMA
PROGRAMME IN PEATLAND MANAGEMENT**

**PART I: CONTENTS OF PROGRAMME AND ITS RELEVANCE TO THE NEEDS
OF ORGANISATIONS**

[Please tick (✓) where applicable]

State the type of organisation / industry:

- I. Locally owned organisation / industry
- II. Foreign owned organisation / industry

a. Fulfilment of Theories, Concepts and Principles

1. Does the programme fulfil the basic principles within the discipline?

- Fully
- Partially
- None

2. Are the concepts and principles relevant to the present context?

- Yes
- Fairly
- No

3. Do the course contents help to build a strong programme?

- Yes
- Fairly
- No

4. Does the proposed programme cover all relevant subjects/topics?

- Yes

Fairly

No

If your answer is 'Fairly' or 'No', please indicate other additional areas that need to be covered by the programme.

5. Is there any subject that is not relevant in the programme?

Yes

No

If your answer is 'Yes', what are the subjects that need to be omitted?

6. State whether the programme fulfils these criteria:

	Fully	Partially	None
a. Basic Theory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Current Concepts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Legal aspects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Use of ICT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Quantitative Treat ^{mt}	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	_____	_____	_____
f. Market / Industry Relevance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Is this programme sufficient in terms of:

a. Length of study	<input type="checkbox"/>	Yes
	<input type="checkbox"/>	No

If your answer is 'No', please suggest the appropriate length of study duration. Please explain your suggestion.

b. Duration of practical training	<input type="checkbox"/>	Yes
	<input type="checkbox"/>	No

If your answer is 'No', please suggest the appropriate duration of practical training. Please explain your suggestion.

PART II : CAREER OPPORTUNITIES

- a. Do you think that graduates of this programme are suitable to work in your organisation?
If yes, please indicate the areas.
- e.g.
- i. Environmental Management
 - ii. Land and Survey
 - iii. Resource Planning
 - iv. Others (Please specify)

1. _____

2. _____

3. _____

4. _____

b. Please indicate relevant jobs in your organization for the graduate of this programme.

- e.g. i. Environmental officer
ii. Environmental Consultant
iii. Agriculture Officer

1. _____

2. _____

3. _____

4. _____

c. State the number of posts in your organisation that can be filled by graduates of this programme.

- | | |
|--------------------------|-------------------------------|
| <input type="checkbox"/> | 1 – 3 posts |
| <input type="checkbox"/> | 4 – 6 posts |
| <input type="checkbox"/> | 7 – 9 posts |
| <input type="checkbox"/> | Others. Please specify: _____ |

d. What is the appropriate range of salary payable to graduates of this programme?

e. Is this programme suitable for articulation to a higher level?

Yes

No

If your answer is 'Yes', please tick the appropriate level (s)

Master level

PhD

f. This programme will have greater demand at the following level:

Bachelor's level

Post-graduate diploma level

Master's level

PART III : OTHERS

1. Sponsorship

a. Has your organisation sponsored students in this field / area?

Yes

No

b. Would you encourage your staff to undergo this course?

Yes

No

If your answer is 'No', please state the reason(s).

2. Outcome of the Programme

In your opinion, will this programme be able to produce the right kind of graduates for the employment market?

Yes

No

Please elaborate.

Thank you