

**MARKET NEEDS, EXISTING CURRICULA AND  
EDUCATIONAL INFRASTRUCTURE  
FOR DEVELOPMENT OF CURRICULLUM ON  
SUSTAINABLE DEVELOPMENT OF PEATLANDS**

AS PART OF ASIA LINK PROGRAMME:

New Educational Tools for Sustainable Management of  
Peatlands in the Humid Tropics

**THE UNIVERSITY OF PALANGKA RAYA**

# UNIVERSITY OF PALANGKA RAYA

- Established in 1963
- Until 1990, 3 Faculties :
  - Economics
  - Education
  - Agriculture (Diploma)
- Now, 5 Faculties:
  - Law
  - Engineering
- 2002 : Postgraduate Programme
- 2500 undergraduate students, 640 academic staff

# OUTLINE

- HUMAN RESOURCES AND EDUCATIONAL INFRASTRUCTURE IN UNPAR
- EXISTING CURRICULA
- MARKET SURVEY
- SHORT COURSES (PILOT PROJECT)  
EVALUATION

# HUMAN RESOURCES

Academic staff of UNPAR (2003) : 640, 399- undergraduates, 221- masters and 20 - doctors. 114 staffs-taking master and 24-PhD programmes.

Recently, UNPAR have 20 staff with PhD degree, with field of study:

a.	Resource Economic	1 staff
b.	Economic	3 staffs
c.	Social Science	3 staffs
d.	Anthropology	1 staff
e.	Environmental Education	2 staffs
f.	Chemistry	1 staff
g.	Forestry	1 staffs
h.	Agronomy	3 staffs
i.	Plant Breeding	1 staff
ij.	Fishery/limnology	1 staff
k.	Soil Science	1 staff
l.	Biology and Physics	2 staff

# INFRASTRUCTURE

<b>Building</b>	<b>Building Area (m<sup>2</sup>)</b>	<b>Remark</b>
Classroom	13.130	24 buildings
Rectorate (2 floors)	2.000	
Faculty Office	3.200	4 faculties
Research Centre	400	
Community Service	200	
Library (2 floors)	1.200	
Laboratory	3.635	11 buildings
Experimental Field/screen house	300	
Educational Forest	450	
Guess House	170	
Sport Facility	3.000	

# Laboratory and Supporting Facilities

Faculty	Laboratory/Unit
Agriculture	Agronomy Lab, Computer Centre (6 PC Intel P4)
	Plant Protection
	Forest Product Technology
	Fishery/Limnology
	Analytical Chemistry/Soil-Plant Analysis
	Field Lab for Peat (5 ha)
	Screen house
	Fish Pond
Economic	Computer Unit (2 unit PC Intel P4)-administration
	Computer Centre (22 units PC P4)
Engineering	Soil Mechanics
	Concrete
	Architecture Studio
	IT Unit (40 units C Intel P4 with Internet facility)

## Laboratory and Supporting Facilities

Teacher Training and Education	Mathematic and Natural Science Lab.
	Physic Lab. (3 unit PC Intel P4)
	Chemistry Lab. (2 unit PC Intel P4)
	Educational Studio
	Basic Laboratory (Biology, Chemistry, Physic)
University	<b>Computer Centre (12 units PC Intel P3)</b>
	Centre for International Co-operation in Management of Tropical Peatlands
	Language Centre
Others	15 units PC Intel P4 <b>8 LCD Projector</b> -distributed - several units 32 unit OHP distributed in several units



## Postgraduate Programme:

- 6 classroom with AC



University Computing Centre

- 12 unit PC PC Intel P3



Computing Center-Faculty of Engineering  
40 units C Intel P4 with Internet facility

# Postgraduate classroom



# EXISTING CURRICULLUM

Undergraduate programme at the University of Palangka Raya

Post graduate programme - in collaboration with other universities.

Other developed universities in Indonesia

## Credit System

- SCS=Semester Credit System
- 1 SCS = 50 minutes of classroom or 60 practical work (field or laboratory work), 60 minutes – self study/week
- Example : \*Module A, 2 SCS (2-0): 100 min classroom
  - \*Module B, 3 SCS (2-2): 100 min classroom and 120 min lab/fieldwork
- Master programme-40 SCS

# Module and Syllabus-Undergraduate UNPAR

## Introduction to GIS (Forestry-optional), 2 SCS (2-0):

1. Definition and principle of GIS
2. Background and importance of GIS
3. Data source: data collection and compilation, remote sensed data processing, processing and digitising of secondary data
4. Data management: input process, data processing, data manipulation and analysis, output process, Digital Elevation Model-modelling based
5. GIS application in forestry and land use: Model design for Forest land use functions, Forest damaged evaluation and monitoring, Forest inventory

## Peatland Management (Agronomy), 3 SCS (2-2):

1. Definition of Peatland
2. Formation, classification and distribution
3. Chemical and physical characteristics, fertility
4. Utilisation of peat soil: agriculture and non-agriculture
5. Peatland management in Indonesia: coastal and inland peat
6. Peatland management: factor that should be considered

## Hydrology for Agriculture (Agronomy, for Soil science specialist), 3 SCS (2-2):

1. Rainfall: measurement, data analysis
2. Infiltration: definition and importance; measurement; methods to increase infiltration
3. Run off
4. River flow: measurement of discharge and data analysis
5. Groundwater
6. Evaporation and transpiration; factor affecting evapotranspiration, measurement
7. Drainage and irrigation: definition and scope, irrigation and drainage methods, water quality, efficiency of irrigation.

### Forest ecology (Forestry), 3 SCS (2-2):

1. Definition and scope of ecology
2. Forest ecosystem as a trees community
3. Forest vegetation classification
4. Relation between trees communities and environments
5. Forest types in Indonesia
6. Tree species selecting for forest estate

### Aquatic ecology (Fisheries), 3 SCS (2-2):

1. Definition and principle of aquatic ecosystem
2. Carrying capacity and constraints
3. Biogeochemical cycle and energy flow
4. Adaptation, acclimatisation, bioritmic, phenology, territoriality, migration, concept of bio-saline and eutrophycation.
5. Determinant factor on population changes, community and succession process.
6. Species diversity and ecological behaviour of aquatic resources relates to fisheries activity.

# Modules and Syllabus-Postgraduate

1. No curriculum available that similar to Asia Link Programme
2. Several Indonesian universities (IPB, UGM)

## 1. Ecology (IPB):

Definition and scope of ecology, principle and concepts of ecosystem, energy in ecosystem, biogeochemical cycle, limiting factor and organisation in community level and population, system ecology: system approach and mathematical model in ecology, habitat approach: freshwater, marine and terrestrial, Natural resources, Pollution and environmental health, Remote sensing as a tool for ecosystems management, Applied ecology.

## 2. Resources Economics (IPB):

Natural resources allocation, population growth, dynamics of social and community changes and the scarcity of resources, Decision on utilisation of natural resources, The use and interpretation of economics on resources allocation for community prosperity, Analysis of natural resources allocation on spatial and temporal, Property rights that affect efficiency and sustainable use of natural resources.

### 3. Remote sensing and GIS (IPB):

Basic concept of remote sensing: theory of electromagnetic spectrum (EMS), interaction between EMS and object, type of satellite and sensor, remote sensing for spatial management/allocation, remote sensing for assessment of natural resources, remote sensing for detection of environment, basic concept of GIS, GIS for planning and implementation of development

### 4. Peat Soil (IPB):

Process of formation; Classification; Distribution, Chemical and Physical characteristics, Productivity. Utilisation of peat soil for agriculture and non-agriculture. Peatland management in Indonesia

### 5.a. Water resources and hydrology (UGM):

Water resources, planning for water use, traditional and national law on control of water use and distribution, protection of water pollution.

### 5.b. Design of water resources system (IPB):

Type of water resources, analysis of water sources characteristics, Exploitation and processing technique of water resources based on conservation and economic principle.

# MARKET SURVEY-WORKSHOP

The total respondent 70 :

- 1) local government institution such as Forestry, Agricultural, Regional Planning, Environmental Impact Agency in several Regency and Palangka Raya Municipality,
- 2) High level staff of the University of Palangka Raya such as vice rector, dean of all Faculty in UNPAR, head of school/department,
- 3) Informal leader.

**Workshop:** 30 people

1. University of Palangka Raya (Asia Link team-8 staff and also invited staff),
2. Delegation from several Regency in Central Kalimantan and Palangkaraya Municipality.

**The main programmes on the workshop are:**

1. Presentation on the Asia Link project to provide the information on the purpose of the project as well as the activity for this project.
2. Discussion and formulation of the result of market survey

# MARKET SURVEY-RESULT

1. Master level
2. Since 2002: UNPAR run several programme for master (economics, law, Urban planning and counselling) and make preparation for post graduate in UNPAR
3. Most of respondent – UNPAR need to develop a “general programme” and not specific on peatland as mentioned in the objective of the Asia link project.
4. Workshop: curriculum on the sustainable development of peatland can be continued, but the result can be utilised as one of the pathway in an umbrella of “Management of Natural Resources and Environment”

## Relevance of topics/modules

1. Two respondents suggested adding the module on **Sociology**, besides other 5 modules in the questioner but in the workshop the staff of Unpar said that it could be incorporated in the module 5. Human dimensions and resources economics.
2. It seems that for module 4, GIS and remote sensing for peatland management, a bit new for respondent. The participants of the workshop understand that the limitation of knowledge and experience on this subject, however this subject or module need to be developed.

## Module 2. Water resources and hydrology of peatland

1. Water resources, introduction : properties, utilisation and economic importance
2. Peatland as a water reservoir
3. Hydrological cycle and its component
4. Climatic variation and water balance
5. Rainfall: meteorological factors that affecting rainfall, measurement and its variation
6. Run off and river flow: variations and factors affecting
7. Watershed morphology
8. Evaporation and transpiration, including the role of vegetation and soil moisture, its measurement and the estimation for evaporation and transpiration
9. Watershed management: planning and problems including deforestation
10. Water policy and management, including legislation, issues on water use: national and international, conflict and the need for water management, effect of global climate change
11. Water policy and management, including legislation, issues on water use: national and international, conflict and the need for water management, effect of global climate change
12. Water resources management including surface and groundwater use, its sustainability: utilisation and protection, environmental impact, water table change, salt water intrusion, subsidence and socio-economic impact
13. Water quality and pollution: measurement, monitoring, and control
14. Aquatic diversity

## Gap : existing and required knowledge and skills

None of respondents fill the information

## Knowledge dissemination environment and methods

1. A wide range of methods can be applied, however **blended education**, combination: “classical” classroom lecturers, distance learning with hard copy of material. On the workshop, the participants agree that for **e-learning methods**, several potential constraints are can be: the **culture, maintenance of hardware system** (including electricity).
2. All of respondent and participants put the **study load of 10-20 weeks** for the whole curriculum.

## Market needs and career opportunities

1. Three market sectors where beneficiaries of the course may find employments are: *university (including research institute), local government and consultant.*
2. Three functions that beneficiaries of the course may obtain are: *Continuation of study (MSc; PhD), Lecturer-including researcher, designer and planner (in company) or Policy implementer (government employee).*
3. Three areas of expertise in which beneficiaries of the course may be employed are: *Environmental management, resource planning, and specific ecological studies.*

## **Relation of the course with your own organisation**

Most of respondents **have not sponsored** any student to study on the area or subject on peatland yet.

For UNPAR staffs that take postgraduate programme, **taking the subjects on peatland is their own decision.**

Most of the respondent will **encourage their staff to take the course of wise use of peatland.**

The participants of the workshop agree that the decision to choose the subject on the study is still dominantly taken by the students.

Respondent agree to provide their contribution to the programme that Asia Link-Unpar want to established, through offering practical work to students, assistance in regular field practical, guest lecturing

# SHORT COURSES EVALUATION

## Participant

1. 100 participants : registered (invited institution-university, local government, NGO, public-announcement in a local newspaper).
2. 44 participants actively attend the short course
3. The active participants are: 39 University of Palangka Raya, 1 Journalist, 2 Local government staff and 2 public participants.
4. Background of participant : wide range of background: socio-economic, architect, fisheries, forestry, and education. Formal education, there are student of UNPAR and diploma (13.6%), graduated (S-1, 47.7%) as well as master (38.7%).

## Speakers

1. Mainly from the University of Palangka Raya (11 speakers or 76.2%) with support from national and international institution (Prof. Jack Rieley-UNINOT, Prof. Bostang Radjagukuguk-UGM, Prof. Fakhrurozie-UNSRI, Marcel Silvius-Wetlands International).
2. Based on the evaluation from that distributed during each session, the participant evaluate that in general agree: a) **the speaker has really knows about the subject,** b) **easy to understand.**
3. Only two speakers (9.5%) did not maximize to use teaching tools such as LCD or OHP projector

## Language

1. The short courses was **designed to use English** as the language, however the speaker who can speak Indonesian change to use Indonesian.
2. 90% of the participant : the main constraint for them to follow the short course is the language problem.
3. We understand that several candidate of participant decided not to come to the workshop also because of their worry on the using of English language.

## Miscellaneous

1. Duration of each session (30 minutes) is too short, and this will have the consequence that the content of the topic is not so detail. Total topic of 28 For 3 days is also too hard. Therefore to extend the periods of short course and also each session probably better.
2. Less than 50% of the speakers provide hand out before the topic was delivered. Most participants agree that the handout of the topic will help them to understand and follow the course. This is also to help them because it relate to the English language.
3. The venue for the short course is inappropriate because that was too big for 40-50 people. In addition, the setting up of audio system in the venue needs to be improved.

PILOT PROJECT OF SHORT COURSE ON  
MANAGEMENT OF PEATLAND RESOURCE IN CENTRAL KALIMANTAN  
AS PART OF  
THE ESTABLISHMENT OF MASTER PROGRAMME AND SHORT COURSES ON  
NATURAL RESOURCES MANAGEMENT AND SUSTAINABLE DEVELOPMENT  
BULA RAHAR UNIAN, 23-24 AUGUST 2003  
UNIVERSITAS PALANGKA RAYA, THE NATIONAL COUNCIL, JALANTAN  
BULOH, PEATLAND INITIATIVE THE NATION/IN THE UNIVERSITY OF PERTALINGA, UK







MANAGEMENT OF PEATLAND RESOURCE IN CENTRAL KALIMANTAN  
AS PART OF  
THE ESTABLISHMENT OF MASTER PROGRAMME AND SHORT COURSES ON  
NATURAL RESOURCES MANAGEMENT AND SUSTAINABLE DEVELOPMENT  
AULA RAHAN UNPAR, 25-29 AUGUST 2003  
UNIVERSITAS PALANGKA RAYA THE BRITISH COUNCIL, JAKARTA  
GLOBAL PEATLAND INITIATIVE THE NETHERLAND THE UNIVERSITY OF NOTTINGHAM, UK

