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PLEC NEWS AND VIEWS

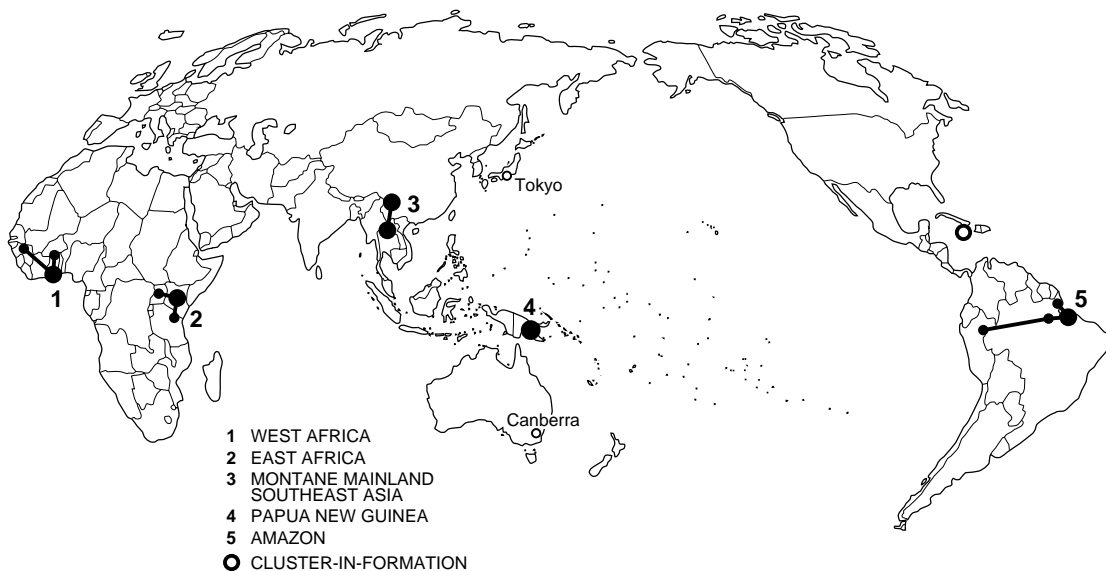
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The clusters of PLEC

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PLEC NEWS AND VIEWS

No.7 NOVEMBER 1996

REPORTS ABOUT GENERAL AND CLUSTER ACTIVITIES

NEWS OF THE PROJECT

by the Editor

Why this issue is late

This issue of *PLEC News and Views* was due to appear in September 1996; instead it appears in November. The principal reason has been uncertainty over the future of PLEC in relation to the GEF, described below. Additionally, however, some promised contributions to this number have been tardy in arriving, and at least one will now appear in the next (March 1997) issue. Apologies are offered for this delay.

PLEC and the GEF

This statement to members and other readers can only be a summary. Much that has happened during an eventful northern summer must remain confidential, some of it for all time. A new 'project document' was prepared in April, considered and strongly supported by the Scientific and Technical Advisory Panel (STAP) of the GEF in late May, and also received support from the World Bank. It was then scheduled for a meeting (teleconference) of the GEFOP (the inter-agency committee of the GEF Secretariat, the World Bank, UNDP and UNEP that manages the business of the GEF) in June, but later deferred until July. PLEC was then required to submit a new document, in a different form, in time for the next meeting in August. Brookfield was in Africa at this time and the new document

was prepared in Norwich by Michael Stocking (with the assistance of Anna Tengberg who is joint author, with Stocking, of a paper in this issue). The job had to be done in ten days, with only marginal assistance from Brookfield who arrived from Africa two days before the end.

This revised submission was then considered at a further GEFOP teleconference in mid-August. It gained approval subject to two important riders. In the first place our project (and one other approved at the same GEFOP) were regarded as strongly research-oriented. The new GEF still had no policy on research. Second, further new documentation was required, of nature to be advised to UNEP (whose GEF project we now are) by the Secretariat. PLEC does not have to go again to GEFOP, but the Secretariat will not put it before the GEF Council until they are satisfied. STAP prepared a draft document on 'Principles for GEF financing of targeted research' at a meeting in September, and Council considered this document in October. UNEP, and PLEC, will be advised of new requirements in late October.

All this represents substantial progress, but nothing is certain until Council has given its approval. The intendedly final version of the project document has already been roughed out in part in the GEF Secretariat, 'repackaging' it into the right sort of language for Council. The contribution includes preparation of an excellent logical-framework ('log-frame') matrix for the project as a whole. The budget is now being recast into the activity categories of the log-frame, as the next step.

'Demonstration sites'

Particularly important in the August success was identification by the GEF Secretariat of a fast-growing element in PLEC. This element was the 'outreach' work into which research has fed, focusing on selected communities in which participatory planning of conservationist and sustainable resource use is undertaken with the local people, and local organizations and institutions; and by them with PLEC assistance. This work began in Amazonia, where it has been integral since before PLEC began. Quite separately, it began in China in late 1994, and was the focus of an MMSEA Cluster meeting in May 1996 (see Quong, this issue at p. 26). In West Africa, evolution was also spontaneous. Collaborative design of improved resource management, at chosen sites, followed the active participation of farmers in PLEC research in 1993-94, and became Cluster policy in 1995.

The GEF Secretariat has proposed the term '**demonstration sites**' for these communities or areas and their populations. They have now been provided with information on such sites at various stages of development in Amazonia (5+), West Africa (4+) and MMSEA (4). In each case, working with local people, in a context in which they take a growing part of the initiative, has proved invaluable not only in gaining local folks' confidence but also in providing bridges to national authorities who are seeking just such innovations. Other PLEC Clusters are moving in the same direction, which is a logical progression from targeted research on local land management and its problems. In East Africa, in Uganda initially and now also in Tanzania, 'feedback seminars' have been held in 1996 with local communities among whom targeted research has been undertaken. They are an important step in the direction of participatory outreach. Remaining Clusters are urged to accelerate development of demonstration sites in their focus areas. They are central to the new presentation of PLEC now being prepared.

A MEETING IN AMSTERDAM

Brookfield attended an environmental history conference in Leiden in late June, and advantage was taken of the opportunity to bring Padoch and Stocking together with him at the beginning of July. Uitto, unfortunately, was unable to come. This meeting, held over two and half days in a small hotel by an Amsterdam canal, had expected to know the outcome of the June GEFOP, but instead was faced with a delay. We had to outline plans for action in the event of either a total rejection by the GEF, or of only a measure of success. Going through a comparative review of Cluster progress, we noted that two of PLEC's Clusters (Amazonia and West Africa) have declared a firm intention to continue their integrated regional work with or without international support. There is an implication of similar intent in MMSEA (although perhaps in a different context) as an outcome of the 1995 Chiang Mai meeting (PN&V 6, 1996: 3-4). While this gave confidence, we agreed that PLEC, in its present size and structure, would find it hard to continue on the basis of the limited UNU funding alone. PLEC could not readily become just a network that holds meetings and publishes, without the means to finance and integrate Cluster work. But while we could outline contingency plans, we could take no decisions.

One important decision did follow. Whether PLEC were to thrive or to grow smaller, there would be need to give increasing prominence to the publication of its work, in places where this work would be widely seen. This decision has been followed up in correspondence, leading to the policy statement at p. 6 below.

Finally, we considered future management of PLEC, noting that already some regional devolution of responsibility between the three principals is coming into place. If PLEC is funded, Cluster Leaders will become part of an enlarged management group, calling for a different structure. It has been stated in Project

documentation that back-up leadership must be developed both centrally and at Cluster level. It has already happened, and has been used, in some Clusters, but not yet everywhere. It is essential that this development continue. Although they have resisted the formal title, the two 'Principal Scientific Advisors', Padoch and Stocking, are in effect already the deputy or associate scientific coordinators. We had some discussion of how to shape future central management in this context.

THREE CLUSTER VISITS IN 1996

Michael Stocking has been to East Africa three times this year on various PLEC-related business. Christine Padoch has been to Yunnan. Harold Brookfield has been to both Ghana and Guinea in West Africa. Summaries extracting phrases from their reports to UNU follow.

East Africa 22 April to 6 May

Stocking's visit was planned to coincide with the EAPLEC general meeting, held at Arusha, Tanzania and in the field on the slopes of Mt Meru, from 23 April to 4 May. Ten of the twelve members of the Cluster were present, in addition to Stocking. The area in which the meeting was held has remarkable variations in land use related to migrations and ethnic differences as well as to varied production opportunities. Work done in 1995 in the main followed standard resource survey patterns, from which a substantial report has been prepared. The Uganda group had gone further in inquiry among the people in their work in the Mbarara District on the eastern side of Mt Elgon. They found an extensive local knowledge of soils, plants and environment in general in an area with a wide variety of natural resource management practices. They had identified farming system 'domains', broadly homogeneous areas of population, land use and environment among which they selected for more

detailed work. They already encountered a strong demand among local people for feedback, leading to the innovation of 'feedback seminars' discussed above. Because of pressures of other work, only more limited progress had been made in Kenya where characterization work, and establishment of recent land use history, has been concentrated mainly in the Kiambu area.

All groups have used transect approaches, the Ugandans incorporating a nested sampling approach down to small sub-plots. In general, Stocking found that adoption of a truly participatory methodology has been slow to arise in EAPLEC, and urged much more attention to this aspect as a major element in the common Cluster methodology which is sought by the participants. A work programme for 1996-97, scaled down to the limited resources available, was drawn up at the meeting. Not least of the outcomes was discussion of the proposal that East Africa host the next general meeting of the project; it was agreed that this might best be held in Uganda and subsequently a firm invitation has been issued by the Uganda group.

MMSEA 14-20 May

Padoch attended the annual Cluster meeting which was held at Baoshan and Baihualing, in western Yunnan. This was also a meeting of the Forest Management and Biodiversity Conservation Programme (FMBC) supported by the MacArthur Foundation and the Government of Yunnan. There were 20 Chinese participants. Three (Kanok Rerkasem, Laxmi Worachai and Narit Yimyam) came from Thailand. Andrea Quong from NYBG, working in Kunming as a research associate in 1996, and Lindsay Brown from the School of International Training also attended. In addition to Christine Padoch's report, there is also a very full report by Andrea Quong and Guan Yuqing. Andrea Quong has written an article out of this report, and it appears

below at p. 26. The first and last days of the meeting were in Baoshan, and the intervening three days were spent in the field at Baihualing, and especially in Hanlong village and in the Gaoligongshan State Nature Reserve. During the field visit to Hanlong, the party divided into two groups. One, led by Kanok Rerkasem, conducted a land-use survey of the village while the other, led by Christine Padoch, assessed the diversity of housegardens and the collective forest. Both had the objective of testing Agrobiodiversity Assessment (ABA), as designed and carried out by the Yunnan group.

In summary, Padoch reported that the meeting was very well planned and attended, with the presence of government representatives and the media (TV) indicating wide public reach of PLEC activities. It was evident that much work had been done quickly and energetically. Research was under way in the forest and in the villages, demonstration sites had been installed, nurseries and other experimental work had been set up, and a farmers' organization had been established. The monumental achievement of setting up such a multi-faceted project that involves not only many different researchers and institutions, but that is located at great distance from the home base in Kunming, deserves applause. There was, however, some evidence of haste in setting up transects and demonstration sites. The described ABA method is not yet consistently applied. Presently available personnel do not have sufficient field time available, and there is need to involve students or young researchers who can spend enough time with the project to allow them to understand the work and its extension aspects. Mapping is on too small a scale, and there is great need to make a larger-scale map. In the light of the complexity that has been revealed, placement of the transects needs to be reviewed. There is particular need to rethink the selection and implementation of on-farm demonstration plots, some of which are on land of the village's most inexper-

enced, rather than most expert, farmers. Much of this is developed further in Andrea Quong's article.

The interaction of Chinese and Thai participants was very positive and useful to all. Thai forward plans have built on the meeting and its lessons. The success of this Cluster has owed much to its joint meetings, especially those held in the field in 1995 and 1996, where methodologies can be exchanged and tested.

West Africa 5-19 July

Brookfield's visit to Ghana and Guinea was not associated with a general Cluster meeting. Its timing was determined by the dates of a conference which paid almost half his total fare. The general Cluster meeting, held at Tamale in January, is separately noted below. Brookfield's purpose was to meet Cluster members, to visit their main work sites, and also to assist the Cluster in its relations with government; one whole day in Ghana was devoted to meetings with ministers and directors. Both in Ghana and in Guinea business opened with a Cluster group meeting, well attended in both Legon and Conakry. Discussion was good, and very constructive. Unfortunately, there were conspicuous absences from both groups, representing the main cluster strength in anthropology and sociology. This rather underlined the heavy reliance on natural scientists and geographers, which needs to be softened, with better balance.

Most of the rest of the time was spent in the field and travelling to and from the field -- six days in Ghana and three in Guinea. Brookfield was thus able not only to spend time with the new groups in Kumasi and Tamale, and visit field sites with them, but also to see all the main sites of both the Legon and Conakry groups. He also read, and later commented on in the light of these visits, all the papers presented at the Cluster meeting in Tamale in January. His principal companions were Edwin Gyasi and Lewis

Enu-Kwesi in Ghana, and A. Karim Barry and Sekou Fofana in Guinea.

Some important conclusions concerned the major progress achieved under energetic leadership since the 1994 workshop. In Ghana, there has been a shift of emphasis from a fundamental-research paradigm to the more complex and serviceable participatory design used now, with its appeal to government and villagers. Methodology has been refined in several other ways. There is a need to bring the very sound scientific work in Guinea into a configuration parallel with that adopted in Ghana, but this has to take account of the fact that different scientific and academic traditions hold sway. With new funding, a visit to Guinea by Lewis Enu-Kwesi is proposed. In Ghana, it has perhaps been premature to set up the new groups in Kumasi and Tamale on a basis of area responsibility. The Kumasi group has started strongly, moving directly into action-oriented work with villagers, but is small, and the Tamale group more clearly lacks the critical mass to work as a PLEC subcluster.

THE TAMALE MEETING

The enlarged West Africa Cluster met in Tamale and in the field in the Manga-Bawku district of northeastern Ghana on 11-13 January 1996. One day was devoted to papers, and two were spent in the field. Road travel provided first-hand experience of the dry 'harmattan' conditions that severely constrain farming, and of the serious environmental degradation in the upper East region. Conclusions from the field visit included the need for emphasis on dry-season valley-bottom farming, intensification, management of bush fire, and conservation of soil, fauna and flora. Links with work in central Guinea, and in Burkina Faso, were also proposed. Most papers presented at the meeting, collected together, will be published in Ghana as an 'occasional paper', but two short papers should also seek journal publication.

Discussions are now in hand about UNU-sponsored publication of modified versions of the two major reports, from Ghana and Guinea respectively.

THE READ REVIEW

A new periodical from Yunnan

The Yunnan subcluster, which forms part of the FMBC Gaoligongshan project as well as PLEC, has initiated its own small periodical, in English and Chinese. Named the *Resource, Environment and Development Review (READ Review)*, it contains news of the project and articles reporting progress. Vol. 1, No. 1 (May 1996) contains a 'Preliminary survey and evaluation of plant diversity of Gaoligong Mountains in 1995', by Li Heng, Yang Shixiong, Gong Xun, Dao Zhiling and Guo Huijun, including summary tables and three species lists. The *READ Review* is edited by Guo Huijun (editor-in-chief), Dao Zhiling and Andrea Quong, and published from the Chinese Academy of Sciences/Kunming, 22 Fuguo Road, Kunming 650021, Yunnan, China, fax 86-871 515 0227.

On participatory methods

'The rhetoric may have taken a turn towards participation and dialogue, but practice changes more slowly. Small wonder: writers and conference organizers have everything to gain from promoting new perspectives, whereas for development practitioners a participatory approach in reality means inviting more people to share the available funds'.

W. Östberg 1995. *Land is coming up: the Burunge of central Tanzania and their environments*, p. 70. Stockholm: Department of Social Anthropology, Stockholm University.

ON PUBLISHING PLEC: A STATEMENT

FUTURE POLICY

The Amsterdam meeting of the management group came to a firm decision that the time has now been reached, in PLEC, to start a serious drive to get work published. While the ultimate output of PLEC work will appear in book form, a great deal else can be put into print before this stage is reached. Subsequent correspondence between us has led to the following statement about where and how PLEC material should see the light of day.

PLEC News and Views

PN&V should remain the place for quick publication of short research papers and notes (the length usually ranges between 2,500 and 4,500 words) as well as for reports on meetings, progress, useful literature references and in future also details of publications by members. *PN&V* is and will remain unrefereed. Most papers published up to now have been invited, often after coming to editorial notice in a rather random manner. To improve this, offers of interim results of work in progress, and discussions of papers previously published, are sought by the editor.

Local publication

A lot of material that PLEC produces, including many papers given at its workshops, some student reports and other material, has primarily local interest. Local publication is the means of getting material back to the people, and to the national and regional authorities. Clusters should prepare such material themselves, in cheap form, maybe as 'occasional papers'. One point to note is that papers published in this 'grey' manner are not thereby precluded from being used, in the same or revised

form, in another and more formal place. *PN&V* will provide a publicity service by printing the titles and other details of all such publications.

Publication in international academic and scientific journals

We urge our colleagues to publish whatever is sufficiently good and of more than local interest in academic and scientific journals. This is for their own advancement, for the advancement of their institutions, and of PLEC. Many do this already, as the list printed below demonstrates, but others are inexperienced in writing for journal publication. Within Clusters that have both experienced and inexperienced members, the former should assist the latter and this should be done systematically whenever potentially publishable work is identified.

There is also a role for the scientific coordinator and advisors of PLEC in responding to work that is sent to them for an opinion. Such response might include suggesting which journals might be approached. In appropriate cases, the advisors might sometimes give assistance to particular authors in casting material for journal publication. The present small advisory group has a measure of regional specialization and also of disciplinary specialization, already fairly well-known.

Special journal issues, and publication by UNU

The special PLEC issue of *Global Environmental Change* has attracted considerable notice. Negotiation of a 'special issue' is not easy, but there are other journals that the project management might approach, given sufficient material to make this worthwhile. In addition, and with

less ready international impact, UNU has itself published a set of papers given on PLEC themes in 1995, and has just published the product of a West African workshop held in 1994. This might be done again, not normally for workshops, but to offer a place to substantive papers too large for journal publication, when a number such can be collected together. Such UNU publications would be refereed. Publication through UNU has the advantage of modest pricing, and sale through the channels of UNU Press. Some suitable material for inclusion in a new UNU publication exists, and we shall be seeking more in the coming months.

**H. Brookfield
C. Padoch
M. Stocking
J. Uitto**

PLEC AND PLEC-RELATED PUBLICATIONS 1993-96

The following list is not complete. Not everyone has responded in time (18 October) to a request for titles. Below are listed publications in definitive places that are **not 'in-house'**, by PLEC members and people associated with PLEC, and reporting work arising from or having input into PLEC. Most are in refereed places. Publications in *PLEC News and Views* are excluded. Graduate theses are included.

In the next issue we shall list a large number of publications in the 'grey' literature, together with further formal titles provided in response to the printing of this list. PLEC needs to record its publications, and such record will now become a regular feature of this periodical.

Some titles are incomplete. They were provided in this form and in only a few cases has it been possible to complete them editorially.

Books and monographs

- Amanor, K. S.
1994 *The new frontier. Farmer responses to land degradation: a West African study.* London: Zed Books for UNRISD, Geneva.
- Barker, D. and D. F. M. McGregor (eds)
1995 *Environment and development in the Caribbean: geographical perspectives.* Kingston: The Press, University of the West Indies.
- Benneh, G., W. B. Morgan and J. I. Uitto (eds)
1996 *Sustaining the future: economic, social, and environmental change in Sub-Saharan Africa.* Tokyo: United Nations University Press.
- Gyasi, E. A. and J. I. Uitto (eds)
1996 *Environment, biodiversity and agricultural change in West Africa.* Tokyo: United Nations University Press.
- Padoch, C. and M. Pinedo (eds)
1996 *Diversity, development, and conservation of the Amazon floodplain.* [In press]
- Smith, N. J. H., E. A. S. Serrão, P. T. Alvim and I. C. Falesi
1995 *Amazonia: resiliency and dynamism of the land and its people.* UNU studies on critical environmental regions. Tokyo: United Nations University Press.
- Thomas-Hope, E. M.
1996 *The environmental dilemma in Caribbean context.* Kingston: Institute of Jamaica Publications Ltd.
- Uitto, J. I. and M. Clüsener-Godt (eds)
1993 *Environmentally sound socio-economic development in the humid tropics: perspectives from Asia and Africa.* Tokyo: The United Nations University.
- Uitto, J. I. and A. Ono (eds)
1996 *Population, land management and environmental change: UNU Global Environmental Forum IV.* Tokyo: The United Nations University.

Graduate theses

- Cai Kui
1996 Changes in land use in response to socio-economic changes in Xishuangbanna, Peoples' Republic of China. Masters thesis in Agricultural Systems. Faculty of Agriculture, Chiang Mai University, Thailand.

Câmara, E.

- 1995 A viabilidade da reserva de lago como unidade de manejo sustentável dos recursos da várzea Amazônica. M.A. thesis. Programa de Pós-Graduação em Ciências Biológicas, Universidade Federal do Pará, Belém, Pará, Brasil.

Guan Yuqing

- 1996 Cash crops cultivation under the tropical natural forest in Xishuangbanna, Yunnan, China. Masters thesis. Institute of Botany, Chinese Academy of Sciences, Kunming, Yunnan, PRC.

Articles in journals

Allen, B. J., R. M. Bourke and R. L. Hide

- 1995 The sustainability of Papua New Guinea agricultural systems: the conceptual background. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 297-312.

Amanor, K. S.

- 1994 Ecological knowledge and the regional economy: environmental management in the Asewewa District of Ghana. *Development and Change* 25: 41-67.

Awumbila, M. and J. H. Momsen

- 1995 Gender and the environment: women's time use as a measure of environmental change. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 337-346.

Brookfield, H.

- 1995 PLEC and global environmental change (This special issue): introduction. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 263-266.

Brookfield, H.

- 1995 Postscript: the population-environment nexus and PLEC. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 381-393.

Brookfield, H. and C. Padoch

- 1994 Appreciating agrodiversity: a look at the dynamism and diversity of indigenous farming practices. *Environment* 36 (5): 6-11, 37-45.

Câmara, E. and D. G. McGrath

- 1996 A viabilidade da reserva de lago como unidade de manejo sustentável dos recursos da várzea Amazônica. *Boletim do Museu Paraense Emílio Goeldi, série Antropológica*. [In press]

Guo Huijun and C. Padoch

- 1995 Patterns and management of agroforestry systems in Yunnan: an approach to upland rural development. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 273-279.

Gyasi, E. A.

- 1994 The adaptability of African communal land tenure to economic opportunity: the example of land acquisition for oil palm farming in Ghana. *Africa* 64 (3): 391-405.

Gyasi, E. A., G. T. Agyepong, E. Ardayfio-Schandorf, L. Enu-Kwesi, J. S. Nabila and E. Owusu-Bennoah

- 1995 Production pressure and environmental change in the forest-savanna zone of southern Ghana. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 355-366.

Hiraoka, M.

- 1995 Land use changes in the Amazon estuary. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 323-336.

Inaoka, T. and R. Ohtsuka

- 1995 Nutritionally disadvantageous effects of small-scale marketing in a lowland Papua New Guinea community. *Man and Culture in Oceania* 11: 81-93.

Kilasara, M., F. B. S. Kaihura and R. Lal

- 1995 Establishment of criteria for distinguishing levels of past erosion in Tanzania. *Norwegian Journal of Agricultural Sciences* 21: 61-70.

Kilasara, M., I. K. Kullaya and R. Lal

- 1995 Impact of past soil erosion on land productivity in selected ecological regions in Tanzania. *Norwegian Journal of Agricultural Sciences* 21: 71-79.

Kiome, R. M. and M. Stocking

- 1995 Rationality of farmer perception of soil erosion: the effectiveness of soil conservation in semi-arid Kenya. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 281-295.

McGrath, D. G., F. Castro, E. Câmara and C. Futeemma

- 1996 Manejo comunitário de lagos de várzea e o desenvolvimento sustentável da pesca na Amazônia. *Papers do NAEA* No. 58. Belém, PA: Universidade Federal do Pará.

- Millette, T. L., A. R. Tuladhar, R. E. Kasperson and B. L. Turner
 1995 The use and limits of remote sensing for analysing environmental and social change in the Himalayan middle mountains of Nepal. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 367-380.
- Mungai, D. N., C. J. Stigter, J. K. Nganga and C. L. Coulson
 1996 New approach in research education to solve problems of dryland farming in Africa. *Arid Soil Research and Rehabilitation* 10 (2): 169-177.
- Ohtsuka, R.
 1994 An ecological assessment of the low population density of taro monoculturalists in the highland-fringe of Papua New Guinea. *Man and Culture in Oceania* 20: 103-115.
- Ohtsuka, R.
 1994 Genealogical-demographic analysis of the long-term adaptation of a human population: methodological implications. *Anthropological Science* 102 (1): 49-57.
- Ohtsuka, R.
 1994 Subsistence ecology and carrying capacity in two Papua New Guinea populations. *Journal of Biosocial Science* 26: 395-407.
- Ohtsuka, R.
 1995 Carrying capacity and sustainable food production: the facts and prospects from Papua New Guinea. *Anthropological Science* 103: 311-320.
- Ohtsuka, R., T. Inaoka, M. Umezaki, N. Nakada and T. Abe
 1995 Long term subsistence adaptation to the diversified Papua New Guinea environment: human ecological assessments and prospects. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 347-353.
- Rerkasem, B. and J. Loneragan
 1994 Boron deficiency in two genotypes in a warm, subtropical region. *Agronomy Journal* 86: 887-890.
- Rerkasem, K. and B. Rerkasem
 1995 Montane Mainland South-East Asia: agroecosystems in transition. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 313-322.
- Thomas-Hope, E. M.
 1993 Population mobility and land assets in hill farming areas of Jamaica. *Caribbean Geography* 4 (1): 49-63.
- Thomas-Hope, E. M.
 1993 Small island environments and international migration: the Caribbean. *Scottish Geographical Magazine* 109 (3): 142-151.
- Thomas-Hope, E. M. and P. Meikle
 1996 Trends in small farming research in Jamaica. *Caribbean Journal of Agriculture and Natural Resources*. [In press]
- Uitto, J. I.
 1993 Population, land management and environmental change project (PLEC) and the United Nations University Environmental Programme. *Asia-Pacific Uplands* No. 6 (September 1993): 8-9.
- Uitto, J. I.
 1995 Population, land management and environmental change: the genesis of PLEC within the United Nations University Programme. *Global Environmental Change: Human and Policy Dimensions* 5 (4): 267-271.
- Umezaki, M. and R. Ohtsuka
 1996 Microdemographic analysis for population structure from a closed to open system: a study in the Kombio, Papua New Guinea. *Man and Culture in Oceania* 12: 19-30.

Chapters in books and monographs

- Agyepong, G. T. with the assistance of S.K. Kufogbe
 1996 Land use and cover patterns. In E. A. Gyasi and J. I. Uitto (eds) *Environment, biodiversity and agricultural change in West Africa*, pp. 52-57. Tokyo: United Nations University Press.
- Agyepong, G. T. and S. K. Kufogbe
 1996 Land use and cover change in the southern forest-savanna transition zone in Ghana: a sequence model. In E. A. Gyasi and J. I. Uitto (eds) *Environment, biodiversity and agricultural change in West Africa*, pp. 112-121. Tokyo: United Nations University Press.
- Amanor, K. S.
 1996 Interacting with the environment: adaptation and regeneration on

- degraded land in Upper Manya Krobo. In E. A. Gyasi and J. I. Uitto (eds) *Environment, biodiversity and agricultural change in West Africa*, pp. 98-111. Tokyo: United Nations University Press.
- Ardayfio-Schandorf, E.
 1996 Gender and non-governmental organizations in environmental management. In E. A. Gyasi and J. I. Uitto (eds) *Environment, biodiversity and agricultural change in West Africa*, pp. 90-97. Tokyo: United Nations University Press.
- Ardayfio-Schandorf, E.
 1996 The fuelwood/energy crisis in Sub-Saharan Africa. In G. Benneh, W. B. Morgan and J. I. Uitto (eds) *Sustaining the future: economic, social, and environmental change in Sub-Saharan Africa*, pp. 262-282. Tokyo: United Nations University Press.
- Awumbila, M.
 1996 Women, environmental change and economic crisis in Ghana. In E. A. Gyasi and J. I. Uitto (eds) *Environment, biodiversity and agricultural change in West Africa*, pp. 122-135. Tokyo: United Nations University Press.
- Barker, D. and D. J. Miller
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MEANINGS OF 'AGRODIVERSITY'

Harold Brookfield

Emphasis on diversity in management

Use of the concept of 'agrodiversity' is central to PLEC, but even within the project it is used in several ways. It is now over four years since the term was first coined, specifically in pair with 'biodiversity', at the first meeting of committed or potential participants in the then-new project, in Washington in August 1992. Three years ago it was first defined in print, by this writer in this periodical, as:

the very many ways farmers have of exploiting the natural diversity of the bio-gosphere, with greater or lesser success. While one element, diminishing crop-biodiversity, has attracted growing concern in recent years, the varied and adaptive management of land, its waters and biota, the core of agrodiversity, remains imperfectly understood (Brookfield 1993: 2).

An emphasis on diversity of management practices was carried further by Brookfield and Padoch in a paper designed to establish the term, relate it to biodiversity and advertize this project, published in the journal *Environment* in 1994.¹ Agrodiversity was there defined as:

the many ways in which farmers use the natural diversity of the environment for production, including not only their choice

of crops but also their management of land, water, and biota as a whole. There is a close relationship between agrodiversity and managed biodiversity. Because of the diversity of cropping and resource systems that exists, agrodiversity serves as a major means of conserving both structural and species biodiversity (Brookfield and Padoch 1994: 9).

Zarin (1995: 17) specifically reduced the 1994 definition to 'the variety of resource management practices' and showed ways in which resource management types could be measured in parallel with the measurement of biodiversity. This quickly led to a departure by members of the Yunnan subcluster in papers presented at a Cluster field workshop in May-June 1995, and later revised for publication in this periodical with the assistance of the present writer. In this it was stated that:

In order more clearly to separate biodiversity from the total diversity in environmental management, it is here proposed that 'agro-biodiversity', within agrodiversity as a whole, has the specific meaning of management and direct use of biological species, including all crops, semi-domesticates and wild species. It is therefore the result of interaction between the diversity of cultural practices and biological diversity (Guo, Dao and Brookfield 1996: 15).

In some of the papers by our West African colleagues the term 'agro-biodiversity' is rather similarly used. Elsewhere in project writing, 'agrodiversity' itself is sometimes employed mainly as a synonym for crop diversity. Outside PLEC, the term 'agrobiodiversity' can occasionally be found employed to describe the whole field of

¹ PLEC was not alone in thinking about the analysis of management diversity. Jodha and Partap (1993:17) defined a field which they called 'folk agronomy', 'a range of agronomic practices, each representing a technological adaptation to meet needs of soil erosion control, soil fertility management, crop agronomy, crop choice, biomass management and livestock farming'. Like PLEC agrodiversity, their 'folk agronomy' emphasizes the use of ecological niches.

diversity among crops, their wild, semi-wild and weedy relatives, with no specific relation to 'agrodiversity'.

Agrodiversity in response to environmental variation

There is clearly a need for a new look at the way in which we define and use 'agrodiversity'. It so happens that there has been a wholly separate invention of the same term, about the same time in the early 1990s, by Louise Fresco, Conny Almekinders and Paul Struik of the University of Wageningen in The Netherlands. Their writings give first emphasis to variation arising in the biotic and abiotic environments. They do not restrict the term 'agrodiversity' to small farms as PLEC does; their approach is fundamentally agronomic. They describe variation within agro-ecosystems as a normal phenomenon arising from environmental variation and from agricultural activity itself. They identify four main factors as important sources of variation. These are plant genetic resources (wider than crop biodiversity), the abiotic and biotic environments, and management practices. They go on to say that **we call the variation resulting from the interaction between the factors that determine the agro-ecosystems, 'agro-diversity'**. (Almekinders, Fresco and Struik 1995: 128).

While giving a clear place to management, their emphasis is that variation in productivity within agro-ecosystems is naturally occurring. It arises from differences in micro-environment and micro-climate, distribution of minerals in the soil, microfauna and microflora - both pathogens and beneficial organisms such as *Rhizobium*, mycorrhiza, earthworms, ants and - for the soil - termites. It is well known that such largely abiotic characteristics as soil depth, nutrient concentration and pH can vary substantially over short distances, and have important effects. Differences arising from farm practices are thus put into a context of

the variation requiring adaptive management.

The variations recognized by Fresco and her colleagues occur in high-input as well as low-input agriculture. In modern high-input systems the usual strategy is to reduce natural diversity by uniform management, or to 'override' it by application of industrial fertilizers and ecocides. This can lead to unsustainability, in addition to revealing sources of variation that were formerly overlooked. In low-input systems 'overruling' is possible to only a very limited degree, and the optimal management strategy is to utilize variability by adapting both cultivars and cultivation methods to take maximum advantage of micro-environmental variation, thereby reducing risks and improving total production and its sustainability. They conclude that the occurrence and importance of variation needs more recognition in all forms of agriculture, not only in small farming, and that its management is of increasing importance as demands placed on the land are augmented.

Synthesis?

Adaptation to and management of naturally occurring diversity is not ignored in PLEC. At meso-scale the interrelationship between management diversity and a highly dynamic natural diversity is well illustrated in Padoch's work in Amazonia (Padoch 1996; Padoch and de Jong 1992). At macro- to meso-scale it is being explored in Papua New Guinea, East Africa, and Guinea. Except, importantly, in regard to management of a natural condition that changes through time, by land degradation, it is not yet central elsewhere. It has to be said that the Brookfield-Padoch and PLEC emphasis on management has to some degree obscured the natural variation that is being managed, in much of our work until now.

The wider definition offered by Fresco and her colleagues has certain advantages, especially through its inclusive and parallel use of the biotic and abiotic environment,

genetic resources and management. Neither they nor we exclude any of these four elements, but the primary focus of attention is different. As a broad definition of 'agrodiversity', that offered by Almekinders, Fresco and Struik in 1995 is perhaps to be preferred to the 1994 Brookfield and Padoch definition, but operationally it might be better to modify the 1994 definition. We might write that:

Agrodiversity is defined as the dynamic variation in cropping systems, output and management practice that occurs within and between agro-ecosystems. It arises from the many ways in which farmers use, adapt to and manage diverse genetic resources and natural micro-environmental variation, both in place and through time'.

'Adaptation', at very least, needs to be added to 'management', and more attention should be given to the natural variation that underlies 'agrodiversity'.

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A UNU book that will be of interest to the participants and friends of PLEC is *Sustaining the future: economic, social, and environmental change in Sub-Saharan Africa* (edited by George Benneh, William B. Morgan and Juha I. Uitto). The authors stress the need for policies aimed at poverty eradication and equitable economic development to counter unsustainable use of natural resources and to reduce vulnerability to environmental deterioration, economic decline, and hazards. (UNUP-918)

The book emanates from an earlier UNU project on "Sustainable Environmental Futures," in which a number of present PLEC researchers participated and which formed one of the starting points for PLEC. Readers will remember an earlier book that was an outcome of the project, *South-East Asia's environmental future: the search for sustainability* (edited by Harold Brookfield and Yvonne Byron). (UNUP-823)

CURRENT ISSUES IN LAND DEGRADATION

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Introduction

This is an amended version of a Briefing Paper prepared for the Global Environmental Facility (GEF), where the topic of central interest was land degradation and the specific subject was how to link the global mandate of GEF to the local level in projects which work with local communities. We want to share these ideas with the readers of *PLEC News and Views* because PLEC also addresses the same challenges. The current issues we highlight here will also be of interest to the PLEC Clusters.

The paper is structured around three principal topics: identification of global benefits; analysis of constraints in dealing with the problem; and suggestion for a research framework. It also addresses the GEF focal areas of climate change, biodiversity and international waters in the sense that the most likely measures to develop the sustainability of land management are bound to improve these focal areas.

Our 'current issues' arise from (1) our coordination of FAO's Erosion-Productivity Network, and investigations for other agencies to quantify the specific impacts of soil erosion and value the benefits of soil conservation; (2) the PLEC project itself which has now amassed a considerable body of experience on small farm management, called 'agrodiversity'; (3) input to IFPRI's (International Food Policy Research Institute) *2020 Vision*, which draws the explicit link between land degradation and food security; (4) development of a land degradation research

agenda by members of our group at East Anglia; and (5) our involvement in the Ninth International Soil Conservation Conference at Bonn, where the theme was 'Towards Sustainable Land Management'.

Opportunities to make global benefits explicit

Soil productivity and land degradation

Land degradation's principal on-site impacts are a deterioration of soil quality (chemical fertility, physical aspects such as water-holding capacity, pollution and specific problems such as salinity) and a reduction in productive capacity - all these are captured in the term 'soil productivity'. Measures to control land degradation will thus bring about global benefits in both direct and indirect ways. For example, a productive soil and plant system enhances the sequestration of carbon and may thus buffer the biosphere against the impacts of global climate change; it enhances soil biodiversity and provides productive opportunities for farmers to be the trustees of 'agrodiversity'; and it reduces threats to internationally shared waters such as oceans and lakes, and prevents damage by siltation to in-shore waters and coral reefs.

To identify the potential global benefits of measures to control land degradation will demand careful quantification of key variables related to soil productivity. Water erosion-yield-time relationships are the most important to develop. Yield acts as a proxy, or production function/value, for productivity, and is (1) most directly relevant to planning and decision-making because of its ready

conversion to monetary values, and (2) related to total biomass and decrease in fixed carbon in the soil. We can show recent examples of erosion-yield relationships for Ferralsols and Cambisols in Brazil, which highlight the general logarithmic form of the curve, meaning that initial yield declines are rapid (Tengberg et al. 1996). The implication of this for land degradation control and the maximisation of global benefit is that more productive soils should receive the highest priority for protection.

A far more process-oriented approach to identifying benefits needs to be encouraged, rather than the heavy empiricism that normally prevails. Key soil variables and processes which hold potential for making explicit global benefits will include those that **explain** the degradation-productivity linkage. These are, according to site and land use, key limiting nutrients, plant-available water holding capacity, soil depth, acidification and chemical toxicities. Only if the processes of productivity decline and increase are understood, do we have any means of extrapolation to other sites without heavy investment in new experiments. Only if we have verified erosion-yield-time relationships for the major soils and agro-ecologies, do we have any ability to translate land use actions into national, regional and global impacts. It is a significant challenge which the international community has barely touched.

Constraints in capturing global benefit opportunities

The two primary constraints are failures in understanding local society and inadequacies in valuing the costs of degradation and the benefits of improved land management. Only one aspect of each will we highlight here:

Local Knowledge (LK)

Our experience with the GEF/PLEC project is the substantial difficulty in linking global

benefits to actions at the levels of individual land users, farm households and local communities. GEF Council and Secretariat are understandably wary of supporting what may seem at first sight to be community development. However, one aspect, the importance and utility of local knowledge, needs to be significantly promoted for its multiple global roles in (1) reversing top-down approaches to development; (2) assisting the capacity of institutions to engage with local communities - the 'participation' agenda; and (3) mitigating the worst excesses of technical fixes. The widespread acceptance of the role of local knowledge would enable global benefits by reducing the demand for costly on-station experiments and increasing the likelihood that technologies will be socially acceptable as well as ecologically sustainable. There is thus a value in being able to understand and access local knowledge. There are pitfalls too - see Muriel Brookfield's (1996) contribution to *PLEC News and Views*. This has led Blaikie et al. (1996) to a typology of construction of local knowledge, or 'knowledge-in-action' (Table 1).

Local Knowledge is an umbrella term used in preference to any of 'Indigenous Knowledge', 'Indigenous Technical Knowledge' and 'Rural Peoples' Knowledge'. Discussed in Blaikie et al. (1996) it is broadly defined as: 'Knowledge that is held collectively by a local population, that is culturally relevant, informed by people's social-cultural tradition, which structures how they explain the world, view events and anticipate the future. LK includes intergenerational knowledge - that which is handed down from one group to another - new or modified knowledge which is created or developed locally through processes of experimentation or innovation, and also knowledge which has been developed elsewhere, adapted or transformed and incorporated into the local way of life.'

Table 1
Knowledge-in-action - a typology of construction of Local Knowledge

<i>Knowledge appropriated</i>	LK has financial value - people as 'local gatekeepers'
<i>Knowledge ventriloquised</i>	LK, a language to transmit modern ideas
<i>Knowledge esteemed</i>	LK as a study of culture; an entry to understanding local beliefs, attitudes and practices
<i>Knowledge negotiated</i>	LK as the means for participation and mutual problem solving
<i>Knowledge as empowerment</i>	LK as the means for local people to exercise their own skills and take control of their own affairs

The process of accessing local knowledge and then employing it in project design and implementation holds great potential for training and capacity-building of professionals. New skills such as facilitation, conflict management and negotiation are required in order that collegial participation of local people can be developed. Support for existing local networks and pathways will also be prioritized with an emphasis on local knowledge.

Local Knowledge will include understanding the various ways local people manage their immediate environment. A good example is indigenous soil and water conservation which includes techniques such as vegetative barriers and grass strips; trashlines and wooden barriers; pits and basins; earth/stone bunds and terraces; water retention and diversion ditches; rainwater and floodwater harvesting. Will Critchley et al. (1994) see the identification and understanding of these indigenous techniques as one answer to the problem of the 'pernicious and widespread problem of land degradation' (p. 293). The development of methodological models for evaluation and improvement of indigenous conservation practices that could be replicated in different environments by a wide range of development and research programmes has the potential of yielding global benefits. The result in better husbandry techniques readily acceptable to small farmers should be a major advance on present hit-or-miss approaches.

Economic costs of soil erosion

As the Draft Operational Strategy for Land Degradation makes clear, incremental costs may often be needed to achieve land degradation control measures which would not otherwise have been feasible from governments or bilateral assistance. These incremental costs are the additional financial investments required for the international community to secure compliance by national governments and local society. Baseline scenarios are an essential component for calculating such costs. Global benefits are more easily made tangible if (1) we have an accurate baseline - i.e. we know what will happen to yields and other economically-relevant variables without a project; (2) results are provided as realistic cost-benefit scenarios. Calculation of incremental costs and benefits of specific actions will thus be facilitated. From our perspective, the major constraint is inadequate outputs from biophysical models to make accurate valuation possible.

To illustrate some of the challenges and possibilities, we cite our recent South American study (Tengberg et al. 1996). Clearly demonstrated is the differential impact of erosion on different cropping and farming systems, with low input systems being far more sensitive than high input systems. This has immediate global relevance in identifying systems most at risk. If we add to this the increasing number of studies now calculating the greater difficulty in obtaining a livelihood from soils that are degrading and the potential benefits of

particular soil conservation practices for farm households, then again the limited GEF financing can be targetted at priority areas, many of which do not receive adequate financing from governments. Further, recent conceptual approaches to calculate the 'resource value' of soils - very close to the idea of long-term sustainability in economic terms - show the potential to attach meaningful values to difficult notions, where before we simply had to say it was unquantifiable. Further global benefits would also derive through supporting current efforts to estimate the economic costs of erosion.

Research framework

Knowing the impact of land degradation in economic terms is not in itself enough to improve planning and decision-making related to the use of natural resources. The socio-economic and political environments open or close the number of options available to land users to cope with land degradation. In a 1995 World Bank Paper from our group (Biot et al. 1995), a matrix for

analysis of levels and elements in decision-making was suggested (Table 2). The importance to adapt to pluralist interpretations of land degradation and multiple levels of analysis, which must be nested in each other, was stressed.

To elaborate on what we recommend as a research framework, the first vector (rows) is a decision-making model based upon elements in decision making by resource users when problems of land degradation (as defined by any actor) occur. These elements are: perception, diagnosis, search for solutions and action. The other vector (columns) identifies different levels of analysis. It directs attention to the individual alone and, successively, in relation to a small group (typically a family, household, residential or extended kinship group), the community, agrarian society, the state, scientific community, and international structures. This procedure could be described as a process of progressive contextualization of land degradation, which could help to bridge the gaps between the local and the global levels.

Table 2
Levels and elements in decision-making (source: Biot et al. 1995)

	Levels	of	Analysis		
Elements in decision-making	Local/domestic (1)	Community (2)	Agrarian society (3)	State/scientific/official (4)	International (5)
1. Perception of symptoms					
2. Diagnosis of causes					
3. Prioritization of needs					
4. Identification of solutions					
5. Assess technical feasibility of solutions					
6. Cost-benefit and risk of solutions					
7. Assess need for collaboration					
8. Decide about adoption					

Summary and conclusions

We believe that consideration of the current issues discussed in this paper is crucial when designing projects related to land degradation. This will contribute to the development of more sustainable land management and farming practices in affected areas, leading to reduction in greenhouse gas emissions, enhanced carbon sequestration, better conservation of biodiversity, and reduced sediment pollution of international waters. Our choice of 'current issues' naturally reflects our interests and the programmes in which we are currently engaged. Some topics, such as local knowledge of sustainable natural resource management practices, need additional incremental support to achieve global benefits through targetted research - this is a key role for PLEC. Valuation techniques and the linkage between physical and economic models also need urgent refinement and validation. Other aspects of our priority agenda in land degradation could usefully be implemented immediately. For example, monitoring of changes in soil productivity - both yield and causative processes - should become standard practice in our view. Such monitoring is very rare today and most projects are reluctant to devote resources which would not have immediate project benefits. Yet, the results are essential to

extrapolation of project approaches and design of future projects - and hence, they are of global significance.

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PLEC in the Race?

In July 1996, Principal Scientific Advisor Michael Stocking wrote the following words about the place of PLEC in the race for funding. The order of his phrases is varied here.

'There is no doubt that PLEC's innovativeness is one of its problems. It is like having a Formula racing car for a Grand Prix and receiving only a litre of fuel -- do you go fast for a little while, hoping you run into a free petrol pump (not many of them about!) before the litre is used, or do you conserve and get as much distance out of the litre as possible? Maybe the car is too powerful? Or the bends on the circuit are too tight?

PLEC has built a certain degree of momentum on its one litre of fuel. It is an exciting but risky project. Some parts and some Clusters may simply fail - other parts could be roaring successes. We are deliberately decentralized and putting responsibility with the Clusters so that capacity-building from a firm foundation is truly developed. Can we not make more of this empowerment element of PLEC?'

LAND HOLDING AND ITS RELATIONSHIP WITH BIOPHYSICAL STATUS: CASE STUDY OF TENANCY AND NON-TENANCY FARMING IN GHANA

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Introduction¹

Land holding or tenure defines the terms governing access to land. Inherent in all land holding types is a basic incentive or disincentive for exploitation, abuse, or sustainable use of the biophysical environmental resources associated with the land. This paper is an interim report on testing of an hypothesis that associates the qualitative status of the biophysical environment with the type of land holding. It does so on the basis of information on tenant and owner-occupier farming obtained through PLEC studies in Yensiso and Sekesua areas in the southern sector of Ghana's forest-savanna transition zone, which is experiencing major environmental changes (Gyasi et al. 1995).

Theoretical perspectives

A land holding aspect that appears particularly germane to biophysical status is security of tenure (Migot-Adholla 1994). This underlies the widely held belief that a land holding arrangement embodying appropriate user incentives is crucial for the sustainable management of biophysical resources. Traditionally, in the ethnically heterogeneous forest-savanna ecotone, as in most other areas in Ghana, land is owned as common, communal, clan or extended-family

property freely used by those owning it, but paid for in cash or in kind by the growing number of tenants (Gyasi 1994; Gyasi et al. 1995).

An argument ascribes deterioration in biophysical conditions to insecurity of tenancy, exacting tenancy charges, and transient character or short duration of tenancies and a concomitant limited time planning horizon, which compel tenants to overexploit the land. Granted the reservations widely expressed about cost and security of tenancy, the assumption that generally tenancies do not favour the conservation of biophysical status and are, in fact, apt to undermine it, would seem to be reasonable (Division of Agricultural Economics, Ministry of Agriculture 1962; PNDC 1986).

A counter-argument ascribes deterioration in biophysical status, particularly under conditions of growing population pressure, to the *abusua*, extended family, group or communal ownership, whereby the land belongs to all, but no one appears to bear responsibility for its maintenance. Other group land holding aspects suspected to be inimical to biophysical quality include disputes, determent of potential land improvement and difficulty in securing bank loans. These are associated with a lack of clarity about communal land boundaries and land allocating authorities, and with the generally nebulous character of the system of group ownership.

A third argument associates deteriorating biophysical quality with the inheritance system. Agricultural land is progressively subdivided into fragmented parcels and overused by the expanding succeeding generations, as in the case of the *huza*

¹ Abbreviated version of paper presented at Congress of International Union of Anthropological and Ethnological Sciences (IUAES) and International Geographical Union (IGU), on *Livelihoods from resource flows: awareness and contextual analysis of environmental conflict*, August 19-22, 1996, Linkoping, Sweden.

system of migrant Krobo farmers (Gyasi 1994).

Biophysical conditions in tenant and owner-occupier localities

Preliminary observations

Unlike the Sekesua area where the stranger-tenant-farmers and the Krobo people, the land owners, commonly live in the same communities, in the Yensiso area the tenants tend to cluster in separate communities from those of the Akuapem people, the land owners.

Our observations in Yensiso have suggested greater biophysical deterioration in the stranger-tenant-farmer localities, where there appear to be:

- a dominance of grass and non-forest floral species;
- fewer trees;
- greater erosion and exhaustion of the soils;
- more of cassava/manioc (*Manihot utilissima*), a crop that is tolerant of poor edaphic conditions, and less of crops that require better soil and moisture conditions, e.g. cocoa (*Theobroma cacao*), cocoyam (*Colocasia esculanta/Xanthosoma sp.*), yam (*Dioscorea sp.*) and plantain (*Musa paradisiaca*);
- less crop diversity, and a greater trend towards cassava monoculture; and,
- greater general landscape denudation.

Moreover complaints of biophysical degradation were greater among the stranger-tenant-farmers.

Biophysical conditions appear less favourable in the stranger-tenant-farmer localities compared with those occupied predominantly by Akuapem land owners, notably the area centred on Gyamfiase, northward of the core stranger-tenant-farmer locality, Kokormu. In Gyamfiase, there remains a relict forest surrounded by a biodiverse indigenous agroforestry zone, which grades southward through Adenya, a

biophysically severely degraded zone overcropped to cassava and maize (*Zea mays*), especially by the Ayigbe/Ewe migrant settler-tenant farmers using the hoe. This practice appears to be more destructive of natural seed stock embedded in the soils than the 'cutlass' commonly used by Akuapem land owners. The approximately one sq. km threatened, but still well preserved, Gyamfiase forest is the focal point of a community-based environmental rehabilitation and rural development initiative by PLEC in collaboration with the local community (Gyasi and Enu-Kwesi 1996).

Results from transect survey

For a more objective assessment, a multidisciplinary transect survey was carried out by the PLEC team with a view to generating quantifiable information on the biophysical conditions relative to the land holding types. Sekesua area was the first to be so surveyed, with the transect line projected from a point in the outskirts of Sekesua towards Sekesua Wayo about 2 km away. As progress of work was slowed by difficult terrain including thick vegetation and a hill, the initial plan, of carrying out the survey in continuously alternating 25 x 25 m (625 sq. m) quadrats along the transect line, was abandoned after the first approximately 0.5 km, in favour of alternating 25 x 25 m quadrats set 100 m apart. Subsequently, the modified faster method was applied to Yensiso area, which made possible a much longer transect of about 4 km from Akokoa to the edge of Gyamfiase forest grove.

In each quadrat, the observations made included those on:

- land use/cover types (farm, fallow, forest reserve, sacred grove, etc.);
- farming type;
- predominant crops, livestock, and other biota;
- appearance of soil and topographical/terrain form; and
- land holding type (tenancy/owner-occupier, and name, sex and village of

holder/farmer).

Additionally, soil samples were taken for laboratory analysis of their pH, organic carbon and other chemical properties. All these activities were undertaken with the help of locally recruited assistants who played the crucial role of identifying the land holders/farmers who, in some cases, were subsequently contacted for clarification.

Table 1 shows the distribution of plots in crop and fallow along the transects in Yensiso and Sekesua. Generally, there is a slight dominance of plots in crop, especially in Yensiso. The total number of plots (both

cropped and fallow) in Yensiso was 36, compared with the 51 encountered along a much shorter transect in Sekesua, which suggests greater agricultural land fragmentation in Sekesua.

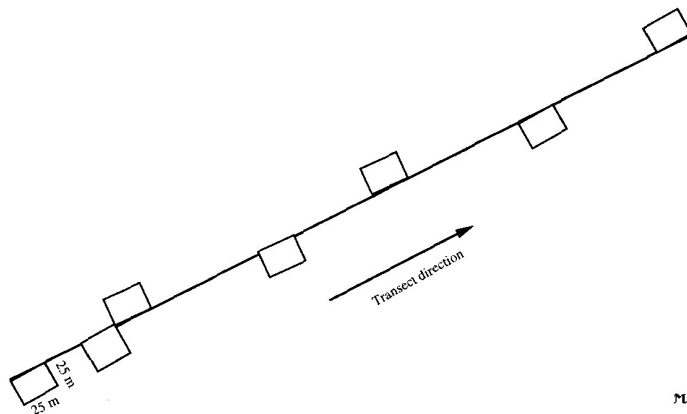
Farming is carried out on a tenancy basis, and on an owner-occupier basis by land-owning extended family members on the family land in both Yensiso and Sekesua (Table 2). However, whereas in Yensiso tenancy predominates, in Sekesua the situation is dominated by owner-occupier holdings.

Table 1
Distribution of plots in crop and fallow along transect lines in Yensiso and Sekesua

FARM PLOTS & FALLOW LAND	YENSISO		SEKESUA		Average of percentages
	No.	%	No.	%	
No. of farm plots in crop	20	55.6	26	51.0	53.3
No. of plots in fallow	16	44.4	25	49.0	46.7
TOTAL	36	100.0	51	100.0	100.0

Source: PLEC transect survey in August-September 1995

Fig. 1 Quadrats along transect line



MRT

Table 2

Plots (in crop and fallow) identified along transect lines as tenancy holdings and owner-occupier holdings (units operated by land owning extended family members on the family-owned land) in Yensiso and Sekesua.

HOLDING TYPES	YENSISO		SEKESUA		Average of percentages
	No.	%	No.	%	
Tenancy	24	70.6	9	33.3	52.0
Owner-occupier	10	29.4	18	66.7	48.0
TOTAL	34	100.0	27	100.0	100.0

Source: PLEC transect survey in August-September 1995

Preliminary examination of data from the transect surveys, suggests less favourable biophysical conditions on the tenancy units than on the owner-occupier ones. Attempts are in progress to quantitatively analyse this and other initial impressions of a significant relationship between land holding type and biophysical status, by comparing the situation on the tenancy units to that on the non-tenancy units, using the following indices:

- soil pH;
- soil organic carbon;
- crop/plant diversity; and
- quantum of typical forest crop/plant species.

Pending the outcome of analysis, some factors are suggested below to explain the apparent differences in biophysical status between the tenancy and owner-occupier holdings.

Possible factors accounting for the apparent differences in biophysical status between tenancy and owner-occupier farm holdings

It is conceivable that tenants are, for the most part, allotted plots of an inferior quality by landlords. However, we did not have

reason to believe this to be the case in our study areas.

Perhaps a more plausible explanation lies in overfarming fuelled by the tenancy charges, which all the tenants described as usurious in the group and individual discussions. Yearly rental fees per acre range from $\text{¢}4,000$ (US\$3 approx. \$7.20 per ha.) to $\text{¢}20,000$ (US\$ 15, \$36 per ha.), which many of the tenants could barely afford. Typically, under sharecropping, landlords take a third of the maize crop, and a half of cassava and of all other crops, in addition to retaining rights over economically valuable trees such as oil palm. As a tenant remarked in Yensiso, 'Due to the fact that our (tenants') share of the cassava is not enough to pay for the labour cost and to meet other demands, we have to continuously till that same piece of land so as to ensure some income on a regular basis.' Similarly, another in Sekesua commented that 'Because they [the tenants] hired the land for three years, they have to exploit it intensively to make up the hiring charges'. In the view of a Sekesua landlord, 'The tenants cut all the trees on the land to enable them to cultivate the whole land for higher yields since the higher the yield, the higher their shared part', unlike the land owners, who 'do not cut down all the trees'. Thus, it would appear that in order to make ends meet and ensure survival, at least in the short-term, tenants are compelled by

exacting tenancy obligations to overfarm the land.

Another factor is a pervasive feeling among the tenants that the land belongs to other people and, therefore, does not deserve any permanent biophysical resource enhancement investments by the tenants.

However, it must be pointed out, a few of the landlords disagreed with the suggestion that the tenants misuse the land. According to these landlords, the tenants dared not do so because, if they did, they would be ejected.

Conclusion

This preliminary effort, based on tenancy and owner-occupier farming in Ghana, suggests a possible relationship between land holding type and biophysical conditions. A more rigorous quantitative analysis of the relevant biophysical parameters vis-a-vis the land holding types is needed, before any firm conclusion may be arrived at to inform policy on biophysical resources planning and management.

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New publications from UNU on PLEC and related topics

Population, land management, and environmental change (edited by Juha I. Uitto and Akiko Ono) is based on the UNU Global Environmental Forum organized in Osaka, Japan, in May 1995. The Forum centred around PLEC research and brought together some of our key colleagues, including Harold Brookfield, Janet Momsen, Ryutaro Ohtsuka, Christine Padoch, Kanok Rerkasem, Graham Sem, and Michael Stocking. The publication contains papers on the conceptual issues underlying PLEC, including farmers' participation and the role of women, as well as reports from the Clusters in Papua New Guinea, Northern Thailand, and Amazonia. (UNUP-956)

Environment, biodiversity and agricultural change in West Africa (edited by Edwin A. Gyasi and Juha I. Uitto) is the first comprehensive report of the work carried out by the PLEC West Africa Cluster. Emphasis is given to the value of indigenous practices and their adaptations to rapidly changing conditions, which may contain keys to sustainable development in the region. (UNUP-964)

ABA CONUNDRUMS

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This paper on Agro-biodiversity Assessment (ABA) is based on observations made at the annual PLEC Thailand-Yunnan Cluster Meeting in May 1996. Andrea Quong, research associate at KIB in 1996, is an anthropologist.

The village head, a gaunt man in his early thirties, gestured to the stately walnut trees at the edge of the pasture and quietly explained in his language how his family had once owned those trees. Just metres away from old WW II trenches where Japanese and Chinese soldiers had fought, this place had been a stopover for many centuries for travellers on the Silk Road as they came east over the Gaoligong Mountains; until as late as the early 1950's, merchants hustled its marketplace and exhausted wayfarers devoured the stores of its kitchens. Our host's ancestors settled this land and made their living from the continuing transience of traders and wayfarers. Today this site lies within the Gaoligong Shan State Nature Reserve; the trees are collectively owned by Hanlong, an old Chinese/Lisu village that borders the Reserve.

The farmer addressed a small, attentive group of Chinese, Thai, and American scientists. The group's visit to this remote mountain village in the Gaoligong Mountains was the focal point of the PLEC Thailand-Yunnan Cluster Meeting held in Baoshan from May 15-20 1996. In theory, by coming to the field, the mystique of small farmer agriculture in yet another rural community would be dispelled, and the scientists would be sufficiently impressed to return to their institutes with new angles, new understandings of local land-resource management and the conditions under which farmers make a living from the land. Yet in field observations and interviews, participants encountered the tremendous difficulties of resolving methodological theory with the particular intricacies of farm life in the village. In the field, the meeting

evolved into a productive discussion of methods.

Featuring cross-fertilization of ideas and field trips in the practical context of FMBC/GLG project sites (MacArthur Foundation-funded Forest Management and Biodiversity Conservation Programme in Gaoligong Mountains), the Cluster meeting merged the small farmer-orientation and participatory approach of PLEC with the ongoing, interdisciplinary field projects of FMBC/GLG.¹

Approximately 30 Chinese and foreign scientists, FMBC project leaders, local government officials, and nature reserve staff attended the five-day affair. Armed with ABA (Agrobiodiversity Assessment methodology, Guo, Dao and Brookfield 1996) and extensive field expertise, FMBC/GLG project leaders and international

¹ Since 1995 the Yunnan group, notably Dao Zhiling, Guo Huijun, and Shen Lixin, has investigated farming systems and forest utilization in two administrative villages in southern Gaoligong Shan. Various sub-projects such as minor forest products collection, community forest management, and soil ecology are carried out within a larger analytical framework in which the interaction of socio-economic forces - commercialization, cash crop production, and population growth - and land-forest resource management are evaluated. FMBC/GLG also assesses the status of the biodiversity of forest environments not directly subjected to intensive management or use. The programme's approach is driven by a commitment to engaging and learning from farmers' resource management practices and strategies. Experimentation and demonstration projects are designed to promote reforestation and agroforestry methods as well as diversified cash crop production, with the goals of encouraging sustainability and generating cash income.

scholars grappled with the problematic of reconciling methodological abstraction and practice in the field and around the conference table. During a three-day excursion to Baihualing Administrative Village, selected Thai, Chinese, and American participants conducted field exercises to refine and test ABA methods against research gaps and issues identified in field observations and interviews. The excursion aimed to familiarize Cluster members with current research and experimentation-demonstration projects in GLG; to give a broad overview of the environments and land-use systems as a whole; and assess land-use systems on macro- and micro- scales within the village.

In the field

Baihualing Administrative Village is a FMBC/GLG project site located on the east side of the southern Gaoligong Mountains in the Salween watershed. A three-hour drive from Baoshan City, Baihualing is comprised of 10 smaller natural villages and an ethnically heterogeneous population including people of Han (ethnic Chinese), Lisu, Yi, Hui, Dai, Bai, and Yu nationalities. A swift-running stream strewn with boulders flows generously into terraced rice fields as it courses down the narrow valley to join the Salween River. The clustered settlements spread up the valley against the rugged mountains. Viewed as a backdrop to the villages, the forests thriving in this precipitous landscape take on an otherworldly character, archetypal primeval hinterlands against pastoral domestication. Above 1880 m, the land belongs to the central government and officially receives the highest level of protection possible in China.

In Hanlong Village, PLEC's principal scientific advisor Christine Padoch (New York Botanical Garden) and MMSEA Cluster co-coordinator in Thailand, Kanok Rerkasem (Chiang Mai University), facilitated working groups on intra-land use assessments of

agrodiversity and a preliminary village land use survey, respectively. The first investigated several house gardens in the village, conducting interviews with their managers and the household heads affiliated with them, and briefly probed historical and contemporary land ownership and rights in the collective forest. The second surveyed land use types through interviews and observations, evaluated available information, and devised an outline for conducting a comprehensive survey that would sufficiently incorporate the complexity of land use types and management strategies in the village.

Emerging from these abbreviated assessments is a sense that village-level land-resource use is played out on a much larger scale of the administrative village and the surrounding mountainous landscape. Hanlong farmers tend wet rice and cane fields adjacent to other Baihualing villages in the lower valley, a two to three hour walk from home. In the early 1980's the government divided and allocated different kinds of land, like these parcels of paddy land, based on the number of family members in each household. Over the course of time, as households divided and children born after 1983 grew up and needed land, paddy lands, upland fields for growing corn and vegetables, house gardens and orchard lands have become increasingly fragmented.

This is especially apparent in house gardens. 'Home gardens,' as they are known in other places, do not exist in Hanlong. Villagers' gardens are indeed multi-functional and relatively species- and structurally- diverse, but they are also intimately intertwined with their dynamic socio-economic contexts, from household 'life cycle', composition, and labour availability to the complicated processes of division and inheritance of land subject to unstable tenure policies.

Hanlong gardens (*cai yuan*, or simply 'vegetable garden') are often not situated by their owner's house, but may be planted at his or her parents' house, the *lao jia* ('old

house'). With garden space limited to non-existent near new houses, young householders are often forced to divide their parents' gardens - land allocated by the state -- with siblings who have remained in the village. In these intergenerational gardens, specific trees are also divided amongst the adult children of the *lao jia*; trees planted by a father or grandfather are now owned, managed, and grafted by their offspring. The convergence of rights and claims to trees and garden plots within such a small area often becomes quite complex; trees that a son inherited from his father and that were planted by his father's father, for example, may now grow on land owned by another party.

This land fragmentation, in the context of constantly shifting dynamic and often contradictory tenure policies and the ageing and splitting of households, obscures categories of land-resource management - from their official designations under different land tenure policies, their definitions on paper and evolving forms in the villages, to field-based classification of productive management, Brookfield and Padoch's 'agrodiversity' (Brookfield and Padoch 1994). In Hanlong, ambivalent forms of land-resource management and tenure abound.

The secondary forest vegetation of the collective forest (*ji ti lin*), for example, belies a complex and often confusing history of settlement and use. Today's villagers collect pig fodder, graze draft animals, and cut fuelwood in the *ji ti lin* where an old Lisu village stood less than fifty years ago. The collective forest has undergone significant land tenure and use transformations in the past: it alternated between collectively-owned agricultural and forest land between 1949 and 1983, and was ravaged while individually 'owned' forest between 1983 and 1992. In yet another example, one farmer has rented a piece of land (*chun bao di*) adjacent to the collective forest from the government and managed it as an orchard of sorts. Prior to 1983 when the government began to encourage individual land holding,

this area - now covered with fruit and timber trees - had been cleared, planted with corn, and farmed as collective fields.

Rights and access to trees are similarly unstable. As with the walnut trees in the nature reserve, ownership and use rights to walnut trees that were planted in 1976 by the village in the collective forest and allocated to individual households since then, are being warily debated. There has been talk of changing the walnut trees into a communal resource whereby individual households would lose their rights to specific trees and forfeit twenty years of labour investment.

Tenure foils ABA

What emerges from these convoluted stories from the field is that tenure reversals are instigated on several levels of political decision-making and cannot be boiled down to the 'Big Three' Tenure Policies.² On the village level, for outsiders with little understanding of the history or the politics of the local, the agents of tenurial change are phantoms, as elusive as the transience of farmers' rights and access to resources is evident. Yet at the same time, deconstruction of these stories, based on particular sites in and around the village, is essential to understanding how tenure works, how high level policies trickle down

² Since Liberation there have been three main periods of land reform: redistribution in 1950 from landlords to peasants, collectivization between 1958 and 1978, and increasingly liberalization of tenure via individualization of land-use rights peaking in the early 1980's and continuing to the present. Of the latter, Lingyeshanding was enacted nationally in 1982-3 to regulate forest tenure and production by stabilizing tenure in hill and forest land, defining individual holdings of hill and forest land, and detailing regulation of and responsibility for forest production. During the same time in Yunnan Province, Liangshanyidi classified forests and hill lands into three categories of tenure and delimited their boundaries. A third land reform in 1983 allocated land to individual households (Guo Huijun 1995).

and are somehow worked into the eccentricities of the village and its environment: and how rights and access to resources are debated, divvied out and awarded in the community where village politics extend 450 years before Liberation's egalitarian ideals.

The field excursions revealed the astounding complexity and dynamism of land-resource tenure in Hanlong/Baihualing and its profound influence on local resource management. The tenure situation - in which top-down policies are translated into local practice and imposed on layers of historical relations of power and privilege, along with land fragmentation as was pointed out on site by Kanok Rerkasem - also has a fracturing effect. As a consequence, the varied structures, individual predilections, skills, and histories of different households form diverse management practices within the prescribed bounds of one-time land allocations. The translation of tenure policies into local practices holds the key to agrodiversity and sustainability in Hanlong, and yet this process has hardly been examined.

Land-resource tenure puzzles are at the crux of the ABA theory-practice disjunction. As delineated in theory (Guo, Dao and Brookfield 1996: 15), agrobiodiversity assessment methodology examines the 'management and direct use of biological species, including all crops, semi-domesticates and wild species' resulting from 'interaction of diversity with cultural practices and biodiversity'. Field methods include collecting secondary data at the administrative village level, using key informants and questionnaires during semi-structured interviews on and off-site, evaluating aerial photographic sequences, mapping village territories, walking transects, and establishing sample plots within management types (i.e. forests, agroforests, paddy fields, upland fields, orchards and home gardens). Tenure is theoretically accounted for by the inclusion of disputed areas and different tenure 'types'

in village mapping and sampling, respectively.

ABA is an incipient methodological theory and an approach to expedient assessment of agro- and biodiversity. FMBC/GLG has been a testing ground for the application of this approach and a stepping stone in its process of development. But, as applied in FMBC/GLG, ABA theory has lacked the capacity to fully address the critical issues of land-resource tenure. As the tales about vegetable gardens and walnut trees suggest, the official categories of tenure (individual, state, collective, and nature reserve) that would be covered in sample plots simply do not capture the diverse and conflicting resource rights and claims asserted within and across those categories.

In part this can be traced to the more general problem of reconciling the macro- (natural or administrative) village - favoured by ABA theory; and the micro- (intra-natural) village - essential to understanding diversity and management practices. For tenure, the macro-categories are one-dimensional official designations; on the micro-level of specific sites, they mutate through time and space. Moreover, to disentangle tenure complexities, additional methods must be combined with sampling and interviewing, such as investigating the histories of tenure, perhaps even prior to Liberation; and mapping tenure collaboratively with villagers, using overlays to show temporal and spatial change, as suggested by Laxmi Worachai (Chiang Mai University).

The other issue raised by the example of land-resource tenure is that of achieving baseline and secondary data sufficiency. Guo, Dao and Brookfield suggest gathering secondary data at the administrative village level, but often there are tremendous gaps in this kind of data for natural villages. Government documents and maps showing official tenure changes through time and even at present either do not exist or are extremely difficult, even impossible, to access. How is one to locate sample plots 'purposively, rather than randomly' when the management and tenure categories are

broadly defined, yet opaque to the fascinating permutations mentioned above (Guo et al. 1996:17). In his comment on the ABA approaches outlined by Guo et al., Zarin (1996: 21) inquires whether the broad management categories targeted for sampling would be further broken down into the lower hierarchical levels of sub-type, form, and association levels used to stratify land management diversity in much of the Yunnan group's work. Such elaborated hierarchical determinations for management or tenure types have not yet been made in FMBC/GLG Hanlong/Baihualing, but could somehow be incorporated into an expanded methodological toolbox.

Other quandaries

FMBC/GLG, PLEC, and ABA theory converge in their commitment to collaboration with communities in the form of participatory planning, experimental work, and reliance on local folks for their environmental and resource management knowledge, ideas, and expertise. They also share consonant goals of biodiversity conservation and promotion of sustainable land-resource use. Even with these guiding principles, expedient implementation sometimes ruptures theoretical intent, the realization of the ideal proving problematic indeed.

The two sides to this coin are 1) the difficulty of including women in FMBC-sponsored projects, the Gaoligong Shan Farmers' Association for Biodiversity Conservation, and participatory planning, and 2) the delicate balancing of experimental and demonstration projects with the ultimate goals of improving sustainability and promoting biodiverse land management practices.

During field exercise interviews, male household heads were interviewed about vegetable/house gardens, of which women are almost without exception the managers, producers, and marketers. Likewise the Farmers' Association's membership is

exclusively male (with the exception of one woman) because only officially-recognized household heads are invited to join. Gender, as in many rural communities, is perilous territory when it comes to issues of power, resource access, and public life. Yet, is expediency sufficient justification for severely lopsided participation? Put another way, is the price of upsetting existing structures of male-dominated political power worth paying if the reward is access to and active engagement of nearly 50% of local farming folk, albeit female?

The experimental and demonstration projects - in which FMBC/GLG liaises with mostly male farmers - that were observed during the Cluster meeting, featured agroforestry and inter-cropping techniques (eg. chestnut/beans, chestnut/corn) but did not appear to fuel an explosion of species and management of diverse plots. Similarly, FMBC/GLG helped to establish a native timber tree species nursery by drawing on the specialized knowledge of one farmer and disseminating this knowledge through a series of on-site farmer-to-farmer trainings; the bottom line, nevertheless, is that the nursery is essentially monocultural. Another demonstration site, chosen for its appropriate soil and drainage conditions, featured coffee inter-planted with a greater variety of vegetables, but was somewhat neglected by its caretaker: the farmer, a young man who had just recently established a homestead, is unable to mobilize enough labour to tend to this extra field in addition to his staple rice and corn production. These examples prompted Christine Padoch and others to suggest that experimental and demonstration sites be chosen with regard to their managers - their ability to mobilize extra labour, predisposition towards experimentation, and resource management expertise - and with species and management diversity in mind.

Implications for ABA

Leading from in-depth discussions at the Cluster meeting, particularly with the intra-

land use group, and field observations, the above discussion raises several critical issues for doing ABA in Baihualing by elaborating the slippages in ABA theory-practice. Gleaned from this analysis and a draft report (Quong and Guan Yuqin 1996) that synthesized the ideas generated at the meeting, the following are briefly sketched recommendations for practical adjustments to the field methods employed in FMBC/GLG:

1. *Detailed and accurate land use maps*

Presently, a 1:25,000 scale land use map of Baihualing Village has been partially completed but not yet computerized. As pointed out by the working group led by Kanok Rerkasem, the official land use map of Baihualing Administrative Village reveals little of the diversity of land management patterns, listing overly broad categories such as 'forests,' undefined 'degraded lands,' and 'dry lands.' Maps should be more detailed, on a 1:5,000 scale, focus on natural village sites, and include tenure boundaries, such as collective and individual responsibility forests.

2. *A comprehensive understanding of land-resource tenure policies and practices over time and space*

An understanding of the larger contexts of tenure policies and histories, their local practices and transcriptions, needs to be established before focusing down. This kind of data does not exist on the natural village level in accessible 'secondary data.' These dynamic configurations of rights and ownership could be untangled on an on-site basis with the help of local informants and participatory mapping using temporal overlays.

3. *Careful selection of sample plots*³

Meeting participants extensively discussed strategic sampling methods. Since ABA professes to assess agricultural and managed diversity as well as that of natural vegetation, it was suggested, particularly strongly by Christine Padoch, that more sample plots be carefully situated in garden plots, orchards and agroforests, as well as in areas within the Reserve or collective forest that are or once were intensively used by local people.⁴ Finally, as mentioned earlier and emphasized by many at the meeting, official land use categories are clearly not the most useful means for situating sample plots because a) these categories are constantly changing and being re-defined, and b), in combination with this uncertainty, people's actual practices may not follow these official designations. Locations of sample plots should be informed by peoples' actual land use and management practices as much as possible.

4. *Recruitment of women in planning, experimentation, and demonstration projects*

If the intent of ABA is to milk the

³ FMBC/GLG sample plots have been situated along transects extending from 760 m in the Salween Valley (tropical riverine forest) to 3,200 m (alpine grassland) at the top of the Gaoligong Shan and over to the west side in Daba Administrative Village. The plots include the nature reserve, collective forest, individual forests, orchards, upland fields, and wet rice fields. Several plots have also been sampled in the buffer zone near or in the Reserve.

⁴ Christine Padoch suggested sampling areas within the Reserve that are frequently used by local people by locating sample plots along footpaths leading from main roads. Old Lisu village sites within the forest are another possibility for sampling as these areas may have been significantly altered by people (e.g. plantings and management of fruit and economic trees)

expertise and indigenous knowledge of farming folk, the unwitting exclusion of women from FMBC/GLG sacrifices an exceptionally rich resource. As with male farmers, consulting female farmers who are known to be enterprising, innovative and knowledgeable, is essential for accessing and understanding local resource management.

5. *Strategic guidance of experimentation and demonstration projects*

Although deriving inspiration and ideas from local farmers, such projects could favour (and indeed feature) species and management diversity while capitalizing on the experimental propensities, labour recruitment capacity, and expertise of carefully selected farmers.

Conclusion

Agrobiodiversity Assessment is an evolving methodology. Although it is self-defined as a means of relatively rapid assessment, a 'first step' ABA has now been put into practice for a sufficiently long time (1½ years) in Baihualing to warrant some revisions. The FMBC/GLG experience reveals that ABA methodological evolution must incorporate flexibility as well as feasibility in the face of the logistical, administrative, and personnel constraints that hobgoblin any ambitious, large research programme. The challenge of FMBC/GLG will be to harmonize the sharpening of comprehensive, quality research with efficacious programme management.

The author's suggestions and the consensual recommendations arising from the PLEC Thailand-Yunnan Cluster meeting are offered with the notion that it is time to move ABA forward, based on observations and experiences in the field. Moreover, by discussing the implications of land-resource tenure issues at length, the author suggests that some things simply cannot be rapidly assessed, particularly if the intention is to

examine the conditions that influence farmers' decision-making and management practices. For Hanlong, the intricacy of 500 years of land tenure history is one of those things.

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An item to record

Members of PLEC and other readers may be interested to know that Harold Brookfield was awarded the Laureat d'honneur for 1996 by the International Geographical Union, at its Congress in August. The interdisciplinary impact and international reach of his work were among reasons listed in the citation.

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