United Nations Development Programme

GLOBAL ENVIRONMENT FACILITY

Date: 27 December 1999

To: Mr. Kenneth King
Assistant Chief Executive Officer
GEF Secretariat

Mr. Lars Vidaeus, Chief
Global Environment Division.
World Bank

Mr. Ahmed Djoghlaf
GEF Executive Coordinator
UNEP, Nairobi, Kenya

Pages: 14

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From: Rafael Asenjo
Executive Coordinator

Subject: PDF A Funding for Medium Size Project: Vietnam: In situ Conservation of Native Landraces and their Wild Relatives.

Please find attached for your review and comments a PDF Block A request for funding entitled: In situ Conservation of Native Landraces and their Wild Relatives.

We would appreciate receiving your comments no later than 04 January 2000

Thank you.

PART I-Eligibility:

1.Project name: ***In situ*** **Conservation of Native Landraces and their Wild Relatives**

2. GEF Implementing Agency: United Nations Development Agency (UNDP)

3. Country in which the project is being implemented: Vietnam

4. Country eligibility: CBD Ratification-16 November 1994.

5. GEF focal area(s): Biodiversity

6. Operational program: Operational Programme 3 (Forest ecosystems)

7. Project linkage to national priorities, action plans, and programs:

a. Conservation of Agrobiodiversity is identified as a national priority in the Vietnam National Biodiversity Action plan (NBAP, 1995). The NBAP places emphasis on enhancing measures to protect agricultural biodiversity, bringing into play the various forms of "farming conservation" encouraging farmers to participate in the common protection efforts; giving special attention to the conservation of popular traditional varieties which have long been adapted to the local geography and climatic conditions in different regions of the country (From the Resolution of the Government Prime Minister No 845-TTg, December 22, 1995, on the ratification of NBAP, in Vietnamese).
b. The long-term objective of NABP is to protect and manage the rich plant genetic resources of Vietnam, as they co-evolve with their physical and biological environment. The immediate objective is to protect specific ecosystems and biodiversity components being endangered by over exploitation.
c. Consistent with the NBAP, this project will assist the government in protecting the zones where the biodiversity of native landraces and their wild relatives are abundant and varied.
d. This project is closely related to the duties of the IAG/MARD, which include the use of wild plants as genetic resources in crop improvement and breeding resistant cultivars not only for agricultural, but also horticultural, industrial and aesthetic purposes.

8. GEF national operational focal point and date of country endorsement:

Ministry of Agriculture and Rural Development: June 1999.
GEF Vietnam Committee: October 04, 1999

9. Project rationale and objectives:

Rationale:

Vietnam, is one of Vavilov's "Centers of Origin" of domesticated plants and animals. The country is recognized as a center of origin and diversity for cultivated Rice (*Oryza sativa* L.) and other crops. The total number of native plant species found in Vietnam is estimated at 4,800. Of these, 1900 are food plants or cultivated plants and their wild relatives. Many species have been

introduced to other countries and other continents. For example, the use of culinary herbs, some of which are native to Vietnam, has grown enormously in the U.S in the last decade. The global significance of the germplasm embodied in these native landraces and their wild relatives is acknowledged by the worldwide spread of crops such as Rice, Taro, Pepper and Sweet Potatoes.

Agrobiodiversity conservation will protect the genetic diversity of crop plants, and forms the basis for the natural evolution and adaptation of the species to the changing environment. Manipulation of this diversity by farmers and scientists has produced the highly productive and specialized crops and livestock of modern agriculture. Further advances in breeding of cultivated varieties depends on the maintenance of genetic diversity in both traditional varieties and wild relatives.

Since the goal of agrobiodiversity conservation is the maintenance of genetic diversity, such programmes need to consider the mating systems and movement of genes between dispersed populations of the same species. Conservation programmes should focus on conservation of species that lack clear present or potential value and those that have known potential value.

However, the agrobiodiversity is threatened by factors, broadly classified as
1. Socio-Economic and
2. Biological threats.

Use of High Yielding Varieties (HYV) which displace the native landraces, fragmentation of land and other actions detailed later in text, are encompassed in the above mentioned threats. Based on the available data, it appears that native landraces of rice have been reduced from nearly 1000 to several hundreds in the last decade. Similar loss is recognized with fruit tree species, legumes, root/tuber and industrial crops. If these continue unabated, a large number of wild relatives and native landraces will disappear before we get a chance to understand and evaluate their genetic nature, the knowledge of which in most cases will contribute positively in crop improvement.

The following table shows the reduction in area and the loss of local varieties within the area.

CROP	REDUCTION IN AREA (%)	LOSS OF NATIVE LANDRACE (%)
Rice	50	80
Legumes, root/tuber	75	50
Tea & Jute	20	90
Fruit trees	50	70

Source: CRES, IEBR, 1998: Forest Science Institute of Vietnam, 1998.

Objectives:

This project will target conservation of agrobiodiversity of eight important crop species including native landraces and wild relatives in 3 local eco-geographical areas: **the northern mountain, the northern midland and the western high land of Vietnam** (Annex 1). These areas contain a large number of native landraces and wild relatives of the target species and are therefore ideal sites for *in situ* conservation. The areas also have a large number of farmers who

are conservation oriented, willing to participate in and promote *in situ* conservation of native landraces and wild relatives.

These crops have been selected based on their endemism, actual or potential importance to long-term global food security, interspecific diversity, extent of genetic erosion, and their social and cultural importance. Orange, litchi, rice and logan have their centers of origin and diversity in Vietnam and other crops listed in Table 1, have their centers of diversity in Vietnam. Rice, taro and mung bean have been included for their significant contribution to the human diet as staple food; jute and tea for the extent of genetic erosion; and orange, litchi and longan for their adaptability to various ecosystems and potential for commercial production.

Table 1. Target Germplasm of the Project

CROP (Common name)	**CROP** (scientific name)	**WILD RELATIVES** (scientific name)
Rice	*Oryza sativa*	*O.meyeriana* *O.ridley* *O.minuta* *O.officinalis* *O.nivara* *O.minuta* *O.officinalis* *O.nivara*
Taro	*Colocasia antiquorum*	*C.esculenta* *C.gigantea*
Mung bean	*Vigna radiata*	*V. unguiculata* & Subsps.
Jute	*Corchorus capsularis*	*C. estuans*
Tea	*Camellia sinensis*	*C. sinenesis* & Subsps
Orange	*Cirus sinensis*	Input required
Litchi	*Litchi chinenesis*	Input required
Longan	*Dimocarpus longan*	*Dimocarpus.longan* spp. *longepetiolulatus*

The project will assist the government in protecting areas that are rich in biodiversity of native landraces and their wild relatives of the above mentioned crops, by mitigating the threats to the agrobiodiversity, preserving their genetic diversity thus ensuring global food security.

Socio-Economic threats to agrobiodiversity:

I. Replacement of native landraces by modern varieties;
II. Lack of an incentive for cultivation and conservation of native landraces.
III. Loss of traditional knowledge about the cultivation of native landraces.
IV. Growing urbanization and reduction of agroecosystems.
V. Intensive farming into refuges of wild relatives in the protected areas

These threats are largely common to, but vary in intensity for all target areas and species.

Native landraces may not yield as much as the HYV, but usually possess genes that help plants adapt to variations in the climatic conditions, provide resistance to pests and diseases, in-effect helping the plants survive and maintain genetic continuity to the next generation. In genetic terms, HYV genotypes have high general combining ability, but low specific combining ability, meaning they perform well over a wide range of sites, but may not be optimally adapted to any one site. In contrast, the high specific combining ability of landrace genotypes means that they are well adapted to certain sites, but perform very poorly off-site.

The use of HYV is therefore an "easy way out", reducing risk and promoting conformity which is often sought by post-harvest food industries. Lack of awareness of the specialized potential of landraces, and lack of incentives by the government to promote their use, are some of the reasons leading to the loss of agrobiodiversity from farmlands. In addition to this, rapid urbanization leading to encroachment into the existing agroecosystems augments the loss of agrobiodiversity.

Spread of agriculture or other land uses into natural habitats also reduces the diversity of wild relatives. Lack of personnel for the maintenance of the protected areas limits the capacity to control encroachment, but the root causes of encroachment also need to be addressed.

The socio-economic threats can be addressed by:

- Increasing awareness of the advantages of native landraces and providing incentives to use them, to the farmers and local communities.
- Promote marketing of products derived from cultivation of native landraces.
- Training workshops bringing together farmers and technicians from local institutions within or serving target sites. These will act as forums for training, exchange techniques and experiences, and for disseminating traditional knowledge on the cultivation of native landraces.
- Review the environment policy on master planning of the cities and other areas in cooperation with related organizations, to make it agrobiodiversity friendly.
- Strengthening and developing buffer zones surrounding the protected areas.
- Development of gene management zones (GMZs) based on the agrobiodiversity encompassed by that particular area. Each GMZ will have a scientific and technical team from various government agencies responsible for carrying out the conservation activities on site. Particular attention will be given to native landraces under threat by protecting them *in situ* and by encouraging their cultivation in home gardens.
- Capacity-building for sustainable agroecosystem management, focusing on increased food production in the local communities using the native landraces, so that the farming community will voluntarily join the conservation force.

Biological threats to loss of agrobiodiversity

- Genetic erosion as a result of fragmentation and isolation of habitats for wild relatives.

Alleles can be lost in small populations. Habitat fragmentation, resulting in smaller and more isolated populations, can therefore pose a significant threat to genetic diversity. However, this is only true if the affected populations are not already genetically isolated. Populations of self-pollinating species are to a large degree reproductively isolated even in continuous habitat, so habitat fragmentation will affect them genetically much less than cross-pollinating species. Similarly, landraces must, by definition, be largely reproductively isolated, otherwise they would lose their genetic identity. This is true of landraces of both cross- and self-pollinating species. Thus, habitat fragmentation will also not significantly impact genetic diversity of landraces. Therefore, habitat fragmentation *per se* is only a major threat to wild relatives of cross-pollinating crops.

A classification of genetic resources according to breeding methods will, as discussed above, provide an estimate of the urgency of the need for conservation and determine the method of conservation to be used. For example, on a small time-scale, a self-pollinated wild relative or traditional variety, has much less risk of genetic loss due to fragmentation compared to cross-pollinated types. Fragmentation will be a barrier to cross pollination depending on the extent to which it has occurred, and the methods of cross pollination (Insects, wind etc). Fragmentation will be deleterious to the self-pollinated over longer periods of time, for reasons mentioned above.

The biological threat can be addressed by first understanding the causes for fragmentation of habitats harboring valuable agrobiodiversity. Where necessary, legal and policy measures should be strengthened to intervene and stop the fragmentation activity.

It is also important to preserve the natural populations of wild relatives, which exist in field borders, and other natural habitats (in the same general area as the centers of crop diversity). Proper *in situ* management is important in maintaining the local adaptive complexes, but in some cases, must be supplemented by *ex situ* conservation. Breeding experiments and related activities provide both a resource and knowledge base for introduction or rehabilitation of agrobiodiversity.

Project activities will target both landraces in farmers' fields and the conservation and management of protected areas where the wild populations are located.

10. Expected outcomes:

In the outcomes described below each bulleted outcome corresponds to a box in the "underlying causes" of the conceptual model in Annex 2.

***Outcome* 1**: Instruments for the financing monitoring and protection of agrobiodiversity established.

- Government policies to encourage "quality" of the agricultural products.
- Increased market demand for products resulting from conserved agrobiodiversity.

***Outcome* 2**: Establishing policies, specific norms and mechanisms to conserve agrobiodiversity in protected areas, agricultural fields and other areas of importance.

- Modified governmental policies to promote conservation of agrobiodiversity.
- Spread of urban areas is monitored and agricultural lands protected from fragmentation.
- Regulated use of agricultural lands to retain viability of the land.
- Enhanced resources and capacity to manage the protected areas.

***Outcome* 3**: Areas of high agrobiodiversity at the species and population levels located for improved management by farmers and local communities. Conservation strategies matched to status and pattern of diversity for different landraces and wild relatives.

- Increased knowledge about distribution and importance of wild relatives.

***Outcome* 4**: Traditional knowledge, biodiversity indexing techniques, and management of agrobiodiversity strengthened in farming communities and related organisations playing a role in agrobiodiversity conservation.

- Providing education on ecological, cultural and nutritional value of native landraces and their wild relatives at the local, regional and national levels;
- Developing a sound information base to document genetic diversity that can be used to educate the farming community and others of the importance of using native landraces and conserving their wild relatives.

11. Planned activities to achieve outcomes:

Considering the extent of geographical area and the anticipated outcomes to be achieved this may either be a Medium size or Full project. The ensuing project will implement the plan produced as a result of the PDF-A activities. The details of the plan will be formulated only during the PDF-A, but it is anticipated that the plan will incorporate the following activities:

Activity 1:

1.1 Based on outputs from PDF-A activities, detailed surveys of selected sites to create a "biodiversity overlay", identifying high diversity areas in relation to land use and threats.

1.2 Quantification of agrobiodiversity at the project sites at two hierarchical levels:

- ❖ diversity of the taxa (species diversity) within each project site
- ❖ within-taxon diversity for important traits region using quantitative morphological traits (morphological markers)

Activity 2:

2.1 Strengthening the application of sustainable farming and agricultural resources management and raising awareness of local communities on genetic resource management.

Activity 3:

3.1 Strengthening of protected area network to secure *in situ* conservation, including possibly the designation of new protected areas, and modification to the management of existing protected areas.

Activity 4:

4.1. Modification of the legal and policy framework and strengthen the multidisciplinary capacity in the agrobiodiversity conservation sector to make use of lessons learned and best practices.

Activity 5:

5.1. Introducing co-management and community participation into conservation and management of the high agrobiodiversity areas as well as endemic areas of agrobiodiversity;
5.2. Training for the development of human capacity to conserve and manage the agrobiodiversity areas. Much attention will be given for the target sites to reflect a range of socioeconomic, climatic and topographical features.
5.3. Education, awareness building and information dissemination to promote replication of the approach to agrobiodiversity conservation in other parts of the country.

12. Stakeholders involved in project:

- Project stakeholders include the traditional farming communities and co-operatives, local institutions, agrarian universities and national agencies and non-government institutions involved in, or responsible for, agricultural development and agrobiodiversity conservation in the target sites.

PART II-Information on Block A PDF Activities

13. Description of activities to be financed by the PDF:

Items to be financed (US$):	PDFA grant	Other Resources
Organize stakeholder consultation workshops (including governmental organizations, NGOs, local communities and international organization representatives)	6,000	1,200*
Translate materials/reports into Vietnamese and English	500	
Field trips to perform preliminary surveys of areas of high agrobiodiversity and areas where wild relatives are found; to identify native and endemic landraces that are economically and nutritionally important; to identify the traditional methods of growing and find the conservation strategies for them;	11,700	6,750**
National workshop to review, finalize and endorse a project action plan, including: • Reviews of identification and inventory of the areas of high agrobiodiversity and the areas of wild relatives are found; • Recording the existing information on the conservation	2,300	3,755*

status of agrobiodiversity and elaboration of guidelines for management; • Introducing co-management and community participation into conservation and management of the high agrobiodiversity areas as well as endemic areas of agrobiodiversity; • Training for the development of human capacity to conserve and manage the agrobiodiversity areas. Much attention will be given for the target sites to reflect a range of socioeconomic, climatic and topographical features. This would be useful for the implementation of a comprehensive plan (*in situ* or combined with *ex situ* depending on crop species and their situation) to conserve agrobiodiversity.		
Provide administrative/logistical support	500	675*
Total	**21,000**	**12,000**

*Note:** Government contribution; * IAG and MARD*

14. Expected outputs and completion dates of the PDF A:

Reports received from consultation workshops: Month 2

Scientific, technical and environmental reports reviewed: Month 4

Draft project brief produced (full project brief) and National workshop results received: Month 5

Final project brief prepared and translated into Vietnamese and English: Month6

15. Other possible contributors/donors and amount:

- IAG and MARD: 5,250 $US
- Government: 6,750 $US.

Both above are contributions to PDF-A. The Government of Vietnam is currently considering a contribution of several million dollars to the eventual project.

16. Total estimated project budget and information on how costs will be met at PDF A stage:

GEF: 21,000 US$, Co-financing: 12,000 US$, Total: 33,000 US$

Part III-Information on the applicant institution:

17. Name:
Institute of Agricultural Genetics (IAG)/Ministry of Agriculture and Rural Development

(MARD)

18. Date of establishment, membership, and leadership:

Established in June 1984; 116 employees; Prof.Dr.Tran Duy Quy-IAG, Co nhue, Tu Liem-Hanoi, Vietnam. Tel: 844 8343198; 844 8347712; Fax: 844 8343196; Email:vdt@agi.ac.vn

Project managing board (IAG/MARD):
Project manager: Prof. Dr. Tran Duy Quy
Principal investigator: Dr.Nguyen Van Son
Secretary: Dr. Tran Thi Hoa
Members: Mr. Dam Van Khanh and Mr. Nguyen Ngoc Hai

19. Mandate/terms of reference:

The IAG is a research and training institute under the Ministry of Agriculture and Rural Development (MARD). The tasks of the IAG are the followings:

- Carrying out scientific and technical research in long-term national and international projects on the conservation of indigenous species and wild plants for use as genetic resources for crop improvement and breeding more resistant cultivars.
- Breeding microbiological strains for post-harvest and food technology.
- Cooperating with domestic and international institutions and universities to train masters and Ph.D.students in agricultural genetics and biology.
- Providing educational materials for students, local administrators, and farmers on sustainable use of genetic resources and management.

20. Sources of revenue:

Major sources of revenue are come from national and international projects. Estimated budget in 1998 was 1,994,000 VND (Financed sources: MARD, MOSTE, and IAG's income from local farmings and 5 international projects).

IAG has had experience with managing funding from multi-bilateral donors. The two projects those relevant to the GEF have been successfully completed are as follows:

- The Asian Biotechnology and Biodiversity Sub-Program of the FARM Program comprising 8 countries (dates: 1994-1997; amounts: 27,000 US$)/UNDP/FAO/UNIDO.
- The project on the Conservation and Development of the Banana (date: 1994-1998; amounts: 150,000US$)/WB.

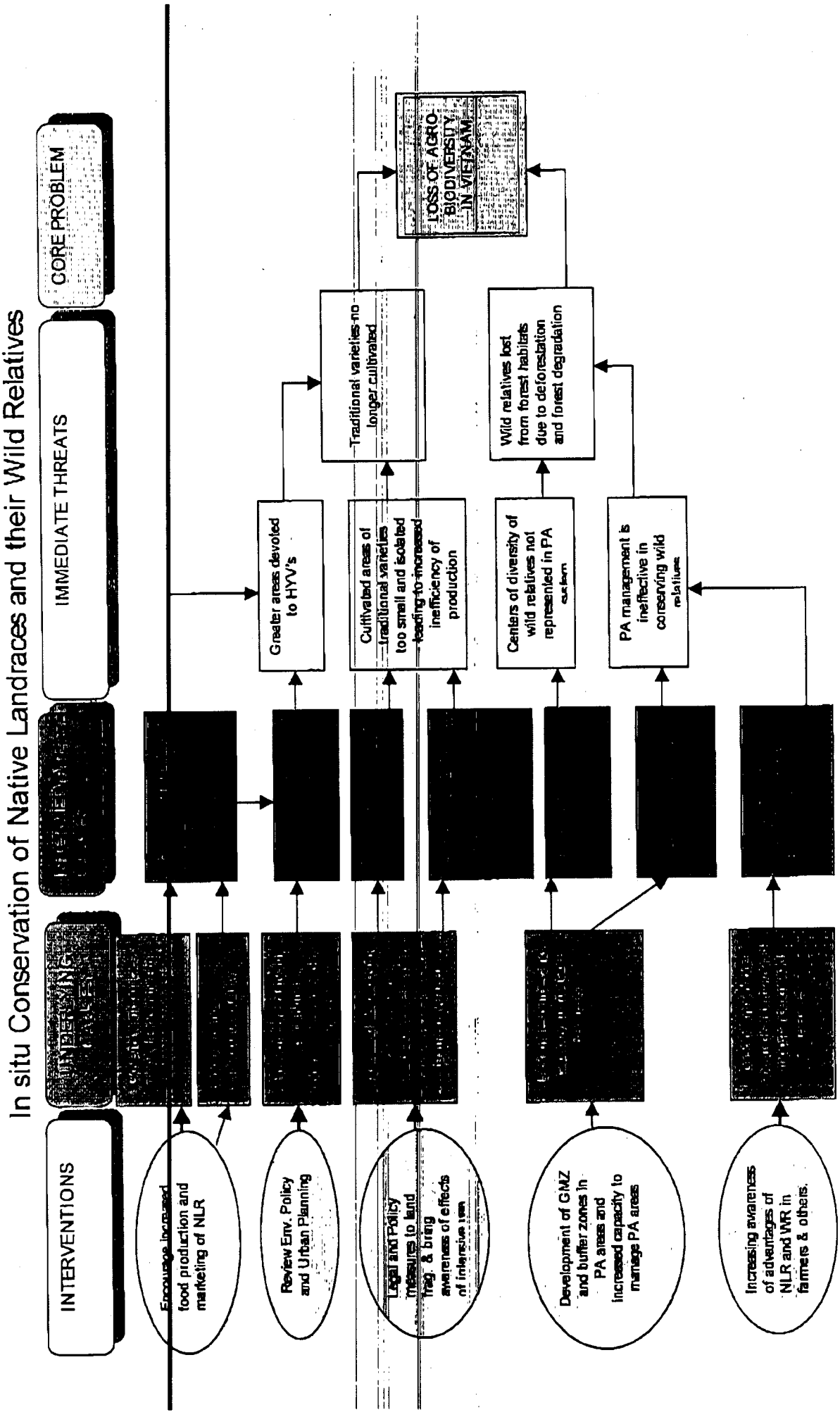
21. Recent activities/programs, in particular those relevant to the GEF: Biotechnology and Biodiversity of FARM program-RAS/93/066

Part IV. Information to be completed by implementing agency:

22. Project identification number: VIE/99/A03

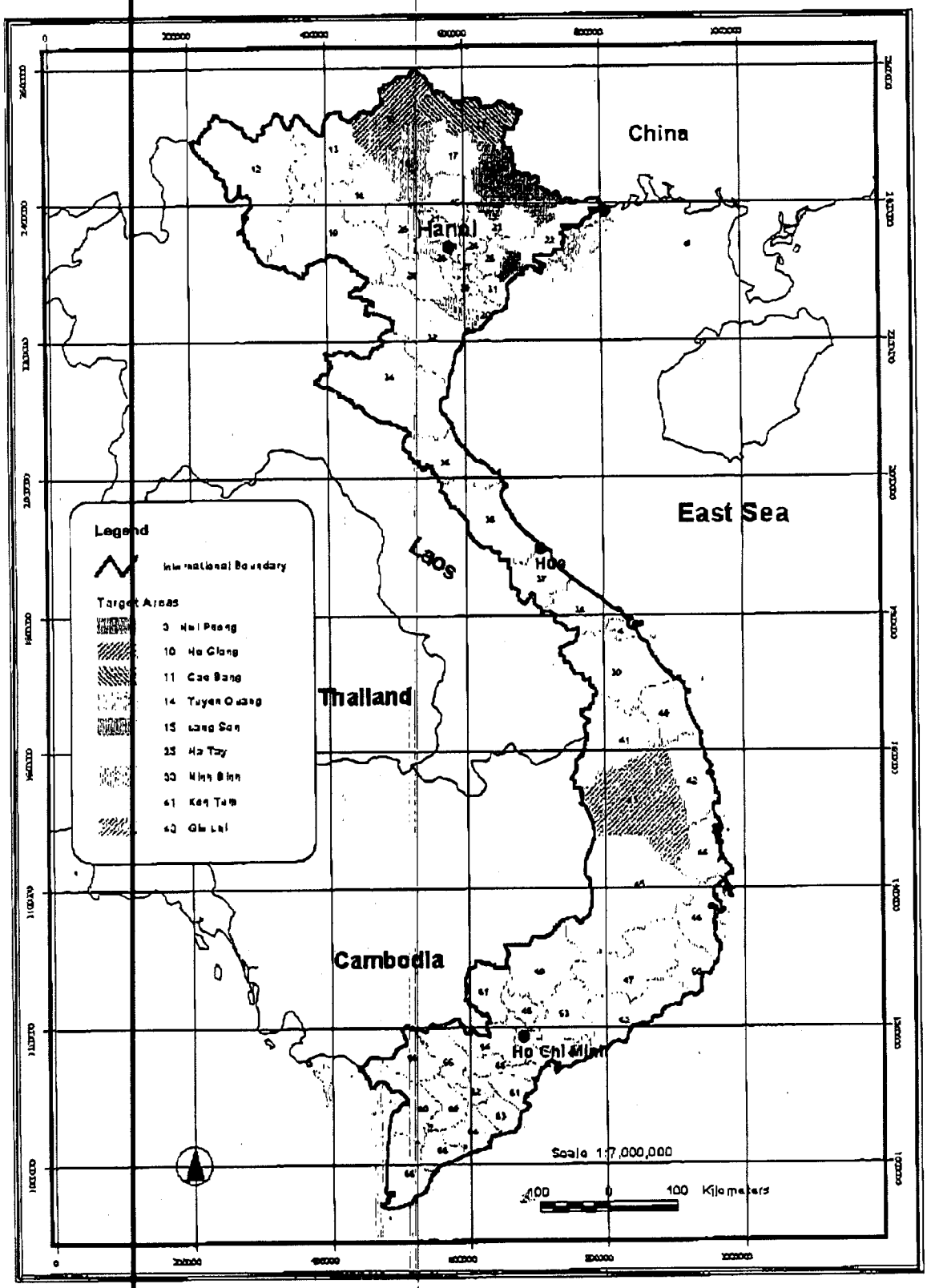
23. Implementing Agency contact person:
Tim Boyle, Regional Co-Ordinator, RBAP, UNDP/GEF, One UN Plaza, New York, NY 10017 USA; Tel: +1-212-906-6511; Fax: +1-212-906-5825; Email: tim.boyle@undp.org

24. Project linkage to Implementing Agency program(s):
This project is in line with UNDP Vietnam's focal areas on Poverty Alleviation (PA) and Environmental and National Resource Management (ENRM). UNDP has been helping Vietnam to approach questions on sustainable use of natural resources, support sustainable agriculture and enhance the multi-function of agriculture. The proposed project will cooperate with the PA and the ENRM projects in the same 3 targeted eco-geographical regions with focus in the provinces Bac Can, Tuyen Quang, Thai Nguyen, Phu Tho, Bac Giang, Quang Binh and Dac Lac.


In situ Conservation of Native Landraces and their Wild Relatives
CORE PROBLEM
IMMEDIATE THREATS
INTERVENTIONS
LOSS OF AGRO BIODIVERSITY IN VIETNAM
Traditional varieties no longer cultivated
Wild relatives lost from forest habitats due to deforestation and forest degradation
Greater areas devoted to HYV's
Cultivated areas of traditional varieties too small and isolated leading to increased inefficiency of production
Centers of diversity of wild relatives not represented in PA system
PA management is ineffective in conserving wild relatives
Encourage increased food production and marketing of NLR
Review Env. Policy and Urban Planning
Legal and Policy measures to land mag. & bring awareness of effects of intensive use
Development of GMZ and buffer zones in PA areas and increased capacity to manage PA areas
Increasing awareness of advantages of NLR and WR in farmers & others.

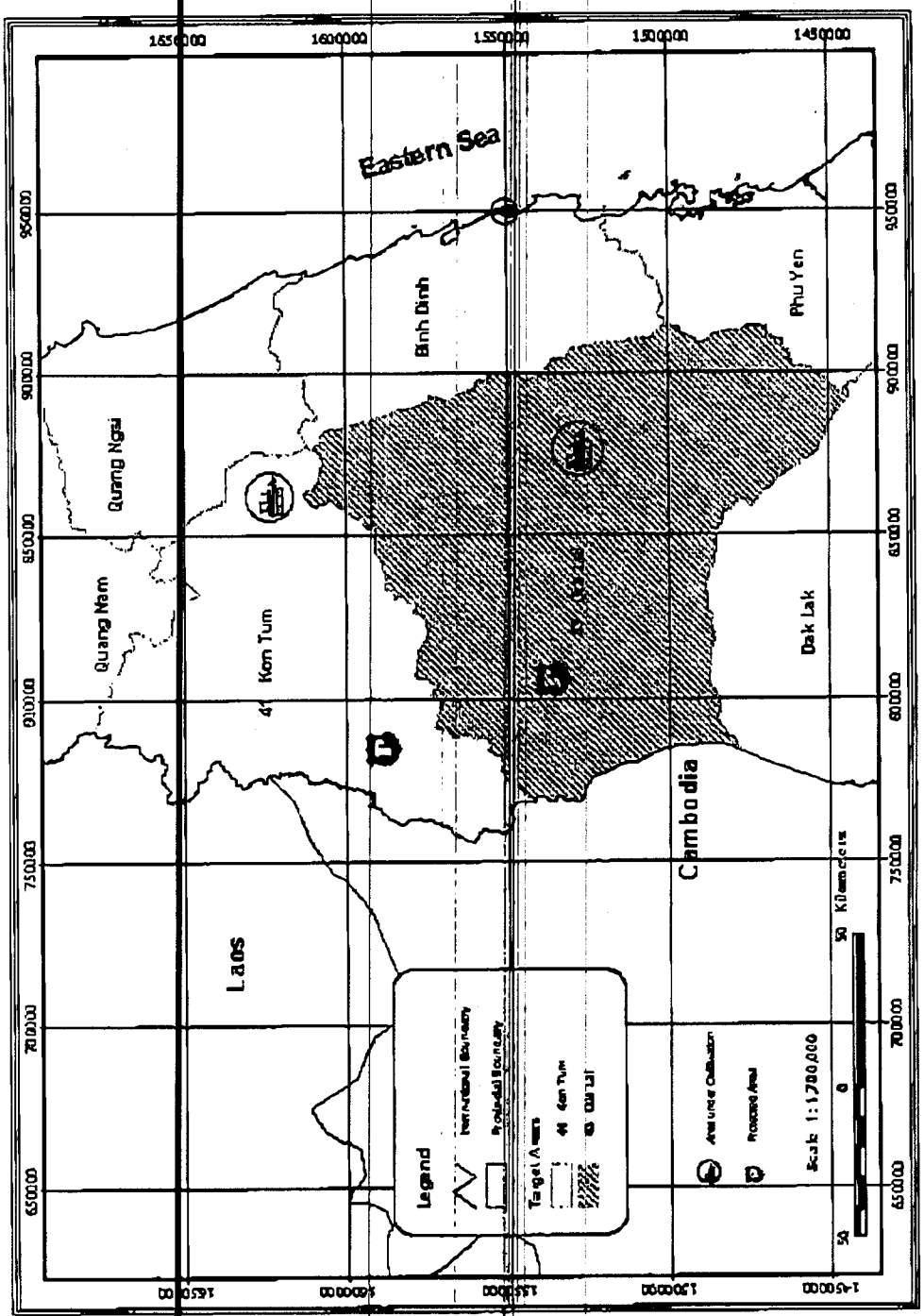
Annex 1. Maps showing project locations

MAP OF PROPOSED TARGET AREAS



MAP OF PROPOSED TARGET AREAS IN THE NORTHERN REGION OF VIETNAM

MAP OF PROPOSED TARGET AREAS IN THE WESTERN HIGHLAND OF VIETNAM



GEF VIET NAM OFFICE
... DU STR., HA NOI, VIETNAM
Tel: 84 4 822 4422 Fax: 84 4 8223 189

DATE: 4 October 1999

From: GEF- Vietnam

To: The GEF/UNDP GEF Secretary GEF Council	Mr. Tim Boyle GEF Regional Coordinator RBAP/UNDP, New York Attn. Nessie Golaky	Fax No. 212.906.5825 Account: UNDP

Ref: GEF- Vietnam Focal Point endorsement letter for the GEF project concept: In situ Conservation of Native Land Races and their Wild Relatives

Dear Sirs,

As the representative for the Global Environment Facility Focal Point for the Government of the Socialist Republic of Vietnam (GEF- Vietnam), I would wish to confirm our strong endorsement of the project concept: In situ Conservation of Native Land Races and their Wild Relatives, which has been developed by Institute of Agricultural Genetics (IAG), Ministry of Agriculture and Rural Development of Vietnam.

The GEF- Vietnam hope very much that the PDF B application will be accepted and can be processed as early as convenient to speedily develop this concept.

Thank you very much for your kind cooperation.

Yours sincerely,

Pham Khoi Nguyen
Chairman of GEF- Vietnam Committee
Vice Minister of Science, Technology and Environment

CC: IAG. MARD
UNDP Hanoi ✓