



Global Environment Facility

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October 28, 2008

Dear Council Member,

The UNEP as the Implementing Agency for the project entitled *Regional (Bangladesh, Pakistan, Sri Lanka, Vietnam): Development and application of decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives*, has submitted the attached proposed project document for CEO endorsement prior to final Agency approval of the project document in accordance with the UNEP procedures.

The Secretariat has reviewed the project document. It is consistent with the project concept approved by the Council in November 2007 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by the UNEP satisfactorily details how Council's comments and those of the STAP have been addressed.

If by November 25, 2008, I have not received requests from at least four Council Members to have the proposed project reviewed at a Council meeting because in the Member's view the project is not consistent with the Instrument or GEF policies and procedures, I will complete the Secretariat's assessment with a view to endorsing the proposed project document.

We have today posted the proposed project document on the GEF website at www.TheGEF.org. If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

A handwritten signature in black ink, appearing to be "M. Barbut", written over a printed name and title.

Monique Barbut
Chief Executive Officer and Chairperson

Attachment: Project Document

cc: Alternates, GEF Agencies, STAP, Trustee



UNITED NATIONS ENVIRONMENT PROGRAMME

Programme des Nations Unies pour l'environnement Programa de las Naciones Unidas para el Medio Ambiente
Программа Организации Объединенных Наций по окружающей среде برنامج الأمم المتحدة للبيئة
联合国环境规划署



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MEMORANDUM

From: Ms. Maryam Niamir-Fuller,
Director, Division of Global Environment Facility
Coordination.

Subject: **BD: FSP: SP-4, 5: Regional (Asia) Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives - CEO Endorsement Submission**

Please find attached herewith, the CEO endorsement request, project document, endorsement and co-finance letters as well as annexes for the proposal titled '**Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives**' being submitted for CEO endorsement.

Regards



REQUEST FOR CEO ENDORSEMENT/APPROVAL

PROJECT TYPE: Full-sized Project
THE GEF TRUST FUND

Submission Date: October 13, 2008

Re-submission Date:

PART I: PROJECT INFORMATION

GEFSEC PROJECT ID:

GEF AGENCY PROJECT ID:

COUNTRY(IES): Bangladesh, Pakistan, Sri Lanka, Vietnam

PROJECT TITLE: Development and application of decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives

GEF AGENCY(IES): UNEP,

OTHER EXECUTING PARTNER(S): Bangladesh

Agricultural University, Department of Animal Breeding and Genetics; Pakistan Agricultural Research Council, Animal Sciences Division; Universty of Peradeniya, Department of Animal Science, Sri Lanka; National Institute of Animimal Husbandry, Vietnam; International Livestock Research Institute, Nairobi

GEF FOCAL AREA(S): Biodiversity

GEF-4 STRATEGIC PROGRAM(S): BD-SP 4, 5

NAME OF PARENT PROGRAM/UMBRELLA PROJECT: N.A.

Expected Calendar	
Milestones	Dates
Work Program	November 2007
Agency Approval date	October 2008
Implementation Start	October 2008
Mid-term Evaluation (if planned)	October 2010
Project Closing Date	March 2014

A. PROJECT FRAMEWORK

Project Objective: Develop and make available effective tools to support decision making for the conservation and sustainable use of indigenous animal genetic resources for food and agriculture (FAnGR) and their wild relatives in developing countries.

Project Components	Indicate whether Investment, TA, or TA*	Expected Outcomes	Expected Outputs	GEF Financing*		Co-financing*		Total (\$) c=a+ b
				(\$ a)	%	(\$ b)	%	
1. Decision-support tools for conservation management of livestock and community-based breeding programmes	STA/TA	Enhanced conservation & management of FAnGR diversity using Decision-Support Tools	1.1 Appropriate breeding tools for low input, smallholder production systems, including animal recording are developed and made available for use 1.2 A tool for cost-benefit analysis of breeding programmes incorporating market and non-market values of FAnGR evaluated and made available 1.3 Analytical	894,936	28.9	2,199,500	71.1	3,094,436

			frameworks for assessment of policy and marketing options (existing and alternatives) for FAnGR developed, evaluated and made available 1.4 Tools for diversity assessment and for setting cost effective conservation priorities developed and made available.					
2.1 Enhanced institutional capacity and knowledge for conservation management of livestock 2.2 Dissemination of information	STA/TA	Increased capacity and enhanced knowledge to use Decision Support Tools for conservation of livestock diversity at national and global levels	2.1 Capacity of stakeholders to apply the developed Decision Support Tools for conservation and sustainable management/use of FAnGR and their wild relatives enhanced 2.2 Knowledge and understanding of value of FAnGR and wild relatives increased and replication strategies made available.	714,500	38,5	1,143,500	61,5	1,858,000
3. Project management.				151,334	34.8	284,000	65.2	435,334
4. Monitoring and Evaluation				222,000	59.0	154,000	41.0	376,000
Total Project Costs				1,982,770		3,781,000		5,763,770

* TA = Technical Assistance; STA = Scientific & technical analysis.

B. FINANCING PLAN SUMMARY FOR THE PROJECT (\$)

	<i>Project Preparation</i> *	<i>Project Grant</i> <i>b</i>	<i>Total</i> <i>c = a + b</i>	<i>Agency Fee</i>	<i>For the record:</i> <i>Project Grant at PIF</i>
GEF	450,000	1,982,770	2,432,770	243,277	1,982,770
Co-financing	190,000	3,781,000	3,971,000		3,781,000

* PDF funds approved as part of GEF 3. The status of implementation and use of fund for the project preparation grant is provided in Annex D.

Total		5,763,770	6,403,770	243,277	5,763,770
	640,000				

C. SOURCES OF CONFIRMED CO-FINANCING FOR PROJECT PREPARATION AND PROJECT

<i>Name of co-financier (source)</i>	<i>Classification</i>	<i>Type</i>	<i>Project Preparation</i>	<i>Project</i>	<i>Total</i>	<i>%</i>
Governments	Nat'l Gov't	In-kind Cash	32,000	807,000	839,000	21.12
				260,000	260,000	6.55
FAO	International Partner	In-kind	-	96,000	96,000	2.42
World Vision	NGO	In-kind Cash	-	160,000	160,000	4.03
				220,000	220,000	5.54
ILRI and collaborating Institutions	Exec. Agency	In-kind Cash	158,000	1,458,000 780,000	1,616,000	40.70
				-	780,000	19.64
Total Co-financing			190,000	3,781,000	3,971,000	100%

D. GEF RESOURCES REQUESTED BY AGENCY(IES), FOCAL AREA(S) AND COUNTRY(IES)

<i>GEF Agency</i>	<i>Focal Area</i>	<i>Country Name/ Global</i>	<i>(in \$)</i>			
			<i>PPG (a)</i>	<i>Project (b)</i>	<i>Agency Fee (c)</i>	<i>Total d=a+b+c</i>
UNEP	Biodiversity	Bangladesh	107,670	558,500	66,617	732,787
UNEP	Biodiversity	Pakistan	61,475	604,695	66,617	732,787
UNEP	Biodiversity	Sri Lanka	138,680	527,500	66,618	732,798
UNEP	Biodiversity	Vietnam	142,175	292,075	43,425	477,675
Total GEF Resources			450,000	1,982,770	243,277	2,676,047

E. PROJECT MANAGEMENT BUDGET/COST

<i>Cost Items</i>	<i>Total Estimated person weeks/months</i>	<i>GEF (\$)</i>	<i>Other sources (\$)</i>	<i>Project total (\$)</i>
Coordination personnel	330	107,000	138,000	245,000
Office facilities, equipment and communications*		32,334	120,000	152,334
Travel		12,000	26,000	38,000
Total	330	151,334	284,000	435,334

* Detailed information and justification for these line items provided below.

A provision of \$ 32,334 has been made for project management facilities, equipment and communication at national level, which averages to around \$ 1,616.70 per country per year; this sum is matched with \$120,000 as co-financing.

Office supplies	12,000
Internet costs	10,167
Telephone, communication	10,167
Total	32,334

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

<i>Component</i>	<i>Estimated person weeks</i>	<i>GEF(\$)</i>	<i>Other sources (\$)</i>	<i>Project total (\$)</i>
<i>Local consultants*</i>	750	70,000	112,500	182,500
<i>International consultants*</i>	454	350,000	288,000	638,000
Total	1,204	420,000	400,500	820,500

* Details provided in Annex C.

G. DESCRIBE THE BUDGETED M&E PLAN:

1. The general and specific objectives of the project, and the list of its planned outputs, have provided the basis for a fully budgeted monitoring and evaluation plan (Appendix F). As indicated in the table below, a total of US\$ 240,000 of the total project budget is allocated for monitoring and evaluation activities to be undertaken by project partners, independent experts and UNEP staff. US\$80,000 of the costs of monitoring and evaluation are built on existing project activities, such as field surveys to collect data on socioeconomic factors, traditional knowledge, marketing statistics, household consumption patterns and the development of participatory methods for evaluation. US\$ 132,000 are built in for international and national steering committee meetings. US\$ 90,000 of GEF funds are planned for mid- and end-term evaluations.

Type of M&E activity	Responsibility	Budget US\$	Time Frequency
Socioeconomic survey of farmers, local communities and institutions	ILRI National Coordinating Agencies National and District/Provincial PMUs Regional consultant (year 5)	40,000	During the first 12 months of the project and year 3 and 5 of the project implementation
Field trips to monitor adoption of best practices	ILRI National Executing Agencies, National PMU and Site Coordination Committee, Regional consultant (year 5)	40,000	During the first 12 months and year 5 of project implementation
Project Steering Committee meetings	UNEP/GEF ILRI, UNEP project management officer National Project Leader, Collaborating institutions (FAO)	132,000	Once a year for 5 years
Mid-term evaluation	Independent consultant UNEP/GEF ILRI National EAs	45,000	Year 3 of the project
Final Evaluation	Independent consultant UNEP/GEF ILRI National EAs	45,000	With-in six months after project completion
TOTAL INDICATIVE COST <i>Excluding project team staff time and UNEP staff and travel expenses</i>		302,000	

2. Execution performance, achievements of project objectives and tracking project progress and financial accountability will be carried out by UNEP with assistance from national and regional project management units (PMU). ILRI and PMU will be responsible for monitoring the technical execution of the project based on the indicators and means of verifying them as detailed in the project logframe, and on implementation timeframe. ILRI with the support of the Regional Project Coordinator will be responsible for preparing biannual progress and quarterly financial reports with inputs from national project management units. Biannual progress reports will include assessment of outputs to be completed within that timeframe, and these reports will be important monitoring tools for National and International Steering Committees to track the progress. These steering committees will be responsible for assessing successes and also address problems in a timely manner.

3. Stakeholder participation in the M&E process is fundamental and essential to ensure ownership of the project activities. The project will develop modalities for evaluation in a participatory manner with stakeholders, and expects to involve stakeholders in routine evaluations and reviews of project performance. Every year, UNEP Division of GEF Coordination will undertake desk evaluation to assess the degree to which the objectives of the project have been achieved. This will be in addition to the standard mid-term and final evaluations of the project as per UNEP procedures, as well as supervision missions conducted by the UNEP task manager and/or Programme Management Officer.

PART II: PROJECT JUSTIFICATION:

A. DESCRIBE THE PROJECT RATIONALE AND THE EXPECTED MEASURABLE GLOBAL ENVIRONMENTAL BENEFITS:

4. The recent major FAO-led study, “The State of the World’s Animal Genetic Resources for Food and Agriculture” (SoW), the “Global Plan of Action for Animal Genetic Resources” and the Interlaken Declaration on Animal Genetics Resources” (International Technical Conference on Animal Genetic Resources for Food and Agriculture, Interlaken, Switzerland, 7 September 2007), three documents endorsed by FAO member states, emphasize that the effective management of farm animal genetic resources (FAnGR) is essential to global food security, sustainable development and the livelihoods of hundreds of millions of people. These documents stress that many livestock breeds have unique traits or combinations of traits that could contribute to meeting the challenges of (i) the rapidly rising demand for livestock products in many parts of the developing world, (ii) climate change impacts, (iii) emerging zoonotic and animal diseases, and (iv) global targets such as the Millennium Development Goals. The SoW report also highlights the dramatic, ongoing and accelerating erosion of the diversity of FAnGR, while the “Global Plan of Action” and the “Interlaken Declaration” advocate for the development and implementation of measures to halt AnGR erosion.

5. The loss of FAnGR diversity is considerable: FAO’s Global Databank for FAnGR reports that around 20% of FAnGR breeds are classified as at risk and, during the last six years, 62 breeds became extinct – amounting to the loss of almost one breed per month. However, this is only a partial picture: breed inventories are inadequate in many parts of the world; population data are unavailable for 36% of all breeds; and, among many of the most

widely used high-output breeds, within-breed genetic diversity is being undermined by the use of a few highly popular lines.

6. The most significant threats to the diversity of FAnGR are crossbreeding and breed replacement. The growing use of exotic breeds has led to the extinction or severe erosion of genetic diversity in traditional breeds, despite their adaptation to local environments. Lack of awareness about the importance of maintaining indigenous diversity, and the production potential of these traditional breeds, are the principal reasons behind these trends. Often national policies that do not adequately identify the need for or address the conservation of FAnGR, exacerbate the negative effects on genetic diversity. The perception persists that specialized exotic, mainly European origin, breeds (those that thrive in temperate conditions) are the best option for increased production and income. These perceptions are based on market analyses that are distorted by, e.g., government and donor subsidies, maintenance costs tied to exotic breeds without adaptive capabilities and lack of recognition of the often multi-functional roles of indigenous FAnGR. In developing countries, the roles of indigenous livestock often include the provision of traction and manure, and as sources of savings, insurance, cyclical buffering, accumulation and diversification, and serving socio-cultural roles (e.g. dowry payments and/or slaughter during special ceremonies). These important services are rarely valued in livestock assessments, leading to distorted government policies and interventions that fail to properly consider the impact of 'new' agricultural practices (e.g. crossbreeding or breed replacement) on farmer livelihoods and indigenous FAnGR. In the same way market access and infrastructures are weak and inequitable. This is especially difficult for poor farmers in remote villages, where the majority of indigenous FAnGR are kept. These farmers then use their livestock for subsistence purposes and only occasionally sell 'surplus off take', often at prices dictated by market agents.

7. Major barriers to addressing these challenges are the lack of an appropriate policy framework for the sustainable management of FAnGR and the inadequate knowledge of the value of indigenous breeds. The latter varies amongst the stakeholder groups, with farmers and breeders' associations holding the most knowledge and government officials the least. Links between and among these groups are weak or non-existent. Basic information about valuable indigenous breeds and representative animals is needed, as is the capacity to prioritize, monitor and manage them at both scientific and farm operational levels. Stakeholder groups need to be empowered with knowledge and conducive operational environments in which they can make decisions that work best for them.

8. Representatives of these scenarios are Bangladesh, Pakistan, Sri Lanka and Vietnam, the partner countries in this project. Their agriculture contributes 20 to 26% of GDP of which livestock contributes approximately 15 to 20% in terms of income, insurance, food (meat, milk, eggs, etc.), hides/skin, traction and manure. Smallholder farmers, who are dependent on indigenous breeds, raise a large majority of the livestock. These FAnGR have evolved in diverse tropical environments and possess valuable traits such as disease resistance, adaptation to harsh environments, including heat tolerance and ability to utilize poor quality feeds, attributes essential for achieving sustainable agriculture in low-input production systems. However, it is still largely unknown which breeds hold significant genetic diversity or specific genes that should be targeted for conservation and/or incorporation into breeding programs. Similarly, wild relatives as progenitors of FAnGR represent an enormous putative reservoir of diversity and adaptation that is still largely unrecognized and under-utilized. Meantime crossbreeding with exotic breeds is increasing and indigenous breeds are being lost and/or being exposed to increasing risk of loss.

8. The development objective of the project is the Conservation of indigenous livestock for future generations and their increased contribution to livelihoods through enhanced use. The immediate objective of the project is *to develop and to make available effective tools to support decision making for the conservation and sustainable use of indigenous FAnGR and their wild relatives in developing countries.*

9. The two key project outcomes are: enhanced conservation and management of FAnGR diversity using tools for decision making; and increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels. To achieve these outcomes, six outputs are defined:

- Appropriate breeding tools for low input production systems are developed and evaluated;
- An effective tool for cost-benefit analysis of breeding programs for alternative breeds evaluated and made available;
- Analytical frameworks for assessment of policy and marketing options (existing and alternatives) for FAnGR developed, evaluated and made available;
- Tools for diversity assessment and for setting cost effectiveness conservation priorities developed and made available
- Capacity of stakeholders to apply the developed Decision Support Tools for conservation and sustainable management/ use of FAnGR and their wild relatives enhanced
- *Tools for diversity assessment and for setting cost effective conservation priorities developed and made available;*
- Knowledge and understanding of value of FAnGR and wild relative increased and replication strategies made available.

10. To address these challenges of the loss of livestock genetic diversity and the non-conducive policy and institutional environments, the proposed project will follow a systematic, participatory process to develop, apply and make available both within and outside the project countries, various, mutually strengthening decision-support tools to identify and manage priority FAnGR and their wild relatives. The tools will enable the relevant stakeholder groups to assess, strengthen and monitor the policies and market structures that support conservation through use of genetic resources. Awareness-raising and capacity-building for each of the stakeholder groups will emphasize the value of FAnGR to human livelihoods and ensure that the tools are embedded in and used efficiently by institutional programmes, the private sector, rural communities and individual livestock keepers. Understanding the local context in which FAnGR resources are managed will necessarily involve an important gender component to ensure that women's roles in decision making is adequately addressed.

11. Project objectives will be achieved through a set of activities which will include; (i) assessment of diversity: development and testing of a tool for combining genotype data from different labs to facilitate pooling for regional/global analyses development of a breed diversity index for priority breeds conservation (ii) market and policy analysis: stakeholder analysis to identify key players, planning process and priorities; development of survey instruments/guidelines;; development of a conceptual framework for characterizing existing indigenous breed marketing systems and guiding marketing options (including niche markets), and performance (including analysis of supply and demand, as well as covering specific producer/consumer preferences and opportunities for niche markets); development of survey instrument to identify policies and their impact; development of analytical framework/models for evaluating existing policy and alternatives;; preparation of policy briefs and realization of dissemination workshops; (iii) Development of recording systems as a tool for breeding and management and a framework for its implementation (at community level); (iv) training and capacity building: training needs assessment of stakeholder groups; development of training materials (modules and manuals) and making available for wider use; organizing and conducting targeted training programs/workshops for various stakeholders (policy-makers, researchers, academics, (non)governmental extension staff and farmers communities involving both genders).

12. The global benefits from the availability and application of the decision-support tools and the capacity building will yield short-term gains in supporting the conservation and use of indigenous livestock through better management, while putting in place medium- and long-term benefits by incorporating market driven breeding strategies and plans as well as recording systems for indigenous

livestock in national development plans. The project will not only lead to the enhanced use and conservation of globally significant FAnGR within the four project countries, it will also serve as a model for replication in other Asian countries and beyond.

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL PRIORITIES/PLANS:

13. Through the proposed project, the four partner countries (Bangladesh, Sri Lanka, Pakistan, Vietnam) are seeking to build on their current framework for the conservation of genetic resources and strengthen policies and programmes to conserve and use FAnGR. The four partner countries have endorsed the Convention on Biological Diversity (CBD) with livestock becoming recently a national priority. More specifically, in Bangladesh the Fifth National Development Plan articulates specific strategies to address livestock issues, including increasing the supply of livestock through their increased productivity, while the Bangladesh Livestock Research Institute has among its priorities to conserve and improve indigenous FAnGR. The Pakistan National Conservation Strategy addresses the need to preserve and improve genetic quality of livestock breeds, while the national breeding policy focuses on buffalo, cattle, sheep and goats and the Pakistan Agricultural Research Council (PARC) manages research and other aspects of FAnGR with the relevant national, regional, and international agencies. Sri Lanka's National Environmental Action Plan calls for the conservation and sustainable use of crop and livestock diversity in traditional farming systems, and with the Department of Animal Production and Health, a biodiversity action plan for the livestock sector has been developed. Vietnam's National Conservation Strategy (NCS) includes agricultural biodiversity and a 2004 law regulates the management and preservation of FAnGR. By ensuring the complementarity of its design with these national plans, the project has aligned itself with national priorities and strategies and avoided duplication.

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH [GEF STRATEGIES](#) AND STRATEGIC PROGRAMS:

14. The project addresses the Biodiversity Strategic Objective 2 and its Strategic Programs 4 and 5 by supporting the mainstreaming of biodiversity in production landscapes of the agricultural sector through strengthening the policy and regulatory framework for FAnGR and their wild relatives, removing critical knowledge barriers including about the market value of FAnGR, and developing institutional capacities. This will be achieved by developing and applying mutually strengthening decision-support tools for: analyzing policy and marketing options affecting livestock genetic resources and their wild relatives; setting priorities for conservation; and analyzing the cost-benefits of breeding programmes incorporating market and non-market values.

D. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

15. The project benefits from and complements several international and national projects. These include the GEF/UNDP project "*In situ* conservation of endemic ruminant livestock of West Africa", which will apply community-based management and incentive approaches to the *in situ* conservation of important indigenous cattle and goat breeds and their habitats. ILRI serves as lead technical backstopping agency for the project. The role of ILRI as executing agency of the current project maximises the coordination of activities with the programs of other International Agencies supporting FAnGR conservation and utilisation, particularly FAO Rome and the Joint FAO/IAEA Division. Ongoing collaboration includes the linking of ILRI's DAGRIS database with the Domestic Animal Diversity Information System (DAD-IS) of FAO, resulting in the continuous exchange of information, and the ILRI technical leadership of the FAO-IAEA Coordinated Research Programme "Characterization of small ruminant genetic resources in seven Asian countries", in which our four partner countries are participants. The project will also benefit from the GEF/UNEP project "*In situ* Conservation of Crop Wild Relatives through Enhanced Information Management and Field Application" which focuses on the conservation of crop wild relatives and their increased availability for crop improvement in Armenia, Bolivia, Madagascar, Sri Lanka and Uzbekistan. Links to this project will occur at two levels: 1) at the full project level to capitalize on the complementary

objectives related to values of indigenous species/breeds and their wild relatives; 2) in Sri Lanka where awareness-raising activities could be linked.

16. With regard to national projects, particular attention will be given to coordinating activities with the Strengthening of Livestock Services project in Pakistan (funded by the EU and govt. of Pakistan); the Livestock Development Planning Project in Sri Lanka; and, the project Making Markets Work Better for the Poor (funded by ADB) in Vietnam, which analyzes the functioning of market value chains for livestock products. The design of the current project complements these activities and has in place institutional linkages, information-sharing and capacity-building mechanisms. Consequently the project is closely aligned with national and international priorities and strategies, it avoids duplication and it will deliver significant synergies.

E. DESCRIBE THE INCREMENTAL REASONING OF THE PROJECT:

BROAD DEVELOPMENT GOALS

17. Farm Animal Genetic Resources (FAnGR) represent a globally significant genetic resource while concurrently playing a critical role in the maintenance and stability of livelihoods. This is particularly true in the rural areas of developing countries, where low-input systems have little capacity to maintain exotic breeds, and the adaptive traits of indigenous livestock breeds offer a stable source of income and livelihood. Growing populations and consequent increasing demand for livestock products is expected to continue, a situation that highlights the need for more effective use and management of indigenous livestock. However, given the pace of change in production systems and socio-economic settings, targeted action is required to provide smallholders with indigenous livestock not only to survive but to be continuously responsive to these changes.

18. Bangladesh, Pakistan, Sri Lanka, and Vietnam all recognize the importance of livestock management and to large extent the genetic diversity of indigenous species. The national biodiversity strategies of all the four countries include genetic diversity, including in agricultural systems, and their development plans emphasize the importance of improving crop and livestock production.

19. Global benefits of the project are:

- a. Availability of decision making tools that can be applied both within and outside the four project countries to prioritize, conserve and utilize significant FAnGR and their wild relatives
- b. Importance and credibility of indigenous animal resources recognized, and breeding strategies/plans for indigenous livestock incorporated into country livestock development plans, and
- c. Productivity of indigenous livestock species increased through better management and feeding.

20. Domestic benefits of the project are:

- a. Enhanced capacity to make decisions and act on all aspects related to FAnGR and wild relatives. All capacity-building trainings will necessarily involve strong gender components to ensure that all actors in the production and marketing of indigenous animals and products are strengthened within the local contexts of community-sanctioned gender roles.
- b. Availability of expertise with strong technical capacity to support diversity assessment (molecular characterization, breed surveys), livestock market analysis, and legal and policy issues affecting FAnGR conservation and use
- c. Establishment of participatory and consultative mechanism for decision-making and availability of technical and policy briefs supporting enhanced conservation of animal diversity, and

- d. Strategies available to support informed utilization of indigenous breeds, including through crossbreeding, and requisite support services such as better feeding targeting rural households whose livelihoods rely on FAnGR

BASELINE

- 21. The project builds on the following baseline assumptions:
 - a. Erosion of globally significant livestock genetic diversity is increasing;
 - b. The loss is felt most acutely by the poor in areas where intensification is already beginning to occur.
 - c. Potential to improve productivity is greatest in these intensifying systems, but these are also the same areas where diversity losses are greatest;
 - d. The stakeholders (from farmers to national-level government officials) lack the awareness, knowledge, tools, systems, and capacity to respond to loss of genetic diversity;
 - e. Capacity of governments to act is limited by both absence appropriate policies and lack of resources;
 - f. Neither farmers nor decision-makers understand the opportunities to improve productivity with indigenous livestock.

Decision Support Tools

22. Through biodiversity and other action plans, all four countries recognize the value of agricultural (crop and livestock) genetic diversity, and the need to conserve it. However, this recognition is not translated into support for the policies, systems, and tools needed to encourage and motivate widespread action for FAnGR conservation. And while some farmers recognize the potential value of indigenous FAnGR, systems and tools to respond to the potential are weak or non-existent.

23. Moreover where breed associations exist, they focus almost exclusively on current profit potential, which is distorted in favor of exotic breeds. The distortion is due to the failure of market analyses to account for a variety of monetary and non-monetary costs and benefits. For example, many exotic breeds require significant veterinary attention to maintain their high level of productivity and, once subsidies are removed, the resources of poor farmers are insufficient to cover the costs. And while the significant number of domestic exotic, cross, and indigenous livestock breeds are reasonably well known in each of the four countries, a significant proportion of the indigenous breeds are classified as “non-descript”, meaning that their genetic make-up is unknown.

24. The result is increasing crossbreeding and introduction of exotic breeds, leading to genetic erosion and loss of valuable indigenous breeds. Therefore, there is a need to assess the diversity in livestock populations (e.g. phenotypic and molecular genetic studies and capacity building in this area) and to develop web-based national domestic animal information systems accessible to all stakeholders. The ability to identify priority indigenous FAnGR that hold both conservation and market values are not enough, however, without the systems in place to manage them. Systems and tools that assure both conservation and livelihood benefits are needed. Such systems would include capacity to identify, prioritize FAnGR for conservation and use, including wild relatives, with highest potential. There is also a need to understand and act on the policy (local to global) that impacts management of indigenous livestock.

25. The baseline cost for this project component is estimated to be \$ 1,067,300. These costs are based on on-going project related activities in the four countries which include: characterization of native cattle and sheep; breed improvement/upgrading through crossbreeding; market studies; nutritional and management studies. The costs includes the cash by national governments and other donors within countries, and regional donors (IAEA/FAO) for staff time salaries, cost of equipment and chemicals and also for field and laboratory experimentation.

Capacity of stakeholders and knowledge of DSTs

26. University-level education in the four project countries includes courses and training in animal breeding, genetics and reproductive management. There is some specialization in breed characteristics, phenotypic characterization, and some essential facilities are available, however the capacity that does exist is inadequate to address the project objectives. Most importantly, capacity to carry out breed survey methodologies, genetic improvement, molecular characterization, and livestock market and policy analysis, five of the most important skills needed to implement this project, is weak or non-existent.
27. There are institutional structures, such as artificial insemination centers and veterinary hospitals in the project countries, but their capacity to support FAnGR management is limited due to poor facilities and inadequate skills at the national levels.
28. Farmers understand the value of indigenous breeds to varying degrees, and in some cases (e.g. pig farmers in Sri Lanka) farmers cross indigenous breeds and their wild relatives as a breeding strategy. But even among those few farmers, there is insufficient capacity (knowledge, networks and tools) and technical support to apply FAnGR management strategies that effectively increase productivity, market potential, and conservation.
29. Understanding about management, and how its potential value might be addressed in policy and market structures is also inadequate. Basic understanding on the impact of policy and markets on FAnGR management, and its potential returns is needed at all policy-making levels (local to global).
30. Knowledge and understanding about the value of FAnGR is a prevalent issue with implications for each component of this project. There is generally a lack of awareness of the importance of FAnGR and wild relatives as genetic resources for breed improvement among all stakeholder groups. Impacts of policies that favor use and importation of exotic breeds and cross-breeds are not properly understood, even though the consequences of such policies may include loss of valuable genetic diversity and loss of potential income and economic stability for low-input farming communities, adversely affecting their livelihoods.
31. The issue is compounded at several levels and among all of the stakeholder groups. Market dynamics, as discussed above, are considered only in the context of direct monetary return. The gaps in knowledge are not recognized so there is little motivation to address them. Potential improvements to productivity offered by indigenous FAnGR are also little known and not recognized, nor are the management practices that support improved management and production.
32. As mentioned above, decision-makers tend to favor exotic and crossbreeds because improved productivity can be realized quickly. However, this approach is generally unsustainable at the rural community level especially once subsidies have been removed. In addition, shifts of production systems toward large commercial enterprises that use exotic breeds to address urban demand has a direct negative impact on the livelihoods of poor farmers, their livestock products being more expensive to produce. The net result is shrinking and increasingly restricted market opportunity for indigenous livestock products, and loss of indigenous diversity. The situation can be addressed by improving long term productivity of indigenous breeds through genetic improvement so that they become more competitive.
33. The baseline cost for this project component is estimated to be \$ 1,304,433. These estimates are based on on-going project related activities which include: support services for livestock farmers; strengthening of livestock institutes and livestock services; farmer training and capacity building; human resource development; poverty alleviation through livestock development; public awareness programmes; transfer of technology related to livestock breeding, nutrition, disease control, marketing

and management. The cost includes the cash by national governments and other donors within countries for personnel, logistic arrangements for training and staff development, publication costs and for NARS livestock extension and training institutions. Also the IAEA/FAO regional AnGR CRP project provides support for the national focal points to meet regularly and exchange information.

GLOBAL ENVIRONMENT OBJECTIVES

34. Bangladesh, Pakistan, Sri Lanka, and Vietnam hold a globally significant wealth of genetic diversity in domestic livestock species and their wild relatives. This important resource is under heavy and growing pressure from cross-breeding and breed replacement, weak and inequitable access to market structures, and lack of knowledge and capacity. While the stakeholder groups value indigenous livestock breeds to differing extents, and the countries' national biodiversity plans acknowledge the importance of livestock genetic diversity, the overriding attitude is that exotic breeds bring more immediate and greater returns. This attitude has, in part, grown from analyses of market potential that exclude consideration of breed adaptability, the high level of management skills and inputs needed, and subsidy distortions. Such analyses based only on traded commodities ignore the non-market livelihood contributions of these genetic resources.

35. These threats will be addressed through the project components that will build the awareness and capacity for the conservation of conserve FAnGR. The project is designed to influence action at the policy and technical levels through development of tools for application in practical situations. These tools are ultimately intended for use by community groups, NGOs and extension workers and researchers in development programmes involving farmers of both gender groups and farming community. It is particularly important that the role of farmers is fully recognized in this process and that they are given the tools needed to participate in new management schemes. In addition national government agencies must be provided with the tools and knowledge to ensure that policy support management and conservation of FAnGR.

36. Ultimately, the project tools and systems will be promoted for replication to other Asian countries and other parts of the world, and will pave the way for the tools to be adapted and used for other livestock species not covered in this project. It is expected that the impact on conservation of FAnGR will be significant and continue to grow as more countries and communities adopt the tools for their own systems.

GEF ALTERNATIVE

37. When the project is completed, stakeholder groups in the four project countries will have in place the tools for FAnGR assessment, identification of priority breeds, management systems and protocols, capacity to assess market and policy opportunities and weaknesses, and appreciation of the value of applying them to conserve FAnGR. More generally, the results will provide a model for replication both outside of the project countries and with other species of livestock.

Decision Support Tools

38. With significant limitations to financial and human resources comes the need to prioritize those breeds with highest conservation and market values. The proposed project will develop the tools and criteria needed to do this, and the national action plans to guide their use and potential. The project will build the knowledge about existing genetic diversity, including wild relatives. This process will include phenotypic analysis, genetic characterization, and protocols to support breeding decisions. Committees of stakeholders (e.g. farmers and extension workers) at sites, a participatory process to develop and manage herds/flocks and data management systems (in human and technological terms) will ensure the greatest potential return to benefit genetic diversity and human livelihoods.

39. A breed diversity index for selected species and breeds/populations, including wild relatives, will serve as a fundamental tool for national governments to develop strategies for the management of

AnGR diversity, including conservations actions. Application of this analytical framework will allow users to rank breeds and populations for priority conservation and utilisation.

40. Policy and market structure analyses will help to strengthen and manage indigenous breeds. The project will develop the conceptual frameworks for characterizing existing indigenous breed marketing systems and guiding marketing options. In-depth studies of market structures (informal/traditional and formal), conduct (including volumes) and performance (including analysis of supply and demand, as well as covering specific producer/consumer preferences and opportunities for niche markets) will enhance knowledge of market dynamics and how they might relate to indigenous breed values. Gender-sensitive information will also be collected by including women researchers in the investigative teams and by using gender-sensitive participatory methods. The idea is to ensure that indigenous breeds are competitive, and that low-input (poor) male and female farmers can achieve greater benefit and livelihood stability.

41. The project will also build knowledge about the impacts of existing policies and will provide to policy-makers alternatives that improve livestock productivity, enhance incomes, and conserve genetic diversity.

42. The incremental cost of this project component is estimated to be US\$ 3,094,436 of which national government will provide co-financing of US\$ 634,500 (in-kind) and US\$ 200,00 (cash) to cover salaries of their staff participation involved in project implementation, logistical support and use of laboratory, livestock farms and operational facilities for undertaking activities as indicated for Outputs 1.1 to 1.4 of the project logframe. These include: protocol for participatory planning and field testing of recording systems with farmers, extension and research staff of (non)governmental organizations; undertaking field surveys (socio-economic, breed, market and policy); field and laboratory assessment of FAnGR and their wild relatives; and providing all logistic arrangements for undertaking these surveys and laboratory experimentations.

43. Co-financing from others is estimated at US\$ 1,365,000, of which World Vision - Bangladesh will contribute US\$ 123,000 (in-kind) and US\$ 164,000 (cash) to partly support the participatory planning process and the implementation of breeding schemes. ILRI's and others contribution will be US\$ 1,078,000, of which US\$ 528,000 will be in-kind to cover staff time and regional networking, and US\$ 550,000 cash to provide the required international expertise for output 1.1 to 1.4. GEF funds amounting to US\$ 894,936 will be used from partner countries GEF-4 allocations to assist the development of protocols for participatory planning and implementation of recording schemes through conducting focus group discussions with stakeholders; farmer surveys; and part-funding for the development and testing of Decision Support Tools. Also these funds will be used for facilitating the development of models, preparation of training manuals and conducting workshops inviting experts on these fields. The DSTs developed and tested will add a valuable dimension to the global knowledge base for prioritizing and conservation of indigenous FAnGR resources.

Capacity of stakeholders and knowledge of DSTs

44. Tools, systems, and policies to support conservation and sustainable management of FAnGR are of little use without the capacity to apply them. The proposed project will build capacity of key stakeholders to ensure that they are knowledgeable and equipped to apply these tools to support the conservation and use of FAnGR in their respective countries.

45. Representatives of all stakeholder groups with equal participation of both genders will have received training in their respective breeding program roles, and will be actively participating in conservation and management of priority FAnGR. Policy-makers, researchers, and academics will be trained in development of policy frameworks, and academics, extension workers and NGOs, and farmer communities in market analysis. Researchers, academics, extension workers and NGO personnel will be trained in phenotypic

and genetic breed characterization, survey methodologies for FAnGR and wild relatives, and database management.

46. At the completion of the project each of the stakeholder groups will have gained sufficient capacity for application of the tools. Training materials (modules and manuals) will be made available, within the framework of the project and beyond (to support replication efforts).

47. To ensure project sustainability, it is critical that stakeholder groups understand the value and potential of FAnGR. The project will develop stakeholder information and networking systems for sharing and dissemination of FAnGR issues, and a synthesis of the decision support tools so developed and an articulation of how and when to use them. A national FAnGR database will support ongoing management of the critical information, and support integration of databases and websites into relevant institutions. All of these new resources will be promoted through awareness workshops and seminars (local, national, and international), and use of media (television, radio, newspapers, internet).

48. All avenues of project promotion, within the project countries and beyond, will be explored and exploited. The end result will be conservation and sustainable management of indigenous breeds and valuable FAnGR among the selected species in the project countries, the motivation and capacity to maintain the systems introduced through the project, and the models and awareness needed for replication to other countries and species.

49. The incremental cost of this project component is estimated to be US\$ 1,858,000. Of this the countries will provide US\$ 77,500 (in-kind) and US\$ 37,000 (cash). National funds will cover part-funding of postgraduate students, costs for supervisors of postgraduate students, staff time of national experts for conducting various training courses and to provide training facilities and logistic arrangements, including subsidized accommodations and catering for the participants, wherever possible for activities as indicated for Outcome 2 of the project logframe. The national contribution will also be used for providing support for conducting awareness workshops, field demonstrations/exhibitions, local media facilities for broadcasting and modifying the existing extension packages and for the development of University and Training school curriculum of national and provincial institutions. Total international co-funding is estimated at US\$ 1,029,000, ILRI will provide US\$ 140,000 cash and together with others will provide US\$ 700,000 in-kind to assist in the preparation of public awareness materials on the conservation and utilization of animal genetic diversity, and its dissemination. In addition FAO will provide in-kind contribution of US\$ 96,000 to assist in preparation of breeding protocol, action plans and setting of animal resource databases, and World Vision - Bangladesh will provide US\$ 37,000 (in-kind), and US\$ 56,000 cash to cover costs of dissemination of project findings in Bangladesh. GEF funds of US\$ 714,500 will be used from partner countries GEF-4 allocations to cover part-funding of postgraduate students field work related to the project, capacity building for farmers and local communities, provincial training institutions, academic and national research institutes, and for training on the use of decision support tools and FAnGR database management and dissemination. The partner countries GEF-4 contribution will also be used for documentation of successful experiences from the project and their publication; translation of training manuals and other relevant publications, and preparation of policy briefs, and disseminating public awareness materials for conservation and utilization of animal genetic diversity, publishing the project results and making available the information to through various channels for wider circulation.

Project Management and M&E

50. The incremental cost of project management component is estimated to be US\$ 811,334. ILRI will provide US\$ 90,000 cash and together with others will contribute a total of US\$ 230,000 in-kind for regional project management which includes office space, and supplies. National governments will provide US\$ 23,000 cash and US\$ 95,000 in kind. US\$ 373,334 available from partner countries GEF-4 allocations will cover the costs related to the National Project Implementation Units, which include allowances for program assistant and accountant for each country, National Steering Committee's work, National Site Coordinating Committees and Site Teams meetings, National Project Director's travel, office equipment and direct administration charges. The National Project Director will be an employee of the national executive agency. Costs of National Directors are partly covered by national in-kind contributions. GEF funds will also be used to support the full time regional project coordinator; travel of project leader and project coordinator; International Steering Committee's work, and the costs (\$90,000) related to project monitoring and evaluation activities including mid-term and final evaluation of the project (as specified in the Monitoring and Evaluation plan, table 4). These funds will be also used in support development and dissemination of public awareness materials for conservation and utilization of animal genetic diversity, publishing the project outcomes into publications and newsletters and making available the information to its web site for wider circulation.

COSTS

51. The incremental cost matrix that follows shows the incremental costs and benefits of the project by project output. Total baseline expenditures are estimated to be US\$ 2,371,733. The alternative is estimated to be US\$ 8,135,503. The incremental cost, US\$ 5,763,770, is the estimated expenditure for carrying out the proposed project activities. US\$ 1,982,770 (34% of the total needed) is requested from the GEF. National and international project partners and donors will provide the balance of funding.

TABLE 1: COSTS AND INCREMENTAL ANALYSIS

	Baseline (B)	Alternative (A)	Increment (A-B)
Global benefits	<ul style="list-style-type: none"> • No systematic efforts to conserve animal genetic diversity through better utilization • Lack of understanding of the importance of indigenous genetic diversity leading to genetic erosion • Services/benefits provided by indigenous animal resources are not valued in formulating breeding strategies which often favors the use of imported breeds • Indigenous FAnGR underutilized, • Breeding policy/plans to improve productivity of indigenous animal resources are nonexistent • Mechanism/tools for prioritization and conservation of globally/regionally/nationally economically important species/breeds/traits of FAnGR and wild relatives are lacking <p>Baseline: US\$ 2,371,733</p>	<ul style="list-style-type: none"> • Tools for decision-making available to prioritize and conserve significant FAnGR and their wild relatives • Importance and credibility of indigenous animal resources recognized • Livestock development plans will include breeding strategies/plans for indigenous livestock • Use and productivity of indigenous livestock breeds increased through better management and feeding <p>Alternative: US \$ 8,135,503</p>	<p>Increment: US\$ 5,763,770</p>
Domestic benefits	<ul style="list-style-type: none"> • Knowledge about priority breeds and the capacity to manage them are weak • Lack of expertise in molecular characterization FAnGR • Policy and legislation to address indigenous genetic diversity is inadequate, and formulation of policies and laws is neither participatory or consultative • Weak or nonexistent market access and infrastructure addressing issues related to FAnGR 	<ul style="list-style-type: none"> • Essential competencies (5 MSc. level qualified staff per country) on molecular characterization, breed surveys, markets and marketing, policy and legal issues, and database management will be developed • Capacity to make decisions and act on important aspects of FAnGR • Participatory and consultative mechanism in place and policy briefs supporting enhanced conservation of animal diversity made available 	

Outcome 1: Enhanced conservation and management of FAnGR diversity using tools for decision-making	<ul style="list-style-type: none"> • Breeding systems for indigenous FAnGR non existent • Knowledge on cost-benefit analysis of breeding programmes are weak • Lack of analytical framework to assess policy and marketing options of FAnGR 	Provision of appropriate FAnGR for use in different production systems in ways that do not compromise resilience of these systems, - based on technical evidence	Bangladesh: US\$ 863,520 Pakistan: US\$ 639,750 Sri Lanka: US\$ 689,250 Vietnam: US\$ 602,750 Regional: 299,166 Total: US\$ 3,094,436 Co-finance: US\$ 2,199,500 Cost to GEF: US\$ 894,936
	Bangladesh: US\$ 232,340 Pakistan: US\$ 253,785 Sri Lanka: US\$ 81,975 Vietnam: US\$ 499,200 Regional: 0 Total: US\$ 1,067,300	Bangladesh: US\$ 1,095,860 Pakistan: US\$ 893,535 Sri Lanka: US\$ 771,225 Vietnam: US\$ 1,101,950 Regional: 299,166 Total: US\$ 4,161,736	

Outcome 2: Increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels	<ul style="list-style-type: none"> • Training to characterize and assess animal genetic diversity, and to prioritize breed conservation strategies, data collection and processing, socio-economic issues and other areas related to conservation and utilization, and sustainable management of genetic diversity not available • Training for farmers, local communities, NARC research and extension staff, University academics and policy makers not available • Knowledge and awareness materials on the value of FAnGR and wild relatives is non-existent • National Livestock Development and Plans (NLDP) and National Action Plans (NAP) do not include FAnGR (and their wild relatives) • National livestock database for FAnGR and wild relatives non-existent 	<ul style="list-style-type: none"> • Farmer groups/associations established with the task to conserve and enhance utilization of indigenous animal genetic resources • Male and female farmers have increased leadership capacity and participate in national decision making fora • Training manuals made available and stakeholders trained on the various expertise needed for their role in project implementation and thereafter • Awareness on the importance and role FAnGR and wild relatives created (National/ international workshops/seminars, media programs (radio/TV/newspaper), exhibitions/open days) at national and global levels • NLDP and NAPs to include FAnGR and wild relatives • Databases/Website on FAnGR and wild relatives launched in each country, and the project website (www.bpslv.org) updated and linked 	
	Bangladesh: US\$ 420,381 Pakistan: US\$ 595,428 Sri Lanka: US\$ 25,848 Vietnam: US\$ 262,776 Regional: 0 Total: US\$ 1,304,433	Bangladesh: US\$ 728,356 Pakistan: US\$ 849,003 Sri Lanka: US\$ 345,323 Vietnam: US\$ 601,751 Regional: US\$ 638,000 Total: US\$ 3,162,433	Bangladesh: US\$ 307,975 Pakistan: US\$ 253,575 Sri Lanka: US\$ 319,475 Vietnam: US\$ 338,975 Regional: 638,000 Total: US\$ 1,858,000 Co-finance: US\$ 1,143,500 Cost to GEF: US\$ 714,500

Project Management and M&E		Effective national and global collaboration to produce project outputs with required standards of monitoring, evaluation and active participation of stakeholders in project activities at national and global levels.	Bangladesh: US\$ 128,734 Pakistan: US\$ 133,734 Sri Lanka: US\$ 129,734 Vietnam: US\$ 133,732 Regional: US\$ 285,400 Total: US\$ 811,334 Co-finance: US\$ 438,000 Cost to GEF: US\$ 373,334
		Bangladesh: US\$ 128,734 Pakistan: US\$ 133,734 Sri Lanka: US\$ 129,734 Vietnam: US\$ 133,732 Regional: US\$ 285,400 Total: US\$ 811,334	

F. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED AND OUTLINE RISK MANAGEMENT MEASURES:

Risk*	Rating	Risk Mitigation Measure
National and local Governments neither demonstrate sufficient political will nor commit adequate human and financial resources	L	Key policy-makers engaged in the design and budgeting of the project and serve as members of National Steering Committees which, in turn, are based on each country's national policies and organizational set-up.
Field-level stakeholders [farmers, producer associations, (non-govt. extension and project staff] do not work together effectively nor relate to national policies	M	In the pilot-site areas representative stakeholders serve on Site Coordinating Committees and one participates in the NSC to facilitate discussion, information exchange, decision making and more effective implementation of project activities.
Natural disasters like floods, droughts (climate changes risks), earthquake, tsunami at project sites	U	Close linkages between project and relevant govt. departments will be put in place to mitigate the impacts on the project
Disease outbreaks (e.g. avian flu) at project sites	L	Close linkages between project and relevant govt. departments will be put in place to mitigate the impacts on the project

*Risk rating – H (High), S (Substantial), M (Modest), L (Low), U (Unpredictable).

G. EXPLAIN HOW COST-EFFECTIVENESS IS REFLECTED IN THE PROJECT DESIGN:

52. There have been limited national investments in the conservation and use of indigenous FAnGR. Often unproductive, investments in government-designed livestock development programmes that were not well-grounded in the realities of production systems and their input and output market infrastructures. By shifting the focus to engaging all stakeholders (from farmers of both gender to national-level Ministries) and providing them with decision-support tools, the project will overcome previous failings by increasing the awareness, knowledge and capacity to better utilize (and therefore conserve) FAnGR diversity and improving the productivity of indigenous livestock. The change in approach is expected to markedly increase the cost-effectiveness of the delivery of public- and private-good benefits.

53. Financial sustainability for maintaining the overall system structures (e.g. policy and markets, prioritization of FAnGR conservation and production at federal and provincial levels) will also depend on the demonstration of feasibility provided during the life of the project. The in-kind co-finance commitments towards the implementation of project activities during the PDF B phase, and both in-cash and in-kind co-finances pledged by national and regional/ provincial governments for the implementation of the full project, is an indication of the importance given by the respective governments towards conservation and utilization of FAnGR and wild relatives. Realization of the value of FAnGR as a means to alleviate rural poverty will provide impetus for allocation of more national and provincial/regional government funds, specifically budgeted towards conservation and improved utilization of FAnGR, thereby securing the project objectives and goals. Even a 5% allocation towards conservation and utilization of FAnGR from the current budgetary allocation for the livestock sector in the collaborating countries will suffice and ensure its sustainability.

PART III: INSTITUTIONAL COORDINATION AND SUPPORT

A. PROJECT IMPLEMENTATION ARRANGEMENT:

54. A detailed national project management and implementation structure and its linkage with the regional (multi-country) coordination was discussed for each country during PDF B phase and are described in Appendix E. A common agreement was reached among partners for the Project Implementation Unit across all the four countries. The four participating countries have in place the institutional structures needed to carry out the project. The National Project Implementation Unit will have a National Project Director (staff member of the National Executive Agency), an Administrative Secretary/Accountant (hired by the project), and Technical Advisors. The country partners discussed the need for various committees at national and site levels for better coordination of project activities and the various committees proposed are: a National Steering Committee, a Site Coordination Committee, and National Teams of Technical Experts. During the PDF B phase, National Steering Committees (NSC) have been constituted in each of the four countries, and regular meetings were conducted to ensure the smooth running of the project activities. Members are drawn from the key stakeholders: Ministries or Departments of Agriculture and Livestock, Rural Development, Environment, Wildlife; National Agricultural Research Institutes; National Universities, IUCN, FAO, NGO and Community-based livestock groups (e.g. farmer organizations and associations).

55. The actual composition (in terms of the actual stakeholder institutions involved) varies slightly between countries, but the overall structure is the same. The constitution and responsibilities of these committees is described in Appendix E. The NSC will take responsibility for national coordination and linkage to the PSC. Each National Executive Agency will appoint a National Project Director, who will manage the overall project activities, undertaking all duties of the project management at national level as will be assigned under the supervision of the Project Leader, and in close collaboration with Regional Project Coordinator. He or she will be responsible for compiling national reports, budgets and work plans. In addition, activities at each of the nine project pilot sites will be overseen by Site Coordinating Committees.

56. ILRI will serve as the executing agency at the regional level. It will oversee the Project Management Unit (PMU). The project will be part of ILRI project BT02 “Characterization of Animal Genetic Resources”. A senior scientist from the ILRI’s animal genetic resources group will directly supervise the project and act as Project Director (whose time is contributed by ILRI), The PMU will also include a full time Project Coordinator (to be hired by ILRI) and a Programme Assistant (to be hired by the project), and Technical Advisors. The PMU will ensure that national coordinating mechanisms are functioning effectively, progress and financial reports are submitted on time and that information is integrated and provided to the Project Steering Committee (PSC) in a timely fashion.

57. An International Steering Committee (ISC) will be established. Membership will include representation from each of the Project Implementation Units at national level (National Project Director), GEF focal points of participating countries, ILRI (Project Leader, Regional Project Coordinator), Representative from FAO and a UNEP/GEF representative, ISC responsibilities includes: review annual summary progress reports and financial reports,

provide policy guidance to the project, assist PMU in developing linkages with other related projects, and overall guidance for the project implementation. ISC will be meeting once a year.

PART IV: EXPLAIN THE ALIGNMENT OF PROJECT DESIGN WITH THE ORIGINAL PIF:

The project is fully consistent with the approved PIF. Only some changes of the project component budgets were made to properly reflect the budget necessary for implementation of project activities and achievement of project objectives.

PART V: AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for CEO Endorsement.	
<p>GEF Agency Coordinator</p> <p>Maryam Niamir-Fuller Director Division of Global Environment Facility (GEF GEF) Coordination UNEP</p> 	<p>Project Contact Person</p> <p>Dr. Marieta Sakalian UNEP/DGEF Programme Management /Liaison Officer (CGIAR/FAO), Biodiversity FAO Headquarters TCAP Unit , D708 Viale Delle Terme di Caracalla 00153 Rome Italy</p>
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ANNEX A: PROJECT RESULTS FRAMEWORK

<p>Project Planning Matrix (PPM)</p>	<p>Project title: “Development & Application of Decision-Support Tools to Conserve & Sustainably Use Genetic Diversity in Indigenous Livestock & Wild Relatives”</p>	<p>Date: 1.08. 2008</p>
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<p>Objectives and Outcomes/Outputs</p>	<p>Objectively Verifiable Indicators</p>	<p>Means of Verification</p>	<p>Important Assumptions</p>
<p><i>Development Objective:</i></p> <p>Conservation of indigenous livestock for future generations and their increased contribution to livelihoods through enhanced use</p>	<p>Population of indigenous livestock of the targeted species remain stable or increase in size (5-10%), with concurrent 5-10% average increase of farmer income from indigenous FAnGR</p>	<ul style="list-style-type: none"> • Project study and independent evaluation reports, that quantify indigenous animal genetic diversity and enhanced off-take 	<ul style="list-style-type: none"> • Stable and favorable economic and political environment, and commitment from policy makers’ and partners’, and project goal consistent with policies and priorities on poverty alleviation
<p><i>Immediate Objective:</i></p> <p>Effective tools to support decision making for the conservation and sustainable use of indigenous FAnGR and their wild relatives in developing countries developed and made available</p>	<p>DSTs and management packages or recommendations made by the project are in use in at least one project site (e.g. community) supporting conservation and/or increased use of at least one indigenous breed by end of year 5</p> <p>National Livestock Development Plan (NLDP) and strategies in each country revised to include the use of the DSTs and implementation initiated at least in one country by end of year 5;</p> <p>At least three livestock institutions/farmers organizations per country raising target species participate in decision making fora or workshops for using developed DSTs to increase the productivity of indigenous FAnGR by end of year 5;</p>	<ul style="list-style-type: none"> • Project reports and independent evaluation reports • Documentation on tools available and distributed • Independent technical evaluation of the decision support tools 	<ul style="list-style-type: none"> • National and local governments provide adequate support and resources and an appropriate enabling environment (extension, policies, incentives, etc.) for the conservation and sustainable use of AnGR

Objectives and Outcomes/Outputs	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
	All the four countries establish national FAnGR databases and these are institutionalized and functioning by end of year 5.		
<p>Outcome 1: Enhanced conservation and management of FAnGR diversity using Decision Support Tools (DST)</p>	Conservation and/or use action taken in at least one project site and involving at least one target species, using one or more of the DSTs developed by this project (by end of year 5)	<ul style="list-style-type: none"> • Project reports and independent evaluation reports, including breed survey information • Official national policies laws and regulations 	<ul style="list-style-type: none"> • Active interest, involvement and support by governmental officer, extension services, and livestock keepers
<p>Output 1.1. Appropriate breeding tools for low input production systems are developed and evaluated.</p>	<p>Working draft of practical manuals on breeding schemes (at least 2 manuals per partner country; in English and in national/local languages), including options and processes for various species and wild relatives (where applicable) available by end of year 1, revised throughout project, with final version published and publicly available by year 5</p> <p>At least one breeding schemes established by the project functional and sustainable at the end of the project for each species by year 5.</p>	<ul style="list-style-type: none"> • Breeding and animal management protocols, data on animal procurement and performance records on procured animals, and training reports • Progress and research reports, minutes of committee meetings workshop reports, annual reports, and scientific publications (conference proceedings, journal articles) 	<ul style="list-style-type: none"> • Local communities and farmers participate and are supportive, current interest by farmers to be involved in the ‘cooperative breeding efforts’ is maintained throughout and beyond the project • No livestock disease outbreak to necessitate quarantine that would prevent farms visits and animal movements. Supportive political environment is maintained to ensure continued enabling socio-political environment, including support by extension service personnel.
<p>Output 1.2. An effective tool for cost-benefit analysis of breeding programs for alternative breeds evaluated and made available</p>	Comparative market and non–market advantages of at least one indigenous breed, crossbreed and exotic breed for each species documented by end of year 4;	<ul style="list-style-type: none"> • Survey guidelines, protocols, and computer based analytical tools available • Periodic project and workshop reports, and scientific publications 	<ul style="list-style-type: none"> • Field activities not disrupted by livestock disease outbreaks or catastrophes of other kinds • Appropriate candidates for training identified • Active interest and

Objectives and Outcomes/Outputs	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Output 1.3. Analytical frameworks for assessment of policy and marketing options (existing and alternatives) for FAnGR developed, evaluated and made available</p>	<p>Market strategies and options for at least one commodity from indigenous FAnGR products (meat in goat and pigs, meat and eggs in chicken) identified for at least one production system in each country by year 5.</p>	<ul style="list-style-type: none"> • Policy and market briefs, national and international workshop proceedings, and national supervisors/international consultants reports • Training materials for farmers, extension workers and research groups 	<p>participation of farmers</p> <ul style="list-style-type: none"> • Active interest, involvement and support by governmental officer, extension services, and livestock keepers
<p>Output 1.4. Tools for diversity assessment and for setting cost effectiveness conservation priorities developed and made available</p>	<p>Breed diversity index developed for each project species by end of year 4</p> <p>Breeds and populations for each species ranked in each country for the implementation of conservation strategies at country level by end of year 5.</p>	<ul style="list-style-type: none"> • Published manual, reports and scientific papers Technical reports of assessments of diversity for both AnGR and wild relatives 	<ul style="list-style-type: none"> • Farmers on-site are cooperative • Farmers have understanding and awareness about use of animal diversity
<p>Outcome 2: Increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels</p>	<p>Action plans for the conservation and utilization of FAnGR and wild relatives developed using information provided by the DSTs in at least two of the project countries by end of year 5.</p> <p>10-20% of staff from all stakeholder groups involved in the project (farmers of both gender, and farmer groups, research and extension staff of NARs, NGO staff, policy makers) are applying the DSTs developed by the project for management of FAnGR by end of year 5</p>	<ul style="list-style-type: none"> • Participant lists of community workshops and national meetings, training workshop Documents from institutional governmental organisation emphasizing use of DSTs, application of their finding and conservation and utilisation of FAnGR and their wild relatives 	<ul style="list-style-type: none"> • Collaborating institutions are open to adoption of <i>in situ</i> conservation approaches to manage indigenous animal resources • Ongoing positive political climate and support
<p>Output 2.1. Capacity of stakeholders to apply the developed Decision Support</p>	<ul style="list-style-type: none"> • Four training programs conducted in a each country, tailored to each specific stakeholder needs (policy makers, extension officers, researchers and academics, 	<ul style="list-style-type: none"> • Participant lists of community workshops and meetings • Project reports including analysis 	<ul style="list-style-type: none"> • Decision makers are open to adoption of <i>in situ</i> conservation approaches to

Objectives and Outcomes/Outputs	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Tools for conservation and sustainable management/ use of FAnGR and their wild relatives enhanced	<p>farmers' organization) on the use of DST for conservation and management of FAnGR and their wild relatives held by year 4.</p> <ul style="list-style-type: none"> • At least one University curriculum in each country include specific courses on indigenous FAnGR management and conservation using examples provided by the DSTs and with course material being applied in practical training by year 5. • At least 2 researchers in each country with disciplinary expertise on <i>in situ</i> conservation and management of FAnGR available by the end of the project. <p>At least one farmers association in each country participates in national programmes/committees on FAnGR conservation as a result of the project by end of year 5.</p>	<p>of the responses from national workshops and NSC meetings</p> <ul style="list-style-type: none"> • Training course evaluation and reports • Training database, manuals, lecture notes and presentations 	manage indigenous animal resources
<p>Output 2.2.</p> <p>Knowledge and understanding of value of FAnGR and wild relatives increased and replication strategies made available</p>	<ul style="list-style-type: none"> • Awareness workshops held every year during project life to increase knowledge and understanding of value of FAnGR and wild relative • At least 1 TV/radio programme, 1 exhibition, 2 open days and 4 newspaper articles/advertisement to increase knowledge and understanding of value of FAnGR and wild relative published in each country by year 3. • One National Domestic Animal Genetic Resources Information System (DAGRIS) developed and freely available on the web for use by end of year 4, interlinked to global DAGRIS by end of year 5; • Project findings disseminated in four national workshops involving other partners by year 3 - 4, and one international workshop involving other countries held by year 5. 	<ul style="list-style-type: none"> • Increase use of animal diversity on-farm (site visits) • Breed associations (indigenous animals) • Project documents, newsletters, audio visuals, websites, workshop proceedings, scientific and popular articles 	<ul style="list-style-type: none"> • Public awareness information reaches appropriate stakeholders • Commitment of the project partners is ensured • National media are receptive

ANNEX B: RESPONSES TO PROJECT REVIEWS

B1: STAP Review

Project Number: TBA
Project Title: Development and Application of Decision-Support Tools to Conserve and Sustainably Use Genetic Diversity in Indigenous Livestock and Wild Relatives
Countries: Bangladesh, Pakistan, Sri Lanka, Vietnam
STAP Reviewer: **Dr. J. Michael Halderman,
Independent Consultant, Berkeley, CA**
Date: November 27, 2005

Key Issues

1) Scientific and technical soundness of the project.

The project has been carefully and thoroughly designed following sound technical and scientific principles. Evidence for this conclusion can be found in the Project Brief and the numerous annexes. The project's development objective is to improve human livelihoods through enhanced capacity to conserve and sustainably use Farm Animal Genetic Resources (FAnGR), and their wild relatives, in developing countries. The project's immediate objective is to develop and make available effective Decision Support Tools (DSTs) for the conservation and sustainable use of indigenous FAnGR and their wild relatives in developing countries.

The project's development objective and general approach are appropriate. It is certainly necessary to (a) develop suitable capacity and to build awareness among the key stakeholder groups regarding the value and potential of FAnGR and (b) identify and manage priority populations of FAnGR. It is also relevant to strengthen and monitor policy and legal frameworks, and to develop suitable market structures and conditions. Based on work carried out during the PDF-B phase, the project will target priority sites and goat, pig and chicken breeds for conservation and sustainable use in the four participating countries (Bangladesh, Pakistan, Sri Lanka, Vietnam). The project will develop DSTs to identify and conserve priority species, build awareness and capacity, and promote the key legal, policy and market interventions.

Specific measures have been taken to ensure technical and scientific soundness of the project. UNEP will be the implementing agency and ILRI the executing agency for the project at the global level. A global Project Management Unit (PMU) will be located at ILRI headquarters in Nairobi, and the project will be part of ILRI project BT02 "Characterization of Animal Genetic Resources." The project leader of the ILRI project will be the project director of this GEF project, providing technical and management leadership. The GEF project being reviewed here will draw on eight years of work already carried out by ILRI and its partners, and by collaborating advanced research institutes in developed countries, on assessment of genetic diversity in farm animals. A Project Steering Committee (PSC) will be established to oversee project implementation. The PMU and PSC will be supported by a Project Advisory Technical Panel that will include technical advisers from ILRI as needed for different aspects of the project. In each of the four participating countries an appropriate national executing agency has been identified: Bangladesh Agricultural University, Pakistan Agricultural Research Council, University of Peradeniya (Sri Lanka), National Institute of Animal Husbandry (Vietnam). A national steering committee (NSC) has been set up in each of the four participating countries that includes relevant government ministries, research institutes, universities, FAO, IUCN country offices, etc. (See Annex E – Public Involvement Plan Summary)

THE COMBINATION OF THESE COMMITTEES AND THE PROJECT'S ADAPTIVE MANAGEMENT APPROACH SHOULD ENABLE THE PROJECT TO MAINTAIN HIGH TECHNICAL AND SCIENTIFIC STANDARDS. (FOR ADDITIONAL INFORMATION, SEE POINTS 6 AND 10 BELOW.)

2) Identification of the global environmental benefits and/or drawbacks of the project.

The project aims to (a) develop and make available decision support tools and (b) build human and institutional capacity to conserve globally significant FAnGR. Although the project will operate in Bangladesh, Pakistan, Sri Lanka and Vietnam, it is intended that the value of the project will be much wider as the environmental benefits are global as well as local. Maintaining most species of livestock and crops (and their wild relatives) important to agriculture benefits not only the country concerned but other countries and regions as well. In addition to conserving globally significant FAnGR within the four identified countries, the project aims to develop a model for conserving globally significant FAnGR that leads to replication in other Asian countries and beyond. In addition, it is intended that the decision support tools developed be adapted and used for other livestock species.

Project documents appropriately explain that livestock are very important in most developing countries, including in the four countries in which the project will be carried out, and that the livestock sector offers particular scope for poverty reduction. Genetic erosion in farm animals is much more serious than in crops because the current gene pool of animals is much smaller and very few wild relatives remain. The documents correctly emphasize that: (a) FAnGR in tropical environments possess valuable traits that include resistance to disease, adaptation to harsh environments (including heat tolerance) and ability to effectively utilize poor quality feeds; (b) such traits are very important in achieving sustainable agriculture in low input production systems. In spite of these advantages, little is currently known about which indigenous breeds hold significant genetic diversity or specific genes that should be targeted for conservation and/or incorporated into breeding programs. And, it is particularly significant that in most developing countries, including the four in which project activities will be carried out, there is very limited (a) recognition of the value of indigenous breeds and (b) existing capacity and skills to identify and manage FAnGR. Similar points are also valid for wild relatives of FAnGR. The most important current threat to FAnGR is crossbreeding and breed replacement.

It is clear that, in spite of some relevant activities within the four countries under the baseline scenario, achieving the global benefits indicated above will require the incremental funding requested of the GEF and international project partners. (See Annex A for additional information.)

3) Project fit within the context of GEF goals, operational strategies, programme priorities, Council guidance and relevant conventions.

The project fits well with the GEF's relevant goals, strategies, priorities etc. The project is particularly relevant to - and fits well with - the GEF's Operational Program # 13, "Conservation and Sustainable Use of Biological Diversity Important to Agriculture," and to the GEF's strategic priority to mainstream biodiversity conservation in production sectors and landscapes. The project also fits well with the CBD, and each of the four participating countries ratified the CBD in 1994.

4) Global context: analysis of the rationale for the project's global approach.

The four countries concerned (Bangladesh, Pakistan, Sri Lanka, Vietnam) contain a great wealth of globally significant genetic diversity in their domestic livestock and wild relatives. Conserving and sustainably using this genetic diversity will be valuable within the four countries participating in the project. But the project has a more ambitious goal – to develop effective tools for key stakeholders in developing countries to enable them to make decisions that enable and promote the conservation and sustainable use of indigenous FAnGR and their wild relatives. The intended result is a model that can

be used by other developing countries for chickens, goats and pigs (the targets of the present project), as well as for other indigenous FAnGR and their wild relatives. The rationale presented in the Project Brief and annexes is generally sound, and this project has the potential to develop an approach to successfully promote such conservation and use of FAnGR and its wild relatives in developing countries. (Some questions regarding the project's current approach are discussed under points 6 and 10 below.)

5) Replicability of the project.

The project explicitly aims to develop decision support tools and the necessary capacity to provide the key stakeholder groups in the four project countries with the skills and tools to carry out FAnGR assessment, identification of priority species, management systems and protocols, capacity to assess market and policy opportunities and weaknesses, and appropriate appreciation and understanding of the value of applying them to conserve FAnGR. In addition, as noted above, the project deliberately aims to develop a model for replication both within the four countries concerned and outside the project countries, including with other species of livestock and their wild relatives. To what extent the model will be in fact useful for replication depends on the quality, relevance and timing of the planned DSTs and capacity building efforts.

In each of the four participating countries, on the basis of PDF-B activities project sites have been selected: four sites in Bangladesh and three sites in each of the other countries. These sites will be the focus of project interventions at the local level. The criteria for site selection are sound and support replicability.

6) (Anticipated Effectiveness and) Sustainability of the project.

First, some comments on the anticipated effectiveness of this project. Based on work carried out during the PDF-B phase, project design involves a number of key activities aimed at achieving enhanced conservation and management of FAnGR diversity using the Decision Support Tools to be developed by the project. The DSTs will draw on work carried out by ILRI (mentioned under point 1 above), including methodologies developed concerning the assessment of genetic diversity in livestock populations and its economic valuation.

The DST under project Output 1.1 is an evaluated and adapted community based open nucleus breeding system (ONBS) that aims to improve productivity of target species, both domestic and wild. Project designers correctly point out that, during the five years of the project, the primary conservation and economic achievements will be the improved management that results from introducing the ONBS systems. Breeds with short generation times have been selected to demonstrate how these ONBS systems can support longer term conservation of genetic diversity that will be only partially visible during the project period. The approach and assumptions regarding the ONBS are sound, although some of the data required may be difficult to collect.

Under Output 1.2 is the development and availability of a DST for cost benefit analysis of breeding programs for alternative breeds incorporating market and non-market values of FAnGR. As sustainable conservation of indigenous FAnGR requires, in part, that it be competitive with exotic breeds (both marketable and non-marketable products), this tool aims to ensure that the benefits of indigenous FAnGR are documented and can be supported. Project designers clearly recognize the importance of producer preferences and value for non-market traits. It may well be a major challenge to obtain appropriate and accurate data, and this would affect the planned sophisticated data analysis. In the four participating countries, the generally low quality of existing data on livestock related issues is not encouraging. (The value of obtaining sound qualitative data in regard to obtaining and maintaining support and cooperation of local farmers is discussed under point 10 below.)

Output 1.3 is the development and availability of analytical frameworks for assessment of policy and marketing options (existing and alternatives) for FAnGR. Project designers state that understanding market issues is essential to execute an effective market strategy for indigenous FAnGR products, and the project will carry out stakeholder analysis. The project will also develop a conceptual framework for characterizing market systems and guiding market options based on market and consumer analysis. The policy/legal work will include policy modeling using mathematical models and policy analysis matrices, policy analysis framework testing, analysis of the impacts of existing policies and alternatives through the application of the models, assessment of the model in other countries. The models will be used to analyze the real and potential impacts of existing policies and alternative approaches.

It is certainly correct that policy, legal and marketing issues are extremely important in regard to the conservation and sustainable use of FAnGR and their wild relatives and, therefore, it is important that the project address them. Two baseline studies carried out during the PDF-B phase, one on livestock marketing and the other on policy and legal issues, are presented in Annexes K and L. These two annexes describe the current situation in the countries involved, including the limited understanding of marketing issues and the poor quality of the data available (and suggest the difficulties of obtaining sound data), and lead one to question the appropriateness and usefulness of the very sophisticated approaches proposed by the project in regard to developing policy and marketing options. Perhaps more emphasis could be given to more practical approaches to these issues, and to better understanding how to influence policy-making and promoting the implementation of sound policies once made. Output 1.4 is the development and availability of tools for diversity assessment and for setting cost effective conservation priorities. This output is very relevant to the project.

Outbreak of livestock disease is a potentially key risk to successful project implementation and sustainability. The current concern with avian influenza is clearly one example, particularly in regard to Vietnam. This reviewer agrees with the project designers that this risk emphasizes the value of and urgent need to assess the diversity of chicken genetic resources in Vietnam, and other affected countries, and to conserve these resources.

The Project Brief clearly and accurately identifies two issues that are key to project sustainability: (1) building awareness about FAnGR's potential livelihood and biodiversity value, and (2) demonstrating real improvements in regard to the stability and levels of income of those raising FAnGR. It is therefore important that the project focus on achieving success in these two areas. If the farmers involved in project activities improve their income as a result of project activities it will have a snowball effect in regard to maintaining and sustaining key aspects related to the project. The successful implementation and sustainability of the project will be determined largely by such pragmatic factors.

Secondary Issues

7) Linkages to other focal areas.

The project is primarily concerned with agricultural biodiversity (OP #13) and is relevant to the cross-cutting theme of land degradation.

8) Linkages to other programmes and action plans.

The project is designed to link with and build on existing policy and initiatives taking place within the four participating countries, as well as several complementary projects taking place in other countries. The project also supports the objectives of Agenda 21 and the Millennium Development Goals. Some existing projects that the GEF project being reviewed here will benefit from and contribute to include:

- the GEF/UNDP project, "*In situ* conservation of endemic ruminant livestock in West Africa" (ILRI is also the executing agency of the project)

- the FAO programme, “State of the World’s Animal Genetic Resources”
- The CIRAD *et al.* supported BIODIVA project, “Characterization and valorization of domestic and wild animal biodiversity in the mountainous areas of Vietnam”

9) Other beneficial or damaging environmental effects.

The project aims to produce local, national, regional and global environmental benefits resulting from the conservation and sustainable use of FAnGR and their wild relatives in developing countries. If successfully implemented, the project should achieve these positive results. No damaging environmental effects have been identified.

10) Stakeholder involvement.

Project designers have done an impressive job of involving a wide variety of stakeholders in project preparation. This work has taken place at the project sites and at national level. The main stakeholder groups identified in the Project Brief are farmers and farmer communities, researchers and academics, extension workers, NGOs and community leaders, and government agencies and ministries operating in the livestock sector of the four project countries. A national project management and implementation structure, and its linkage with the global coordination unit, was discussed for each country during the PDF-B phase. (Considerable detail is provided in Annex E.) Project documents indicate that linkages between and among stakeholder groups, and with international organizations, are weak. The vast majority of livestock owners are poor, unorganized and with little capacity to lobby for their needs and/or to influence policy-making.

If the project is to achieve its objectives and produce the anticipated outputs it must obtain and/or maintain the support and cooperation of the various stakeholders. Project designers are keenly aware that to develop the community based open nucleus breeding system (ONBS) and related outcomes requires the active interest and participation of the farmers concerned. One possible risk facing the project is that some key sets of actors (or influential groups or individuals within the sets) may perceive the analytical frameworks intended to assess policy and marketing options as too academic and technical to be useful.

The community based approach taken in this project is consistent with the widespread recognition among rural development professionals that a decentralized, participatory approach is much more effective and sustainable than other approaches. The Project Brief, however, does not explicitly recognize the fact that local communities do not necessarily have a single point of view on issues. Rural communities in developing countries tend to be stratified by age, kinship and gender. In addition, they often reflect different interests based on wealth, involvement in the market, political affiliations etc. These differences can pose significant challenges for those working with such communities, as well as for those within the communities who are trying to reach agreement on contentious issues. In view of the heavy emphasis on the project’s involvement with communities, it might be useful to briefly discuss in the Project Brief the designers’ views on such issues.

There are references in the project documents to (a) the involvement of women in the project and (b) the value of indigenous knowledge. It might be useful to specify what concrete steps will be taken to ensure that these two issues will be effectively followed up during project implementation.

11) Capacity building.

The project places heavy emphasis on capacity building and awareness raising at all levels. This approach is appropriate and necessary as, in all four countries involved, currently there is limited awareness and understanding of the value and importance of animal genetic resource conservation

(specifically FAnGR and wild relatives) and very little capacity to deal with these issues. The project's Outcome 2 and Outputs 2.1 and 2.2 focus directly on capacity building and awareness raising. The approach to awareness raising is suitably broad and includes the use of workshops, TV, radio, newspapers and websites. Capacity building activities will include: training programs tailored to the needs of different stakeholders, establishing at least one university curriculum in each country with specific courses on FAnGR management and conservation, training of at least four researchers in each country on in situ conservation and management of FAnGR, training of at least 50-100 smallholder farmers at each project site on ONBS.

The capacity building efforts are linked to the use by various stakeholders of the Decision Support Tools the project aims to develop. It is therefore essential that the DSTs be effective and be developed according to the project's timetable. If one or more of the DSTs is perceived by one or more sets of stakeholders as not useful or effective - or if it is not available at the scheduled time – this situation could significantly restrict the ability of the project to achieve its goals in regard to the sustainable use and management of FAnGR and their wild relatives. (Such a scenario could also severely limit the replicability of the project.)

To avoid this potential risk to the project, appropriate steps should be taken early on. For example, the Project Brief suggests (paragraph 52) that “Stated preference estimates should ideally (emphasis added) be validated against revealed preference estimates.” The use of participatory rural appraisal techniques is suggested as one method of validation, although the use of the term “ideally” and simply listing some standard PRA techniques suggests this method of validation may be considered optional. Also, as noted above, project documents stress that cooperation by and support of local farmers in the project sites is essential to project success. It is likely that the project's chances of obtaining and maintaining such cooperation from local farmers could be enhanced if farmers' input played a significant role in the development of the cost benefit analysis of breeding programs for alternative breeds (Output 1.2).

The genuine involvement of farmers in the development of relevant DSTs could be critical to their perception of the accuracy of these DSTs and, therefore, to the usefulness and relevance of the project itself. Project documents heavily emphasize quantitative analysis. It might be useful for the project to give additional emphasis to qualitative analysis, for example of the results of the ONBS. It is possible that this could lead to learning significant lessons from the component of the project most visible to rural communities. Some senior government officials and researchers may well need to be convinced by the modeling studies identified in project documents. Collecting and managing the needed data, however, may prove a major challenge that could possibly delay the project and/or limit its usefulness.

Innovativeness of the project.

This is an innovative project dealing with important but poorly understood issues. As the specific Decision Support Tools will be developed during the course of the project, it may be useful to mount a substantial, external mid-term review and final evaluation. The MTR could assist in identifying any needed mid-course changes or corrections, and the final evaluation could aid in learning lessons of experience. No cost information regarding the MTR and final evaluation is available in the project documents, but other GEF-supported projects have had small budgets allocated for these important exercises.

Conclusions and recommendations

This is an important project that should be approved for GEF funding. To what extent the proposed approach will be successful will depend largely on: (a) the quality, relevance and timing of the Decision Support Tools developed by the project and (b) the effectiveness of the capacity building efforts. If successful, the model has considerable potential for replication both within and outside the

four participating countries. Five years may be too short a time period to achieve the project's objectives and outcomes.

Notes re editing

The first sentence of the Project Brief (paragraph 1) contained inaccurate information and seemed inconsistent with information provided in paragraph 3. (I sent an email to UNEP immediately after receiving the project documents regarding this problem and, subsequently, both paragraphs 1 and 3 were revised.)

Paragraph 5: "...multifunctional rules..." should be "...roles..."

Para 21: The sentence with the reference to BLRI under the bullet on Vietnam is out of place.

The title of Annex E ("Public Involvement Plan Summary") might be changed as this annex deals with project coordination and implementation arrangements at the global and national levels.

ACRONYMS: SOME OF THE ACRONYMS USED IN THE PROJECT BRIEF (AND IN ANNEXES A AND B) ARE NOT INCLUDED IN THE LIST OF ACRONYMS.

ANNEX B2: RESPONSE TO STAP REVIEW

(A) Response to STAP Review

Comment 1 (point 6; para 5)

It is certainly correct that policy, legal and marketing issues are extremely important in regard to the conservation and sustainable use of FAnGR and their wild relatives and, therefore, it is important that the project address them. Two baseline studies carried out during the PDF-B phase, one on livestock marketing and the other on policy and legal issues, are presented in Annexes K and L. These two annexes describe the current situation in the countries involved, including the limited understanding of marketing issues and the poor quality of the data available (and suggest the difficulties of obtaining sound data), and lead one to question the appropriateness and usefulness of the very sophisticated approaches proposed by the project in regard to developing policy and marketing options. Perhaps more emphasis could be given to more practical approaches to these issues, and to better understanding how to influence policy-making and promoting the implementation of sound policies once made.

Response 1

The STAP reviewer points out several times, the importance and the need to collect quality data for the successful development of Decision Support Tools (DSTs). We fully agree with this analysis and in this context we would like to point out that the main activities of the year 1 and partly year 2 of the project would be on intensive training of enumerators/data collectors and the collection of quality data.

The point raised above is dealing particularly with the policy, legal issues and it suggests that given the complexity of obtaining sound data in this area, practical approaches rather than complex ones should be the focus of the project. While recognizing such difficulty, we believe it is important to nevertheless spend a substantial effort in obtaining sound data leading to the development of model assessing impact of policy. Indeed, it is essential that policy decisions are made after being fully informed on their putative impacts. In this context approaches/models which will allow comparisons of impact of current and alternative policies will be particularly important. Moreover output 2.1. "Capacity of stakeholders to apply the developed Decision Support Tools for conservation and sustainable management/use of FAnGR and their wild relatives enhanced" include training activities on DSTs uses which will address policy stakeholders amongst others. Also, it should be noted that the increase awareness resulting from activities within output 2.2. "Knowledge and understanding of value of FAnGR and wild relative increased and replication strategies made available" is expected to make an impact on policy maker decisions. Finally, the development of action plans for the conservation and utilization of FAnGR and wild relatives will incorporate the promotion of sound policies.

Comments 2 (point 10; para 2)

If the project is to achieve its objectives and produce the anticipated outputs it must obtain and/or maintain the support and cooperation of the various stakeholders. Project designers are keenly aware that to develop the community based open nucleus breeding system (ONBS)

and related outcomes requires the active interest and participation of the farmers concerned. One possible risk facing the project is that some key sets of actors (or influential groups or individuals within the sets) may perceive the analytical frameworks intended to assess policy and marketing options as too academic and technical to be useful.

RESPONSE 2

We were particularly careful during the PDF-B phase of the project to ensure the participation of representatives from all stakeholders and to involve them closely in the design and the development of the full project. The project will ensure their continuous participation through awareness workshop from the beginning of the project targeting all stakeholders (output 2.1). We feel that the participatory process built into nearly all activities of the project will ensure continuous interest of all stakeholders in its activities.

Comment 3 (point 10; para 3)

The community based approach taken in this project is consistent with the widespread recognition among rural development professionals that a decentralized, participatory approach is much more effective and sustainable than other approaches. The Project Brief, however, does not explicitly recognize the fact that local communities do not necessarily have a single point of view on issues. Rural communities in developing countries tend to be stratified by age, kinship and gender. In addition, they often reflect different interests based on wealth, involvement in the market, political affiliations etc. These differences can pose significant challenges for those working with such communities, as well as for those within the communities who are trying to reach agreement on contentious issues. In view of the heavy emphasis on the project's involvement with communities, it might be useful to briefly discuss in the Project Brief the designers' views on such issues.

Response 3

We fully agree with the reviewer regarding the diversity of actors found at the community level. There is always significant diversity among community members on views that are related to for example the management, the selling or the buying of the household livestock. Also, difference between genders will reflect the often traditional distinct rule and responsibility that they play in the management of the livestock resources of the household. For example goats are traditionally raised and under the custody of men, while poultry (chicken) will often be under the custody of women and children. Pigs on the other hand will often been taken care of by both genders, being fed by women while the selling of the animals will be under the responsibility of the men. Given the species focus of the project such difference in gender responsibility may help us to achieve consensus on contentious issues. On the other hand they are many sources of difference in opinion, and addressing these will be an integral part of the project. For example, it will be important to ensure that site project committees include respected farmer representatives as much as possible.

The Project Brief has been modified to reflect more explicitly these important issues (see paragraph 17 of Project Brief; Stakeholder Involvement section),

Comment 4 (point 10; para 4)

There are references in the project documents to (a) the involvement of women in the project and (b) the value of indigenous knowledge. It might be useful to specify what concrete steps will be taken to ensure that these two issues will be effectively followed up during project implementation.

Response 4

Women will be deeply involved and benefit from the project given their “ownership” on the breeding of rural poultry chicken, a priority species for the four countries of the project and a species present in all sites. At all the project site level committees, it will be expected that at least one of the farmer representative will be therefore a women. It will be expected also that all capacity building and training workshops will included women at a proportion reflecting their involvement in the project activities.

The understanding, documentation and use of indigenous knowledge of relevance to project activities will be central for the success of its activities. More particularly the development of Open Nucleus Breeding Schemes (ONBS) tools will fully integrate indigenous knowledge information of relevance to the breeding of the animals at the sites. In order to fully document this indigenous knowledge surveys carried out during the first year of the project will include the recording of such information which will subsequently be integrated into the ONBS manuals.

We have now modified paragraphs 17, 43 and 87 of the Project Brief paragraph to clarify and address the above issues.

Comment 5 (point 11; para 2)

The capacity building efforts are linked to the use by various stakeholders of the Decision Support Tools the project aims to develop. It is therefore essential that the DSTs be effective and be developed according to the project’s timetable. If one or more of the DSTs is perceived by one or more sets of stakeholders as not useful or effective - or if it is not available at the scheduled time – this situation could significantly restrict the ability of the project to achieve its goals in regard to the sustainable use and management of FAnGR and their wild relatives (Such a scenario could also severely limit the replicability of the project).

Response 5

It will be indeed extremely important to adhere closely to the timetable of the project as well as to provide regular feedback to the participating stakeholders regarding the development of the DSTs. The project management and implementation structure (Annex E) will ensure the information flow between the different stakeholders. More particularly, regional steering committee will be meeting once a year. National Coordinator and national project director will be participating in these meetings. The agenda of the meeting will include progress on the development of the DSTs. The National steering committee meeting twice a year will provide the opportunity to relay these progresses to the National Stakeholders. One representative of the site coordinating committee will be present at the NSC. These meeting will provide the opportunity to flag any delays in development of DSTs and to take remedial actions to address (regional steering committee meeting) and to inform participating stakeholder on progress made (NSC).

Comment 6 (point 11; in para 3)

To avoid this potential risk to the project, appropriate steps should be taken early on. For example, the Project Brief suggests (paragraph 52) that “Stated preference estimates should

ideally (emphasis added) be validated against revealed preference estimates.” The use of participatory rural appraisal techniques is suggested as one method of validation, although the use of the term “ideally” and simply listing some standard PRA techniques suggests this method of validation may be considered optional.

Response 6

We agree with the review. The project Brief has been revised to reflect this valuable comment. We have now modified the phrasing of paragraph 52 and more particularly we emphasize that the validation of stated preference estimates will be performed within the scope of the activities of output 1.2. This will not be optional but a requirement within the project.

Comments 7 (point 11; in para 3)

Also, as noted above, project documents stress that cooperation by and support of local farmers in the project sites is essential to project success. It is likely that the project’s chances of obtaining and maintaining such cooperation from local farmers could be enhanced if farmers’ input played a significant role in the development of the cost benefit analysis of breeding programs for alternative breeds (Output 1.2).

Response 7

As indicated in paragraph 49 of the project brief the development of the cost benefit analysis tool for breeding programs of alternative breeds will primarily rely on data collection from farmers. Collecting data is however one thing, while providing feedback is another. We are fully aware of the latter and the project will include workshops at the project sites reporting to the participating farmers the results of the breeds comparison analysis as well as the recommendation of the cost-benefit analysis (see annex F Monitoring and Evaluation).

Comment 8 (point 12)

No cost information regarding the MTR and final evaluation is available in the project documents, but other GEF-supported projects have had small budgets allocated for these important exercises.

Response 8

The monitoring and evaluation costs including the costs related to mid-term and final evaluation are part of the budget for project management component. As it is indicated in Annex A. GEF ALTERNATIVE, Project Management section on page A-9 part of the funds “requested from GEF will cover costs of global project coordination, project management and evaluation activities, full time national program assistant and accountant, direct administration charges, etc....”

Comment 9

The first sentence of the Project Brief (paragraph 1) contained inaccurate information and seemed inconsistent with information provided in paragraph 3. (I sent an email to UNEP

immediately after receiving the project documents regarding this problem and, subsequently, both paragraphs 1 and 3 were revised.)

Response 9

We would like to thank the reviewer for this comment. The paragraph 1 and paragraph 3 have been revised to read as:

Para 1:

1. Agriculture contributes to a large proportion of the Gross Domestic Product (GDP) in most developing countries with values ranging from 8% to 51% in South and South East Asia¹. It is estimated that the human needs for livestock products (food, hides/skins and other products) in developing countries will more than double in the next 25 years². The rapid increase in demand is attributed to rapid increase in human population, rising incomes and rapid urbanization, with accompanying changes in preferences for foods of animal origin.

Para 3:

3. The loss of this globally significant genetic diversity has significant implications for local livelihoods in developing countries, including in the four countries participating in this project. In Bangladesh, agriculture contributes to 21.2% of GDP (Annex G: Description of Country Conditions and Project Pilot Sites) of which livestock contributes 13% in terms of income, insurance, food (meat, milk, eggs, etc.), hides/skin, traction and manure. Smallholder farmers, who are dependent on indigenous livestock, raise more than 85% of livestock. In rural Pakistan, agriculture count for 26% of the national GDP. Livestock is the mainstay of the socio-economic life of the people. It is the largest sub-sector of agriculture, totaling 12.3 % of exports. Livestock products are an important component of diet and source of good quality proteins, minerals and vitamins in the rural areas. In Sri Lanka, 30% of the land use is for agriculture. Agriculture contributes 20.5% of the GDP. Just over 20% of this is in the livestock sector, which provides livelihoods for 50% of the 3.3 million agricultural smallholdings (2002) for whom livestock forms an integral part of the production system. Authorities consider the livestock sector as the most promising sector for the employment of a large number of people in poverty alleviation programs in areas where livestock farming is a way of life. In Vietnam, more than 75% of the population lives in the countryside where agriculture is the primary livelihood; there are 12 million agricultural households. Agriculture generates 21.8% of the GDP (2001) and 39.8% of the export income. The sector employs about 65% of the national labor force and 72% in the private sector, of those; approximately 70% are engaged in crop production and 14% in full time livestock husbandry.

Comment 10

Paragraph 5: "...multifunctional rules..." should be "...roles..."

Response 10

As noted by the reviewer, para 5, line 10: 'rules' has been corrected to read as 'roles'

Comment 11

Para 21: The sentence with the reference to BLRI under the bullet on Vietnam is out of place.

Response 11

As correctly noted by the reviewer, the sentence referring to BLRI in Bangladesh under the bullet on Vietnam was out of place (in para 21). This sentence has been moved to the bullet point dealing with Bangladesh.

Comment 11

The title of Annex E (“Public Involvement Plan Summary”) might be changed as this annex deals with project coordination and implementation arrangements at the global and national levels.

Response 11

Title for Annex E is standard for all GEF projects, and therefore cannot be changed.

Comment 12

ACRONYMS: SOME OF THE ACRONYMS USED IN THE PROJECT BRIEF (AND IN ANNEXES A AND B) ARE NOT INCLUDED IN THE LIST OF ACRONYMS.

Response 12

The following acronyms have been added to the list:

AnGR-CRP	Animal Genetic Resources – Coordinated Research Programme
DST	Decision Support Tool
NAP	National Action Plan
NGO	Non Governmental Organization

ANNEX B3: STAP SCREENING OF THE PROJECT IDENTIFICATION FORM

Attached as a separate PDF file

ANNEX B4: RESPONSE OF STAP SCREENING OF THE PROJECT IDENTIFICATION FORM

STAP has no objection to this proposal. However, STAP notes that the development of decision tools for genetic diversity in animals potentially has some targeted research components. The application of such tools also has a potential wider application than the four Asian countries. For these reasons, STAP is interested in the development of the project, and its outcomes. It requests, therefore, that more detailed and precise methods and techniques are developed, including an analysis of the potential of existing decision support tools; define a baseline, how it will be tracked, and monitored; and, a more precise reasoning of incremental benefits. STAP would also like to note that an added barrier is limited understanding of methods that are suitable for valuing farm animal genetic resources (FAnGR). Refer to "Options and Strategies for the Conservation of Farm Animal Genetic Resources", Gibson, J. et al., 2005 - <http://books.google.com/books>

UNEP Response:

We note STAP strong interest on the development of decision tools for AnGR conservation and fully agreed on STAP analysis about the potential wider application of the tools and the need of some targeted research components. In this respect we would like to stress that the executing agency (ILRI) ongoing linkages with advance research institutes will be particularly important. For example, ILRI is part of an EU supported 3 years multi countries and multi-institutional project called GLOBALDIV "A global view of livestock diversity and conservation" (<http://www.globaldiv.eu/>). The overall objective of GLOBALDIV is to disseminate current advanced and integrated methodologies for the characterization, evaluation prioritization and conservation of livestock genetic resources. It has several components, including work package 6 'Integrating data and setting priorities for conservation' which include review of the available tools. However, it is important to recognize that the AnGR European situation might not be completely of relevance here, and therefore our project include a consultancy component in this area as well, the task of the consultant will be to define in details the appropriate baselines and methodology of relevance to the project countries and species and to optimal link these to the project activities.

STAP also point out rightly that an added barrier is limited our understanding of methods that are suitable for valuing farm animal genetic resources (FAnGR). The socio-economic aspects of conservation are extremely important for any *in situ* conservation initiative. Long term conservation of indigenous livestock will only be possible if the net result is improvement of human livelihood. They have been several attempts to develop methodologies for correctly valuing AnGR, including some ILRI led studies (e.g. Special Issue of Ecological Economics, " Vol 45 No 3, July 2003 "Valuing Animal Genetic Resources"). The reality is that it will always remain an issue and more particularly non-monetary values of indigenous AnGR will always be difficult to estimate accurately. For the purpose of this project we will adopt a pragmatic approach recognizing and documenting the multi-components of valuing AnGR while focusing on the development of socio-economic tools which will relying heavily on the current and anticipated market environments for AnGR and their products in the four project countries.

ANNEX B5: RESPONSE TO THE COMMENTS OF CBD SECRETARIAT

FSP Regional : Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives

The Secretariat has reviewed the project brief and would like to see more express references to how well this project will enable the GEF to respond to the guidance provided by the Conference of the Parties. COP guidance may be accessed at: <http://www.biodiv.org/decisions/default.asp>.

We would like to thank the Secretariat for the valuable comments and our response is the following:

Response:

As indicated in the STAP review c-2/C-3 the project fits well with the GEF's relevant goals, strategies, priorities and the Convention on Biological Diversity. The project supports all four objectives of the Convention of Biological Diversity (CBD) programme of work on agricultural biodiversity, adopted through decision V/5 at the fifth meeting of the Conference of the Parties of the CBD. More specifically:

Operational Objective 1: Assessment of agricultural biodiversity.

The objective is to provide a comprehensive analysis of status and trends of the world's agricultural biodiversity and of their underlying causes as well as of local knowledge of its management. The project responds directly to Activity 1.1. "Support the ongoing or planned assessments of different component of agricultural biodiversity", more particularly, "the State of the World's Animal Genetic Resources"; Activity 1.3. "Carry out an assessment of the knowledge, innovations and practices of farmers and indigenous and local communities in sustaining agricultural biodiversity and agro-ecosystem services for and in support of food production and food security"; and Activity 1.5 "Develop methods and techniques for assessing and monitoring the status and trends of agricultural biodiversity and other components of biodiversity in agricultural ecosystems". Activity 1.1 is particularly addressed through output 1.4 of the proposed project, Activity 1.3 through output 1.1 and Activities 1.5 is embedded in all outputs of Outcome 1.

Operational Objective 2: Adaptive management.

The aim is "To identify management practices, technologies and policies that promote the positive and mitigate impacts of agriculture on biodiversity, and enhanced productivity and the capacity to sustain livelihoods, by expanding knowledge, understanding and awareness of the multiple goods and services provided by the different levels and functions of agricultural biodiversity". The proposed project responds here directly to Activity 2.1 "to carry out a series of case-studies, in a range of environments and production systems, and in each region". It specifically addresses "(a) To identify key goods and services provided by agricultural biodiversity, needs for the conservation and sustainable use of components of this biological diversity in agricultural ecosystems, and threats to such diversity", "(b) To identify best management practices" and "(c-a) The role and potential of wild, under-utilized and neglected species, varieties and breeds, and products. Again the above are specifically addressed through all outputs of outcome 1 of the project.

Operational Objective 3: Capacity building.

The objective aims “To strengthen the capacities of farmers, indigenous and local communities, and their organizations and other stakeholders, to manage sustainably agricultural biodiversity so as to increase their benefits, and to promote awareness and responsible actions”. The project responds directly to Activity 3.1, “Promote enhanced capabilities to manage agricultural biodiversity by promoting partnerships among researchers, extension workers and farmers in research and development programmes for biological diversity conservation and sustainable use of biological diversity in agriculture...”, Activity 3.2 “Enhance the capacity of indigenous and local communities for the development of strategies and methodologies for in situ conservation, sustainable use and management of agricultural biological diversity, building on indigenous knowledge systems”, Activity 3.3 “Provide opportunities for farmers and local communities, and other stakeholder groups, to participate in the development and implementation of national strategies, plans and programmes for agricultural biodiversity, through decentralised policies and plans, and local government structures” and Activities 3.4 Identify and promote possible improvement in the policy environment, including benefit-sharing arrangements and incentives measures, to support local-level management of agricultural biodiversity. Training embedded in the outputs of outcomes 1 and outcome 2 (output 2.1) of the proposed project are addressing the above activities.

Operational Objective 4: Mainstreaming.

The aim is “To support the development of national plans or strategies for the conservation and sustainable use of agricultural biodiversity and to promote their mainstreaming and integration in sectoral and cross-sectoral plans and programmes.” Here the project respond directly to Activity 4.1 “Support the institutional framework and policy and planning mechanisms for the mainstreaming of agricultural biodiversity in agricultural strategies and action plans, and its integration into wider strategies and plans for biological diversity” and more specifically points (a) “Support for relevant institutions in the conduct of assessments on the status and trends of agricultural biodiversity within the context of ongoing biodiversity and sectoral assessments” and (b) “Development of policy and planning guidelines, and training materials, and support for capacity-building initiatives at policy, technical and local levels in agricultural and environmental forums for the development, implementation, monitoring and evaluation of policies, programmes and actions for the conservation and sustainable use of agricultural biodiversity”. While (a) is addressed to all outputs of outcomes 1, (b) is particularly addressed through output 1.3.

In addition the project addresses the following guidance provided by the Conference of the Parties (COP 7 Decisions):

Decision VII/3 Agricultural diversity: The project will help the Government of the four targeted countries (Pakistan, Bangladesh, Sri Lanka and Vietnam) of the project to consider and to promote the mainstreaming of agricultural biodiversity in their plans, programmes and strategies with the active participation of local and indigenous communities through both on the ground (outcome 1 ‘Enhanced conservation and management of FAnGR diversity using Decision Support Tools (DSTs)’ and capacity building and awareness activities (outcome 2 ‘Increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels’)); responding so to the invitation to

international organization and international funding institutions to support the development and use of agricultural biodiversity.

Decision VII/8 Monitoring and indicators, designing national level monitoring programmes and indicators: The development and application of DSTs (outcome 1) will provide indicators to estimate status and trends in livestock biodiversity in the four targeted countries. Moreover it is expected DSTs will be of applicability to other Asian and African countries.

Decision VII/12 Sustainable use: Activities of the project is addressing the concerns of the need to apply the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity to agricultural biodiversity, in particular domestic species, breeds and varieties.

Decision VII/19 Access and benefit-sharing as related to genetic resources: Sites activities of the project involving directly the communities stakeholders will be fully in line with the fair and equitable sharing of the benefits arising out of the utilization of genetic resources (one of the objectives of the convention on Biological Diversity).

Decision VII/24 Education and public awareness: Activities listed under Outcome 2 (Increased capacity and enhanced knowledge to use DSTs) focuses on capacity building needs (postgraduate training at MSc/PhD level, training manuals for all relevant stakeholders, curriculum revision) and dissemination of information (training programs/workshops, media coverage, field days/exhibitions) in all four countries.

Decision VII/29 Transfer and technology and technology cooperation: In all four countries the key stakeholders are the local farming communities and the project activities are planned (taking into account their perceptions and indigenous knowledge related to conservation and sustainable use of animal genetic resources) and implemented with their active participation. Woman and their active role in caring for the indigenous poultry is adequately addressed.

Decision VII/32 The programme of work of the Convention and Millennium Development Goals: The project goals/objectives and activities clearly addresses some key issues of the MDGs (poverty alleviation, human livelihood.)

ANNEX B6: RESPONSE TO THE COMMENTS FROM WORLD BANK

FSP Regional: Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives

This project addresses the conservation of globally important livestock genetic diversity, including wild relatives of domestic livestock, in areas that are a center of origin for the livestock in question. While the importance of the area for agrobiodiversity is clear, the logic of the approach taken in this project is less well explained. The presence of ILRI as one of the partners in the project gives us great confidence in the technical soundness of the approach. Nevertheless, the fit of the project methodology with the conservation objectives of the GEF is not so clearly presented, and for that reason we have the following questions and comments:

Comment 1

1) Threats analysis: There is a rather general threats analysis for the domesticated indigenous breeds that does not provide enough information to understand what exactly is happening on the ground with the breeds in question; for wild relatives, there is no real threats analysis. It is hard to follow the logic from the threats (cross-breeding, breed replacement, inadequate valuation of indigenous breeds in the market) to the project's threat mitigation strategy (provision of decision-support tools to identify and manage priority indigenous breeds and build awareness of their value). There is little discussion of the issues an individual farmer considers or faces as he or she makes decisions about which breeds to use. For wild relatives, there is no analysis of where they live or what is affecting those presumably undisturbed areas.

Response 1

Paragraph 2 of the Project Brief gives the global perspective of the current situation of FAnGR. It is emphasized that since the turn of the last century, some 16% of uniquely adapted breeds are believed to have gone extinct while 15% are rare, and a further 32% are at risk of becoming extinct and the rate of extinction continues to accelerate. Moreover, 75% of the estimated 3,800 breeds across 40 species are in developing countries.

Paragraph 9 of the Project Brief elaborates the current situation regarding the targeted species (chicken, goats and pigs) in the project countries. Threat analysis country wise and per target species is further elaborated in Annex J: FAnGR Status and Trends: Synthesis of National reports.

Paragraph 5 of project brief and the above Annex highlights that among others the most significant threat to FAnGR is crossbreeding and breed replacement, and the increased use of exotic breeds has led to extinction or severe erosion of genetic diversity in traditional breeds of target species. Of the 3 species the most vulnerable is the poultry sector where the commercial poultry sector is totally dependent on imported grand parent stock for day-old chick production which has resulted in wiping out of the rural poultry sector which harbours the indigenous poultry breeds. With the other 2 species the threat is more from crossbreeding with imported breeds resulting in breed replacement and genetic erosion.

As indicated in paragraph 39 in project brief, extensive consultation with community members took place during the PDF-B phase. There is always significant diversity among community members on views that are related to for example the management, the selling or

the buying of the household livestock (more specifics on premium price for indigenous products, and lack of marketing channels for indigenous animals and products are elaborated in Annex K: Livestock markets and marketing). Also, difference between genders will reflect the often traditional distinct rule and responsibility that they play in the management of the livestock resources of the household. For example goats are traditionally raised and under the custody of men, while poultry (chicken) will often be under the custody of women and children. Pigs on the other hand will often been taken care of by both genders, being fed by women while the selling of the animals will be under the responsibility of the men. There are many sources of difference in opinion, and addressing these will be an integral part of the project. Some of these views are included in paragraph 17 of Project Brief.

On the specific points of the link between the threats and the project's threat mitigation strategy: The novelty and originality of the project is that it recognizes the increasing threat affecting FAnGR diversity but also the fact that for *in situ* conservation at country level priority decisions will have to be made. Indeed, it will be unrealistic to believe that countries will be in a position to conserve in a sustainable way all their FAnGR diversity *in situ*. So the project aim to provide them with decision support tools which will help and allow national institutions to make sounds decision on which breed/population to conserve in order to maximise diversity conserved and impact on human livelihood. The alternative scenario is no availability of decision support tools with the putative results that the absence of sound criteria for conservation decision may lead at the best to *in situ* conservation of a minor subset of FAnGR diversity or at the worst to no conservation action at all leading to the nearly complete disappearance of indigenous breeds at the short term (a good illustration of the putative possible future scenario if no action is taken, is what we have been observing for the livestock sector in developed countries, as in Europe; FAO statistic clearly indicate that the majority of breeds which have disappeared in 20th century, following industrialization and intensification of livestock production, are from developed countries).

The wild relatives are an important component of the project and an important criterion for the choice of the project site, as indicated in the project document, paragraph 35, is the presence of wild relatives and clearly one of the novelty of the project is the inclusion of the wild relative with its domestic counterparts. The project will however not be targeting directly conservation of the habitats of the wild relatives. They are currently other projects lead by others institution as IUCN, WWF addressing specifically this issues and more particularly the reason of the decline of the wild relatives in relation to the destruction of their habitats. In all four countries, a major partner of the project is IUCN. We will be liaising closely with IUCN for all matter dealing with the wild relatives.

As indicate above the project is adding new dimensions to the conservation of the wild relatives. Indeed, the project emphasised the importance of the wild relatives as reservoir of genetic diversity of the domestic stock (output 1.1 activity 1.1.2 and output 1.4. activity 1.4.1). It will address specifically the contribution of the genetic diversity of the wild relatives in comparison of the genetic stock of the domestic breed and as source of adaptive traits for the improvement of productivity of domestic stock (output 1.1 activity 1.1.2).

Comment 2

Threat mitigation strategies: It is not clear that the proposed decision-support tools (DSTs) actually respond adequately to the threats, especially because the threats are presented at such a general level. The DSTs seem to be rather sophisticated, and one wonders whether it

wouldn't be adequate simply to work with knowledge farmers already have about the characteristics of value in different breeds, perhaps testing that indigenous knowledge scientifically to see where advantages are most worth preserving. It is also unclear what the genetic studies of indigenous breeds will add to the project in terms of improving the ability to conserve key breeds effectively. There is probably a good reason for doing these studies, but does not seem to be presented in the GEF Executive Summary. The open nucleus breeding system, another part of the project's approach to breed conservation, is not well explained in the document, and how it will help in conserving priority breeds is not addressed. Finally, wild relatives should be conserved *in situ* and not only as part of a breeding program; some analysis of the protection status of their habitats would be welcome, and if these are not well protected, a solid conservation program should consider how to contribute to improving this protection.

Response 2

If the nature of the threat (e.g. breeds replacement, crossbreeding) affecting indigenous FAnGR are understood at the general level, detailed information are currently lacking for allowing efficient intervention. This project is addressing these gaps of knowledge but also recognised the complexity of the situation on the ground. The immediate objective of the project is therefore to develop tools which will allow countries to understand the situation on the ground, to gather information and to prioritize interventions. More particularly lack of understanding of the potential of indigenous FAnGR for improvement of productivity, lack of knowledge of the market and non-market values of FAnGR, of the relevant policy and marketing environment affecting indigenous FAnGR and last but not current lack of knowledge of FAnGR diversity present are all addressed in Outcome 1 and its related outputs 1.1 to 1.4 (detailed in paragraphs 41 to 66) which is centred around the development of DSTs for conservation and utilization of FAnGR.

An important criterion which will lead to successful *in situ* breed conservation will be higher market value of an indigenous breed for a specific production system environment compared to exotic breeds. In livestock diversity rich countries, as the one chosen for this project, it is likely that the breed priority output of the market and policy analysis will be more than one breed. However, in a diversity conservation context it will be essential to maximize diversity conserved. Genetic studies, tool for diversity assessment (output 1.4), will provide the diversity information needed to integrate the two components.

The ONBS (output 1.1) will be developed as a working tool for conservation of FAnGR among its technical aspects encompassing the existing knowledge base from the farming communities, it is central to the *in situ* conservation of priority breeds which will only be achievement in a sustainable way through positive impact on human livelihood (breeding improvement of desirable traits). The insights on threats due to cross breeding and breed replacement is addressed by the development of the tool for cost-benefit analysis (output 1.3), which will not only include economic data on comparing breeding programmes but also non-market traits which are valued by the farming communities.

We fully agree that “*wild relatives should be conserved in situ and not only as part of a breeding program*”. This is particularly important in the context of the conservation of their adaptive traits. As indicated above, response to comment 2, the *in situ* conservation of their wild relatives and their habitat will be addressed specifically through targeted action lead by other institutions than ILRI. We will liaise closely with our IUCN counterparts with IUCN

representative being member of each national steering committee.

Comment 3

Development objective: It seems that a GEF funded project should have conservation of agrobiodiversity as part of its development objective; here the development objective is focused on raising farmer incomes, and conservation is just one of a number of immediate objectives of the project.

Response 3

The development objective of the proposal is “Improved human livelihoods through enhanced capacity to conserve and sustainably use FAnGR and their wild relatives in developing countries”, it therefore includes both the human livelihood and the agrobiodiversity conservation components. However, we fully realize that the major impact of the project in term of conservation of agro-biodiversity will be beyond the 5 years duration of the project. The objective is to develop the required tools, illustrate their application, and build-up the capacity to apply them.

ANNEX B7: RESPONSE FROM COUNCIL AT WORK PROGRAM INCLUSION

France Comments on Work Program (GEF/C.32) **GEF Council November 2007**

The project aims at developing and making available effective tools to support decision making for the conservation and sustainable use of indigenous animal genetic resources for food and agriculture (FAnGR) and their wild relatives in developing countries

Opinion: favourable, but with the following questions and remarks to be taken into account:

This is a sound and timely proposal for a multipurpose project. The rationale rightly states FAO's leadership on AnGR (especially after the adoption of the Global Plan of Action for AnGR). FAO is also recognized as a co-funding agency of the preparatory phase. Considering the importance of global information systems to guide policy decisions on AnGR, links with FAO support facilities should be highlighted & national data collection processes on An GR enhanced.

1. Regional (Pakistan, Sri Lanka, Vietnam) : Development and Application of Decision support Tools to Conserve and Sustainably use Genetic Diversity in Indigenous Livestock and Wild Relatives (UNEP) (GEF Grant : \$ 1.98 m)

The project aims at developing and making available effective tools to support decision making for the conservation and sustainable use of indigenous animal genetic resources for food and agriculture (FAnGR) and their wild relatives in developing countries

Opinion: favourable, but with the following questions and remarks to be taken into account:

This is a sound and timely proposal for a multipurpose project. The rationale rightly states FAO's leadership on AnGR (especially after the adoption of the Global Plan of Action for AnGR). FAO is also recognized as a co-funding agency of the preparatory phase. Considering the importance of global information systems to guide policy decisions on AnGR, links with FAO support facilities should be highlighted & national data collection processes on An GR enhanced.

UNEP Response

We fully agree with France comments/remarks. More particularly we would like to emphasize and to clarify the following. We note that our proposal closely link to the following FAO strategic priorities for actions both at the national and international level. As for example (i) national level: SP13, Establish or strengthen national educational and research facilities; SP14 Strengthen national human capacity for characterization, inventory and monitoring of trends and associated risks, for sustainable use and development, and for conservation; (ii) regional/international level: SP2 develop international technical standard and protocols for characterization, inventory and monitoring and associated risks, SP11 Develop approaches and technical standards for conservation, SP19 Raise regional and

international awareness of the roles and values of AnGR etc. The FAO was involved in the PDF B phase of the proposal, we therefore expect FAO to continue to be closely involved in the implementation of the full project through participation of FAO representatives in project steering committee at national and/or global level.

As for the Global Information Systems, it should be noted that major activities of the full project will include the development of country database on AnGR status and characteristics for sound policy decision making. UNEP will make arrangements that these database benefits from and link to FAO AnGR DAD-IS and ILRI DAGRIS databases. FAO country representatives will be part of the national country committees facilitating linkage between databases. Also, at the regional level, the project findings will be presented at the FAO-Animal Production and Health Commission for Asia and the Pacific (APHCA) annual meetings which target stakeholder groups involved in policy issues. At the international level, promotion of project findings will target researchers and policy-makers in countries beyond those participating in the projects to encourage project replication. An international workshop will be organized. Representatives from relevant stakeholders involved in FAnGR and wild relative issues will be invited, including FAO national focal points from different countries, and other organizations/institutions involved in conservation/utilization of indigenous livestock and wild relatives. Project results will also be presented at the Animal Science Congress of the Association of Australasian Animal Production (AAAP), World Congress for Genetics Applied to Livestock Production, and meetings of the International Society of Animal Geneticists.

ANNEX C: CONSULTANTS TO BE HIRED FOR THE PROJECT

<i>Position Titles</i>	<i>\$/ person week</i>	<i>Estimated person weeks</i>	<i>Tasks to be performed</i>
For Technical Assistance			
National			
Breeding specialist	150	300	These consultants will be academics and/or researchers attached to NARS who will work closely with the International consultant, and will provide technical guidance and supervision to the students enrolled for higher degrees at their institutions and under the auspices of the project.
Specialist on Socio-economic/Market/Policy issues	150	450	These consultants will be academics and/or researchers attached to NARS who will work closely with the International consultant, and will provide technical guidance and supervision to the students enrolled for higher degrees at their institutions and under the auspices of the project.
Sub-Total for TA (national)	150	750	
International			
Breeding specialist	2000	90	Consultant will develop the protocols for ONBS and other breeding schemes, conduct training workshops and assist in the monitoring and evaluation of the breeding schemes.
Socio-economist/Market/Policy issues	1200	100	Consultant will take the lead in planning, execution, data analysis and reporting of the farm field surveys. Plan studies related markets/policy of indigenous animals and products, and assist in the planning, execution, data analysis and reporting.
Molecular Scientist	2,000	144	Consultant in close collaboration with national project leaders and assist in the planning and execution of relevant studies, be responsible for training of National Scientists on molecular work.
Modelling Expert for breeding: diversity index	1,000	60	Consultant will liaise closely with national and international consultants for Breeding and Molecular characterization and use the data generated by them to derive DSTs.
Expert for development, training and management of database	1,000	60	Consultants will programme and implement Information Management system in the 4 countries, and assist in the management of data bases.
Sub-Total for TA (International)		454	

ANNEX D: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS

A. EXPLAIN IF THE PPG OBJECTIVE HAS BEEN ACHIEVED THROUGH THE PPG ACTIVITIES UNDERTAKEN.

The objective of the PPG was to prepare a Full Project Proposal based on a sufficient understanding of the current situation in each potential project location and convergence of purpose and approach amongst key players in the project implementation. In addition, the PPG implementation has:

- a) enhanced awareness in the project countries of the long-term benefits of FAnGR conservation;
- b) resulted in preliminary capacity building for FAnGR conservation at national levels; and
- c) facilitated participatory consensus on the objectives and design of the project.

The following outputs were envisioned from the PDF-B phase of this project and were achieved in full as described above and more details were described in the full project document:

- Design criteria and priority areas for the animal species and project/demonstration sites in each country;
- Established steering committee and co-ordination mechanisms for the full project;
- Baseline data and information on the project sites identified for the proposed initiatives;
- *Studies*: Review of the state of Animal Genetic Resources in each country, the reasons for the decline in population size, the interactions between different stakeholders in existing production systems;
- *Studies*: Review of current knowledge and activities in marketing of indigenous animals and products;
- *Studies*: Identification of critical gaps in information on policy issues related to FAnGR;
- *Studies*: Background information on legal issues related to FAnGR;
- *Studies*: Overview of agro-climatic conditions and Production systems at national level and in particular at the sites selected for implementation of full size project;
- Conducted community level workshops and initiated preliminary activities in each project/demonstration site;
- Development of a website;
- Conducted national workshops and consultations;
- Stakeholder participation plan;
- Mobilised donors and a financial plan;
- A monitoring and evaluation plan;
- Full size GEF project proposal, including the information gathered and experiences gained during implementation of the PDF-B phase.

A. DESCRIBE FINDINGS THAT MIGHT AFFECT THE PROJECT DESIGN OR ANY CONCERNS ON PROJECT IMPLEMENTATION, IF ANY:

None

B. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES AND THEIR IMPLEMENTATION STATUS IN THE TABLE BELOW:

<i>Project Preparation Activities Approved</i>	<i>Implementation Status</i>	<i>GEF Amount (\$)</i>				<i>Co-financing (\$)</i>
		<i>Amount Approved</i>	<i>Amount Spent To-date</i>	<i>Amount Committed</i>	<i>Uncommitted Amount*</i>	
Activity 1: Background Studies and assessments	Completed	105,815	105,815	0	0	103,600
Activity 2: Participatory Planning, consensus building and Awareness Creation	Completed	135,460	135,460	0	0	101,000
Activity 3: Elaboration of Project Proposal	Completed	66,833	66,833	0	0	118,000
Activity 4: Project Coordination and Management	Completed	141,892	141,892	0	0	160,420
Total		450,000	450,000	0	0	483,020[†]

[†] The mobilized co-financing is higher than the committed amount (\$ 190,000) at PDF B approval stage



UNITED NATIONS ENVIRONMENT PROGRAMME

Programme des Nations Unies pour l'environnement Programa de las Naciones Unidas para el Medio Ambiente
Программа Организации Объединенных Наций по окружающей среде برنامج الأمم المتحدة للبيئة
联合国环境规划署



PROJECT DOCUMENT

SECTION 1: PROJECT IDENTIFICATION

- 1.1 Project title:** Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives
- 1.2 Project number:** GFL/
PMS:
- 1.3 Project type:** FSP
- 1.4 Sub-programme title:**
GEF strategic long-term objective: BD2
Strategic programme for GEF IV: NA
- 1.5 UNEP priority:** Ecosystem management
Regional/Multi-country
- 1.6 Geographical scope:**
- 1.7 Mode of execution:** External
- 1.8 Project executing organization:** **Bangladesh:** Bangladesh Agricultural University (BAU), Department of Animal Breeding and Genetics
- Pakistan:** Pakistan Agricultural Research Council (PARC) (Animal Sciences Division)
- Sri Lanka:** University of Peradeniya (Department of Animal Science)
- Vietnam:** National Institute of Animal Husbandry (NIAH), (on behalf of the State Committee for Science and Technology of the Ministry of Science, Technology and Environment)
- International Livestock Research Institute (ILRI), Kenya**

1.9	Duration of project:	63 months Commencing: October 2008 Completion: December 2013	
1.10	Cost of project	US\$	%
	Cost to the GEF Trust Fund	1,982,770	34.40
	Co-financing		
	Cash		
	Bangladesh	5,000	0.08
	Pakistan	55,000	0.96
	Sri Lanka	145,000	2.51
	Vietnam	55,000	0.96
	World Vision	220,000	3.81
	ILRI and collaborating Institutions	780,000	13.54
	Sub-total	1,260,000	21.86
	In-kind		
	Bangladesh	143,000	2.48
	Pakistan	197,000	3.42
	Sri Lanka	220,000	3.81
	Vietnam	247,000	4.29
	FAO	96,000	1.66
	World Vision	160,000	2.78
	ILRI and collaborating Institutions	1,458,000	25.30
	Sub-total	2,521,000	43.74
	Total	5,763,700	100

1.11 Project summary

The outcome of this project will be decision-support tools and the capacity to conserve through sustainable utilization globally-significant Farm Animal Genetic Resources (FAnGR) in Bangladesh, Pakistan, Sri Lanka and Vietnam. Decision-support tools will be developed to identify and manage priority FAnGR, and to assess, strengthen and monitor the policies and market structures that support the conservation through utilization of FAnGR and their wild relatives for the benefit of human livelihoods. The tools will be applied through capacity-building and awareness-raising mechanisms that will both emphasize the value (conservation

and potential market return) of FAnGR and ensure that the tools are embedded in and used efficiently by institutional programmes and by poor livestock keepers. The project will aim not only to conserve globally significant FAnGR within the four project countries, but it will also serve as a model for replication in other Asian countries and beyond.

1.12. Operational Focal Point Endorsement:

<p>A.H.M Rezaul Kabir Secretary Ministry of Environment and Forest Dhaka, Bangladesh</p>	<p><i>Date of Endorsement:</i> : 5th July 2005 <i>Re-endorsement:</i> 7th September 2006 <i>Re-re-endorsement:</i> 29th August 2007</p>
<p>Sikandar Maken Hayat Joint Secretary International Cooperation/ GEF Operational Focal Point Ministry of Environment Government of Pakistan</p>	<p><i>Date of Endorsement:</i> 8th September 2005 <i>Re-endorsement:</i> 13th September 2006 <i>Re-re-endorsement</i> 6th September 2007</p>
<p>M.A.R.D Jayathilake Secretary Ministry of Environment and Natural Resources Colombo, Sri Lanka</p>	<p><i>Date of Endorsement:</i> 5th August 2005 <i>Re-endorsement:</i> 6th September 2006 <i>Re-re-endorsement:</i> 20th August 2007</p>
<p>Dr. Nguyen Van tai Senior Vice Minister Chairman of GEF–Vietnam Ministry of Natural Resources and Environment Hanoi, Vietnam</p>	<p><i>Date of Endorsement:</i> 18th July 2005 <i>Re-endorsement:</i> 2nd October 2006 <i>Re-re-endorsement</i> 29th August 2007</p>

LIST OF ACRONYMS AND ABBREVIATIONS

AAAP	Association of Australasian Animal Production
ACIAR	Australian Centre for International Agricultural Research
AnGR-CRP	Animal Genetic Resources – Coordinated Research Programme
APHCA	Animal Production and Health Commission for Asia and the Pacific of the FAO Regional Office for Asia and the Pacific
ARI	Advanced Research Institutes
ASD-PARC Council	Animal Sciences Division of the Pakistan Agricultural Research Council
BAU	Bangladesh Agricultural University
BLRI	Bangladesh Livestock Research Institute
BNCS	Bangladesh National Conservancy Strategy
BSGN	Best practices and success Stories Global Network
CBD	Convention on Biological Diversity
CIRAD	Centre de coopération International de Recherche Agronomique pour le Développement (International Agronomical Centre of Research for Development)
CNTS	Centre of Natural Science and Technology
DAD-IS	Domestic Animal Diversity – Information System
DAGRIS	Domestic Animal Genetic Resources Information System
DANIDA	Danish International Development Agency
DAPH	Department of Animal Production and Health
DFG	Deutsche Forschungsgemeinschaft
DLS	Directorate of Livestock Services
DST	Decision Support Tool
FAnGR	Farm Animal Genetic Resources
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GEF	Global Environment Facility
GoB	Government of Bangladesh
GoP	Government of Pakistan
GoSL	Government of Sri Lanka
GoV	Government of Vietnam
GRET	Groupe de Recherche et d'Exchanges Technologiques (Research and Technological Exchange Group)
IAEA	International Atomic Energy Agency
ICARDA	International Center for Agricultural Research in Dry Areas
ILRI	International Livestock Research Institute
LW-FMFAL	Livestock Wing of the Federal Ministry for Food, Agriculture and Livestock
MACP	Mountain Areas Conservancy Project
MENRM	Ministry of Environment and Natural Resources Management
MOSTE	Ministry of Science, Technology and the Environment
MPIHRD&LD	Ministry of medium and small scale Plantation Industry, Rural Human Resource Development and Livestock Development
NAP	National Action Plan
NARS	National Agricultural Research System
NCS	National Conservation Strategy
NEMAP	National Environment Management Action Plan

NEPAD	The New Partnership for Africa's Development
NGO	Non Governmental Organization
NIAH	National Institute of Animal Husbandry
NLDB	National Livestock Development Board
NLDP	National Livestock Development Plan
NSC	National Steering Committee
NSPD	Network for Smallholder Poultry Development
ONBS	Open Nucleus Breeding System
PARC	Pakistan Agricultural Research Council
PSC	Project Steering Committee
SCC	Site Coordinating Committees
SoW	State of the World's Animal Genetic Resources' (SoW-AnGR)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNPACD	United Nations Plan of Action to Combat Desertification
UNCCD	United Nations Convention to Combat Desertification
VSF-CICDA	Vétérinaires Sans Frontières - Centre International de Coopération pour le Développement Agricole
WSSD	World Summit on Sustainable Development
WTP	Willingness To Pay
WV	World Vision - Bangladesh

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SECTION 2. BACKGROUND AND PROJECT CONTRIBUTION TO OVERALL SUBPROGRAMME IMPLEMENTATION

BACKGROUND AND CONTEXT (BASELINE COURSE OF ACTION)

1. Agriculture contributes to a large proportion of the Gross Domestic Product (GDP) in most developing countries with values ranging from 8% to 51% in South and South East Asia¹. It is estimated that the human needs for livestock products (food, hides/skins and other products) in developing countries will more than double in the next 25 years². The rapid increase in demand is attributed to rapid increase in human population, rising incomes and rapid urbanization, with accompanying changes in preferences for foods of animal origin.

2. Genetic erosion in farm animals is much more serious than in crops because the current gene pool of animals is much smaller and very few wild relatives remain (Rege and Gibson, 2003). According to FAO (2000), about 82% of the total contribution of animal genetic resources to global food and agricultural production comes from only 14 species. Since the turn of the last century, some 16% of uniquely adapted breeds are believed to have gone extinct while 15% are rare (Hall and Ruane, 1993). A further 32% are at risk of becoming extinct and the rate of extinction continues to accelerate (FAO, 2000). Seventy per cent of the estimated 3,800 breeds across 40 species are in developing countries.³

3. The loss of this globally significant genetic diversity has significant implications for local livelihoods in developing countries, including in the four countries participating in this project. In Bangladesh, agriculture contributes to 21.2% of GDP (Appendix G: Description of Country Conditions and Project Pilot Sites) of which livestock contributes 13% in terms of income, insurance, food (meat, milk, eggs, etc.), hides/skin, traction and manure. Smallholder farmers, who are dependent on indigenous livestock, raise more than 85% of livestock. In rural Pakistan, agriculture counts for 26% of the national GDP. Livestock is the mainstay of the socio-economic life of the people. It is the largest sub-sector of agriculture, totaling 12.3 % of exports. Livestock products are an important component of diet and source of good quality proteins, minerals and vitamins in the rural areas. In Sri Lanka, 30% of the land use is for agriculture. Agriculture contributes 20.5% of the GDP. Just over 20% of this is in the livestock sector, which provides livelihoods for 50% of the 3.3 million agricultural smallholdings (2002) for whom livestock forms an integral part of the production system. Authorities consider the livestock sector as the most promising sector for the employment of a large number of people in poverty alleviation programs in areas where livestock farming is a way of life. In Vietnam, more than 75% of the population lives in the countryside where agriculture is the primary livelihood; there are 12 million agricultural households. Agriculture generates 21.8% of the GDP (2001) and 39.8% of the export income. The sector employs about 65% of the national labor force and 72% in the private sector; of those, approximately 70% are engaged in crop production and 14% in full time livestock husbandry.

4. Indigenous Farm Animal Genetic Resources (FAnGR) that have evolved in diverse tropical environments possess valuable traits such as disease resistance, adaptation to harsh environments, including heat tolerance and ability to utilize poor quality feeds. These

¹ *Selected Indicators of Food and Agriculture Development in Asia-Pacific Region 1992-2002*. RAP PUBLICATION: 2003/10, Food and Agriculture Organization of The United Nations, Regional Office for Asia and The Pacific, Bangkok, October 2003

² Delgado et al (1999): *Livestock to 2020: the next food revolution. A 2020 vision for food, agriculture, and the environment*. IFPRI - 2020 Vision Brief. no. 61. IFPRI. Washington, D.C. (USA). 2p.

³ FAO (2000): *World Watch List for domestic animal diversity (3rd Ed.)*

attributes are essential for achieving sustainable agriculture in low-input production systems. However, it is still largely unknown which breeds hold significant genetic diversity or specific genes that should be targeted for conservation and/or incorporation into breeding programs. At the same time, recognition of the value of indigenous breeds, and capacity to identify and manage them to maximize productivity, market potential and conservation of genetic resources is largely inadequate. Similarly, wild relative as progenitors of FAnGR represent an enormous putative reservoir of diversity and adaptation for our domestic breeds, still largely unrecognized and values as such as well are unexploited.

Threats and Barriers

5. The most significant threat to FAnGR is crossbreeding and breed replacement. The growing use of exotic breeds has led to extinction or severe erosion of genetic diversity in traditional breeds. Loss of adaptation to the environmental stresses of tropical climates is another consequence. Lack of awareness about the importance of maintaining indigenous diversity, and the production potential of these breeds, is the principal reason behind these counter-productive actions. The perception that specialized exotic, mainly of European origin, breeds (those that thrive in temperate conditions) are the best option for increased production and income persists, due primarily e.g. to market analyses that are distorted by, for example, government and donor subsidies, maintenance costs tied to exotic breeds without adaptive capabilities and lack of recognition of the often multi-functional roles of indigenous FAnGR (e.g. productivity but also socio-cultural values).

6. The response to droughts, civil conflict and famines that result in loss of livestock is often a re-stocking program that relies on availability of animals and convenience. There is little regard for the implications to genetic diversity. The breeds that result are then bred with those indigenous breeds that remain, leading to further genetic erosion and creating ill-adapted and more vulnerable livestock populations.

7. Market access and infrastructures are weak and inequitable. Wealthier farmers have the resources and skills to capture a large share of the local and export markets, leaving resource-poor farmers with few options and opportunities. This is especially difficult for poor farmers in remote villages, where the majority of indigenous FAnGR are kept. These farmers then use their livestock for subsistence purposes and only occasionally sell 'surplus off take'. The services these livestock do provide include traction services and manure production, sources of savings, insurance, cyclical buffering, accumulation and diversification, and socio-cultural roles (e.g. dowry payments and/or slaughter during special ceremonies). These important services are rarely valued in livestock assessments, leading to distorted government policies and interventions that fail to properly consider the impact of 'new' agricultural practices (e.g. crossbreeding or breed replacement) on farmer livelihoods and indigenous FAnGR.

8. Barriers to addressing these challenges begin with inadequate knowledge of the value of indigenous breeds and FAnGR. This is true to varying degrees within each of the stakeholder groups, with farmers and breeders' associations holding the most knowledge and government officials the least. Links between and among these groups are weak or non-existent. Basic information about valuable indigenous breeds and representative animals is needed, as is the capacity to prioritize, monitor and manage them at both scientific and farm operation levels. Stakeholder groups need the capacity to take on this process. Finally, market structures diminish or deny access to the poor farmers, making it difficult for them to realize the benefits of FAnGR.

Baseline and System Boundaries

9. Bangladesh, Pakistan, Sri Lanka and Vietnam, the national partners in this project, together hold a rich and widely representative diversity of FAnGR (see Appendix J: FAnGR Status and Trends: Synthesis of National Reports). Studies conducted during the PDF B phase indicate that more than 30 breeds of goats and 4 types of chicken are currently recognized in Pakistan. Two goat breeds and 4 types of chicken are found in Bangladesh. The statistics for chicken and pigs in Vietnam and Sri Lanka are 16 (chicken), 13 (pigs), 2 (chicken), and 10 (pigs), respectively. However, PDF-B studies have also revealed that many livestock populations in these countries remain poorly described and characterized and the above breed numbers should be considered as minimum values.

10. To a great extent the countries' richness in diversity is due to their position as centers of origin (wild ancestors) of the domestic breeds, their history of livestock rearing, and access to species and breeds particularly suited to production. For example, Pakistan is a center of goat domestication, and an expected source of diverse and valuable gene pool for this species. Pakistan still holds wild population of this species. Also, Pakistan is also a putative center of chicken domestication (unpublished information collected from the PDF-B work). Sri Lanka has for centuries been a major trading center for livestock from different origins being at the crossroad of the sea trading routes of South and South East Asia. Vietnam (Southeast Asia) has traditionally been considered a center of chicken domestication. Similarly, recent molecular work has indicated several different pig domestication areas including South Asia and South East Asia. Participation of countries from both regions, including Bangladesh, which bridges the two, therefore ensures wide representation of the gene pool of these species.

11. However, identification of breeds tends to be vague and imprecise, with breed identity frequently tied to place of origin and/or ownership rather than a specific phenotypic description (e.g. color shape, markings). The "non-descript" breeds need to be more precisely identified and distinguished before it is possible to identify the priority breeds for production and conservation purposes.

12. Wild relatives of domestic livestock are also found in the four project countries and, in a number of cases, will provide new or additional reservoirs of diversity. Comparisons of domestic and wild diversity, including studies undertaken during the PDF-B phase, indicate potential from a number of wild relatives. These include:

- In Bangladesh, the red jungle fowl (*Gallus gallus murghi*), which has contributed to the existing pool of FAnGR;
- In Pakistan, the wild goat (*Capra aegagrus*), including two subspecies (the scimitar-horned Sind Wild goat (*C. a. blythi*) and the Chiltan goat (*C. a. chiltanensis*)), and two other related species (the Asiatic or Siberian ibex (*Capra [ibex] sibirica*) and the markhor (*Capra falconeri*). Further investigation is needed to determine the status of the wild red jungle fowl in this country, which is likely to have contributed to domestic breeds in the past;
- In Sri Lanka, the wild boar (*Sus scrofa*) and a species related to the red jungle fowl, (*Gallus lafayetti*). Farmers in rural areas are known to cross-breed domestic and wild species as a breeding strategy;

- In Vietnam, red jungle fowl (*Gallus gallus gallus* and *Gallus gallus jabouilli*) as well as wild boar (*Sus scrofa*). There are indications that farmers in Vietnam cross-breed domestic and wild pig species as a breeding strategy.

13. To identify specific opportunities and weaknesses within the four project countries, analyses of the legal and technical infrastructures, and existing expertise in livestock genetic diversity, management, production, conservation, and marketing, was carried out during the PDF-B phase. Detailed analyses are presented in Appendices I (Agro-ecology and Agriculture Systems: Synthesis of National Reports), J (FAnGR Status and Trends: Synthesis of National Reports), K (Livestock Markets and Marketing: Synthesis of National Reports), L (Policy and Legal Framework Governing FAnGR: Synthesis of National Reports) and M (Capacity Building Needs: Synthesis of National Reports)

14. Policy and law in the four project countries address livestock management, production, and conservation, although the value of indigenous genetic diversity is not adequately addressed, nor are the laws and policies effectively applied or enforced. Responsibility for implementation of policy and law is spread throughout Ministries and agencies, and from national to provincial levels. The result is lack of both clarity and coordination. Adding to the weaknesses is the fact that formulation of policies and laws is neither participatory nor consultative.

15. Knowledge about priority breeds and capacity to manage them are weak. University-level education facilities with courses/training in animal breeding, genetics and reproductive management are available in the project countries. Some capacity for breed characteristics and phenotypic characterization and breed survey methodologies exists, although in all cases it needs strengthening. There is little or no expertise in molecular characterization and economic valuation of FAnGR. While a number of relevant technologies and methodologies are used for managing livestock breeding, they are not adequately infused into government agencies, research and academic institutions, or breeders' associations. The focus of existing breeders' associations is almost entirely on profit potential without adequate consideration of alternative scenarios that include indigenous breeds.

16. Research facilities in all four countries with regard to disease diagnosis, vaccine production, semen production, artificial insemination services are of reasonable quality. In Bangladesh, for example, the government manages a livestock office along with an artificial insemination center. Each district has a well-equipped veterinary hospital, but the human resources to use them to potential are inadequate. Some private organizations address production of commercial chicks (layer and broiler), maintain breeders stock and rear commercial strains for egg production. In Sri Lanka, 225 veterinary ranges (Veterinary Offices) are staffed with a Veterinary Surgeon and Livestock Development Instructor. These veterinary offices focus on artificial insemination services, treatment of common animal diseases, and providing advice on other management aspects. The research mandate is the responsibility of the Veterinary Research Institute, which falls within the central DAPH structure. However, research facilities and human resources to cater to the needs of the livestock sector are inadequate. In Pakistan and Vietnam, the national structures (PARC and NIAH) have adequate laboratory infrastructure and equipment. They are supported by provincial organizations that deal with research needs of the livestock sector, but these services are hampered by lack of modern equipment and inadequate human resources/capacity. The drawbacks are addressed through the expertise, training

courses/programs and collaborative research provided by National Universities to the government institutes.

17. Stakeholder groups in all four partner countries include farmers, breeders' associations, extension workers, NGOs, researchers and academics, and government officials (local to national) with responsibilities related to livestock. It is noted that there is significant diversity among the farming community on views that are related to specific issues on management and on trading of livestock. Moreover, within a household different members are responsible for the different livestock species they own (for example, goats are traditionally raised under the custody of men, while chicken are raised by women and children), these issues will be addressed when organizing training programmes. Linkages between and among stakeholder groups and with international organizations are weak. The vast majority of livestock farmers are landless and poor. They are unorganized and have little capacity to lobby for their needs, influence policy makers, or sustainably use indigenous FAnGR. In some cases, the extension departments, researchers, and livestock graduates have the needed information and technologies for better management of FAnGR, but weak or non-existent support systems and structures prevent cooperation and technology transfer. Cost-effective performance recording schemes involving farmers are needed and would help improve utilization. Farmers' demand for superior germplasm can only be met if recording and genetic evaluation infrastructure gets priority both at public and private levels. Local scientists need assistance in developing successful genetic improvement programs for small-holders farming system.

18. Marketing channels are reliant primarily on marketing intermediaries, and with little government regulation. Marketing is characterized by poor and unhygienic market places, unorganized traders, absence of grading, lack of information, and seasonality in demand and price variation. Absence of a consistent market behavior along with high yield and quality breeding animals (both indigenous and exotic) diminishes return. While the governments and national and international research institutes have carried out some research on the utilization and conservation of animal genetic resources, and on animal production systems, there has been no study of the impacts of market factors and system changes on demand, consumer preferences, and profit. Nor have any of the studies analyzed the artificially high profits resulting from subsidies provided by donors and governments, implications of biodiversity loss, ecological disturbance to the production system and present/future economic impacts resulting from loss of FAnGR. The result is that neither farmers nor decision-makers understand the opportunities to improve productivity with indigenous livestock.

19. This project will build on extensive work on assessment of genetic diversity in farm animals carried out over the past eight years by the International Livestock Research Institute (ILRI) and its national partners, working in collaboration with Advanced Research Institutes (ARIs) of developed countries. This work focused initially in Africa, and more recently in Asia. ILRI's world-renowned technical capacity in animal breeding, molecular genetics, and economic and policy analysis, including development of methodologies for the assessment of genetic diversity in livestock populations and its economic valuation, will be an important resource for this project. ILRI's extensive network of National Agriculture Research Systems (NARS) and the Network for Smallholder Poultry Development will be used to support field tests and mainstreaming.

20. Interventions are needed to provide decision-support tools, capacity to identify and manage priority populations, strengthen the policy/legal frameworks and market structures, and build awareness amongst the stakeholder groups about the value and potential of FAnGR.

The proposed project will address these issues. Based on ecosystem, breed status, and market research carried out during the PDF-B phase, the project will target pig, goat, and chicken breeds and priority sites for their conservation in Bangladesh, Pakistan, Sri Lanka, and Vietnam (sites are described in detail in Appendix G, Description of country conditions and project pilot sites, and Appendix H, provides the maps of the project area and pilot sites). It will develop decision-support tools needed to identify and conserve priority species. It will build awareness and capacity among stakeholder groups, and the bridges between them needed to ensure effective conservation of indigenous livestock genetic diversity. Finally, the project will identify and promote the key policy, legal, and market interventions that will bring value to indigenous breeds, supporting both livelihoods and conservation of globally significant genetic diversity.

Programming Context: National and International Policy and Action

21. The project will link to and build on existing policy and initiatives taking place within the partner countries, as well as a number of complementary projects taking place in other countries. Project objectives and activities support national policy of all four participating countries:

- The Bangladesh National Conservancy Strategy (BNCS) and National Environment Management Plan (NEMAP) both prioritize the need to conserve natural resources. NEMAP specifically argues the need to sustain and improve crop and animal agriculture, including plant and animal genetic resources. The Fifth National Development Plan articulates specific strategies to address livestock issues, including increasing the supply of livestock through their increased productivity. In addition, the Bangladesh Livestock Research Institute (BLRI), with a mandate to carry out research in all areas of livestock development, has among its priorities to conserve and improve native poultry, poultry production research, conservation and improvement of native animals (including goats).
- The Pakistan National Conservation Strategy addresses the need to preserve and improve genetic quality of livestock breeds. Pakistan’s livestock breeding policy focuses on buffalo, cattle, sheep, and goats. The government supports the need to strengthen the livestock production extension service, in order to ensure technology transfer to farmers on better feeding, breeding, management and disease control through demonstration, training programs, audio-visual materials and TV coverage. A mandate of the Pakistan Agricultural Research Council (PARC) is to coordinate and exchange information on research and other aspects of FAnGR with the relevant national, regional, and international agencies. Agreements and Memoranda of Understanding have been implemented with, for example, the South Asian Association for Regional Cooperation, International Center for Agricultural Research in Dry Areas (ICARDA), Australian Center for International Agricultural Research, the US Agency for International Development, and the Food and Agriculture Organization of the United Nations (FAO).
- Sri Lanka’s National Environmental Action Plan (MENRM) calls for conservation and sustainable use of crop and livestock diversity in traditional farming systems, and supports incentives and community participation as elements of this work. Stemming from MENRM and in cooperation with the Department of Animal Production and Health, a biodiversity action plan for the livestock sector has been developed. “Caring For The Environment 2003-2007, Path to Sustainable Development” includes as outputs: captive breeding/propagation of species that are in demand and that are rare and threatened,

including the wild relatives of cultivated species, and the *ex-situ* conservation of genetic stocks of agricultural species and their wild relatives.

- Vietnam's National Conservation Strategy (NCS), published in 1985, covers all areas of biological diversity, including agricultural biodiversity. Policy and law related to livestock management has evolved over the past 15 years, with the most recent law of 2004 regulating the management and preservation of FAnGR, research, selection, creation, experimentation, and inspection of new livestock varieties, and livestock production, business and quality control.

22. The project will benefit from and contribute to a number of existing projects and initiatives:

- The GEF/UNDP project "In situ conservation of endemic ruminant livestock of West Africa" aims to apply community-based management and incentive approaches to lower barriers to *in situ* conservation of important indigenous breeds and habitats. The partners are the Governments of The Gambia, Guinea, Mali and Senegal, with ILRI serving as the Executing Agency. Both the West Africa and Asia projects will focus on *in situ* conservation through utilization of the diversity and uniqueness of indigenous livestock genetic resources, and both will strive to improve human livelihoods in agro-pastoral communities. The West Africa project due to start in 2007 will be developing community-based Open Nucleus Breeding Systems (ONBS) for cattle, goat, and sheep, and will be studying market and policy factors affecting indigenous livestock production and the commercialization of their products. Both components are integral to the project proposed here. However, conditions in the two regions are different in important respects, and thus the two projects will take varied approaches to implementation in the field. For example, contrary to the Asian countries, in West Africa, the uniqueness of the diversity and adaptation of indigenous livestock living in the tsetse infested agro-ecological zones is relatively well understood and characterized, allowing for the immediate implementation of *in situ* conservation programs. To ensure synergies and that lessons learned are shared between the two projects, complementary mechanisms for information sharing (for example, invitations to participate in project steering committee meetings/national and/or international workshops), institutional linkages and capacity-building have been designed into each project.
- ILRI collaborated closely with FAO in the implementation of FAnGR projects in Africa and Asia. The recent FAO study, The State of the World's Animal Genetic Resources (SoW), highlights that animal genetic resources for food and agriculture (FAnGR) are at the hub of major global challenges. Implementation of the SoW process is underway, outputs from it, including identified constraints, were integrated into the PDF-B investigations of current circumstances in the project countries. A Report on Strategic Priorities for Action resulting from Country Reports is currently under revision by countries. Another area of collaboration with FAO is the linking of the two databases DAGRIS (ILRI) and Domestic Animal Diversity Information System (DAD-IS, FAO). The Joint FAO/IAEA Division is also collaborating with ILRI on a Coordinated Research Programme on Characterization of small ruminant genetic resources in seven Asian countries including our four project countries; it involves the same national implementing institution as in the proposed project. To ensure synergies and that lessons learned are shared between the two institutions, complementary mechanisms for information sharing

(for example, invitations of FAO representative to participate in project steering committees at national and/or global level) have been included into the project.

- The UNDP/GEF 'Mountain Areas Conservancy Project' (MACP) aims to mitigate threats to biological diversity in the Western Himalayan, Karakoram and Hindukush ranges of northern Pakistan. The focus is on empowering local communities to manage ecosystems and wild resources, making them accountable for the quality of their stewardship. Link to this project will be at level of the possible use of wild relative of the goat for ONBS breeding scheme as two species of wild goat, *Capra falconeri* (Astore Markhor) and *Capra ibex* (Ibex) are found in the area of the MACP project.
- The GEF/UNEP project In-situ Conservation of Crop Wild Relatives through Enhanced Information Management and Field Application focuses on the conservation of crop wild relatives and their increased availability for crop improvement in Armenia, Bolivia, Madagascar, Sri Lanka and Uzbekistan. Links to this project will occur at two levels: 1) at the full project level to capitalize on the complementary objectives related to values of indigenous species/breeds and their wild relatives; 2) in Sri Lanka where awareness-raising activities could be linked.

23. At the national level, a number of relevant projects are operating. These include:

- In Bangladesh, the project *Smallholder Livestock Development in Five Southern Districts* (funded by the government of Bangladesh and DANIDA, 2000-2005 will likely extension beyond 2005), is implementing a village-based model for poultry development among women in poor rural households. The main elements are NGO implemented training packages on simple but structured backyard poultry development and associated small-scale credit programs. The *Participatory Livestock Development Project* (funded by the Asian Development Bank and DANIDA) seeks to improve community capabilities to develop and manage income-generating activities, provide micro-finance and technical supporting services for livestock enterprise development, and build capacity of the Department of Livestock Services (DLS).
- In Pakistan, *Strengthening of Livestock Services – Pakistan* (funded by the EU and government of Pakistan) aims to enhance government capacity for strategic planning and management for effective delivery of livestock services by the public and private sectors, developing policy and regulatory frameworks, and carrying out research. Another project (Livestock and Fisheries Department, Sindh) is building capacity of farmers for more effective livestock management through technology transfer about livestock nutrition, breeding, management, disease control, and marketing.
- In Sri Lanka, the *Livestock Development Planning Project* supports the planning and livestock development activities of the Department of Animal Production and Health (DAPH) and the *Livestock Breeding Project* supports the Centre for Genetic Improvement activities related to livestock. Other projects at national and provincial levels include *Participatory Approach for Livestock Sector Development*, which aims to test systems for production improvement through participatory approaches, and *Genetic Improvement of Farm Animals* which aims to increase milk and meat production. In the Northwest Province, *Strengthening Community Based Organization for Livestock* will increase the bargaining power of livestock farmers.

- In Vietnam, *The Uplands Program, Research for Sustainable Land Use and Rural Development in Mountainous Regions of Southeast Asia* (funded by Deutsche Forschungsgemeinschaft) is developing and testing sustainable production and resource use systems for increased productivity. It is looking specifically at trade-offs between alternative ruminant livestock production systems to establish profitable and sustainable production alternatives in the more remote areas of the region, focusing on the household level. *Making Markets Work Better for the Poor* (funded by the Asian Development Bank) aims to conduct analytical work on the functioning of markets and the extent to which the poor are able to benefit from them, and build capacity to support pro-poor market development through research activities, networking and the promotion of policy dialogue. The project will involve a series of studies examining ways to link poor farmers with value chains for livestock products. The studies will build on work undertaken in 2004 relating to tea, cassava, and supermarket development.
- The BIODIVA project on ‘Characterization and valorization of domestic and wild animal biodiversity in the mountainous areas of Vietnam’ aims to strengthen the scientific, technical and institutional public establishments of Vietnam whilst improving the status of genetic animal resources. It will extend the capacity of the government to improve its stake hold in ecological, social and economic areas linked to biodiversity, and will promote public Vietnamese institutions and laboratories to become integrated in future large scale regional and international conservation projects and manage genetic resources within the framework of the governing conventions set by Rio. The project is supported by a consortium of public institutions – the International Agronomical Centre of Research for Development (CIRAD) and the National Institute for Agronomical Research (INRA) on the French side and the Ministry of Sciences and Technologies (MOST), the National Institute of Animal Husbandry (NIAH) and the National Centre of Natural Science and Technology (CNST) on the Vietnamese side. The project is a three year project and it started in 2005. BIODIVA geographic focus is Northern mountainous areas of Vietnam which is not included in the proposed project. However, the project has similar objectives for the molecular characterization of indigenous species/breeds and their wild relatives, which will allow comparison and combination of data for country analysis; this will be facilitated as both projects have NIAH in Hanoi as common and leading partner for the molecular activities.

24. The project supports objectives of Agenda 21 (1992, in particular 14.4.h “Conservation and sustainable utilization of animal genetic resources for sustainable agriculture”), the Millennium Development Goals (Goal 7, Ensure Environmental Sustainability, integrate the principles of sustainable development into country policies and programs; reverse loss of environmental resources), and the mission of the Global Forum on Agricultural Research (GFAR Communiqué, 2 April, 2007).

25. The project addresses the Biodiversity Strategic long-term Objective 2 for GEF-4 by supporting the mainstreaming of biodiversity in production landscapes through strengthening the policy and regulatory framework for livestock genetic resources and their wild relatives (Strategic Program 4). Specifically, the project will strengthen the capacity of countries to assess their livestock genetic diversity and to take steps to conserve and sustainably use these important resources. This will be achieved by developing, applying and disseminating mutually-strengthening tools and best practices for the conservation and sustainable use of livestock genetic resources and their wild relatives in support of poverty alleviation in rural communities.

26. This project proposes to develop the knowledge and tools, both to conserve important representation of livestock genetic diversity and to test replicable tools and approaches for applying similar livestock diversity conservation in other developing countries. These interventions, which comprise the core components of this project, will help ensure the conservation of globally significant genetic diversity while supporting the livelihoods of small farmers in the four project countries.

SECTION 3. INTERVENTION STRATEGY

RATIONALE AND OBJECTIVES (ALTERNATIVE)

27. *Development and application of decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives* aims to conserve indigenous breeds of pigs, goats and chickens important to farmers and local communities for their livelihoods, and to the researchers, extension workers, and NGOs positioned to contribute to livestock conservation and management. The project will develop the decision-support tools needed to identify and manage priority FAnGR, build awareness about the value of these genetic resources, and help to develop the networks and structures needed to identify, manage, and market them. The result will be conservation of indigenous breeds of livestock and sustainable livelihoods for small farmers in the four project countries and model tools and systems for replications throughout Asia and in other parts of the world.

28. With investment in indigenous livestock development, it is possible to improve rural income distribution. The landless and small farm holdings own the highest percentage of poultry, sheep and goats, indicating that investment in small ruminant and poultry species will help to generate employment and income for the rural poor. The current subsistence level of production and unorganized marketing systems keep production levels well below their potential. Effective and accessible decision support tools for sustainable development of FAnGR could respond to these shortcomings.

29. The development objective of the project is *Conservation of indigenous livestock for future generations and their increased contribution to livelihoods through enhanced use*. The immediate objective of the project is *to develop and make available effective tools to support decision making for the conservation and sustainable use of indigenous FAnGR and their wild relatives in developing countries*.

30. Key project outcomes are: enhanced conservation and management of FAnGR diversity using Decision Support Tools; and increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels. To achieve these outcomes, six outputs are defined:

- 1) Appropriate breeding tools for low input production systems are developed and evaluated;
- 2) An effective tool for cost-benefit analysis of breeding programs for alternative breeds evaluated and made available;
- 3) Analytical frameworks for assessment of policy and marketing options (existing and alternatives) for FAnGR developed, evaluated and made available;
- 4) Tools for diversity assessment and for setting cost effective conservation priorities developed and made available;

- 5) Capacity of stakeholders to apply the developed Decision Support Tools for conservation and sustainable management/ use of FAnGR and their wild relatives enhanced;
- 6) Knowledge and understanding of value of FAnGR and wild relative increased and replication strategies made available.

31. The project builds on the existing diversity of FAnGR and wild relatives in the four project countries, and ILRI's extensive experience, including development and application of relevant tools and methodologies, implementation of community-based projects, and provision of policy advice. It will also take into account the knowledge, networks, policy, and market structures that presently exist in the four countries, and will build on their strengths while addressing the weaknesses. The project offers a new approach to conservation and management of livestock genetic resources in that it will provide decision-making tools appropriate to each of the stakeholder groups, and promote multi-disciplinary networks (i.e. integrating the different stakeholder groups) including farmers of both genders.

32. The project intervention will assist stakeholders at pilot sites to identify and manage priority FAnGR, testing approaches and providing models for replications in other sites within and outside of the project countries. The project components are designed to achieve specific conservation and livelihood outputs in the pilot sites, while contributing more widely to conservation of valuable livestock genetic diversity by providing proven tools and systems.

33. Success of the project will be measured through nine impact indicators:

1. Population of indigenous livestock of the targeted species remain stable or increase in size (5-10%), with concurrent 5-10% average increase of farmer income from indigenous FAnGR;
2. 20% of the livestock farmers in the project sites use DSTs and management packages developed by the project to increase productivity of flocks/herds of the three targeted species by 20% by end of year 5 as compared to project start;
3. National Livestock Development Plan (NLDP) and strategies in each country revised to include the use of the DSTs and implementation initiated at least in one country by end of year 5;
4. At least 10-20% of the livestock institutions/farmers organizations country wide raising target species participate in decision making fora for using developed DSTs to increase the productivity of indigenous FAnGR by end of year 5;
5. At least 1-2 breeding programs incorporating wild relatives developed and under implementation in each country (Pakistan – wild goats; Sri Lanka – wild pigs; Bangladesh/Vietnam – wild chicken) by the end of year 5;
6. Populations of indigenous breeds of the three target species at project sites increase by 10-20% following the application of the DSTs (breeding tools, cost benefit analysis tools, policy and marketing frameworks and diversity assessment tools) by end of year 5;
7. 10-20% more indigenous FAnGR livestock or its products marketed.
8. Action plans for the conservation and utilization of FAnGR and wild relatives developed using information provided by the DSTs in at least two of the project countries by end of year 5;
9. 10-20% of staff from all stakeholders groups involved in the project (farmers in project sites, research and extension staff of NARS, NGO staff, policy makers of

governmental institutions), implement DSTs developed by the project for management of FAnGR by end of year 5

PROJECT ACTIVITIES/COMPONENTS AND EXPECTED RESULTS

34. Livestock production systems, FAnGR status and relevant policy must be fully understood to develop appropriate and cost effective interventions. Therefore PDF-B activities included a series of studies to better understand current circumstances (e.g. agro-ecological), level of knowledge about FAnGR and existing capacity (technical and institutional) to conserve it, and the strengths and weaknesses of relevant national policy. The studies enabled the planning team to define criteria for choice of livestock species and sites, assess the status of information needed for project implementation and identify key stakeholders from the stakeholder groups.

35. The criteria for selection of target livestock species are:

- 1) Species of economic importance to the ‘poor’ farmer communities;
- 2) High genetic diversity (phenotypic, genetic etc) in the country;
- 3) “Short-generation” times species;
- 4) Species/breed threatened (e.g. crossbreeding, breed replacement) but not yet on the verge of extinction;
- 5) Presence of wild relatives in the country;
- 6) Species common and of economic importance in large number of Asian countries and more particularly in several of the project countries.

36. The criteria for choice of sites are:

- 1) Presence of the selected indigenous species and breeds and their wild relatives;
- 2) Representing different agro-ecological zones (if possible all agro-ecological of the countries where the chosen species are present);
- 3) Presence of an important community of poor-farmers;
- 4) Priority areas for development by the National Governments and donors communities;
- 5) Ongoing relevant activities (with positive and/or negative impacts on FAnGR) funded by the donors and governmental bodies;
- 6) Presence of relevant and supportive governmental and NARS bodies and infrastructures;
- 7) Endorsement of the project scope and goals by the local farmer communities.

37. Application of these criteria resulted in agreement to work with three species (chickens, pigs and goats) and 9 sites. See Appendix G for a detailed description of the pilot sites, species and agro-ecosystem for each of the four project countries.

	Species	Sites
Bangladesh	Chickens	Mymensingh District; and Sherpur district.
	Goats	
Pakistan	Chickens	Bahawalpur District in Punjab province; Saeedabad in Mitari District in Sindh Province
	Goats	
Sri Lanka	Chickens	Hambantota and Sooriyawewa in Hambantota District; Thirappane and Galenbindunuwewa in Anuradhapura District.
	Pigs	
Vietnam	Chickens	Northwest, Red River Delta Son la province; Bac ninh province
	Pigs	

38. Infrastructure development as well as capacity building in molecular characterization will be required in at least one place in each country. Economists will be trained in economic valuation of local FAnGR. Wide variation among technical competence of technical staff in different provinces and universities will require targeted trainings and capacity building. Three important steps must be taken to address these problems: 1) building awareness of the importance of local FAnGR among the communities, intelligentsia and policy makers, 2) developing effective breeders' organizations, and 3) building capacity of both genders within these organizations.

39. In each country, project pilot sites have been selected (two in each of the other countries) which will be the focus of all project interventions at the local level. Extensive consultations with community members took place during the PDF-B phase. The project will build on the public participation work (community level workshops) accomplished during that period. Working with national experts, livestock keepers will be identified and engaged at the early stage of project formulation in the identification of implementation pathways that are appropriate and practical.

40. The PDF-B phase enabled the project team to identify specific activities for each of the project outputs. These are grouped by expected outcome and described below.

Decision support tools

Outcome 1: Enhanced conservation and management of FAnGR diversity using Decision Support Tools

Output 1.1. Appropriate breeding tools for low input production systems are developed and evaluated

41. Breeding schemes including open nucleus breeding system (ONBS) aims to improve productivity of target species. It will help achieve dual goals of economic stability and conservation of genetic diversity in domestic and wild populations. During the life of the project, it is recognized that the primary conservation and economic achievements will be the improved management that results from introduction of appropriate breeding systems. Breeds with short generation times have been selected to illustrate how these systems can support longer-term conservation of genetic diversity, which is a goal that will be seen only minimally within the timeframe of the project but to a greater and growing degree in the years to come.

42. The output will be achieved through a series of activities that focus on building knowledge about and managing information on the scope for genetic selection and the phenotypic variation of target traits, building networks of scientists and farmers and promoting use of the tools through participatory consultation and capacity-building.

43. Both field screening and identification of indigenous knowledge will be used to identify the target domestic animals and their wild relatives. Selection will be based on phenotypic variation of target trait(s). Data capture systems (collection and recording) that are consistent with indigenous practices will be defined through close interaction with farmers. Assessment of wild relatives will be carried out. Community-managed nucleus herds/flocks (including wild relatives if appropriate) will be established using "elite" animals identified during the

selection process. All information documented including indigenous knowledge will be integrated into the ONBS manuals

44. Once the initial screening has been done (including wild relatives where relevant), and selected animals assembled to form the nuclei herd, routine (after every reproductive cycle) genetic evaluation of both nuclei and farmers' herds will be undertaken. In addition, regular field screening will continue to identify new animals for the nucleus. The animals will then be ranked and priority animals from farmers' herds/flocks will replace those with lower rankings. Mating and subsequent selection from the resulting progeny will be assessed over a number of generations, and progressive adjustments in animal management will be made.

45. Appropriate breeding schemes including the ONBS will be introduced at the community level through a series of stakeholder workshops and focused group discussions. Participating farmers of both gender will be chosen based on their willingness to participate in the project, and to form working groups or be part of an existing group. These groups will work together to:

- Develop breeding and management protocols, including for livestock management;
- Define community participation rules and individual responsibilities;
- Establish community-based nucleus herds/flocks based on those animals identified as priorities.

46. Training on breeding strategies will be provided at two levels. Throughout the project, enumerators/data recorders will be trained. This group, which will be identified during the initial consultative project workshop by the local team (farmers, researchers and extension staff), will in turn train the farmers.

Output 1.2. An effective tool for cost-benefit analysis of breeding programs for alternative breeds evaluated and made available.

47. Sustainable conservation of indigenous FAnGR depends in part on the competitiveness of their marketable and non-marketable products with those of exotic breeds. The proposed tool will help ensure that the benefits of indigenous FAnGR are documented and supportable.

48. During the PDF-B phase, the need for three cases studies (one each on chicken, goats and pigs) were identified to allow comparison between different genotypes (pure bred, crossbred and indigenous). An economic analysis at the *production system level* will be carried out during the full project. It will involve information gathering on priority species, genotypes, products, utilization, ownership, off-take/sales, and decision-making and household consumption disaggregated by gender. Common production technologies, producers' practices, profitability and technological needs of the producing households will be identified. Producer preferences and the value they place on non-marketed traits (e.g. disease resistance, heat tolerance, foraging capability and socio-cultural functions) will also be identified for different genotypes. The survey and subsequent analysis will identify levels and determinants of production and marketed surplus and the current contribution of priority indigenous breeds (versus other genotypes) to household income, nutrition, investment, and other social functions.

49. Training will be provided to recorders and enumerators on data collection and use of survey instruments. The process will include collection and collation of bio-physical and

empirical production data, as described above, comparing exotic, crossbred and indigenous pure flocks/herds over two generations. The data will be collected primarily from farmers.

50. The data analysis will require the application of economic valuation tools to assign values to important non-market traits and functions. Such tools include the use of both revealed and stated preference techniques that have been successfully tested elsewhere (see Drucker and Scarpa, 2003).

51. Stated preference techniques are based on identifying stakeholder willingness to pay or willingness to accept compensation for changes in breeds and traits. To date, choice experiments have been particularly successful in permitting the valuation of non-marketed traits (e.g. drought tolerance, disease resistance, foraging capability, socio-cultural values) and have been successfully tested in a number of countries in Africa and Latin America (e.g. see Scarpa et al., 2003a; Scarpa et al. 2003b and Tano et al. 2003). They also have the advantage of being able to explore the value of hypothetical attributes that could form part of future breeding program goals.

52. Stated preference estimates should ideally be validated against revealed preference estimates. Revealed preference techniques rely on the existence and collection of market data, and include hedonic valuation approaches (e.g. Jabbar and Diedhou, 2003) as well as the use of participatory rural appraisal techniques for economic analysis, for example of the type used by Drucker and Anderson (2004) in Mexico. These include, *inter alia*: semi-structured interviews, direct observation, animal inventory, timelines, seasonal calendars, wealth ranking, preference ranking and pair-wise rankings. The data obtained from the application of such techniques will provide input into the overall analytical model.

53. Based on the above data and analysis, the Karugia et al (2001) conceptual framework will be refined and developed into a computer-based analytical model. Karugia made some progress towards developing a conceptual framework to account for subsidies, externalities, and non-market values when evaluating crossbreeding programs. Conventional models tend to ignore such factors and hence overstate the advantages of crossbreeding. A Kenyan dairy case study showed that crossbreeding had indeed improved welfare. However, in other farming systems there appeared to be no advantage to using exotic germplasm and the funds would have been better spent on indigenous breed selection.

54. Based on the data collected through the case studies described above, sensitivity analysis will be applied to the model. The results will be summarized in a series of recommendations. A validation process will be used to assess the replicability of the computer modeling tools and will provide guidance as to their use in conserving FAnGR throughout the project countries and in other parts of the world. The validation process will include testing and analysis in other countries/locations, specifically those covered by the GEF project “*In situ* conservation of endemic ruminant livestock in West Africa” which covers cattle and small ruminants.

Output 1.3. Analytical frameworks for assessment of policy and marketing options (existing and alternatives) for FAnGR developed, evaluated and made available.

55. Understanding market issues is essential to execute an effective market strategy for indigenous FAnGR products. The aim is to respond to present day needs while accounting for future market demand. Similarly, policy issues are often identified as a major constraint that

affects *in situ* conservation and development of FAnGR. However the precise impact of such policies remains poorly documented. To begin addressing issues related to these topics, two baseline studies were conducted during the PDF-B phase from which the activities and objectives for the full project were developed. These are summarized in Appendix K, Livestock Markets and Marketing: Synthesis of National Reports, and Appendix L, Policy and Legal Framework Governing FAnGR: Synthesis of National Reports.

56. During the full project, activities related to output 1.3 will follow two streams: markets, and policy/legal. The market stream will comprise three types of activities, and will build on the market analyses carried out during the PDF-B phase. The first activity will involve an analysis by the key stakeholders of the institutions and factors affecting the relevant markets in each of the four project countries. Based on these findings, planning processes and priorities will be identified.

57. The second activity will lead to the development of a conceptual framework for characterizing marketing systems and guiding market options. This will require a series of steps to design survey instruments and sampling procedures in order to carry out the following levels of analysis:

1) *Market level analysis*, based on price and market data, will be used to identify factors affecting market demand and supply, identify the mechanisms that determine market prices, and estimate income and price elasticities of demand. Four sub-levels of analysis will be pursued: (i) analysis of structure-conduct-performance of the marketing channels; (ii) a price integration analysis to assess degree of competitiveness; (iii) traders' (livestock-keeper trader, rural trader, wholesaler, and retailer) individual margins and costs will be used in a transactions costs analysis to identify entry barriers, or market failures and missing markets; and (iv) market modeling to assess impact of policy and institutional options, e.g. on the possible negative effect of transaction costs on productivity. Descriptive analysis, econometric estimation, and modeling techniques will be employed in this activity.

2) At the *consumer level* contingent valuation and (where sufficient data exists) hedonic approaches will be applied in order to assess consumer (stratified by income) "willingness to pay" (WTP) for priority species and breeds. Such contingent valuation approaches can provide important insights into the viability of conservation policies that seek to harness market potential. WTP, in addition to price, income and demographic elasticities of demand for different breed types estimated from the survey data, will provide a basis for making policy conclusions.

58. Based on the findings of these analyses, econometric and mathematical modeling can be used to develop an appropriate decision-support tool.

59. In a third stage, validation of the resulting market models through their application in other countries (e.g. the countries participating in the GEF project on "In-situ conservation of endemic ruminant livestock in West Africa"), will be carried out. Market briefs will subsequently be prepared for use in a series of dissemination workshops on FAnGR. Participants will include National Focal Points installed by the countries under FAO's State of the World Programme, representatives from livestock research institutes, livestock development officers from international donor agencies, and collaborators with the FAO FAnGR group.

60. The policy/legal stream will include the identification of priorities by key stakeholders and agreement regarding the implementation process (i.e. specific activities/approaches), development and execution of survey instruments to identify policies and their impacts, and articulation of policy factors that affect FAnGR and their wild relatives. It will also build on analyses carried out during the PDF-B phase. The impacts of primary macro-economic interventions, regulations, pricing and their alternatives on FAnGR and wild relatives will be used to support the development of analytical models and frameworks for evaluating existing policies. This latter step will include:

- policy modeling using mathematical models and policy analysis matrices;
- policy analysis framework testing;
- analysis of the impacts of existing policies and alternatives through application of the models;
- assessment of the model in other countries.

61. The models will be used to analyze the real and potential impacts of existing policies and alternative approaches. The policy scenarios to be examined in participating countries will be identified both through the above survey analysis as well as in consultation with key stakeholders. They are likely to include, *inter alia*, an analysis of the impact of the removal of any adverse subsidies, the establishment of environmental funds and public financing, as well as market creation and support for commercialisation. The general distribution of the costs and benefits of the different approaches will also be considered. Policies will be rated according to their potential impacts on livelihoods, conservation of the priority indigenous breeds and the net costs of implementation. This will provide policy-makers and other key stakeholders with an improved understanding of the implications of different policy approaches, institutional options and conservation strategies.

62. Their applicability in other countries under different circumstances will also be tested and analyzed. The results will be summarized in a series of policy briefs which will be disseminated in the workshops described above.

Output 1.4. Tools for diversity assessment and for setting cost effective conservation priorities developed and made available.

63. Understanding the distribution patterns of diversity within and between breeds is a prerequisite to the development of an effective conservation program. Targeted countries are particularly rich in indigenous FAnGR. To support selection of priority populations for conservation, cross-species application and cost-effective tools are needed.

64. A breed diversity index will be developed for the project species, breeds, and populations, and including their wild relatives. Field surveys will be undertaken to gather socio-economic data related to domestic species. For both domestic species and their wild relatives, field surveys will be undertaken to gather data on trends, causes, and risks of endangerment, and on phenotypes. Extinction probabilities of the priority breeds and populations will be calculated to further understand the risks at play.

65. Existing conservation projects and simulation modeling efforts will be reviewed for their relevance to this set of activities. Economic valuation techniques will be adapted and applied to assess the market and non-market values of the candidate breeds and their wild relatives.

These activities will help to define the contribution to livelihoods that the candidate breeds could make. Analytical frameworks will then be applied (Weitzman⁴ and similar models) to rank order the breeds and populations and make recommendations for the overall conservation strategy.

66. Training on use of the methods elaborated will be provided to scientists and researchers from National Agriculture Research Centers (NARS), academics from Universities, and extension officers from public and private organizations (NGOs).

Capacity of stakeholders and knowledge of DSTs

Outcome 2: Increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels.

Output 2.1. Capacity of stakeholders to apply the developed Decision Support Tools for conservation and sustainable management and use of FAnGR and their wild relatives enhanced.

67. In the four project countries, there is little awareness about the importance of animal genetic resource conservation, and capacity to address it is limited. Capacity building and training components of the project are therefore critical for both short term project implementation (training) and long term sustainability (capacity building).

68. To achieve the output, the first step will be to define the stakeholder roles and the relationship between them. This will include development of collaborative agreements that will be formalized through Letters of Agreement (LoA).

69. This process will help to define the training needs of each stakeholder, and design a project-wide training program. The program will be designed to support adaptability at country and local levels. It is envisaged that the following modules and manuals will be developed:

- breeding program modules and training for policy-makers, researchers and academics, extension workers and NGOs, farmer communities;
- policy framework analysis for policy-makers, researchers and academics;
- market analysis for researchers and academics, extension workers and NGOs, farmer communities;

⁴ The Weitzman (Weitzman 1993; Weitzman 1998) approach supports prioritization for allocating economic resources to maximize future diversity. The approach, which has been applied to greatest extent by Simianer and colleagues (Simianer 2002; Simianer *et al.* 2003), estimates genetic distances among breeds based on molecular genetic data as well as the extinction probability of each breed. These can then be used to calculate the expected future diversity of a group of breeds, taking into account the probability of extinction of the breeds. The contribution to diversity of each breed to the total set (marginal contribution) of a given breed. It is not related to its own extinction probability, but rather to the extinction probability of closely related breeds. The observation is that those breeds that are under greatest threat are not generally the breeds that are expected to have the greatest marginal contribution to diversity. This means that resources for conservation will rarely be best expended on breeds with the greatest threat of extinction. Methods will be developed within the scope of the full project to include contribution to livelihood of individual breeds a contribution factor to priority for breed conservation.

- methodology for phenotypic breed characterization for researchers and academics, extension workers and NGOs;
- methodology for genetic breed characterization for researchers and academics;
- methodology for surveys of FAnGR and wild relatives researchers and academics, extension workers and NGOs;
- database management for researchers and academics, extension workers and NGOs.

70. Training and workshop sessions will include:

- awareness workshops for policy makers;
- social mobilization and facilitation of group processes for extension workers and NGOs, farmer communities involving both genders;
- specific aspects of livestock breeding/management for researchers and academics, extension workers and NGOs, farmer communities including the role of women;
- policy analysis training for policy makers, researchers and academics;
- market analysis for researchers and academics, extension workers and NGOs, farmer communities;
- Database management for researchers, academics, IT technical staff of NARS.

Output 2.2. Knowledge and understanding of value of FAnGR and their wild relatives increased and replication strategies made available.

71. Support from the public and decision-makers for the project objectives will help to facilitate replication of the approach to other sites and regions and ensure long-term sustainability of the project practices. During the PDF-B phase, national and community workshops were conducted to discuss project aims and approaches, and to begin building a network of stakeholders committed to the project aims. Workshops were attended by a diverse and representative set of stakeholders. A project website (www.bpslv.org) was established to help increase public awareness.

72. PDF-B consultations assisted project planners to determine the types of communication methods needed to effectively promote stakeholder involvement in conservation and management of FAnGR. Tools to support these activities will include:

- A primer that describes the Decision Support Tools, other actions required and how to use them to meet FAnGR conservation objectives will be developed;
- National FAnGR databases;
- A publicly available Action Plan to guide implementation;
- A system for integrating databases and linked web sites into stakeholder institutions and associations;
- Establishment of national indigenous FAnGR breeds associations.

73. Knowledge and understanding of stakeholders will be achieved through awareness workshops and seminars (local, national and international), FAnGR newsletter and development of information and networking systems for dissemination of project information and results. More general public awareness will be built through use of directed media strategies.

74. When the project begins, an analysis of methods to promote project objectives will be undertaken, and a dissemination action plan will be developed. Multiple simultaneous approaches to enhancing knowledge, interest, and participation in FAnGR conservation and management will be applied. The project web site, developed and put into active use during the PDF-B phase will be carefully managed to ensure its currency and relevance. An electronic newsletter (bi-annual) on the value of FAnGR will be widely distributed via email to interested parties.

75. More directed approaches will include awareness workshops and seminars that promote adoption and support for the Decision Support Tools. These will occur at three levels:

- At the national level, the experiences and results will be presented at annual meetings and seminars. In Sri Lanka, examples include the Annual Congress of the Postgraduate Institute of Agriculture in Sri Lanka, annual meeting of the Association for the Advancement of Science, and annual meetings/seminars of the Sri Lanka Association of Animal Production, and the Sri Lanka Veterinary Association. In Bangladesh, examples include conference of the Bangladesh Association for the Advancement of Science, annual meeting of the Bangladesh Animal Husbandry Association, annual workshop of the Biodiversity Research Group of Bangladesh, annual seminar of the Bangladesh Veterinary Association, and annual meeting of the Bangladesh Association for Biotechnology (BABT). In Pakistan and Vietnam, examples include annual seminars organized by PARC and NIAH, respectively.
- At the regional level, the project findings will be presented at the FAO-Animal Production and Health Commission for Asia and the Pacific (APHCA) annual meetings which target stakeholder groups involved in policy issues.
- At the international level, promotion of project findings will target researchers and policy-makers in countries beyond those participating in the projects to encourage project replication. An international workshop will be organized. Representatives from relevant stakeholders involved in FAnGR and wild relative issues will be invited, including FAO national focal points from different countries, and other organizations/institutions involved in conservation/utilization of indigenous livestock and wild relatives. Project results will also be presented at the Animal Science Congress of the Association of Australasian Animal Production (AAAP), World Congress for Genetics Applied to Livestock Production, and meetings of the International Society of Animal Geneticists.

RISKS AND SUSTAINABILITY

76. Project design and success rely on a number of assumptions that fall outside of the project boundaries. These include the assumption that economic and political conditions in the project countries, especially in the rural areas where the project will focus, remain stable. The project will also depend on stable leadership within the government agencies and institutions that are integral to project activities. The project also carries with it risk of natural disaster (flood, drought, earthquake) and livestock disease outbreaks that lead to quarantine regimes, loss of priority animals, and/or general disruption of project activities. In this context, the increasing ongoing concern of bird flu epidemics could be a risk for the implementation of

project activities particularly in Vietnam. On the other hand, the above concern stresses the importance and the urgency to assess the diversity of chicken genetic resources of Vietnam and other Asian countries as well as urgency to develop conservation action and strategies to prioritize conservation and utilization of chicken genetic resources.

77. Closer to the heart of the project are the assumptions that farmers are willing to participate, and, more specifically, agree to the screening and use of their animals in the open nucleus breeding systems. It is also assumed that project success will ensure that their willingness and interest remains beyond the life of the project. The risks associated with this assumption have been minimized during the PDF-B phase through work with this stakeholder group. Community level workshops were conducted in all collaborating countries and in all project sites. These workshops were conducted in collaboration with NARS extension staff and the farmers were briefed on the objectives, goals and the proposed activities of the project. The enthusiasm and the devotion expressed by the farmer groups during these meetings will help to assure a favorable working environment throughout the project.

78. National and local governments are expected to provide adequate resources and an appropriate enabling environment (extension, policies, incentives, etc.) for the conservation and sustainable use of FAnGR. Finally, project success will rely on availability and willingness of extension, University and other relevant staff to participate in project activities, including training, and that personnel in key staff positions remain stable.

79. Conservation of globally significant FAnGR requires long-term commitment to their management. The project will develop the tools, provide training, build awareness and capacity, and address market and policy weaknesses. However, the key to sustainability is in two areas: building awareness about the potential livelihood and biodiversity value of FAnGR, and demonstrating actual improvements to the stability and levels of income in rural communities. It is this latter step that will motivate local farmers, farmer associations and extension workers to apply the tools and knowledge developed by the project, and the continuing assessment and monitoring of FAnGR that will be carried out by researchers, academic institutions, and government agencies.

80. Financial sustainability for maintaining the overall system structures (e.g. policy and markets, prioritization of FAnGR conservation and production at federal and provincial levels) will also depend on the demonstration of feasibility provided during the life of the project. The in-kind co-finance commitments towards the implementation of project activities during the PDF B phase, and both in-cash and in-kind co-finances pledged by national and regional/ provincial governments for the implementation of the full project, is an indication of the importance given by the respective governments towards conservation and utilization of FAnGR and wild relatives. Realization of the value of FAnGR as a means to alleviate rural poverty will provide impetus for allocation of more national and provincial/regional government funds, specifically budgeted towards conservation and improved utilization of FAnGR, thereby securing the project objectives and goals. Even a 5% allocation towards conservation and utilization of FAnGR from the current budgetary allocation for the livestock sector in the collaborating countries will suffice and ensure its sustainability

STAKEHOLDER PARTICIPATION AND IMPLEMENTATION ARRANGEMENTS

81. The main stakeholder groups are both male and female farmers and farming communities, researchers and academics, extension workers, NGOs and community leaders, and

government agencies and Ministries operating in the livestock sector of the four project countries. These can also be defined in the following terms: local communities; National Agricultural Research Centers/Institutes; National Universities; National Ministries (agriculture and natural resource management); and regional and international organizations. During the PDF-B phase of the project, the individual agencies, organizations and associations within these groups were identified. These are listed in the Public Involvement Plan Summary (Appendix E).

82. Stakeholder groups in each of the four countries contributed to the project design, primarily by helping to define existing resources and capacities, and by contributing to the discussion about how the various stakeholders could most effectively interact during project execution. In each of the four countries, two national workshops were held (start and end of PDF B) where all the key stakeholders actively participated in providing inputs to the formulation of the project, agreeing on the national organizational structure for project implementation and also the budgetary requirements for successful implementation of the project activities.

83. A detailed national project management and implementation structure and its linkage with the global coordination were discussed for each country during PDF B phase. The project management and implement structure is based on each countries' national policies and organizational set up. These implementation and execution arrangements are designed for effective coordination of project activities at national as well as at project sites. The details of the public involvement plan for each country are described in Appendix E. A common agreement was reached among partners for the Project Implementation Unit across all the four countries. The Project Implementation Unit will have a National Project Director (staff member from the national executing agency), a national administrative/accounting assistant (to be hired by the project), and Technical Advisors.

84. ILRI will serve as the executive agency at the global level. The project will be part of ILRI project BT02 "Characterization of Animal Genetic Resources". ILRI will oversee the Project Management Unit (PMU), located at its headquarters in Nairobi, Kenya. The PMU will be under the overall management of ILRI's Project leader on Animal Genetic Resources who will act as Project Leader. The PMU will include also a Regional Project Coordinator. The PMU will be assisted by project advisory panel which will include Technical Advisors from the executing agency. The PMU will establish reporting guidelines for all partners and ensure that they submit quality reports prepare biannual progress and quarterly financial and annual summary progress reports for UNEP; the PMU will also carry out a programme of regular visits to project countries, to address concerns relating to implementation problem.

85. A Project Steering Committee (PSC) will be established. Membership will include representation from each of the National Executing Agency ILRI Project Leader, Regional Project Coordinator and UNEP/GEF representative. PSC responsibilities include: reviewing biannual progress and quarterly financial reports and annual summary progress reports, providing policy guidance to the project, assisting the PIUs in developing linkages with other related projects, and overall guidance for the project implementation. The PSC will be meeting once a year.

86. National Steering Committees (NSC) have been constituted in each of the four countries. During the PDF B phase regular national meetings were conducted to ensure the smooth running of the project activities. Members are drawn from the key stakeholders: Ministries or

Departments of Agriculture and Livestock, Rural Development, Environment, Wildlife; National Agricultural Research Institutes; National Universities, local IUCN and FAO offices, relevant NGO and Community-based livestock groups (e.g. farmer organizations/associations). The actual composition (both key stakeholders and individuals represented) varies with the countries concerned. The NSC will take responsibility for national coordination and linkage to the PSC. National Project Director will be responsible for the management of the project at the national level and will provide linkage to the overall project through the PSC.

87. At the site level, public participation will be promoted through the formation of Site Coordinating Committees (SCCs) in each of the pilot areas, which will include public representatives such as farmers, grass roots level (non) governmental extension officers, and project staff. It is expected that at least one of the farmer representative to this committee will be a woman to reflect their leading roles in the rearing of rural poultry. These community representatives will be joined by local personnel of livestock and farmer outreach workers, and other technical personnel. One representative from each of the SCCs will be invited to participate in the relevant National Steering Committee (NSC).

88. For the SCCs to develop into effective entities, their responsibilities will be gradually increased and broadened as the project progresses. A dedicated effort to ensure that adequate capacity is developed will be made. The project will therefore support significant training and capacity development for these new bodies.

INCREMENTAL COSTS AND PROJECT FINANCING

Incremental Cost Analysis

89. Baseline, incremental, and component costs are provided in the tables that follow. They reflect the baseline and increments costs and activities described in Appendix A.

Table 1: Baseline, Alternative and Incremental Costs in US\$

	Partner	Baseline	Alternative	Increment
Outcome 1	Bangladesh	232,340	1,095,860	863,520
	Pakistan	253,785	893,535	639,750
	Sri Lanka	81,975	771,225	689,250
	Vietnam	499,200	1,101,950	602,750
	Regional	0	299,166	299,166
Total		1,067,300	4,161,736	3,094,436
Outcome 2	Bangladesh	420,381	728,356	307,975
	Pakistan	595,428	849,003	253,575
	Sri Lanka	25,848	345,323	319,475
	Vietnam	262,776	601,751	338,975
	Regional	0	638,000	638,000
Total		1,304,433	3,162,433	1,858,000
Project Management and M&E	Bangladesh	0	128,734	128,734
	Pakistan	0	133,734	133,734
	Sri Lanka	0	129,734	129,734
	Vietnam	0	133,732	133,732
	Regional	0	285,400	285,400
Total		0	811,334	811,334
GRAND TOTAL		2,371,733	8,135,503	5,763,770

Table 2: Component financing in US\$

	Partner	Increment	Governments		Collaborating institutions and donors		GEF
			In-kind	Cash	In-kind	Cash	
Outcome 1	Bangladesh	863,520	124,000	0	123,000	164,000	452,520
	Pakistan	639,750	150,000	40,000	132,000	137,500	180,250
	Sri Lanka	689,250	192,000	110,000	132,000	137,500	117,750
	Vietnam	602,750	168,500	50,000	132,000	137,500	114,750
	Regional	299,166	0	0	132,000	137,500	29,666
Total		3,094,436	634,500	200,000	651,000	714,000	894,936
Outcome 2	Bangladesh	307,975	0	0	56,200	56,000	195,775
	Pakistan	253,575	17,000	7,000	194,200	35,000	375
	Sri Lanka	319,475	13,000	30,000	194,200	35,000	47,275
	Vietnam	338,975	47,500	0	194,200	35,000	62,275
	Regional	638,000	0	0	194,200	35,000	408,800
Total		1,858,000	77,500	37,000	833,000	196,000	714,500
Project Management and M&E	Bangladesh	128,734	19,000	5,000	46,000	18,000	40,734
	Pakistan	133,734	30,000	8,000	46,000	18,000	31,734
	Sri Lanka	129,734	15,000	5,000	46,000	18,000	45,734
	Vietnam	133,732	31,000	5,000	46,000	18,000	33,732
	Regional	285,400	0	0	46,000	18,000	221,400
Total		811,334	95,000	23,000	230,000	90,000	373,334
GRAND TOTAL		5,763,770	807,000	260,000	1,714,000	1,000,000	1,982,770

SECTION 4. INSTITUTIONAL FRAMEWORK

90. International Livestock Research Institute, as the Executing Agency, will be responsible for the implementation of the project in accordance with the objectives and activities outlined in Section 2 of this document. UNEP, as the GEF Implementing Agency, will be responsible for overall project supervision to ensure consistency with GEF and UNEP policies and procedures, and will provide guidance on linkages with related UNEP and GEF-funded activities. The UNEP/DGEF Co-ordination will monitor implementation of the activities undertaken during the execution of the project. The UNEP/DGEF Co-ordination will be responsible for clearance and transmission of financial and progress reports to the Global Environment Facility.

91. International Livestock Research Institute as executing agency will cooperate with UNEP so as to allow the organization to fulfill its responsibility as Implementing Agency accountable to the GEF. To this end free access to all relevant information will be provided by International Livestock Research Institute. Project operational arrangements are detailed in Section 2 paragraphs 81-88 and Appendix E.

SECTION 5. MONITORING AND EVALUATION PLAN

92. The project will follow UNEP standard monitoring, reporting and evaluation processes and procedures. Substantive and financial project reporting requirements are summarized in Appendix F. Reporting requirements and templates are an integral part of the UNEP legal instrument to be signed by the executing agency and UNEP.

93. The project M&E plan is consistent with the GEF Monitoring and Evaluation policy. The Project Results Framework presented in Appendix F includes SMART indicators for each expected outcome as well as mid-term and end-of-project targets. These indicators along with the key deliverables and benchmarks included in Appendix F. Table 2 will be the main tools for assessing project implementation progress and whether project results are being achieved. The means of verification and the costs associated with obtaining the information to track the indicators are summarized in Appendix F. Table 4. Other M&E related costs are also presented in the Costed M&E Plan and are fully integrated in the overall project budget.

94. The M&E plan will be reviewed and revised as necessary during the project inception workshop to ensure project stakeholders understand their roles and responsibilities vis-à-vis project monitoring and evaluation. Indicators and their means of verification may also be fine-tuned at the inception workshop. Day-to-day project monitoring is the responsibility of the project management team but other project partners will have responsibilities to collect specific information to track the indicators. It is the responsibility of the Project Manager to inform UNEP of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely fashion.

95. The project Steering Committee will receive periodic reports on progress and will make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E plan. Project oversight to ensure that the project meets UNEP and GEF policies and procedures is the responsibility to the Task Manager in UNEP-GEF. The Task Manager will also review the quality of draft project outputs, provide feedback to the project partners, and establish peer review procedures to ensure adequate quality of scientific and technical outputs and publications.

At the time of project approval 15% of baseline data is available. Baseline data gaps will be addressed during the first year of project implementation. A plan for collecting the necessary baseline data is presented in Appendix F. Table 3.

96. Project supervision will take an adaptive management approach. The Task Manager will develop a project supervision plan at the inception of the project which will be communicated to the project partners during the inception workshop. The emphasis of the Task Manager supervision will be on outcome monitoring but without neglecting project financial management and implementation monitoring. Progress vis-à-vis delivering the agreed project global environmental benefits will be assessed with the Steering Committee at agreed intervals. Project risks and assumptions will be regularly monitored both by project partners and UNEP. Risk assessment and rating is an integral part of the Project Implementation Review (PIR). The quality of project monitoring and evaluation will also be

reviewed and rated as part of the PIR. Key financial parameters will be monitored quarterly to ensure cost-effective use of financial resources.

97. A mid-term management review or evaluation will take place in October 2010 as indicated in the project milestones. The review will include all parameters recommended by the GEF Evaluation Office for terminal evaluations and will verify information gathered through the GEF tracking tools, as relevant. The review will be carried out using a participatory approach whereby parties that may benefit or be affected by the project will be consulted. Such parties were identified during the stakeholder analysis (see Appendix E of the project document). The project Steering Committee will participate in the mid-term review - and develop a management response to the evaluation recommendations along with an implementation plan. It is the responsibility of the UNEP Task Manager to monitor whether the agreed recommendations are being implemented.

98. An independent terminal evaluation will take place at the end of project implementation. The Evaluation and Oversight Unit (EOU) of UNEP will manage the terminal evaluation process. A review of the quality of the evaluation report will be done by EOU and submitted along with the report to the GEF Evaluation Office not later than 6 months after the completion of the evaluation. The standard terms of reference for the terminal evaluation are included in Appendix P. These will be adjusted to the special needs of the project.

99. The GEF tracking tools are attached as Appendix N. These will be updated at mid-term and at the end of the project and will be made available to the GEF Secretariat along with the project PIR report. As mentioned above the mid-term and terminal evaluation will verify the information of the tracking tool.

SECTION 6. BUDGET

6.1 Workplan and Timetable

100. A detailed operational Workplan and Timetable can be found in **Appendix B**.

6.2 Budget

101. The grant will be used to finance the activities mentioned in Section 2, including administrative and operational support. A detailed budget following UNEP format can be found in **Appendix P** of this document.

APPENDIX A – INCREMENTAL COST

BROAD DEVELOPMENT GOALS

Farm Animal Genetic Resources (FAnGR) represent a globally significant genetic resource while concurrently playing a critical role in the maintenance and stability of livelihoods. This is particularly true in the rural areas of developing countries, where low-input systems have little capacity to maintain exotic breeds, and the adaptive traits of indigenous livestock breeds offer a stable source of income and livelihood. Growing populations and consequent increasing demand for livestock products is expected to continue, a situation that highlights the need for more effective use and management of indigenous livestock.

Bangladesh, Pakistan, Sri Lanka, and Vietnam all recognize the importance of livestock management and to some extent the genetic diversity of indigenous species. The national biodiversity strategies of all four countries include genetic diversity, including in agricultural systems, and their development plans emphasize the importance of improving crop and livestock production.

Global benefits of the project are:

1. Availability of decision making tools that can be applied both within and outside the 4 project countries to prioritize and conserve significant FAnGR and their wild relatives
2. Importance and credibility of indigenous animal resources recognized, and breeding strategies/plans for indigenous livestock incorporated into country livestock development plans, and
3. Productivity of indigenous livestock species increased through better management and feeding

Domestic benefits of the project are:

1. Enhanced capacity to make decisions and act on all aspects related FAnGR and wild relatives. All capacity-building trainings will necessarily involve strong gender components to ensure that all actors in the production and marketing of indigenous animals and products are strengthened within the local contexts of community-sanctioned gender roles.
2. Availability of expertise with a strong scientific background on molecular characterization, breed surveys, markets and marketing, policy and legal issues, and data base management
3. Establishment of participatory and consultative mechanism and availability of policy briefs catering to the enhanced conservation of animal diversity, and
4. Alternatives available to decrease cross-breeding of indigenous breeds by providing alternative production and productivity options, better feeding and participatory management strategies of benefit to rural households whose livelihood rely on FAnGR

BASELINE

The project builds on the following baseline assumptions:

1. Erosion of globally significant livestock genetic diversity is increasing;
2. The loss is felt most acutely by the poor in areas where intensification is already beginning to occur.
3. Potential to improve productivity is greatest in these intensifying systems, but these are also the same areas where diversity losses are greatest;

4. The stakeholders (from farmers to national-level government officials) lack the awareness, knowledge, tools, systems, and capacity to respond to loss of genetic diversity;
5. Capacity of governments to act is limited by both absence appropriate policies and lack of resources;
6. Neither farmers nor decision-makers understand the opportunities to improve productivity with indigenous livestock.

Decision Support Tools

Through biodiversity and other action plans, all four countries recognize the value of agricultural (crop and livestock) genetic diversity, and the need to conserve it. However, this recognition is not translated into support for the policies, systems, and tools needed to encourage and motivate widespread action for FAnGR conservation. And while some farmers recognize the potential value of indigenous FAnGR, systems and tools to respond to the potential are weak or non-existent.

Moreover where breed associations exist, they focus almost exclusively on current profit potential, which is distorted in favor of exotic breeds. The distortion is due to the failure of market analyses to account for a variety of monetary and non-monetary costs and benefits. For example, many exotic breeds require significant veterinary attention to maintain their high level of productivity and, once subsidies are removed, the resources of poor farmers are insufficient to cover the costs. And while the significant number of domestic exotic, cross, and indigenous livestock breeds are reasonably well known in each of the four countries, a significant proportion of the indigenous breeds are classified as “non-descript”, meaning that their genetic make-up is unknown.

The result is increasing crossbreeding and introduction of exotic breeds, leading to genetic erosion and loss of valuable indigenous breeds. Therefore, there is a need to assess the diversity in livestock populations (e.g. phenotypic and molecular genetic studies and capacity building in this area) and to develop web-based national domestic animal information systems accessible to all stakeholders. The ability to identify priority indigenous FAnGR that hold both conservation and market values are not enough, however, without the systems in place to manage them. Systems and tools that assure both conservation and livelihood benefits are needed. Such systems would include capacity to identify, prioritize FAnGR for conservation and use, including wild relatives, with highest potential. There is also a need to understand and act on the policy (local to global) that impacts management of indigenous livestock.

The baseline cost for this project component is estimated to be \$ 1,067,300. These costs are based on on-going project related activities in the four countries which include: characterization of native cattle and sheep; breed improvement/upgrading through crossbreeding; market studies; nutritional and management studies. The costs includes the cash by national governments and other donors within countries, and regional donors (IAEA/FAO) for staff time salaries, cost of equipment and chemicals and also for field and laboratory experimentation.

Capacity of stakeholders and knowledge of DSTs

University-level education in the four project countries includes courses and training in animal breeding, genetics and reproductive management. There is some specialization in breed characteristics, phenotypic characterization, and some essential facilities are available, however the capacity that does exist is inadequate to address the project objectives. Most importantly, capacity to carry out breed survey methodologies, genetic improvement, molecular characterization, and livestock market and policy analysis, five of the most important skills needed to implement this project, is weak or non-existent.

There are institutional structures, such as artificial insemination centers and veterinary hospitals in the project countries, but their capacity to support FAnGR management is limited due to poor facilities and inadequate skills at the national levels.

Farmers understand the value of indigenous breeds to varying degrees, and in some cases (e.g. pig farmers in Sri Lanka) farmers cross indigenous breeds and their wild relatives as a breeding strategy. But even among those few farmers, there is insufficient capacity (knowledge, networks and tools) and technical support to apply FAnGR management strategies that effectively increase productivity, market potential, and conservation.

Understanding about management, and how its potential value might be addressed in policy and market structures is also inadequate. Basic understanding on the impact of policy and markets on FAnGR management, and its potential returns is needed at all policy-making levels (local to global).

Knowledge and understanding about the value of FAnGR is a prevalent issue with implications for each component of this project. There is generally a lack of awareness of the importance of FAnGR and wild relatives as genetic resources for breed improvement among all stakeholder groups. Impacts of policies that favor use and importation of exotic breeds and cross-breeds are not properly understood, even though the consequences of such policies may include loss of valuable genetic diversity and loss of potential income and economic stability for low-input farming communities, adversely affecting their livelihoods.

The issue is compounded at several levels and among all of the stakeholder groups. Market dynamics, as discussed above, are considered only in the context of direct monetary return. The gaps in knowledge are not recognized so there is little motivation to address them. Potential improvements to productivity offered by indigenous FAnGR are also little known and not recognized, nor are the management practices that support improved management and production.

As mentioned above, decision-makers tend to favor exotic and crossbreeds because improved productivity can be realized quickly. However, this approach is generally unsustainable at the rural community level especially once subsidies have been removed. In addition, shifts of production systems toward large commercial enterprises that use exotic breeds to address urban demand has a direct negative impact on the livelihoods of poor farmers, their livestock products being more expensive to produce. The net result is shrinking and increasingly restricted market opportunity for indigenous livestock products, and loss of indigenous diversity. The situation can be addressed by improving long term productivity of indigenous breeds through genetic improvement so that they become more competitive.

The baseline cost for this project component is estimated to be \$ 1,304,433. These estimates are based on on-going project related activities which include: support services for livestock farmers; strengthening of livestock institutes and livestock services; farmer training and capacity building; human resource development; poverty alleviation through livestock development; public awareness programmes; transfer of technology related to livestock breeding, nutrition, disease control, marketing and management. The cost includes the cash by national governments and other donors within countries for personnel, logistic arrangements for training and staff development, publication costs and for NARS livestock extension and training institutions. Also the IAEA/FAO regional AnGR CRP project provides support for the national focal points to meet regularly and exchange information.

GLOBAL ENVIRONMENT OBJECTIVES

Bangladesh, Pakistan, Sri Lanka, and Vietnam hold a globally significant wealth of genetic diversity in domestic livestock species and their wild relatives. This important resource is under heavy and growing pressure from cross-breeding and breed replacement, weak and inequitable access to market structures, and lack of knowledge and capacity. While the stakeholder groups value indigenous livestock breeds to differing extents, and the countries' national biodiversity plans acknowledge the

importance of livestock genetic diversity, the overriding attitude is that exotic breeds bring more immediate and greater returns. This attitude has, in part, grown from analyses of market potential that exclude consideration of breed adaptability, the high level of management skills and inputs needed, and subsidy distortions. Such analyses based only on traded commodities ignore the non-market livelihood contributions of these genetic resources.

These threats will be addressed through the project components that will build the awareness and capacity for the conservation of conserve FAnGR. The project is designed to influence action at the policy and technical levels through development of tools for application in practical situations. These tools are ultimately intended for use by community groups, NGOs and extension workers and researchers in development programmes involving farmers of both gender groups and farming community. It is particularly important that the role of farmers is fully recognized in this process and that they are given the tools needed to participate in new management schemes. In addition national government agencies must be provided with the tools and knowledge to ensure that policy support management and conservation of FAnGR.

Ultimately, the project tools and systems will be promoted for replication to other Asian countries and other parts of the world, and will pave the way for the tools to be adapted and used for other livestock species not covered in this project. It is expected that the impact on conservation of FAnGR will be significant and continue to grow as more countries and communities adopt the tools for their own systems.

GEF ALTERNATIVE

When the project is completed, stakeholder groups in the four project countries will have in place the tools for FAnGR assessment, identification of priority breeds, management systems and protocols, capacity to assess market and policy opportunities and weaknesses, and appreciation of the value of applying them to conserve FAnGR. More generally, the results will provide a model for replication both outside of the project countries and with other species of livestock.

Decision Support Tools

With significant limitations to financial and human resources comes the need to prioritize those breeds with highest conservation and market values. The proposed project will develop the tools and criteria needed to do this, and the national action plans to guide their use and potential. The project will build the knowledge about existing genetic diversity, including wild relatives. This process will include phenotypic analysis, genetic characterization, and protocols to support breeding decisions. Committees of stakeholders (e.g. farmers and extension workers) at sites, a participatory process to develop and manage herds/flocks and data management systems (in human and technological terms) will ensure the greatest potential return to benefit genetic diversity and human livelihoods.

A breed diversity index for selected species and breeds/populations, including wild relatives, will serve as a fundamental tool for national governments to develop strategies for the management of AnGR diversity, including conservations actions. Application of this analytical framework will allow users to rank breeds and populations for priority conservation and utilisation.

Policy and market structure analyses will help to strengthen and manage indigenous breeds. The project will develop the conceptual frameworks for characterizing existing indigenous breed marketing systems and guiding marketing options. In-depth studies of market structures (informal/traditional and formal), conduct (including volumes) and performance (including analysis of supply and demand, as well as covering specific producer/consumer preferences and opportunities for niche markets) will enhance knowledge of market dynamics and how they might relate to indigenous breed values. Gender-sensitive information will also be collected by including women researchers in the investigative teams and by using gender-sensitive participatory methods. The idea is to ensure that

indigenous breeds are competitive, and that low-input (poor) farmers can achieve greater benefit and livelihood stability.

The project will also build knowledge about the impacts of existing policies and will provide to policy-makers alternatives that improve livestock productivity, enhance incomes, and conserve genetic diversity.

The incremental cost of this project component is estimated to be US\$ 3,094,436 of which national government will provide co-financing of US\$ 634,500 (in-kind) and US\$ 200,000 (cash) to cover salaries of their staff participation involved in project implementation, logistical support and use of laboratory, livestock farms and operational facilities for undertaking activities as indicated for Outputs 1.1 to 1.4 of the project logframe. These include: protocol for participatory planning and field testing of recording systems with farmers, extension and research staff of (non)governmental organizations; undertaking field surveys (socio-economic, breed, market and policy); field and laboratory assessment of FAnGR and their wild relatives; and providing all logistic arrangements for undertaking these surveys and laboratory experimentations

Co-financing from others is estimated at US\$ 1,365,000, of which World Vision - Bangladesh will contribute US\$ 123,000 (in-kind) and US\$ 164,000 (cash) to partly support the participatory planning process and the implementation of breeding schemes. ILRI's and others contribution will be US\$ 1,078,000, of which US\$ 528,000 will be in-kind to cover staff time and regional networking, and US\$ 550,000 cash to provide the required international expertise for output 1.1 to 1.4. GEF funds amounting to US\$ 894,936 will be used from partner countries GEF-4 allocations to assist the development of protocols for participatory planning and implementation of recording schemes through conducting focus group discussions with stakeholders; farmer surveys; and part-funding for the development and testing of Decision Support Tools. Also these funds will be used for facilitating the development of models, preparation of training manuals and conducting workshops inviting experts on these fields. The DSTs developed and tested will add a valuable dimension to the global knowledge base for prioritizing and conservation of indigenous FAnGR resources.

Capacity of stakeholders and knowledge of DSTs

Tools, systems, and policies to support conservation and sustainable management of FAnGR are of little use without the capacity to apply them. The proposed project will build capacity of key stakeholders to ensure that they are knowledgeable and equipped to apply these tools to support the conservation and use of FAnGR in their respective countries.

Representatives of all stakeholder groups will have received training in their respective breeding program roles, and will be actively participating in conservation and management of priority FAnGR. Policy-makers, researchers, and academics will be trained in development of policy frameworks, and academics, extension workers and NGOs, and farmer communities in market analysis. Researchers, academics, extension workers and NGO personnel will be trained in phenotypic and genetic breed characterization, survey methodologies for FAnGR and wild relatives, and database management.

At the completion of the project each of the stakeholder groups with equal participation of both gender groups will have gained sufficient capacity for application of the tools. Training materials (modules and manuals) will be made available, within the framework of the project and beyond (to support replication efforts).

To ensure project sustainability, it is critical that stakeholder groups understand the value and potential of FAnGR. The project will develop stakeholder information and networking systems for sharing and dissemination of FAnGR issues, and a synthesis of the decision support tools so developed and an articulation of how and when to use them. A national FAnGR database will support ongoing management of the critical information, and support integration of databases and websites into relevant institutions. All of these new resources will be promoted through awareness workshops

and seminars (local, national, and international), and use of media (television, radio, newspapers, internet).

All avenues of project promotion, within the project countries and beyond, will be explored and exploited. The end result will be conservation and sustainable management of indigenous breeds and valuable FAnGR among the selected species in the project countries, the motivation and capacity to maintain the systems introduced through the project, and the models and awareness needed for replication to other countries and species.

The incremental cost of this project component is estimated to be US\$ 1,858,000. Of this the countries will provide US\$ 77,500 (in-kind) and US\$ 37,000 (cash). National funds will cover part-funding of postgraduate students, costs for supervisors of postgraduate students, staff time of national experts for conducting various training courses and to provide training facilities and logistic arrangements, including subsidized accommodations and catering for the participants, wherever possible for activities as indicated for Outcome 2 of the project logframe. The national contribution will also be used for providing support for conducting awareness workshops, field demonstrations/exhibitions, local media facilities for broadcasting and modifying the existing extension packages and for the development of University and Training school curriculum of national and provincial institutions. Total international co-funding is estimated at US\$ 1,029,000, ILRI will provide US\$ 140,000 cash and together with others will provide US\$ 700,000 in-kind to assist in the preparation of public awareness materials on the conservation and utilization of animal genetic diversity, and its dissemination. In addition FAO will provide in-kind contribution of US\$ 96,000 to assist preparation of breeding protocol, action plans and setting of animal resource databases, and World Vision - Bangladesh will provide US\$ 37,000 (in-kind), and US\$ 56,000 cash to cover costs of dissemination of project findings in Bangladesh. GEF funds of US\$ 714,500 will be used from partner countries GEF-4 allocations to cover part-funding of postgraduate students field work related to the project, capacity building for farmers and local communities, provincial training institutions, academic and national research institutes, and for training on the use of decision support tools and FAnGR database management and dissemination. The partner countries GEF-4 contribution will also be used for documentation of successful experiences from the project and their publication; translation of training manuals and other relevant publications, and preparation of policy briefs, and disseminating public awareness materials for conservation and utilization of animal genetic diversity, publishing the project results and making available the information to through various channels for wider circulation.

Project Management and M&E

The incremental cost of project management component is estimated to be US\$ 811,334. ILRI will provide US\$ 90,000 cash and together with others will contribute a total of US\$ 230,000 in-kind for regional project management which includes office space, and supplies. National governments will provide US\$ 23,000 cash and US\$ 95,000 in kind. US\$ 373,334 available from partner countries GEF-4 allocations will cover the costs related to the National Project Implementation Units, which include allowances for program assistant and accountant for each country, National Steering Committee's work, National Site Coordinating Committees and Site Teams meetings, National Project Director's travel, office equipment and direct administration charges. The National Project Director will be an employee of the national executive agency. Costs of National Directors are partly covered by national in-kind contributions. GEF funds will also be used to support the full time regional project coordinator; travel of project leader and project coordinator; International Steering Committee's work, and the costs related to project monitoring and evaluation activities including mid-term and final evaluation of the project (as specified in the Monitoring and Evaluation plan, table 4). These funds will be also used in support development and dissemination of public awareness materials for conservation and utilization of animal genetic diversity, publishing the project outcomes into publications and newsletters and making available the information to its web site for wider circulation.

COSTS

The incremental cost matrix that follows shows the incremental costs and benefits of the project by project output. Total baseline expenditures are estimated to be US\$ 2,371,733. The alternative is estimated to be US\$ 8,135,503. The incremental cost, US\$ 5,763,770, is the estimated expenditure for carrying out the proposed project activities. US\$ 1,982,770 (34% of the total needed) is requested from the GEF. National and international project partners and donors will provide the balance of funding.

TABLE 1: COSTS AND INCREMENTAL ANALYSIS

	Baseline (B)	Alternative (A)	Increment (A-B)
Global benefits	<ul style="list-style-type: none"> • No systematic efforts to conserve animal genetic diversity through better utilization • Lack of understanding of the importance of indigenous genetic diversity leading to genetic erosion • Services/benefits provided by indigenous animal resources are not valued in formulating breeding strategies which often favors the use of imported breeds • Indigenous FAnGR underutilized, • Breeding policy/plans to improve productivity of indigenous animal resources are nonexistent • Mechanism/tools for prioritization and conservation of globally/regionally/nationally economically important species/breeds/traits of FAnGR and wild relatives are lacking <p>Baseline: US\$ 2,371,733</p>	<ul style="list-style-type: none"> • Tools for decision-making available to prioritize and conserve significant FAnGR and their wild relatives • Importance and credibility of indigenous animal resources recognized • Livestock development plans will include breeding strategies/plans for indigenous livestock • Use and productivity of indigenous livestock breeds increased through better management and feeding <p>Alternative: US \$ 8,135,503</p>	<p>Increment: US\$ 5,763,770</p>
Domestic benefits	<ul style="list-style-type: none"> • Knowledge about priority breeds and the capacity to manage them are weak • Lack of expertise in molecular characterization FAnGR • Policy and legislation to address indigenous genetic diversity is inadequate, and formulation of policies and laws is neither participatory or consultative 	<ul style="list-style-type: none"> • Essential competencies (5 MSc. level qualified staff per country) on molecular characterization, breed surveys, markets and marketing, policy and legal issues, and database management will be developed • Capacity to make decisions and act on important aspects of FAnGR • Participatory and consultative 	

	<ul style="list-style-type: none"> Weak or nonexistent market access and infrastructure addressing issues related to FAnGR 	mechanism in place and policy briefs supporting enhanced conservation of animal diversity made available	
Outcome 1: Enhanced conservation and management of FAnGR diversity using tools for decision-making	<ul style="list-style-type: none"> Breeding systems for indigenous FAnGR non existent Knowledge on cost-benefit analysis of breeding programmes are weak Lack of analytical framework to assess policy and marketing options of FAnGR 	Provision of appropriate FAnGR for use in different production systems in ways that do not compromise resilience of these systems, - based on technical evidence	Bangladesh: US\$ 863,520 Pakistan: US\$ 639,750 Sri Lanka: US\$ 689,250 Vietnam: US\$ 602,750 Regional: 299,166 Total: US\$ 3,094,436 Co-finance: US\$ 2,199,500 Cost to GEF: US\$ 894,936
	Bangladesh: US\$ 232,340 Pakistan: US\$ 253,785 Sri Lanka: US\$ 81,975 Vietnam: US\$ 499,200 Regional: 0 Total: US\$ 1,067,300	Bangladesh: US\$ 1,095,860 Pakistan: US\$ 893,535 Sri Lanka: US\$ 771,225 Vietnam: US\$ 1,101,950 Regional: 299,166 Total: US\$ 4,161,736	

Outcome 2: Increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels	<ul style="list-style-type: none"> • Training to characterize and assess animal genetic diversity, and to prioritize breed conservation strategies, data collection and processing, socio-economic issues and other areas related to conservation and utilization, and sustainable management of genetic diversity not available • Training for farmers, local communities, NARC research and extension staff, University academics and policy makers not available • Knowledge and awareness materials on the value of FAnGR and wild relatives is non-existent • National Livestock Development and Plans (NLDP) and National Action Plans (NAP) do not include FAnGR (and their wild relatives) • National livestock database for FAnGR and wild relatives non-existent 	<ul style="list-style-type: none"> • Farmer groups/associations established with the task to conserve and enhance utilization of indigenous animal genetic resources • Male and female farmers have increased leadership capacity and participate in national decision making fora • Training manuals made available and stakeholders trained on the various expertise needed for their role in project implementation and thereafter • Awareness on the importance and role FAnGR and wild relatives created (National/ international workshops/seminars, media programs (radio/TV/newspaper), exhibitions/open days) at national and global levels • NLDP and NAPs to include FAnGR and wild relatives • Databases/Website on FAnGR and wild relatives launched in each country, and the project website (www.bpslv.org) updated and linked 	
	Bangladesh: US\$ 420,381 Pakistan: US\$ 595,428 Sri Lanka: US\$ 25,848 Vietnam: US\$ 262,776 Regional: 0 Total: US\$ 1,304,433	Bangladesh: US\$ 728,356 Pakistan: US\$ 849,003 Sri Lanka: US\$ 345,323 Vietnam: US\$ 601,751 Regional: US\$ 638,000 Total: US\$ 3,162,433	Bangladesh: US\$ 307,975 Pakistan: US\$ 253,575 Sri Lanka: US\$ 319,475 Vietnam: US\$ 338,975 Regional: 638,000 Total: US\$ 1,858,000 Co-finance: US\$ 1,143,500 Cost to GEF: US\$ 714,500

Project Management and M&E		Effective national and global collaboration to produce project outputs with required standards of monitoring, evaluation and active participation of stakeholders in project activities at national and global levels.	Bangladesh: US\$ 128,734 Pakistan: US\$ 133,734 Sri Lanka: US\$ 129,734 Vietnam: US\$ 133,732 Regional: US\$ 285,400 Total: US\$ 811,334 Co-finance: US\$ 438,000 Cost to GEF: US\$ 373,334
		Bangladesh: US\$ 128,734 Pakistan: US\$ 133,734 Sri Lanka: US\$ 129,734 Vietnam: US\$ 133,732 Regional: US\$ 285,400 Total: US\$ 811,334	

APPENDIX B - LOGICAL FRAMEWORK AND WORK PLAN

Project Planning Matrix (PPM)	Project title: “Development & Application of Decision-Support Tools to Conserve & Sustainably Use Genetic Diversity in Indigenous Livestock & Wild Relatives”	Date: 10 July 2008	APPENDIX B
Objectives and Outcomes/Outputs	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Development Objective:</p> <p>Conservation of indigenous livestock for future generations and their increased contribution to livelihoods through enhanced use</p>	<ul style="list-style-type: none"> • Population of indigenous livestock of the targeted species remain stable or increase in size (5-10%), with concurrent 5-10% average increase of farmer income from indigenous FAnGR 	<ul style="list-style-type: none"> • Project study and independent evaluation reports, that quantify indigenous animal genetic diversity and enhanced off-take 	<ul style="list-style-type: none"> • Stable and favorable economic and political environment, and commitment from policy makers’ and partners’, and project goal consistent with policies and priorities on poverty alleviation
<p>Immediate Objective:</p> <p>Effective tools to support decision making for the conservation and sustainable use of indigenous FAnGR and their wild relatives in developing countries developed and made available</p>	<ul style="list-style-type: none"> • DSTs and management packages or recommendations made by the project are in use in at least one project site (e.g. community) supporting conservation and/or increased use of at least one indigenous breed by end of year 5 • National Livestock Development Plan (NLDP) and strategies in each country revised to include the use of the DSTs and implementation initiated at least in one country by end of year 5; • At least three livestock institutions/farmers organizations per country raising target species participate in decision making fora or workshops for using developed DSTs to increase the productivity of indigenous FAnGR by end of year 5; • All the four countries establish national FAnGR 	<ul style="list-style-type: none"> • Project reports and independent evaluation reports • Documentation on tools available and distributed • Independent technical evaluation of the decision support tools 	<ul style="list-style-type: none"> • National and local governments provide adequate support and resources and an appropriate enabling environment (extension, policies, incentives, etc.) for the conservation and sustainable use of AnGR

	databases and these are institutionalized and functioning by end of year 5.		
Outcome 1: Enhanced conservation and management of FAnGR diversity using Decision Support Tools (DST)	<ul style="list-style-type: none"> • Conservation and/or use action taken in at least one project site and involving at least one target species, using one or more of the DSTs developed by this project (by end of year 5) 	<ul style="list-style-type: none"> • Project reports and independent evaluation reports, including breed survey information • Official national policies laws and regulations 	<ul style="list-style-type: none"> • Active interest, involvement and support by governmental officer, extension services, and livestock keepers
Output 1.1. Appropriate breeding tools for low input production systems are developed and evaluated.	<ul style="list-style-type: none"> • Working draft of practical manuals on breeding schemes (at least 2 manuals per partner country; in English and in national/local languages), including options and processes for various species and wild relatives (where applicable) available by end of year 1, revised throughout project, with final version published and publicly available by year 5 • At least one breeding schemes established by the project functional and sustainable at the end of the project for each species by year 5. 	<ul style="list-style-type: none"> • Breeding and animal management protocols, data on animal procurement and performance records on procured animals, and training reports • Progress and research reports, minutes of committee meetings workshop reports, annual reports, and scientific publications (conference proceedings, journal articles) 	<ul style="list-style-type: none"> • Local communities and farmers participate and are supportive, current interest by farmers to be involved in the ‘cooperative breeding efforts’ is maintained throughout and beyond the project • No livestock disease outbreak to necessitate quarantine that would prevent farms visits and animal movements. Supportive political environment is maintained to ensure continued enabling socio-political environment, including support by extension service personnel.
Output 1.2. An effective tool for cost-benefit analysis of breeding programs for alternative breeds evaluated and made available	<ul style="list-style-type: none"> • Comparative market and non–market advantages of at least one indigenous breed, crossbreed and exotic breed for each species documented by end of year 4; 	<ul style="list-style-type: none"> • Survey guidelines, protocols, and computer based analytical tools available • Periodic project and workshop reports, and scientific publications 	<ul style="list-style-type: none"> • Field activities not disrupted by livestock disease outbreaks or catastrophes of other kinds • Appropriate candidates for training identified • Active interest and participation of farmers
Output 1.3. Analytical frameworks for			

assessment of policy and marketing options (existing and alternatives) for FAnGR developed, evaluated and made available	<ul style="list-style-type: none"> • Market strategies and options for at least one commodity from indigenous FAnGR products (meat in goat and pigs, meat and eggs in chicken) identified for at least one production system in each country by year 5. 	<ul style="list-style-type: none"> • Policy and market briefs, national and international workshop proceedings, and national supervisors/international consultants reports • Training materials for farmers, extension workers and research groups 	<ul style="list-style-type: none"> • Active interest, involvement and support by governmental officer, extension services, and livestock keepers
Output 1.4. Tools for diversity assessment and for setting cost effectiveness conservation priorities developed and made available	<ul style="list-style-type: none"> • Breed diversity index developed for each project species by end of year 4 • Breeds and populations for each species ranked in each country for the implementation of conservation strategies at country level by end of year 5. 	<ul style="list-style-type: none"> • Published manual, reports and scientific papers Technical reports of assessments of diversity for both AnGR and wild relatives 	<ul style="list-style-type: none"> • Farmers on-site are cooperative • Farmers have understanding and awareness about use of animal diversity
Outcome 2: Increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels	<ul style="list-style-type: none"> • Action plans for the conservation and utilization of FAnGR and wild relatives developed using information provided by the DSTs in at least two of the project countries by end of year 5. • 10-20% of staff from all stakeholder groups involved in the project (farmers and farmer groups, research and extension staff of NARs, NGO staff, policy makers) are applying the DSTs developed by the project for management of FAnGR by end of year 5 	<ul style="list-style-type: none"> • Participant lists of community workshops and national meetings, training workshop Documents from institutional governmental organisation emphasizing use of DSTs, application of their finding and conservation and utilisation of FAnGR and their wild relatives 	<ul style="list-style-type: none"> • Collaborating institutions are open to adoption of in situ conservation approaches to manage indigenous animal resources • Ongoing positive political climate and support
Output 2.1. Capacity of stakeholders to apply the developed Decision Support Tools for conservation and sustainable management/ use of FAnGR and their wild relatives enhanced	<ul style="list-style-type: none"> • Four training programs conducted in a each country, tailored to each specific stakeholder needs (policy makers, extension officers, researchers and academics, farmers' organization) on the use of DST for conservation and management of FAnGR and their wild relatives held by year 4. • At least one University curriculum in each country include specific courses on indigenous FAnGR management and conservation using examples 	<ul style="list-style-type: none"> • Participant lists of community workshops and meetings • Project reports including analysis of the responses from national workshops and NSC meetings • Training course evaluation and reports • Training database, manuals, lecture notes and presentations 	<ul style="list-style-type: none"> • Decision makers are open to adoption of in situ conservation approaches to manage indigenous animal resources

	<p>provided by the DSTs and with course material being applied in practical training by year 5.</p> <ul style="list-style-type: none"> • At least 2 researchers in each country with disciplinary expertise on in situ conservation and management of FAnGR available by the end of the project. • At least one farmers association in each country participates in national programmes/committees on FAnGR conservation as a result of the project by end of year 5. 		
<p>Output 2.2. Knowledge and understanding of value of FAnGR and wild relatives increased and replication strategies made available</p>	<ul style="list-style-type: none"> • Awareness workshops held every year during project life to increase knowledge and understanding of value of FAnGR and wild relative • At least 1 TV/radio programme, 1 exhibition, 2 open days and 4 newspaper articles/advertisement to increase knowledge and understanding of value of FAnGR and wild relative published in each country by year 3. • One National Domestic Animal Genetic Resources Information System (DAGRIS) developed and freely available on the web for use by end of year 4, interlinked to global DAGRIS by end of year 5; • Project findings disseminated in four national workshops involving other partners by year 3 - 4, and one international workshop involving other countries held by year 5. 	<ul style="list-style-type: none"> • Increase use of animal diversity on-farm (site visits) • Breed associations (indigenous animals) • Project documents, newsletters, audio visuals, websites, workshop proceedings, scientific and popular articles 	<ul style="list-style-type: none"> • Public awareness information reaches appropriate stakeholders • Commitment of the project partners is ensured • National media are receptive

PLAN OF ACTIVITIES FOR THE PERIOD 1st JANUARY 2007 – 31st DECEMBER 2011

Activities and time table	Project: “Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives”		
Outcome 1: Enhanced conservation and management of FAnGR diversity using Decision Support Tools (DSTs)	Planning period: October 2008- December 2013	Schedule established:	APPENDIX B

Output 1.1. Community based open nucleus breeding system (ONBS) evaluated and adapted as a working tool for in-situ conservation of FAnGR	Timeframe Years				
	1	2	3	4	5
Activities and Sub-activities					
1.1.1 Introduction of the concept of ONBS and implementation requirements (at community level)					
1.1.1.1 ONBS explained in posters/briefs					
1.1.1.2 Community Workshops on ONBS					
1.1.1.3 Gathering information on implementation requirements					
1.1.2 Field screening, including wild relatives to determine scope for selective breeding based on phenotypic variation of target trait(s) including recording					
1.1.2.1 Gathering quantitative estimates of phenotypic ranges and variances in target traits					
1.1.3 Drawing up of the breeding and management protocols.					
1.1.3.1 Participatory/consultative meetings to prepare breeding and management protocols					
1.1.3.2 Participatory/consultative meetings to prepare livestock management (feeding, housing/fencing, health care and general management aspects) protocols					
1.1.4 Finalization of community participation rules and responsibilities including the establishment of committees and agreement on management of shared resources at the nucleus and in herds/flocks					
1.1.4.1 Preparation and finalize community participation rules and responsibilities					
1.1.4.2 Establishment of committees and agreements on management of shared resources finalized					
1.1.5 Establishment of the community-managed nucleus herd/flock (including wild relatives if appropriate) based on ‘elite’ animals from the community					
1.1.5.1 Selection of herds to be included as nucleus herds/flocks					
1.1.6. Training of enumerators/data recorders by project national/international staff					
1.1.6.1 Training of enumerators/data recorders on project management skills					

1.1.6.2 Training of enumerators/data recorders on ONBS process					
1.1.7. Development of data captures systems consistent with indigenous practises (e.g. recording)					
1.1.8. Mating and subsequent selection from the resulting progeny over a number of generations; and progressive adjustments in animal management.					
1.1.8.1 For chicken					
1.1.8.2 For pigs and goats					
1.1.9. Data analysis and identification of breeding animals at the nucleus and for redistribution to participating herds/flocks in successive generations					
1.1.9.1 Data analysis and identification of breeding animals					
1.1.9.2 Redistribution to participating herds/flocks					
1.1.10. Training of farmers (by enumerators/data recorders)					
1.1.10.1 Training of farmers on project management skills					
1.1.10.2 Training of farmers on ONBS process					
1.1.11. Regular field screening to identify candidates for the nucleus (may include field days/shows)					
1.1.11.1 Field screening to select candidate/priority breeds					
1.1.11.2 Organizing field days or shows to select candidate/priority breeds					

Activities and time table	Project: “Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives”		
Outcome 1: Enhanced conservation and management of FAnGR diversity using Decision Support Tools (DSTs)	Planning period: October 2008- December 2013	Schedule established:	APPENDIX B

Output 1.2. A tool for cost-benefit analysis of breeding programmes incorporating market and non-market values of FAnGR evaluated and made available	Timeframe Years				
	1	2	3	4	5
Activities and Sub-activities					
1.2.1 Identification and collection of existing data for breed/genotype comparison as identified during PDF B (case studies)					
1.2.2 Identification of missing data					
1.2.3 Identification of specific herds/flocks to be monitored					
1.2.4 Development of survey instruments/guidelines					
1.2.5 Train recorders/enumerators for data collection					
1.2.6 Recording of input-output data of 2-4 case studies as identified exotic genotype and comparison of breeding of indigenous pure flocks/herds					
1.2.7. Data collection/collation of bio-physical and empirical production data, farmer breed and trait preferences data, and input-output prices) for the breed(s) in question on a large number of animals and herds over a period of two generations					
1.2.8 Refine the conceptual framework of Karugia et al (2001) and develop it into a computer-based analytical model					
1.2.9 Apply economic valuation tools to assign values to important non-market traits and functions					
1.2.10 Apply the resulting computer model based on the data obtained from the case studies and subject the model to sensitivity analysis					
1.2.11 Interpret the results and make recommendations					
1.2.12 Assess generality of computer tools					
1.2.13 Apply the tool to other sites and species and refine it.					

Activities and time table	Project: “Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives”		
Outcome 1: Enhanced conservation and management of FAnGR diversity using Decision Support Tools (DSTs)	Planning period: October 2008- December 2013	Schedule established:	APPENDIX B

Outputs 1.3. Analytical frameworks for assessment of policy and marketing options (existing and alternatives) for FAnGR developed, evaluated and made available	Timeframe Years				
	1	2	3	4	5
Activities and Sub-activities					
1.3.1 Markets					
1.3.1.1 Stakeholder analysis					
1.3.1.1.1 Identification of key players, institutions and factors affecting the marketing of indigenous breeds and their products.					
1.3.1.1.2 Identification of planning process and priorities (depending on who are identified as the ultimate users of the decision-support tool – e.g. policy-makers, breeders, livestock-keeper associations – there will be different data requirements).					
1.3.1.2 Development of conceptual framework for characterising existing indigenous breed marketing systems and guiding marketing options (including niche markets).					
1.3.1.2.1 Formulate questions and hypotheses to be answered or tested in relation to perceive constrains.					
1.3.1.2.2 Determine the analytical methodologies to be used to answer the formulated questions and to test hypotheses					
1.3.1.2.3 In accordance with the ultimate users, questions, hypotheses and analytical methods selected, define the data needs					
1.3.1.2.4 Define the sources of data required and determine the most appropriate data collection methods for these sources					
1.3.1.2.5 Where primary data collection is required, design survey instruments, including sample selection procedure					
1.3.1.3 Conduct in-depth study of market structure (informal/traditional and formal, including volumes), and performance (including analysis of supply and demand, as well as covering specific producer/consumer preferences and opportunities for niche markets)					
1.3.1.4 Data analysis through econometric and mathematical modelling (e.g. using models based on transaction cost theory, market chain analysis, etc.)					
1.3.1.4.1 Identify market opportunities, constraints and threats for indigenous FAnGR and products					
1.3.1.5 Assess generality of model in other countries (e.g. based on data from GEF W. Africa project)					
1.3.1.6 Preparation of ‘market briefs’ and conduct of dissemination workshops					
1.3.2 Policy					
1.3.2.1 Stakeholders analysis to identify key players and identification of planning process and priorities					

1.3.2.2 Development of survey instrument to identify policies and their impact					
1.3.2.3 Enumerate potential policy factors (survey/guidelines) for analysis of policies that affect FAnGR and wild relatives					
1.3.2.4 Quantification of impact of principal macro-economic intervention, regulations, pricing, investment as well as their potential alternatives affecting use and access to FAnGR and wild relatives					
1.3.2.5 Development of analytical framework/models for evaluating existing policy and alternatives					
1.3.2.5.1 Mathematical and policy modelling: mathematical models and policy analysis matrix					
1.3.2.5.2 Testing of policy analysis framework					
1.3.2.6 Apply resulting models to analyse (potential) impact of existing policies and alternatives					
1.3.2.7 Assess generality of model in other countries					
1.3.2.8 Preparation of policy briefs and realisation of dissemination workshops					

Activities and time table	Project: “Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives”		
Outcome 1: Enhanced conservation and management of FAnGR diversity using Decision Support Tools (DSTs)	Planning period: October 2008- December 2013	Schedule established:	APPENDIX B

Output 1.4. Tools for diversity assessment and for setting cost effectiveness conservation priorities developed and made available	Timeframe Years				
	1	2	3	4	5
Activities and Sub-activities					
1.4.1 Development of a breed diversity index for selected species and breeds/populations including wild relatives		■	■	■	
1.4.2 Conduct field surveys on socio-economic data (domestic), trends/causes/risks (domestic, wild relatives) and phenotypes (domestic, wild)	■	■	■		
1.4.3 Calculation/derivation of extinction probabilities of candidate breeds/ populations		■	■	■	
1.4.4 Reviews of completed/on-going conservation projects and/or simulation/modelling			■	■	■
1.4.5 Adapt and apply economic valuation techniques to assess market and non-market values of breeds and wild relatives to provide information on total breed contribution to livelihoods		■	■	■	
1.4.6 Apply analytical framework (Weitzman model and similar) to rank breeds/population and make recommendations on conservation strategy			■	■	■
1.4.7 Synthesis of results from different analysis/projects			■	■	
1.4.8 Training of stakeholders on the use of the method elaborated			■	■	

Activities and time table	Project: “Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives”		
Outcome 2: Increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels	Planning period: October 2008-December 2013	Schedule established:	APPENDIX B

<i>Output 2.1. Capacity of stakeholders to apply the developed Decision Support Tools for conservation and sustainable management/ use of FAnGR and their wild relatives enhanced</i>	Timeframe Years				
	1	2	3	4	5
Activities Sub-activities					
2.1.1 Identification and agreement on each stakeholder role including development of collaborative agreements					
2.1.2 Preparation of Letter of agreement (LoA) with stakeholders					
2.1.3 Refine training needs of each stakeholder					
2.1.4 Development of training materials (modules and manuals)					
2.1.4.1 Development of training modules and manuals on breeding programs for policy makers, researchers and academics, (non)governmental extension officers, and farmer communities					
2.1.4.2 Development of training modules and manuals on policy analysis for policy makers, researchers and academics					
2.1.4.3 Development of training modules and manuals on market analysis for researchers, academics, (non)governmental extension officers, and farmer communities					
2.1.4.4 Development of training modules and manuals on methodology for phenotypic breed characterization for researchers, academics, and (non)governmental extension officers					
2.1.4.5 Development of training modules and manuals on Methodology for genetic breed characterization for researchers and academics					
2.1.4.6 Development of training modules and manuals on methodology for surveys of FAnGR and wild relatives for researchers, academics, and (non)governmental extension officers					
2.1.4.7 Development of training modules and manuals on Database management for researchers, academics, and (non)governmental extension officers					
2.1.5 Organizing and conducting training programs/workshops for various stakeholders: (policy-makers, researchers, academics, (non)governmental extension staff and farmers communities)					
2.1.5.1 Awareness of FAnGR and wild relative issues for policy makers					
2.1.5.2 Social mobilization and facilitation of group processes for (non)governmental extension staff and farmer communities					
2.1.5.3 Specific aspects of livestock breeding/management for researchers and academics, (non)governmental extension staff and farmer communities					

2.1.5.4 Policy analysis for policy makers and researchers and academics					
2.1.5.5 Market analysis for researchers and academics, (non)governmental extension staff and farmer communities					
2.1.5.6 Methodology for phenotypic breed characterization for researchers, academics and (non)governmental extension staff					
2.1.5.7 Methodology for genetic breed characterization for researchers and academics					
2.1.5.8 Methodology for surveys of FAnGR and wild relatives for researchers, academics and (non)governmental extension staff					
2.1.5.9 Database management for researchers, academics and (non)governmental extension staff					

Activities and time table	Project: “Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives”		
Outcome 2: Increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels	Planning period: October 2008-December 2013	Schedule established:	APPENDIX B

Output 2.2. Knowledge and understanding of value of FAnGR and wild relative increased and replication strategies made available	Timeframe Years				
	1	2	3	4	5
Activities Sub-activities					
2.2.1 Development of information and networking system for sharing and dissemination of AnGR issues					
2.2.1.1 Launching of websites in each country					
2.2.2 Synthesis of the decision support tool and articulation of how and when to use them to ensure sustainable use of indigenous FAnGR and wild relatives					
2.2.2.1 Assist in the preparation of National action plan based on decision support tools for the conservation and sustainable use of FAnGR and wild relatives in all 4 countries for the project species					
2.2.3 Establishment of national web based FAnGR database and linked to international database in each country					
2.2.4 Support embedding of databases/ websites into relevant institutions					
2.2.5 Holding of awareness workshop, seminar, etc..					
2.2.5.1 Organizing awareness workshops					
2.2.5.2 Organizing seminars					
2.2.6 Use of media for awareness creation of the value of FAnGR					
2.2.6.1 Organizing TV/radio programmes, exhibitions, open days and publication of newsletters, news paper articles and advertisement published in each country.					
2.2.7 Organizing an international workshop involving other partners and other countries in the region					
2.2.8 Share data generated by the project by participating and making presentations in national and international seminar/conferences					
2.2.9 Action plan promoted/popularized through advertisement in media					
2.2.10 Organizing and establishing breed associations for indigenous livestock in each country					

Activities and time table	Project: “Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives”		
Project Management.	Planning period: October 2008- December 2013	Schedule established:	APPENDIX B

Activities Sub-activities	Timeframe Years				
	1	2	3	4	5
1 Arrangements for overall project administration and implementation infrastructure					
1.1 Hire global project coordinator and assistants					
1.2 Hire project personnel in partner countries					
1.3 Establish and equip national project offices					
1.4 Establish the Site Coordination Committees in each partner country					
7.1.5 Equip site coordinating office at each site					
2 Establish and operate project reporting and accounting system					
3 Prepare work plans for project personnel in partner countries					
4 International Steering Committee Meetings					
5 National Steering Committee Meetings					
6 Site Coordination Committee meetings					
6.1 Annual work plan workshops					
6.2 Annual project implementation review meetings					
7 Project monitoring and evaluation					

APPENDIX C. RESPONSE TO PROJECT REVIEWS

APPENDIX C 1. STAP ROSTER TECHNICAL REVIEW

Project Number: **TBA**
Project Title: **Development and Application of Decision-Support Tools to Conserve and Sustainably Use Genetic Diversity in Indigenous Livestock and Wild Relatives**
Countries: **Bangladesh, Pakistan, Sri Lanka, Vietnam**
STAP Reviewer: **Dr. J. Michael Halderman, Independent Consultant, Berkeley, CA**
Date: **November 27, 2005**

Key Issues

1) **Scientific and technical soundness of the project.**

The project has been carefully and thoroughly designed following sound technical and scientific principles. Evidence for this conclusion can be found in the Project Brief and the numerous annexes. The project's development objective is to improve human livelihoods through enhanced capacity to conserve and sustainably use Farm Animal Genetic Resources (FAnGR), and their wild relatives, in developing countries. The project's immediate objective is to develop and make available effective Decision Support Tools (DSTs) for the conservation and sustainable use of indigenous FAnGR and their wild relatives in developing countries.

The project's development objective and general approach are appropriate. It is certainly necessary to (a) develop suitable capacity and to build awareness among the key stakeholder groups regarding the value and potential of FAnGR and (b) identify and manage priority populations of FAnGR. It is also relevant to strengthen and monitor policy and legal frameworks, and to develop suitable market structures and conditions. Based on work carried out during the PDF-B phase, the project will target priority sites and goat, pig and chicken breeds for conservation and sustainable use in the four participating countries (Bangladesh, Pakistan, Sri Lanka, Vietnam). The project will develop DSTs to identify and conserve priority species, build awareness and capacity, and promote the key legal, policy and market interventions.

Specific measures have been taken to ensure technical and scientific soundness of the project. UNEP will be the implementing agency and ILRI the executing agency for the project at the global level. A global Project Management Unit (PMU) will be located at ILRI headquarters in Nairobi, and the project will be part of ILRI project BT03 "Characterization of Animal Genetic Resources." The project leader of the ILRI project will be the project director of this GEF project, providing technical and management leadership. The GEF project being reviewed here will draw on eight years of work already carried out by ILRI and its partners, and by collaborating advanced research institutes in developed countries, on assessment of genetic diversity in farm animals. A Project Steering Committee (PSC) will be established to oversee project implementation. The PMU and PSC will be supported by a Project Advisory Technical Panel that will include technical advisers from ILRI as needed for different aspects of the project. In each of the four participating countries an appropriate national executing agency has been identified: Bangladesh Agricultural University, Pakistan Agricultural

Research Council, University of Peradeniya (Sri Lanka), National Institute of Animal Husbandry (Vietnam). A national steering committee (NSC) has been set up in each of the four participating countries that includes relevant government ministries, research institutes, universities, FAO, IUCN country offices, etc. (See Appendix E – Public Involvement Plan Summary)

The combination of these committees and the project’s adaptive management approach should enable the project to maintain high technical and scientific standards. (For additional information, see points 6 and 10 below.)

2) Identification of the global environmental benefits and/or drawbacks of the project.

The project aims to (a) develop and make available decision support tools and (b) build human and institutional capacity to conserve globally significant FAnGR. Although the project will operate in Bangladesh, Pakistan, Sri Lanka and Vietnam, it is intended that the value of the project will be much wider as the environmental benefits are global as well as local. Maintaining most species of livestock and crops (and their wild relatives) important to agriculture benefits not only the country concerned but other countries and regions as well. In addition to conserving globally significant FAnGR within the four identified countries, the project aims to develop a model for conserving globally significant FAnGR that leads to replication in other Asian countries and beyond. In addition, it is intended that the decision support tools developed be adapted and used for other livestock species.

Project documents appropriately explain that livestock are very important in most developing countries, including in the four countries in which the project will be carried out, and that the livestock sector offers particular scope for poverty reduction. Genetic erosion in farm animals is much more serious than in crops because the current gene pool of animals is much smaller and very few wild relatives remain. The documents correctly emphasize that: (a) FAnGR in tropical environments possess valuable traits that include resistance to disease, adaptation to harsh environments (including heat tolerance) and ability to effectively utilize poor quality feeds; (b) such traits are very important in achieving sustainable agriculture in low input production systems. In spite of these advantages, little is currently known about which indigenous breeds hold significant genetic diversity or specific genes that should be targeted for conservation and/or incorporated into breeding programs. And, it is particularly significant that in most developing countries, including the four in which project activities will be carried out, there is very limited (a) recognition of the value of indigenous breeds and (b) existing capacity and skills to identify and manage FAnGR. Similar points are also valid for wild relatives of FAnGR. The most important current threat to FAnGR is crossbreeding and breed replacement.

It is clear that, in spite of some relevant activities within the four countries under the baseline scenario, achieving the global benefits indicated above will require the incremental funding requested of the GEF and international project partners. (See Appendix A for additional information.)

3) Project fit within the context of GEF goals, operational strategies, programme priorities, Council guidance and relevant conventions.

The project fits well with the GEF’s relevant goals, strategies, priorities etc. The project is particularly relevant to - and fits well with - the GEF’s Operational Program # 13,

“Conservation and Sustainable Use of Biological Diversity Important to Agriculture,” and to the GEF’s strategic priority to mainstream biodiversity conservation in production sectors and landscapes. The project also fits well with the CBD, and each of the four participating countries ratified the CBD in 1994.

4) Global context: analysis of the rationale for the project’s global approach.

The four countries concerned (Bangladesh, Pakistan, Sri Lanka, Vietnam) contain a great wealth of globally significant genetic diversity in their domestic livestock and wild relatives. Conserving and sustainably using this genetic diversity will be valuable within the four countries participating in the project. But the project has a more ambitious goal – to develop effective tools for key stakeholders in developing countries to enable them to make decisions that enable and promote the conservation and sustainable use of indigenous FAnGR and their wild relatives. The intended result is a model that can be used by other developing countries for chickens, goats and pigs (the targets of the present project), as well as for other indigenous FAnGR and their wild relatives. The rationale presented in the Project Brief and annexes is generally sound, and this project has the potential to develop an approach to successfully promote such conservation and use of FAnGR and its wild relatives in developing countries. (Some questions regarding the project’s current approach are discussed under points 6 and 10 below.)

5) Replicability of the project.

The project explicitly aims to develop decision support tools and the necessary capacity to provide the key stakeholder groups in the four project countries with the skills and tools to carry out FAnGR assessment, identification of priority species, management systems and protocols, capacity to assess market and policy opportunities and weaknesses, and appropriate appreciation and understanding of the value of applying them to conserve FAnGR. In addition, as noted above, the project deliberately aims to develop a model for replication both within the four countries concerned and outside the project countries, including with other species of livestock and their wild relatives. To what extent the model will be in fact useful for replication depends on the quality, relevance and timing of the planned DSTs and capacity building efforts.

In each of the four participating countries, on the basis of PDF-B activities project sites have been selected: four sites in Bangladesh and three sites in each of the other countries. These sites will be the focus of project interventions at the local level. The criteria for site selection are sound and support replicability.

6) (Anticipated Effectiveness and) Sustainability of the project.

First, some comments on the anticipated effectiveness of this project. Based on work carried out during the PDF-B phase, project design involves a number of key activities aimed at achieving enhanced conservation and management of FAnGR diversity using the Decision Support Tools to be developed by the project. The DSTs will draw on work carried out by ILRI (mentioned under point 1 above), including methodologies developed concerning the assessment of genetic diversity in livestock populations and its economic valuation.

The DST under project Output 1.1 is an evaluated and adapted community based open nucleus breeding system (ONBS) that aims to improve productivity of target species, both

domestic and wild. Project designers correctly point out that, during the five years of the project, the primary conservation and economic achievements will be the improved management that results from introducing the ONBS systems. Breeds with short generation times have been selected to demonstrate how these ONBS systems can support longer term conservation of genetic diversity that will be only partially visible during the project period. The approach and assumptions regarding the ONBS are sound, although some of the data required may be difficult to collect.

Under Output 1.2 is the development and availability of a DST for cost benefit analysis of breeding programs for alternative breeds incorporating market and non-market values of FAnGR. As sustainable conservation of indigenous FAnGR requires, in part, that it be competitive with exotic breeds (both marketable and non-marketable products), this tool aims to ensure that the benefits of indigenous FAnGR are documented and can be supported. Project designers clearly recognize the importance of producer preferences and value for non-market traits. It may well be a major challenge to obtain appropriate and accurate data, and this would affect the planned sophisticated data analysis. In the four participating countries, the generally low quality of existing data on livestock related issues is not encouraging. (The value of obtaining sound qualitative data in regard to obtaining and maintaining support and cooperation of local farmers is discussed under point 10 below.)

Output 1.3 is the development and availability of analytical frameworks for assessment of policy and marketing options (existing and alternatives) for FAnGR. Project designers state that understanding market issues is essential to execute an effective market strategy for indigenous FAnGR products, and the project will carry out stakeholder analysis. The project will also develop a conceptual framework for characterizing market systems and guiding market options based on market and consumer analysis. The policy/legal work will include policy modeling using mathematical models and policy analysis matrices, policy analysis framework testing, analysis of the impacts of existing policies and alternatives through the application of the models, assessment of the model in other countries. The models will be used to analyze the real and potential impacts of existing policies and alternative approaches.

It is certainly correct that policy, legal and marketing issues are extremely important in regard to the conservation and sustainable use of FAnGR and their wild relatives and, therefore, it is important that the project address them. Two baseline studies carried out during the PDF-B phase, one on livestock marketing and the other on policy and legal issues, are presented in Annexes K and L. These two annexes describe the current situation in the countries involved, including the limited understanding of marketing issues and the poor quality of the data available (and suggest the difficulties of obtaining sound data), and lead one to question the appropriateness and usefulness of the very sophisticated approaches proposed by the project in regard to developing policy and marketing options. Perhaps more emphasis could be given to more practical approaches to these issues, and to better understanding how to influence policy-making and promoting the implementation of sound policies once made.

Output 1.4 is the development and availability of tools for diversity assessment and for setting cost effective conservation priorities. This output is very relevant to the project.

Outbreak of livestock disease is a potentially key risk to successful project implementation and sustainability. The current concern with avian influenza is clearly one example, particularly in regard to Vietnam. This reviewer agrees with the project designers that this risk emphasizes the value of and urgent need to assess the diversity of chicken genetic resources in Vietnam, and other affected countries, and to conserve these resources.

The Project Brief clearly and accurately identifies two issues that are key to project sustainability: (1) building awareness about FAnGR's potential livelihood and biodiversity value, and (2) demonstrating real improvements in regard to the stability and levels of income of those raising FAnGR. It is therefore important that the project focus on achieving success in these two areas. If the farmers involved in project activities improve their income as a result of project activities it will have a snowball effect in regard to maintaining and sustaining key aspects related to the project. The successful implementation and sustainability of the project will be determined largely by such pragmatic factors.

Secondary Issues

7) Linkages to other focal areas.

The project is primarily concerned with agricultural biodiversity (OP #13) and is relevant to the cross-cutting theme of land degradation.

8) Linkages to other programmes and action plans.

The project is designed to link with and build on existing policy and initiatives taking place within the four participating countries, as well as several complementary projects taking place in other countries. The project also supports the objectives of Agenda 21 and the Millennium Development Goals. Some existing projects that the GEF project being reviewed here will benefit from and contribute to include:

- the GEF/UNDP project, "In situ conservation of endemic ruminant livestock in West Africa" (ILRI is also the executing agency of that project.)
- the FAO programme, "State of the World's Animal Genetic Resources"
- The CIRAD et al supported BIODIVA project, "Characterization and valorization of domestic and wild animal biodiversity in the mountainous areas of Vietnam"

9) Other beneficial or damaging environmental effects.

The project aims to produce local, national, regional and global environmental benefits resulting from the conservation and sustainable use of FAnGR and their wild relatives in developing countries. If successfully implemented, the project should achieve these positive results. No damaging environmental effects have been identified.

10) Stakeholder involvement.

Project designers have done an impressive job of involving a wide variety of stakeholders in project preparation. This work has taken place at the project sites and at national level. The main stakeholder groups identified in the Project Brief are farmers and farmer communities, researchers and academics, extension workers, NGOs and community leaders, and government agencies and ministries operating in the livestock sector of the four project countries. A national project management and implementation structure, and its linkage with the global coordination unit, was discussed for each country during the PDF-B phase. (Considerable detail is provided in Appendix E.) Project documents indicate that linkages between and among stakeholder groups, and with international organizations, are weak. The vast majority of livestock owners are poor, unorganized and with little capacity to lobby for their needs and/or to influence policy-making.

If the project is to achieve its objectives and produce the anticipated outputs it must obtain and/or maintain the support and cooperation of the various stakeholders. Project designers are keenly aware that to develop the community based open nucleus breeding system (ONBS) and related outcomes requires the active interest and participation of the farmers concerned. One possible risk facing the project is that some key sets of actors (or influential groups or individuals within the sets) may perceive the analytical frameworks intended to assess policy and marketing options as too academic and technical to be useful.

The community based approach taken in this project is consistent with the widespread recognition among rural development professionals that a decentralized, participatory approach is much more effective and sustainable than other approaches. The Project Brief, however, does not explicitly recognize the fact that local communities do not necessarily have a single point of view on issues. Rural communities in developing countries tend to be stratified by age, kinship and gender. In addition, they often reflect different interests based on wealth, involvement in the market, political affiliations etc. These differences can pose significant challenges for those working with such communities, as well as for those within the communities who are trying to reach agreement on contentious issues. In view of the heavy emphasis on the project's involvement with communities, it might be useful to briefly discuss in the Project Brief the designers' views on such issues.

There are references in the project documents to (a) the involvement of women in the project and (b) the value of indigenous knowledge. It might be useful to specify what concrete steps will be taken to ensure that these two issues will be effectively followed up during project implementation.

11) Capacity building.

The project places heavy emphasis on capacity building and awareness raising at all levels. This approach is appropriate and necessary as, in all four countries involved, currently there is limited awareness and understanding of the value and importance of animal genetic resource conservation (specifically FAnGR and wild relatives) and very little capacity to deal with these issues. The project's Outcome 2 and Outputs 2.1 and 2.2 focus directly on capacity building and awareness raising. The approach to awareness raising is suitably broad and includes the use of workshops, TV, radio, newspapers and websites. Capacity building activities will include: training programs tailored to the needs of different stakeholders, establishing at least one university curriculum in each country with specific courses on FAnGR management and conservation, training of at least four researchers in each country on *in situ* conservation and management of FAnGR, training of at least 50-100 smallholder farmers at each project site on ONBS.

The capacity building efforts are linked to the use by various stakeholders of the Decision Support Tools the project aims to develop. It is therefore essential that the DSTs be effective and be developed according to the project's timetable. If one or more of the DSTs is perceived by one or more sets of stakeholders as not useful or effective - or if it is not available at the scheduled time - this situation could significantly restrict the ability of the project to achieve its goals in regard to the sustainable use and management of FAnGR and their wild relatives. (Such a scenario could also severely limit the replicability of the project.)

To avoid this potential risk to the project, appropriate steps should be taken early on. For example, the Project Brief suggests (paragraph 52) that "Stated preference estimates should

ideally (emphasis added) be validated against revealed preference estimates.” The use of participatory rural appraisal techniques is suggested as one method of validation, although the use of the term “ideally” and simply listing some standard PRA techniques suggests this method of validation may be considered optional. Also, as noted above, project documents stress that cooperation by and support of local farmers in the project sites is essential to project success. It is likely that the project’s chances of obtaining and maintaining such cooperation from local farmers could be enhanced if farmers’ input played a significant role in the development of the cost benefit analysis of breeding programs for alternative breeds (Output 1.2).

The genuine involvement of farmers in the development of relevant DSTs could be critical to their perception of the accuracy of these DSTs and, therefore, to the usefulness and relevance of the project itself. Project documents heavily emphasize quantitative analysis. It might be useful for the project to give additional emphasis to qualitative analysis, for example of the results of the ONBS. It is possible that this could lead to learning significant lessons from the component of the project most visible to rural communities. Some senior government officials and researchers may well need to be convinced by the modeling studies identified in project documents. Collecting and managing the needed data, however, may prove a major challenge that could possibly delay the project and/or limit its usefulness.

12) Innovativeness of the project.

This is an innovative project dealing with important but poorly understood issues. As the specific Decision Support Tools will be developed during the course of the project, it may be useful to mount a substantial, external mid-term review and final evaluation. The MTR could assist in identifying any needed mid-course changes or corrections, and the final evaluation could aid in learning lessons of experience. No cost information regarding the MTR and final evaluation is available in the project documents, but other GEF-supported projects have had small budgets allocated for these important exercises.

Conclusions and recommendations

This is an important project that should be approved for GEF funding. To what extent the proposed approach will be successful will depend largely on: (a) the quality, relevance and timing of the Decision Support Tools developed by the project and (b) the effectiveness of the capacity building efforts. If successful, the model has considerable potential for replication both within and outside the four participating countries. Five years may be too short a time period to achieve the project’s objectives and outcomes.

Notes re editing

The first sentence of the Project Brief (paragraph 1) contained inaccurate information and seemed inconsistent with information provided in paragraph 3. (I sent an email to UNEP immediately after receiving the project documents regarding this problem and, subsequently, both paragraphs 1 and 3 were revised.)

Paragraph 5: “...multifunctional rules...” should be “...roles...”

Para 21: The sentence with the reference to BLRI under the bullet on Vietnam is out of place.

The title of Appendix E (“Public Involvement Plan Summary”) might be changed as this Appendix Deals with project coordination and implementation arrangements at the global and national levels.

Acronyms: some of the acronyms used in the Project Brief (and in Annexes A and B) are not included in the List of Acronyms.

APPENDIX C1.1. RESPONSE TO STAP REVIEW,

Comment 1 (point 6; para 5)

It is certainly correct that policy, legal and marketing issues are extremely important in regard to the conservation and sustainable use of FAnGR and their wild relatives and, therefore, it is important that the project address them. Two baseline studies carried out during the PDF-B phase, one on livestock marketing and the other on policy and legal issues, are presented in Annexes K and L. These two annexes describe the current situation in the countries involved, including the limited understanding of marketing issues and the poor quality of the data available (and suggest the difficulties of obtaining sound data), and lead one to question the appropriateness and usefulness of the very sophisticated approaches proposed by the project in regard to developing policy and marketing options. Perhaps more emphasis could be given to more practical approaches to these issues, and to better understanding how to influence policy-making and promoting the implementation of sound policies once made.

Response 1

The STAP reviewer points out several times, the importance and the need to collect quality data for the successful development of Decision Support Tools (DSTs). We fully agree with this analysis and in this context we would like to point out that the main activities of the year 1 and partly year 2 of the project would be on intensive training of enumerators/data collectors and the collection of quality data.

The point raised above is dealing particularly with the policy, legal issues and it suggests that given the complexity of obtaining sound data in this area, practical approaches rather than complex ones should be the focus of the project. While recognizing such difficulty, we believe it is important to nevertheless spend a substantial effort in obtaining sound data leading to the development of model assessing impact of policy. Indeed, it is essential that policy decisions are made after being fully informed on their putative impacts. In this context approaches/models which will allow comparisons of impact of current and alternative policies will be particularly important. Moreover output 2.1. "Capacity of stakeholders to apply the developed Decision Support Tools for conservation and sustainable management/use of FAnGR and their wild relatives enhanced" include training activities on DSTs uses which will address policy stakeholders amongst others. Also, it should be noted that the increase awareness resulting from activities within output 2.2. "Knowledge and understanding of value of FAnGR and wild relative increased and replication strategies made available" is expected to make an impact on policy maker decisions. Finally, the development of action plans for the conservation and utilization of FAnGR and wild relatives will incorporate the promotion of sound policies.

Comments 2 (point 10; para 2)

If the project is to achieve its objectives and produce the anticipated outputs it must obtain and/or maintain the support and cooperation of the various stakeholders. Project designers are keenly aware that to develop the community based open nucleus breeding system (ONBS) and related outcomes requires the active interest and participation of the farmers concerned. One possible risk facing the project is that some key sets of actors (or influential groups or

individuals within the sets) may perceive the analytical frameworks intended to assess policy and marketing options as too academic and technical to be useful.

Response 2

We were particularly careful during the PDF-B phase of the project to ensure the participation of representatives from all stakeholders and to involve them closely in the design and the development of the full project. The project will ensure their continuous participation through awareness workshop from the beginning of the project targeting all stakeholders (output 2.1). We feel that the participatory process built into nearly all activities of the project will ensure continuous interest of all stakeholders in its activities.

Comment 3 (point 10; para 3)

The community based approach taken in this project is consistent with the widespread recognition among rural development professionals that a decentralized, participatory approach is much more effective and sustainable than other approaches. The Project Brief, however, does not explicitly recognize the fact that local communities do not necessarily have a single point of view on issues. Rural communities in developing countries tend to be stratified by age, kinship and gender. In addition, they often reflect different interests based on wealth, involvement in the market, political affiliations etc. These differences can pose significant challenges for those working with such communities, as well as for those within the communities who are trying to reach agreement on contentious issues. In view of the heavy emphasis on the project's involvement with communities, it might be useful to briefly discuss in the Project Brief the designers' views on such issues.

Response 3

We fully agree with the reviewer regarding the diversity of actors found at the community level. There is always significant diversity among community members on views that are related to for example the management, the selling or the buying of the household livestock. Also, difference between genders will reflect the often traditional distinct rule and responsibility that they play in the management of the livestock resources of the household. For example goats are traditionally raised and under the custody of men, while poultry (chicken) will often be under the custody of women and children. Pigs on the other hand will often been taken care of by both genders, being fed by women while the selling of the animals will be under the responsibility of the men. Given the species focus of the project such difference in gender responsibility may help us to achieve consensus on contentious issues. On the other hand they are many sources of difference in opinion, and addressing these will be an integral part of the project. For example, it will be important to ensure that site project committees include respected farmer representatives as much as possible.

The Project Brief has been modified to reflect more explicitly these important issues (see paragraph 17 of Project Brief; Stakeholder Involvement section),

Comment 4 (point 10; para 4)

There are references in the project documents to (a) the involvement of women in the project and (b) the value of indigenous knowledge. It might be useful to specify what concrete steps will be taken to ensure that these two issues will be effectively followed up during project implementation.

Response 4

Women will be deeply involved and benefit from the project given their “ownership” on the breeding of rural poultry chicken, a priority species for the four countries of the project and a species present in all sites. At all the project site level committees, it will be expected that at least one of the farmer representative will be therefore a women. It will be expected also that all capacity building and training workshops will included women at a proportion reflecting their involvement in the project activities.

The understanding, documentation and use of indigenous knowledge of relevance to project activities will be central for the success of its activities. More particularly the development of Open Nucleus Breeding Schemes (ONBS) tools will fully integrate indigenous knowledge information of relevance to the breeding of the animals at the sites. In order to fully document this indigenous knowledge surveys carried out during the first year of the project will include the recording of such information which will subsequently be integrated into the ONBS manuals.

We have now modified paragraphs 17, 43 and 87 of the Project Brief paragraph to clarify and address the above issues.

Comment 5 (point 11; para 2)

The capacity building efforts are linked to the use by various stakeholders of the Decision Support Tools the project aims to develop. It is therefore essential that the DSTs be effective and be developed according to the project’s timetable. If one or more of the DSTs is perceived by one or more sets of stakeholders as not useful or effective - or if it is not available at the scheduled time – this situation could significantly restrict the ability of the project to achieve its goals in regard to the sustainable use and management of FAnGR and their wild relatives (Such a scenario could also severely limit the replicability of the project).

Response 5

It will be indeed extremely important to adhere closely to the timetable of the project as well as to provide regular feedback to the participating stakeholders regarding the development of the DSTs. The project management and implementation structure (Appendix E) will ensure the information flow between the different stakeholders. More particularly, regional steering committee will be meeting once a year. National Coordinator and national project director will be participating in these meetings. The agenda of the meeting will include progress on the development of the DSTs. The National steering committee meeting twice a year will provide the opportunity to relay these progresses to the National Stakeholders. One representative of the site coordinating committee will be present at the NSC. These meeting will provide the opportunity to flag any delays in development of DSTs and to take remedial actions to address (regional steering committee meeting) and to inform participating stakeholder on progress made (NSC).

Comment 6 (point 11; in para 3)

To avoid this potential risk to the project, appropriate steps should be taken early on. For example, the Project Brief suggests (paragraph 52) that “Stated preference estimates should ideally (emphasis added) be validated against revealed preference estimates.” The use of participatory rural appraisal techniques is suggested as one method of validation, although the use of the term “ideally” and simply listing some standard PRA techniques suggests this method of validation may be considered optional.

Response 6

We agree with the review. The project Brief has been revised to reflect this valuable comment. We have now modified the phrasing of paragraph 52 and more particularly we emphasize that the validation of stated preference estimates will be performed within the scope of the activities of output 1.2. This will not be optional but a requirement within the project.

Comments 7 (point 11; in para 3)

Also, as noted above, project documents stress that cooperation by and support of local farmers in the project sites is essential to project success. It is likely that the project’s chances of obtaining and maintaining such cooperation from local farmers could be enhanced if farmers’ input played a significant role in the development of the cost benefit analysis of breeding programs for alternative breeds (Output 1.2).

Response 7

As indicated in paragraph 49 of the project brief the development of the cost benefit analysis tool for breeding programs of alternative breeds will primarily rely on data collection from farmers. Collecting data is however one thing, while providing feedback is another. We are fully aware of the latter and the project will include workshops at the project sites reporting to the participating farmers the results of the breeds comparison analysis as well as the recommendation of the cost-benefit analysis (see Appendix F Monitoring and Evaluation).

Comment 8 (point 12)

No cost information regarding the MTR and final evaluation is available in the project documents, but other GEF-supported projects have had small budgets allocated for these important exercises.

Response 8

The monitoring and evaluation costs including the costs related to mid-term and final evaluation are part of the budget for project management component. As it is indicated in Appendix A. GEF ALTERNATIVE, Project Management section on page A-9 part of the funds “requested from GEF will cover costs of global project coordination, project management and evaluation activities, full time national program assistant and accountant, direct administration charges, etc....”

Comment 9

The first sentence of the Project Brief (paragraph 1) contained inaccurate information and seemed inconsistent with information provided in paragraph 3. (I sent an email to UNEP immediately after receiving the project documents regarding this problem and, subsequently, both paragraphs 1 and 3 were revised.)

Response 9

We would like to thank the reviewer for this comment. The paragraph 1 and paragraph 3 have been revised to read as:

Para 1:

100. Agriculture contributes to a large proportion of the Gross Domestic Product (GDP) in most developing countries with values ranging from 8% to 51% in South and South East Asia¹. It is estimated that the human needs for livestock products (food, hides/skins and other products) in developing countries will more than double in the next 25 years². The rapid increase in demand is attributed to rapid increase in human population, rising incomes and rapid urbanization, with accompanying changes in preferences for foods of animal origin.

Para 3:

3. The loss of this globally significant genetic diversity has significant implications for local livelihoods in developing countries, including in the four countries participating in this project. In Bangladesh, agriculture contributes to 21.2% of GDP (Appendix G: Description of Country Conditions and Project Pilot Sites) of which livestock contributes 13% in terms of income, insurance, food (meat, milk, eggs, etc.), hides/skin, traction and manure. Smallholder farmers, who are dependent on indigenous livestock, raise more than 85% of livestock. In rural Pakistan, agriculture counts for 26% of the national GDP. Livestock is the mainstay of the socio-economic life of the people. It is the largest sub-sector of agriculture, totaling 12.3 % of exports. Livestock products are an important component of diet and source of good quality proteins, minerals and vitamins in the rural areas. In Sri Lanka, 30% of the land use is for agriculture. Agriculture contributes 20.5% of the GDP. Just over 20% of this is in the livestock sector, which provides livelihoods for 50% of the 3.3 million agricultural smallholdings (2002) for whom livestock forms an integral part of the production system. Authorities consider the livestock sector as the most promising sector for the employment of a large number of people in poverty alleviation programs in areas where livestock farming is a way of life. In Vietnam, more than 75% of the population lives in the countryside where agriculture is the primary livelihood; there are 12 million agricultural households. Agriculture generates 21.8% of the GDP (2001) and 39.8% of the export income. The sector employs about 65% of the national labor force and 72% in the private sector, of those; approximately 70% are engaged in crop production and 14% in full time livestock husbandry.

Comment 10

Paragraph 5: “...multifunctional rules...” should be “...roles...”

Response 10

As noted by the reviewer, para 5, line 10: ‘rules’ has been corrected to read as ‘roles’

Comment 11

Para 21: The sentence with the reference to BLRI under the bullet on Vietnam is out of place.

Response 11

As correctly noted by the reviewer, the sentence referring to BLRI in Bangladesh under the bullet on Vietnam was out of place (in para 21). This sentence has been moved to the bullet point dealing with Bangladesh.

Comment 11

The title of Appendix E (“Public Involvement Plan Summary”) might be changed as this Appendix Deals with project coordination and implementation arrangements at the global and national levels.

Response 11

Title for Appendix E is standard for all GEF projects, and therefore cannot be changed.

Comment 12

Acronyms: some of the acronyms used in the Project Brief (and in Annexes A and B) are not included in the List of Acronyms.

Response 12

The following acronyms have been added to the list:

AnGR-CRP	Animal Genetic Resources – Coordinated Research Programme
DST	Decision Support Tool
NAP	National Action Plan
NGO	Non Governmental Organization

APPENDIX C2. RESPONSE TO THE COMMENTS OF CBD SECRETARIAT

FSP Regional : Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives

The Secretariat has reviewed the project brief and would like to see more express references to how well this project will enable the GEF to respond to the guidance provided by the Conference of the Parties. COP guidance may be accessed at:<http://www.biodiv.org/decisions/default.asp>.

We would like to thank the Secretariat for the valuable comments and our response is the following:

Response:

As indicated in the STAP review c-2/C-3 the project fits well with the GEF's relevant goals, strategies, priorities and the Convention on Biological Diversity. The project supports all four objectives of the Convention of Biological Diversity (CBD) programme of work on agricultural biodiversity, adopted through decision V/5 at the fifth meeting of the Conference of the Parties of the CBD. More specifically:

Operational Objective 1: Assessment of agricultural biodiversity.

The objective is to provide a comprehensive analysis of status and trends of the world's agricultural biodiversity and of their underlying causes as well as of local knowledge of its management. The project responds directly to Activity 1.1. "Support the ongoing or planned assessments of different component of agricultural biodiversity", more particularly, "the State of the World's Animal Genetic Resources"; Activity 1.3. "Carry out an assessment of the knowledge, innovations and practices of farmers and indigenous and local communities in sustaining agricultural biodiversity and agro-ecosystem services for and in support of food production and food security"; and Activity 1.5 "Develop methods and techniques for assessing and monitoring the status and trends of agricultural biodiversity and other components of biodiversity in agricultural ecosystems". Activity 1.1 is particularly addressed through output 1.4 of the proposed project, Activity 1.3 through output 1.1 and Activities 1.5 is embedded in all outputs of Outcome 1.

Operational Objective 2: Adaptive management.

The aim is "To identify management practices, technologies and policies that promote the positive and mitigate impacts of agriculture on biodiversity, and enhanced productivity and the capacity to sustain livelihoods, by expanding knowledge, understanding and awareness of the multiple goods and services provided by the different levels and functions of agricultural biodiversity". The proposed project responds here directly to Activity 2.1 "to carry out a series of case-studies, in a range of environments and production systems, and in each region". It specifically addresses "(a) To identify key goods and services provided by agricultural biodiversity, needs for the conservation and sustainable use of components of this biological diversity in agricultural ecosystems, and threats to such diversity", "(b) To identify best management practices" and "(c-a) The role and potential of wild, under-utilized and neglected species, varieties and breeds, and products. Again the above are specifically addressed through all outputs of outcome 1 of the project.

Operational Objective 3: Capacity building.

The objective aims “To strengthen the capacities of farmers, indigenous and local communities, and their organizations and other stakeholders, to manage sustainably agricultural biodiversity so as to increase their benefits, and to promote awareness and responsible actions”. The project responds directly to Activity 3.1, “Promote enhanced capabilities to manage agricultural biodiversity by promoting partnerships among researchers, extension workers and farmers in research and development programmes for biological diversity conservation and sustainable use of biological diversity in agriculture...”, Activity 3.2 “Enhance the capacity of indigenous and local communities for the development of strategies and methodologies for in situ conservation, sustainable use and management of agricultural biological diversity, building on indigenous knowledge systems”, Activity 3.3 “Provide opportunities for farmers and local communities, and other stakeholder groups, to participate in the development and implementation of national strategies, plans and programmes for agricultural biodiversity, through decentralised policies and plans, and local government structures” and Activities 3.4 Identify and promote possible improvement in the policy environment, including benefit-sharing arrangements and incentives measures, to support local-level management of agricultural biodiversity. Training embedded in the outputs of outcomes 1 and outcome 2 (output 2.1) of the proposed project are addressing the above activities.

Operational Objective 4: Mainstreaming.

The aim is “To support the development of national plans or strategies for the conservation and sustainable use of agricultural biodiversity and to promote their mainstreaming and integration in sectoral and cross-sectoral plans and programmes.” Here the project respond directly to Activity 4.1 “Support the institutional framework and policy and planning mechanisms for the mainstreaming of agricultural biodiversity in agricultural strategies and action plans, and its integration into wider strategies and plans for biological diversity” and more specifically points (a) “Support for relevant institutions in the conduct of assessments on the status and trends of agricultural biodiversity within the context of ongoing biodiversity and sectoral assessments” and (b) “Development of policy and planning guidelines, and training materials, and support for capacity-building initiatives at policy, technical and local levels in agricultural and environmental forums for the development, implementation, monitoring and evaluation of policies, programmes and actions form the conservation and sustainable use of agricultural biodiversity”. While (a) is addressed to all outputs of outcomes 1, (b) is particularly addressed through output 1.3.

In addition the project addresses the following guidance provided by the Conference of the Parties (COP 7 Decisions):

Decision VII/3 Agricultural diversity: The project will help the Government of the four targeted countries (Pakistan, Bangladesh, Sri Lanka and Vietnam) of the project to consider and to promote the mainstreaming of agricultural biodiversity in their plans, programmes and strategies with the active participation of local and indigenous communities through both on the ground (outcome 1 ‘Enhanced conservation and management of FAnGR diversity using Decision Support Tools (DSTs)’ and capacity building and awareness activities (outcome 2 “Increased capacity and enhanced knowledge to use decision support tools for conservation of livestock diversity at national and global levels”)); responding so to the invitation to

international organization and international funding institutions to support the development and use of agricultural biodiversity.

Decision VII/8 Monitoring and indicators, designing national level monitoring programmes and indicators: The development and application of DSTs (outcome 1) will provide indicators to estimate status and trends in livestock biodiversity in the four targeted countries. Moreover it is expected DSTs will be of applicability to other Asian and African countries.

Decision VII/12 Sustainable use: Activities of the project is addressing the concerns of the need to apply the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity to agricultural biodiversity, in particular domestic species, breeds and varieties.

Decision VII/19 Access and benefit-sharing as related to genetic resources: Sites activities of the project involving directly the communities stakeholders will be fully in line with the fair and equitable sharing of the benefits arising out of the utilization of genetic resources (one of the objectives of the convention on Biological Diversity).

Decision VII/24 Education and public awareness: Activities listed under Outcome 2 (Increased capacity and enhanced knowledge to use DSTs) focuses on capacity building needs (postgraduate training at MSc/PhD level, training manuals for all relevant stakeholders, curriculum revision) and dissemination of information (training programs/workshops, media coverage, field days/exhibitions) in all four countries.

Decision VII/29 Transfer and technology and technology cooperation: In all four countries the key stakeholders are the local farming communities and the project activities are planned (taking into account their perceptions and indigenous knowledge related to conservation and sustainable use of animal genetic resources) and implemented with their active participation. Woman and their active role in caring for the indigenous poultry is adequately addressed.

Decision VII/32 The programme of work of the Convention and Millennium Development Goals: The project goals/objectives and activities clearly addresses some key issues of the MDGs (poverty alleviation, human livelihood.)

APPENDIX C3. RESPONSE TO THE COMMENTS FROM WORLD BANK

FSP Regional: Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives

This project addresses the conservation of globally important livestock genetic diversity, including wild relatives of domestic livestock, in areas that are a center of origin for the livestock in question. While the importance of the area for agrobiodiversity is clear, the logic of the approach taken in this project is less well explained. The presence of ILRI as one of the partners in the project gives us great confidence in the technical soundness of the approach. Nevertheless, the fit of the project methodology with the conservation objectives of the GEF is not so clearly presented, and for that reason we have the following questions and comments:

Comment 1

1) Threats analysis: There is a rather general threats analysis for the domesticated indigenous breeds that does not provide enough information to understand what exactly is happening on the ground with the breeds in question; for wild relatives, there is no real threats analysis. It is hard to follow the logic from the threats (cross-breeding, breed replacement, inadequate valuation of indigenous breeds in the market) to the project's threat mitigation strategy (provision of decision-support tools to identify and manage priority indigenous breeds and build awareness of their value). There is little discussion of the issues an individual farmer considers or faces as he or she makes decisions about which breeds to use. For wild relatives, there is no analysis of where they live or what is affecting those presumably undisturbed areas.

Response 1

Paragraph 2 of the Project Brief gives the global perspective of the current situation of FAnGR. It is emphasized that since the turn of the last century, some 16% of uniquely adapted breeds are believed to have gone extinct while 15% are rare, and a further 32% are at risk of becoming extinct and the rate of extinction continues to accelerate. Moreover, 75% of the estimated 3,800 breeds across 40 species are in developing countries.

Paragraph 9 of the Project Brief elaborates the current situation regarding the targeted species (chicken, goats and pigs) in the project countries. Threat analysis country wise and per target species is further elaborated in Appendix J: FAnGR Status and Trends: Synthesis of National reports.

Paragraph 5 of project brief and the above Appendix Highlights that among others the most significant threat to FAnGR is crossbreeding and breed replacement, and the increased use of exotic breeds has led to extinction or severe erosion of genetic diversity in traditional breeds of target species. Of the 3 species the most vulnerable is the poultry sector where the commercial poultry sector is totally dependent on imported grand parent stock for day-old chick production which has resulted in wiping out of the rural poultry sector which harbours the indigenous poultry breeds. With the other 2 species the threat is more from crossbreeding with imported breeds resulting in breed replacement and genetic erosion.

As indicated in paragraph 39 in project brief, extensive consultation with community members took place during the PDF-B phase. There is always significant diversity among community members on views that are related to for example the management, the selling or the buying of the household livestock (more specifics on premium price for indigenous

products, and lack of marketing channels for indigenous animals and products are elaborated in Appendix K: Livestock markets and marketing). Also, difference between genders will reflect the often traditional distinct rule and responsibility that they play in the management of the livestock resources of the household. For example goats are traditionally raised and under the custody of men, while poultry (chicken) will often be under the custody of women and children. Pigs on the other hand will often been taken care of by both genders, being fed by women while the selling of the animals will be under the responsibility of the men. There are many sources of difference in opinion, and addressing these will be an integral part of the project. Some of these views are included in paragraph 17 of Project Brief.

On the specific points of the link between the threats and the project's threat mitigation strategy: The novelty and originality of the project is that it recognizes the increasing threat affecting FAnGR diversity but also the fact that for *in situ* conservation at country level priority decisions will have to be made. Indeed, it will be unrealistic to believe that countries will be in a position to conserve in a sustainable way all their FAnGR diversity *in situ*. So the project aim to provide them with decision support tools which will help and allow national institutions to make sounds decision on which breed/population to conserve in order to maximise diversity conserved and impact on human livelihood. The alternative scenario is no availability of decision support tools with the putative results that the absence of sound criteria for conservation decision may lead at the best to *in situ* conservation of a minor subset of FAnGR diversity or at the worst to no conservation action at all leading to the nearly complete disappearance of indigenous breeds at the short term (a good illustration of the putative possible future scenario if no action is taken, is what we have been observing for the livestock sector in developed countries, as in Europe; FAO statistic clearly indicate that the majority of breeds which have disappeared in 20th century, following industrialization and intensification of livestock production, are from developed countries).

The wild relatives are an important component of the project and an important criterion for the choice of the project site, as indicated in the project document, paragraph 35, is the presence of wild relatives and clearly one of the novelty of the project is the inclusion of the wild relative with its domestic counterparts. The project will however not be targeting directly conservation of the habitats of the wild relatives. They are currently other projects lead by others institution as IUCN, WWF addressing specifically this issues and more particularly the reason of the decline of the wild relatives in relation to the destruction of their habitats. In all four countries, a major partner of the project is IUCN. We will be liaising closely with IUCN for all matter dealing with the wild relatives.

As indicate above the project is adding new dimensions to the conservation of the wild relatives. Indeed, the project emphasised the importance of the wild relatives as reservoir of genetic diversity of the domestic stock (output 1.1 activity 1.1.2 and output 1.4. activity 1.4.1). It will address specifically the contribution of the genetic diversity of the wild relatives in comparison of the genetic stock of the domestic breed and as source of adaptive traits for the improvement of productivity of domestic stock (output 1.1 activity 1.1.2).

Comment 2

Threat mitigation strategies: It is not clear that the proposed decision-support tools (DSTs) actually respond adequately to the threats, especially because the threats are presented at such a general level. The DSTs seem to be rather sophisticated, and one wonders whether it wouldn't be adequate simply to work with knowledge farmers already have about the

characteristics of value in different breeds, perhaps testing that indigenous knowledge scientifically to see where advantages are most worth preserving. It is also unclear what the genetic studies of indigenous breeds will add to the project in terms of improving the ability to conserve key breeds effectively. There is probably a good reason for doing these studies, but does not seem to be presented in the GEF Executive Summary. The open nucleus breeding system, another part of the project's approach to breed conservation, is not well explained in the document, and how it will help in conserving priority breeds is not addressed. Finally, wild relatives should be conserved in situ and not only as part of a breeding program; some analysis of the protection status of their habitats would be welcome, and if these are not well protected, a solid conservation program should consider how to contribute to improving this protection.

Response 2

If the nature of the threat (e.g. breeds replacement, crossbreeding) affecting indigenous FAnGR are understood at the general level, detailed information are currently lacking for allowing efficient intervention. This project is addressing these gaps of knowledge but also recognised the complexity of the situation on the ground. The immediate objective of the project is therefore to develop tools which will allow countries to understand the situation on the ground, to gather information and to prioritize interventions. More particularly lack of understanding of the potential of indigenous FAnGR for improvement of productivity, lack of knowledge of the market and non-market values of FAnGR, of the relevant policy and marketing environment affecting indigenous FAnGR and last but not current lack of knowledge of FAnGR diversity present are all addressed in Outcome 1 and its related outputs 1.1 to 1.4 (detailed in paragraphs 41 to 66) which is centred around the development of DSTs for conservation and utilization of FAnGR.

An important criterion which will lead to successful *in situ* breed conservation will be higher market value of an indigenous breed for a specific production system environment compared to exotic breeds. In livestock diversity rich countries, as the one chosen for this project, it is likely that the breed priority output of the market and policy analysis will be more than one breed. However, in a diversity conservation context it will be essential to maximize diversity conserved. Genetic studies, tool for diversity assessment (output 1.4), will provide the diversity information needed to integrate the two components.

The ONBS (output 1.1) will be developed as a working tool for conservation of FAnGR among its technical aspects encompassing the existing knowledge base from the farming communities, it is central to the *in situ* conservation of priority breeds which will only be achievement in a sustainable way through positive impact on human livelihood (breeding improvement of desirable traits). The insights on threats due to cross breeding and breed replacement is addressed by the development of the tool for cost-benefit analysis (output 1.3), which will not only include economic data on comparing breeding programmes but also non-market traits which are valued by the farming communities.

We fully agree that “*wild relatives should be conserved in situ and not only as part of a breeding program*”. This is particularly important in the context of the conservation of their adaptive traits. As indicated above, response to comment 2, the *in situ* conservation of their wild relatives and their habitat will be addressed specifically through targeted action lead by other institutions than ILRI. We will liaise closely with our IUCN counterparts with IUCN representative being member of each national steering committee.

Comment 3

Development objective: It seems that a GEF funded project should have conservation of agrobiodiversity as part of its development objective; here the development objective is focused on raising farmer incomes, and conservation is just one of a number of immediate objectives of the project.

Response 3

The development objective of the proposal is “Improved human livelihoods through enhanced capacity to conserve and sustainably use FAnGR and their wild relatives in developing countries”, it therefore includes both the human livelihood and the agrobiodiversity conservation components. However, we fully realise that the major impact of the project in term of conservation of agrobiodiversity will be beyond the 5 years duration of the project. The objective is to develop the required tools, illustrate their application, and build-up the capacity to apply them.

APPENDIX C4. NOVEMBER 2007 GEF COUNCIL COMMENTS AND UNEP RESPONSES

**France Comments on Work Program (GEF/C.32)
GEF Council November 2007**

The project aims at developing and making available effective tools to support decision making for the conservation and sustainable use of indigenous animal genetic resources for food and agriculture (FAnGR) and their wild relatives in developing countries

Opinion: favourable, but with the following questions and remarks to be taken into account:

This is a sound and timely proposal for a multipurpose project. The rationale rightly states FAO's leadership on AnGR (especially after the adoption of the Global Plan of Action for AnGR). FAO is also recognized as a co-funding agency of the preparatory phase. Considering the importance of global information systems to guide policy decisions on AnGR, links with FAO support facilities should be highlighted & national data collection processes on An GR enhanced.

1. Regional (Pakistan, Sri Lanka, Vietnam) : Development and Application of Decision support Tools to Conserve and Sustainably use Genetic Diversity in Indigenous Livestock and Wild Relatives (UNEP) (GEF Grant : \$ 1.98 m)

The project aims at developing and making available effective tools to support decision making for the conservation and sustainable use of indigenous animal genetic resources for food and agriculture (FAnGR) and their wild relatives in developing countries

Opinion: favourable, but with the following questions and remarks to be taken into account:

This is a sound and timely proposal for a multipurpose project. The rationale rightly states FAO's leadership on AnGR (especially after the adoption of the Global Plan of Action for AnGR). FAO is also recognized as a co-funding agency of the preparatory phase. Considering the importance of global information systems to guide policy decisions on AnGR, links with FAO support facilities should be highlighted & national data collection processes on An GR enhanced.

UNEP Response

We fully agree with France comments/remarks. More particularly we would like to emphasize and to clarify the following. We note that our proposal closely link to the following FAO strategic priorities for actions both at the national and international level. As for example (i) national level: SP13, Establish or strengthen national educational and research facilities; SP14 Strengthen national human capacity for characterization, inventory and monitoring of trends and associated risks, for sustainable use and development, and for conservation; (ii) regional/international level: SP2 develop international technical standard and protocols for characterization, inventory and monitoring and associated risks, SP11

Develop approaches and technical standards for conservation, SP19 Raise regional and international awareness of the roles and values of AnGR etc. The FAO was involved in the PDF B phase of the proposal, we therefore expect FAO to continue to be closely involved in the implementation of the full project through participation of FAO representatives in project steering committee at national and/or global level.

As for the Global Information Systems, it should be noted that major activities of the full project will include the development of country database on AnGR status and characteristics for sound policy decision making. UNEP will make arrangements that these database benefits from and link to FAO AnGR DAD-IS and ILRI DAGRIS databases. FAO country representatives will be part of the national country committees facilitating linkage between databases. Also, at the regional level, the project findings will be presented at the FAO-Animal Production and Health Commission for Asia and the Pacific (APHCA) annual meetings which target stakeholder groups involved in policy issues. At the international level, promotion of project findings will target researchers and policy-makers in countries beyond those participating in the projects to encourage project replication. An international workshop will be organized. Representatives from relevant stakeholders involved in FAnGR and wild relative issues will be invited, including FAO national focal points from different countries, and other organizations/institutions involved in conservation/utilization of indigenous livestock and wild relatives. Project results will also be presented at the Animal Science Congress of the Association of Australasian Animal Production (AAAP), World Congress for Genetics Applied to Livestock Production, and meetings of the International Society of Animal Geneticists.