Draft 9/19/01

Draft Outline of Activities for Phases II and III of the Spatial Framework for the Strategic Evaluation of Land Use and Livelihood Options

International Food Policy Research Institute

Phase II will be completed by June 2002. Phase III would start in July 2002

Phase II – to June 2002

1. UPDATE LIVELIHOOD, PRODUCTIVITY, AND MARKETING ANALYSIS FOR COTTON AND COFFEE.

As input to a national conference on November 10-11 to be attended by the President of Uganda, USAID has expressed interest in obtaining a set of commodity-specific, updated assessments for cotton and coffee. This information will also serve to enrich the generic databases underlying the IFPRI framework for evaluating land use options.

The updated assessment will involve several sub-activities:

- Generating commodity-specific livelihood domains for Uganda. These domains will be constructed using commodity specific production potential maps and, possibly, the revised stratification variables identified through regression analysis.
- Generating a new and richer set of analysis on the potential economic benefits of increased productivity in arabica and robusta coffee and cotton. To take into account international market conditions, this assessment will also draw on the most recent price level and trend data for production and prices for other important coffee producer countries (as well as for Uganda). Productivity trends from the immediate past will also be used as a basis for projecting commodity-specific productivity trends.
- Performing additional analyses of the IFPRI marketing and processor survey data. This will include the identification of commodity-specific constraints to the marketing and processing of coffee and cotton.
- Highlight the likely tradeoffs involved in expanding or intensifying coffee and cotton production in terms of the potential loss of environmental goods and services.

The IFPRI team will consult with USAID's implementation partners – in particular the COMPETE and IDEA projects – to obtain more complete and reliable information on which to base these updated analyses.

Outputs:

1. Potential livelihood domain maps for expansion and intensification of coffee and cotton production for Uganda
2. District, region, and national estimates of the potential economic benefits of productivity increases in cotton, arabica coffee, and robusta coffee
3. Maps and tabular summaries of the threats to ecosystem goods and services of the potential expansion and intensification of coffee and cotton production
4. A set of mapped and tabular data summarizing key findings of the input and output trader and processing surveys with respect to coffee and cotton.

Expected Completion: 1st February 2002

2. IMPROVE THE CHARACTERIZATION OF MAJOR ECOSYSTEMS AND THE IDENTIFICATION OF RESOURCE-BASED LIVELIHOOD OPTIONS AND POTENTIAL "WIN-WIN" TECHNOLOGIES

This activity would likely involve three subcontracts, and would focus on generating improved environment-related land use and livelihood data both nationally and regionally (South Western Uganda). All elements would feed into the overall national analytical framework.

Firstly, we need to identify important ecosystem sub-types (e.g., subtypes of forest, woodland, and wetlands) so as to distinguish between different ecosystem goods and services that the sub-types might offer, as well as to differentiate among the quality of services provided (e.g. different types of forest provide different qualities of habitat or species diversity). This will allow us to be more specific about the nature and importance of environmental threats associated with threatened areas.

Another sub-activity will be to identify known or potential livelihood strategy options for Uganda that were not encountered in the IFPRI-sampled communities and, therefore, are not yet represented in the analytical framework. This work should be national in perspective, but should pay special attention to the SW Uganda region and to natural resource-oriented, non-agricultural livelihood options. For each actual or potential livelihood strategy identified its conditioning factors (in terms of production potential, population density, market access, etc) must be hypothesized. This would then allow the new set of livelihood options to be embedded into the existing analytical framework. This might be a combined with the first sub-activity as a sub-contract undertaken by local consultants.

In order to inform the design process for the proposed USAID RFP for SW Uganda, it would be invaluable to gain an overview of the significant technology successes and promising options in the region. This is particularly important for identifying technologies that have or might contribute to "win-win" solutions in terms of raising incomes as well as reducing environmental damage (or enhancing the supply of

ecosystem goods and services). In a pilot mode for some proposed Phase III activities, this sub-activity will also examine the relationship between livelihood strategies, technology options and land tenure status. A sub-contract that taps ICRAF/AFRENA knowledge of and experience in the area is proposed for this sub-activity.

A final element is the specific inclusion of data on wildlife distribution and potential wildlife-related livelihood strategies including eco-tourism and community management of wildlife resources. This work would need to be done by a wildlife specialist and would complement the first two sub-activities.

The above data would be integrated into the overall national framework and would:

- improve our ability to identify the type and importance of environmental threats;
- improve our ability to locate the sites where such environmental threats may be encountered; and
- improve our capacity to identify sustainable livelihood strategies that are based upon responsible use of environmental resources.

Outputs:

1) A more detailed characterization of the ecosystem classes than appears in the Uganda National Land Cover map, and that identifies the nature and quality of ecosystem goods and services by important ecosystem sub-types.

2) A preliminary set of potential, non-agricultural resource base livelihood strategies. Such strategies – such as the collection of resins and honey, or sustainable extraction of fuelwood, would provide livelihood options for areas currently classified as "protected" or as "hotspots".

3) A review and annotated inventory of technology options that can form the basis of, or be integrated with, sustainable production systems in SW Uganda. This will include some preliminary outputs defining relationships between technology use and land tenure.

4) A specific set of ecosystem sub-types and livelihood strategies related to wildlife

Expected Completion: 1st February 2002

3. UPDATE THE SPECIFICATION OF LIVELIHOOD STRATEGIES AND THEIR SPATIAL DOMAINS

Verification and revision of the livelihood strategy domains has recently been completed (reported in part in Appendix B of the Phase I report). The verification process involved a statistical analysis of the full set of community survey data. This process has helped to improve the specification of livelihood strategy domains by utilizing the most statistically

significant explanatory variables (i.e., drawing on more than, or other than, the three variables currently used – agricultural potential, population density, and market access). This new statistical evidence will provide better spatial extrapolation of livelihood domains to non-sampled areas in Uganda, and will generate more reliable maps of potential conflict area maps (i.e., it will provide improved characterization of the three classes of potential "private" and environmental land use conflict: no conflict; threatened; and protected areas).

Output:

1. An updated set of livelihood strategy domain maps and tabular area summaries by district
2. An updated set of "hot spot" area maps and tabular area summaries by district

Expected Completion: November 30th 2001

4. ENHANCE ANALYSIS OF THE POTENTIAL ECONOMIC BENEFITS OF IMPROVED PRODUCTIVITY.

The initial assessments of the potential economic payoffs to investments in improving agricultural productivity will be upgraded through the use of improved data and a broader range of analysis scenarios. In-country data sources will include the Ministry of Agriculture, the Uganda Bureau of Statistics, USAID's IDEA and COMPETE projects, and ILRI's Rockefeller funded sub-national production database study. The enhanced analysis will include:

- Assessments for bananas, plantains, and milk (in addition to the current 14 major commodities)
- Use of the most recent price and production data
- Commodity-specific estimates of potential productivity change based on recent trends in yields and prices (not the standard one percent change used previously).
- A range of assumptions about productivity and output changes in the rest of the world (for traded commodities)

Outputs:

1. Tabular and mapped summaries by district, region and nationally, of the potential economic benefits to increased productivity of Uganda's major food and cash crops, as well as milk.

2. A description of the scenarios and assumptions used to generate these estimates.

Expected Completion: December 31st 2001

5. PRELIMINARY ANALYSIS OF SOIL CONSERVATION PRACTICES AND NON-AG LAND USE OPTIONS FOR SW UGANDA

The results of the IFPRI household surveys across the 107 communities will be entered, cleaned, and ready for analysis, by October 2001. A preliminary tabulation of this data will be made in order to draw out information on reported evidence of soil degradation and the adoption of soil conservation measures in the hillsides of SW Uganda and, if time permits, on the adoption of non-farm activities in those locations.

Output:

> A 20 page summary report with statistical appendices, describing evidence of soil degradation, use of soil conservation measures and, likely, adoption of non-farm activities.

Expected Completion: November 30th 2001

6. IMPROVE THE SPATIAL RESOLUTION AND COMPLETENESS OF THE DECISION SUPPORT DATABASE

The IFPRI database contains national land cover data from the 1:250,000 scale National Biomass Study. We can significantly improve the resolution of the data by purchasing copies of the digital data at 1:50,000 scale (25 times as much detail). We can also take this opportunity to obtain and include the national soil map. Depending on budget constraints we could purchase the entire national coverage of the higher resolution map, which would significantly improve the resolution and reliability of analyses nationwide, or just the information for SW Uganda.

This activity will involve GIS resources to integrate the new land cover and soils data into the spatial framework and to re-run the analyses already performed with the higher resolution land cover data.

Output:

1. New (soils) and higher resolution (land cover) themes integrated into the national analytical framework
2. The capacity to perform more reliable assessments and interpretations, in particular in the identification of threatened areas, and the analysis of soil degradation issues.

Expected Completion: November 30th 2001

7. IMPROVE THE TREATMENT OF SOIL DEGRADATION IN THE FRAMEWORK DRAWING ON DATA AND ANALYSIS FROM SW UGANDA

This activity would generate information on incidence and causes of soil degradation in the SW region of Uganda. The contemporary effects of soil degradation will be revealed by analysis of the soil quality component of the IFPRI household survey and analysis of the related soil samples (around 2000 for Uganda and around 200-300 for SW Uganda). Beyond site-specific evaluations, a second analysis would place greater emphasis on soil quality dynamics across the SW region by conducting a meta-review of available evidence generated and studies performed in the region. Both papers would also make specific proposals as to how the IFPRI framework can strengthen its treatment of soil degradation from both a data and methodological perspective.

Output:

1. A report on the findings of the analysis the soils data collected as part of the IFPRI household and community surveys, focusing on linking describing soil nutrient balances and the likely cause of degradation in SW Uganda.
2. Meta-review of the published evidence on soil degradation dynamics and the productivity and environmental consequences of soil degradation in SW Uganda.

Expected Completion: June 30th, 2002

8. DEVELOP AND APPLY AN AGRICULTURE-FOCUSED GENERAL EQUILIBRIUM MODEL AND ITS DATABASE

This activity will develop an improved agricultural sector model that is embedded in a Computable General Equilibrium (CGE) of the Ugandan economy. The model will provide a consistent framework for balancing alternative production scenarios with demand (including trade) and market prices. Such a framework is needed to ensure that land use plans are consistent with private profitability at the farm level, and to explore the consequences of alternative land use development scenarios for aggregate agricultural production, agricultural household welfare, agricultural trade, and national food security. The model will also be used to analyze the impact of agricultural sector and trade policy reforms on agricultural production and prices. The information generated by the model can be linked back to the spatial and community level analyses to explore the implications for development and land use pathways and their environmental and social outcomes.

The exact disaggregation of the model and the associated database will be determined during the data assembly and analysis stage. We anticipate that the agricultural supply side (including use of primary factors and intermediate inputs) will be highly disaggregated, possibly as follows:

1. Outputs (7): bananas, maize, cassava, cotton, coffee, other crops, and livestock

2. Agroclimatic zones (8): the southwestern highlands; the eastern highlands; the high potential bimodal rainfall area of the Lake Victoria crescent; the low rainfall "cattle corridor" in lower elevation parts of the southwest; medium potential bimodal rainfall areas covering much of central and parts of western Uganda; medium potential unimodal rainfall areas in much of the north; low potential unimodal rainfall areas towards the northeast; and medium and high potential unimodal rainfall areas in the West Nile region of the northwest
3. Producer market access (2): high and low; and
4. Market involvement (2): high (commercial farmers) and low (subsistence-oriented farmers).

All permutations do not exist (for example all outputs are not produced in all regions) but, if they did, the model would include 224 agricultural production activities. Each zone will include a set of representative agricultural households, most likely disaggregated by market access (cf. point 3 above). Each representative household will control (and earn incomes from) a set of production factors that are used by relevant production activities in its zone. The model will consider transactions (including transport and marketing) costs in agricultural trade, both domestic and international.

In order to capture spillover and feedback effects between agriculture and the rest of the economy, the model will also include a simplified structure for the non-agricultural economy (production, demand, and trade). The addition of the non-agricultural economy will be important for assessing the impact of national economic growth on domestic food demands, which may provide an important outlet for increased agricultural production. In particular, as per capita incomes rise and people diversify and improve their diets, important new domestic opportunities should arise for farmers to diversify into higher value products beyond the opportunities available in niche export markets. The model could also be used to assess the impacts of specific investment programs and policy reforms as part of a future monitoring and evaluation program for USAID's investments.

This activity will be undertaken in dialogue (possibly including data sharing) with Dean DeRosa, who has been retained by the Uganda Mission to develop a manufacturing-focused multi-country model that is complementary to the single-country agriculture-focused model described here.

Output:

1. An integrated database for the agricultural and non-agricultural economy, including a Social Accounting Matrix (SAM); for the agricultural sector, the database will incorporate recent survey information.
2. A functioning and tested computer-based agricultural sector/general-equilibrium model.
3. Documentation of the model and its use
4. Documentation of model-based analysis of the impact of some important policy scenarios, including further market and trade liberalization.

Expected Completion: June 30th, 2002

9. CONSOLIDATE AND DOCUMENT THE IMPROVED ANALYTICAL FRAMEWORK

With the benefit of another 9 months of experience, development and application of the analytical framework (i.e., between now and June 2002), the completion of the Phase II effort will be an appropriate time to prepare a technical report describing the analytical framework itself. This would serve the purposes of providing collaborating scientists and analysts with a comprehensive overview of the concepts, structure, and methods embodied in the framework, including the multi-market model. This report will likely be prepared as an IFPRI Discussion Paper, with the ultimate objective of producing a publication in a peer-reviewed professional journal. This will also serve to inform specialists on a much broader basis, and subject the framework to more rigorous professional scrutiny.

Output:

A 60-80 page document (plus tables, figures and maps), providing a technical description of the entire conceptual and methodological basis for the analytical framework that has been developed, and to be submitted for peer review.

Expected Completion: June 30th, 2002

10. INVENTORY OBSERVED AND FEASIBLE LIVELIHOOD STRATEGIES FOR UGANDA – WITH SPECIAL EMPHASIS ON NON-AG, RESOURCE BASED STRATEGIES

At the end of Phase II a consolidated inventory of livelihood strategies will be generated. This inventory will update and consolidate the strategies identified in Phase I with those emerging from Phase II activities 2 and 3, and as will emerge from the process of capturing more local knowledge into the framework as its application proceeds. The inventory will summarize the statistically verified or hypothesized range of determinants governing the likely feasibility each livelihood strategy. By this time the inventory should contain a better balance of agriculture and non-agriculture livelihood strategies than was the case at the end of Phase I - particularly those involving the sustainable exploitation of natural resources.

Output:

A tabular inventory and descriptions of the observed and feasible livelihood strategies identified and characterized by activities up to June 2002.

Expected Completion: June 30th, 2002

11. CONDUCT AND ANALYZE MARKET, COMMUNITY, AND HOUSEHOLD SURVEYS IN THE DISTRICTS OF NEBBI, ARUA/YUMBE, GULU, KITGUM/PADER, HOIMA, MASINDI, AND BUNDIBUGYO.

As part of its project on *Policies for Improved Land Management in Uganda*, IFPRI conducted market, community, household and plot surveys in 2000 and 2001 in the central, eastern, western and parts of northern (Apac and Lira) Uganda, representing seven of the nine major farming systems of the country. The districts in the upper north and west Nile were not surveyed due to security concerns and inadequate resources to cover the entire country. As a result, Phase I of this project, which depended upon the data provided by the IFPRI land management project, was not able to adequately analyze market conditions, land use and livelihood options in the northern and northwestern regions. The proposed survey activities will provide the missing information needed to identify such options.

The surveys will be conducted in the districts of Nebbi, Arua/Yumbe, Gulu, Kitgum/Pader, Hoima, Masindi, and Bundibugyo. The government of Uganda has identified coffee and cotton as strategic crops for its recovery and agricultural modernization programs. [There is potential for expansion of cotton production [in all four of these districts, while parts of Arua and Nebbi are also suitable for expansion of coffee production.] The west Nile districts (Arua and Nebbi) account for 17% of the seed cotton produced by Uganda, even though the districts cover only 4.5% of the nation's surface area. The two districts also account for 2% of the total national coffee production. Gulu and Kitgum account for 3% of Uganda's cotton production. However, the two districts are sparsely populated and have large areas of uncultivated land that is suitable for cotton production. The surveys will generate necessary information to analyze market conditions, production constraints, and livelihood options in the region.

Outputs:

1. Report on market structure and transaction costs affecting potentials for cotton and coffee in the western, northern and West Nile regions, based upon analysis of the market surveys.
2. Report on livelihood and land use options in these regions, based upon analysis of the community, household and plot surveys, with emphasis on options related to cotton or coffee production.

Expected Completion: June 30th 2002

12. PHASE II COMPLETION DISSEMINATION WORKSHOP

During the life of Phase II activities the IFPRI team and its local collaborators will make short presentations to describe the analytical framework to key donor, government and other stakeholder groups. However, on completion of phase II activities (end of June 2002) it would be opportune to make a more formal one-day workshop that described elements of the framework in more detail, as well as to provide some specific examples of its applications. A workshop of this type would also be timely as it would take place shortly after USAID expects several new program teams to be initiating their activities in Uganda. The presentation would have a major focus, therefore, on demonstrating to those teams the opportunities to make use of and contribute to the analytical framework and its underpinning databases.

The workshop would be a one-day event with lunch and refreshments provided, and involve some 100-120 participants.

Output:

Increased awareness and understanding of the nature and utility of the analytical framwork and its databases, among USAID personnel, their contractors, and other international and national stakeholders.

Expected Completion: June 30th, 2002

PHASE III (Starting July 2002)

Objectives

1. To provide a continuing strategic decision support capacity to USAID (Uganda), its program partners, and relevant national institutions to a) guide decisions about land use options and rural investments to meet desired productivity, environmental and poverty goals, b) to guide investments in various intervention options, e.g. technology development choices, and c) guide the collection and evaluation of project impact data. The information will be maintained in a spatially referenced format.

2. To institutionalize the decision support system within Uganda and to phase out IFPRI's involvement within 3-5 years.

Activities

Building on the achievements of phases I and II, activities in phase III will include:

Continued enrichment of the GIS data base. Special areas of focus will include:

a) Integration of community and household survey data and findings from the Northern region
b) Better representation of key environmental variables in number, resolution, and quality, especially for environmentally important or sensitive areas
c) Inclusion of land tenure and resource access concerns. This would require spatially referenced land tenure data and, methodologically, the integration of land tenure status as a determinant of livelihood strategies
d) Inventory and mapping of donor investment activities by donor, location, and sector

1. Part of the new data will be generated by other USAID program partners (e.g. from research, project implementation and program monitoring), part will be collected from other research, government, donor, and miscellaneous sources, and part (especially for the North) will involve primary data collection.

2. Improvements to the conceptual framework, particularly in incorporating poverty and food security concerns, in capturing the dynamics of land use changes, and in assessing the impact of policy changes on land use options at the micro level.

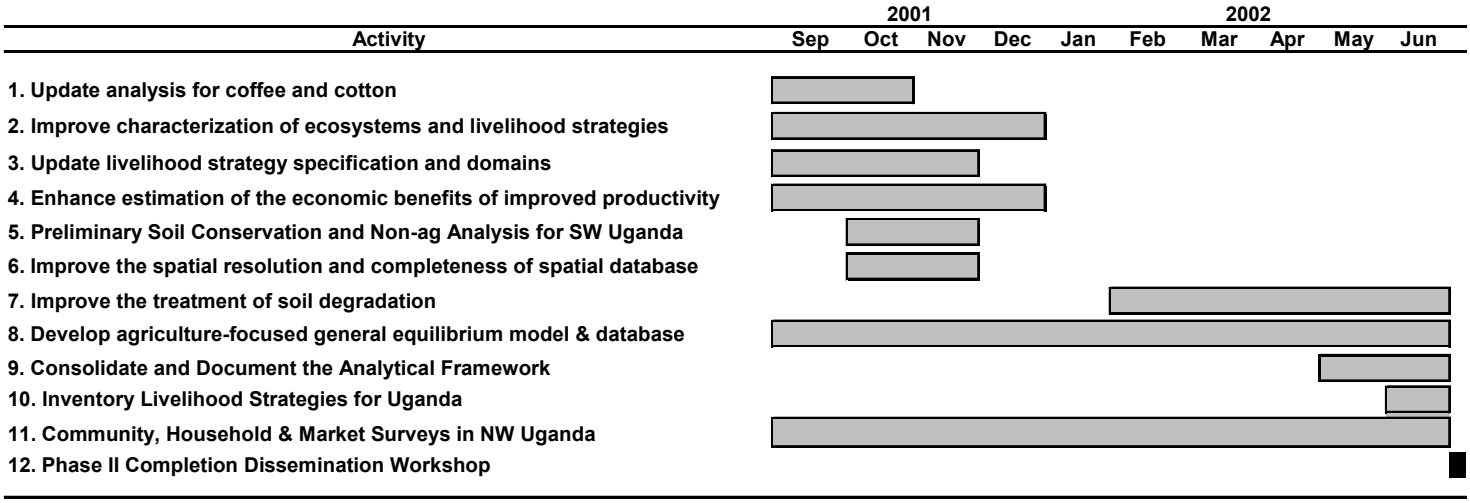
3. Providing a more explicit ability to evaluate the potential benefits to a range of specific intervention options – by instrument, by region, by land use, by type of threatened area and so on. A high priority would likely be the capacity to perform ex ante evaluations of the likely impacts of R&D, or new technologies in general (i.e., locally developed or "imported" technologies). This capacity will be particularly useful for the USAID/Uganda mission in evaluating the potential economic benefits of biotechnology investments.

4. Information and policy support to the USAID mission and its program partners in executing SO-7. Additionally, expanding the client group to include other relevant donors, national policy makers and NGOs. This may also provide an opportunity to broaden the financial base for maintaining the strategic decision support system which would be important for its long term sustainability.

5. Provide necessary training and technical support to institutionalize the approach, data base and analytical tools within appropriate national institutions.

6. Work with USAID and its partners in developing and implementing indicators of impact assessment. IFPRI's data base can provide baseline information against which future impacts can be measured.

Management

IFPRI will continue to lead and manage the strategic decision support system until such time as it has been successfully institutionalized within the country (within 3-5 years). IFPRI will assign a full-time scientist to the project based in Kampala, who will be supported by other IFPRI staff as needed.

TIME LINE FOR PHASE II