TECHNICAL ASSISTANCE COMPLETION REPORT

Division: EAAE/EARD

<table>
<tr><td colspan="3">TA No., Country, and Name
TA6067-REG: Technical Assistance for the Seventh Agriculture and Natural Resources Research at International Agricultural Research Centers [TA Cluster (TAC)]</td><td colspan="2">Amount Approved: $3,818,000
Revised Amount:</td></tr>
<tr><td colspan="2">Executing Agencies (EAs)
Subproject 1: International Center for Tropical Agriculture
Subproject 2: International Crops Research Institute for the Semi-Arid Tropics
Subproject 3: International Food Policy Research Institute
Subproject 4: Asian Vegetable Research and Development Center</td><td>Sources of Funding
TA Special Fund (41% total cost)
EA core budgets (24%)
National Agricultural Research Systems (29%)
Donors: Ford Foundation, United States Agency for International Development, European Commission (6%)</td><td>Amount Undisbursed:
$27,937.26</td><td>Amount Utilized:
$3,790,062.74</td></tr>
<tr><td>TA Approval Date:
6 Dec 2002</td><td>TA Signing Date:
15 Jan 2003</td><td>Fielding of First Consultants:
15 Jan 2003</td><td colspan="2">TA Completion Date
Original: 31 Dec 2005 Actual: 30 Jun 2006
Account Closing Date
Original: 31 Dec 2005 Actual: 20 Jun 2008</td></tr>
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Description:

The TAC encompassed four subprojects to promote sustainable agriculture development, effective natural resource management (NRM), poverty reduction, and capacity development in National Agricultural Research Systems (NARS) of the participating countries. The subprojects were independently executed by four centers that are part of the Consultative Group on International Agricultural Research (CGIAR). The four subprojects were (i) "Improving livelihoods of upland farmers using participatory approaches to develop more efficient livestock systems" implemented by the International Center for Tropical Agriculture (CIAT); (ii) "Participatory watershed management for reducing poverty and land degradation in the semi-arid tropics" carried out by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT); (iii) "Poverty reduction through advisory network, policy research, and capacity strengthening in South Asia" executed by the International Food Policy Research Institute (IFPRI); and (iv) "Promoting utilization of indigenous vegetables (IVs) for improved nutrition of resource-poor households in Asia" conducted by the Asian Vegetable Research and Development Center (AVRDC).

Subproject 1: Livestock represent a vital component of upland smallholder livelihoods in Southeast Asia. Sales of livestock often account for more than 50% of smallholder cash income and are both a means of accumulating capital and providing a safety net for families. Traditionally, the main feed resource for livestock has been communal land, which farmers utilize by grazing their animals and cutting grass for stall-fed animals. With increasing pressure on land, these natural feed resources have become scarce, forcing farmers to spend more time securing feed. This resulted in declining returns to labor, under-feeding of animals, poor animal productivity, lowered disease resistance among livestock, and higher animal mortality. Subproject 1 sought to develop improved forage systems that could be integrated with indigenous fodders and crop residues in Cambodia, People's Republic of China (PRC), Indonesia, Lao PDR, Philippines, Thailand, and Viet Nam.

Subproject 2: The vast dryland areas of Asia provide livelihoods to a large percentage of Asia's poor population (about 250 million). An earlier Asian Development Bank (ADB)-supported project carried out by ICRISAT demonstrated that improving watershed management in rain-fed agricultural areas can foster conservation of soil and water, and readily adopted by farmers based on yield increases and improvements in farmers' incomes in the order of 50% to 250% (TA5812-REG: Third Agriculture and Natural Resources Research at CGIAR Centers: Improving Management of Natural Resources for Sustainable Rain-fed Agriculture, for $1,250,000, approved on 22 October 1998, see the TA Completion Report for the project dated 24 April 2003). The objectives of this subproject were to further strengthen and consolidate the promising results and gains achieved in NRM under its predecessor project in India, Thailand, and Viet Nam. The subproject sought to develop a framework and accompanying institutional arrangements for upscaling the benefits of improved technologies to a region.

Subproject 3: More than 40% of the poor in the world live in South Asia and the absolute number of people living below the poverty line was greater in 1999 than 30 years earlier. This subproject was proposed to support a broader initiative of IFPRI establishing the Policy Analysis and Advisory Network of South Asia. This network undertook applied agricultural policy research and conducted research, training, and exchange programs with local institutions, government agencies, nongovernmental organizations (NGOs), and the private sector.

Subproject 4: Food security, particularly nutritional security, and loss of biodiversity in Asia increasingly constrain the livelihoods of people in Asia. This subproject aimed to tackle these issues by promoting cultivation, preservation, and utilization of IVs in eight countries, namely Bangladesh, Cambodia, Indonesia, Lao PDR, Malaysia, Philippines, Thailand, and Viet Nam under the direction of AVRDC. A participatory approach was used to demonstrate diversity in IVs and involve farmers, vendors, and consumers (particularly women's groups and school children) in the selection of IVs promotion.

Expected Impact, Outcome, and Outputs:

Subproject 1 was developed to use farmer participatory approaches to improve the sustainable livelihood of small farmers in the uplands through intensification of crop-livestock system, deliver new forage and feed technologies, and improve mechanisms for delivering new technologies. Specific outputs included identification of market constraints and opportunities for smallholder livestock intensification, improvement of regional interaction and linkages to improve extension methods, and increase in the capacity of country partners through improved cooperation and collaboration. More than 5,000 households benefited from the subproject.

Subproject 2 aimed to establish 25 demonstration watersheds in four participating countries, and identify constraints and opportunities for enhancing the productivity and incomes of the rural poor. It aimed to foster adaptation of institutional and technical models for community-scale integrated watershed management (IWM) and train staff in NARS and NGOs as well as farmers. Expected outcomes were increased farmers' productivity by 50%, improved drinking water availability, and mitigation of environmental degradation.

Subproject 3 aimed to build agricultural policy research capacity and create synergies among policymakers and researchers in South Asia to enhance policy effectiveness in reducing hunger and poverty. The subproject had five major outputs: (i) linkage between decisionmakers and researchers strengthened to identify emerging policy research priorities and engage in policy dialogue; (ii) collaborative research studies on key policy issues developed; (iii) policy decisions made based on collaborative research; (iv) policy research centers developed through capacity strengthening; and (v) training materials developed for trainers, policy researchers, and analysts in policy analysis, implementation, and communication of policy recommendations.

Subproject 4 aimed to improve food security for rural households and enhance the role of IVs in the diversification of farm income and nutrition of resource-poor farmers. Intended outcomes included (i) increased consumption of IVs, (ii) increased cultivation of IVs in agricultural production systems at targeted farms, (iii) development of at least 10 varieties of IVs for promotion and use, and (iv) production of technology guidelines to train farm households on household-based seed production, seed preservation, food preparation, and home gardening of IVs.

Delivery of Inputs and Conduct of Activities:

The TAC was well-formulated, and its implementation was flexible enough to accommodate changes in priorities and circumstances. The subprojects were implemented in a cost-effective manner and demonstrated good productivity in preparing technical reports and associated activities in the field. Given the fairly modest resources provided, outputs were impressive; and client satisfaction with the subprojects was high. The performance of ADB and the EAs in administering the TAC was generally good, with the few exceptions noted below. Consultants hired under the subprojects generally performed assigned tasks in a timely and proficient manner, consistent with their individual evaluations.

Subproject 1: CIAT implemented this subproject with a budget of $0.95 million. The subproject was coordinated through CIAT's regional office in Vientiane and involved work with implementing agencies in each of the seven participating ADB developing member countries (DMCs). The subproject was carried out in close consultation with national and local subproject partners. CIAT provided effective support by linking the subproject with agro-enterprises, marketing expertise, training, and impact assessment. Support from national and local subproject partners far exceeded expectations and demonstrated the relevance of the TA to the DMCs. Funds were used efficiently and effectively to achieve the subproject goals. ADB's inputs to the subproject were satisfactory.

Subproject 2 had a budget of $1.3 million and contributions from participating NARS and ICRISAT. Subproject activities were carried out as per the annual work plans developed in each country at the beginning of the subproject. No significant delays or problems in conducting the subproject were reported, and the subproject started and ended according to schedule set out in the regional TA (RETA) paper. ADB's inputs into subproject implementation were satisfactory.

Subproject 3 was part of a larger IFPRI initiative drawing on various sources of financial support. Both the timing and relevance of the outputs of the subproject were adversely influenced by the competing demands of various agencies funding the initiative. ADB's influence in directing the Project was limited due to changes in staff overseeing the subproject, appointment of staff to oversee the subproject that lacked adequate economics skills to fully engage and direct IFPRI researchers, and by the limited number and duration of missions authorized in relation to the subproject. Despite shortcomings in ADB inputs and IFPRI researchers' responsiveness to these inputs, review of project outputs

suggests ADB inputs resulted in production of outputs that were more practical and useful to ADB's DMCs.

Subproject 4 was linked to other AVRDC activities including projects evaluating nutritional and health properties of IVs, promoting IV regeneration, and characterizing and documenting IV diversity. These linkages helped ensure that the subproject had an extensive pool of information and materials for use to promote cultivation of IVs in supporting food security and nutritional health in rural households. AVRDC's support and coordination of subproject activities were timely and fostered smooth implementation. NARS were involved in the subproject as implementing agencies, and shared their research facilities and personnel. The subproject also established linkages between participating NARS and other institutions (e.g., universities, ministries of education and health, media, and NGOs). These inputs were adequate and effective. ADB provided effective supervision and ensured the timely release of funds.

Evaluation of Outputs and Achievement of Outcome:

Overall, the TAC performed well in terms of timely implementation, delivery of expected outputs, and production of high-quality research results of practical importance.

Subproject 1 successfully developed improved feeding systems based on planted forages, which significantly increased returns on labor and farm livestock income, thus improving the livelihoods of participating farmers. The subproject also developed improved extension methods and scaled up improved feeding systems to areas beyond the original project area, which were subsequently incorporated into government programs. Improvements in feeding systems included rapid fattening of cattle, improved cow-calf production, greater fish production in small on-farm ponds, and supplementing forage legumes for village pigs.

Subproject 2's final outputs included an international workshop on impact assessment methods for NRM initiatives, three books (including "Natural Resource Management in Agriculture" and "Watershed Management Challenges") which disseminated research and institutional innovations in community watershed management, 50 research papers and bulletins, 11 book chapters, 9 workshop proceedings, 5 working papers and manuals, 41 newsletters, 26 conference presentations, and 10 information brochures. At a broader level, the subproject developed options and strategies for community watershed management.

Subproject 3 accomplished the following: (i) organization of a coordinating body with 46 members from Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka; (ii) completion of two research studies, the results of which were shared with the stakeholders in a final workshop; and (iii) a number of smaller events including four workshops, three seminars, and four conferences, to share the collaborative research with policy makers, professionals, private sector leaders, and donors. The subproject helped create centers of excellence for agriculture policy research, and memoranda of understanding outlining future cooperation in agricultural policy research and capacity building were signed. The subproject initiated various capacity building activities covering themes such as agricultural diversification, agroprocessing, domestic market reforms, market interactions, and trade liberalization.

Subproject 4 sought to safeguard the biodiversity of major IVs in targeted countries, and it was successful in achieving this goal assembling 2,360 new variants of IVs. The subproject applied a participatory approach to demonstrate IVs diversity, nutritional and health values, and consumer preference. Through the subproject, researchers from NARS learned to prepare and conduct field demonstrations and participatory evaluation of IVs. The subproject also carried out training for rural farmers in IVs home gardening, seed production, and nutrition, and benefited more than 500 women. These activities contributed to an increased recognition of the importance of IVs. For example, the Government of Thailand decided to include IVs in the school lunch program.

Overall Assessment and Rating:

Overall, the TA is rated successful.

Subproject 1 is rated successful. It was carried out in a timely manner and exceeded the original targets and milestones. Improved feeding systems were developed using participatory approaches at subproject sites, and these were adopted by more than 7,500 households and improved returns to labor and increased incomes from livestock. Cattle fattening supplemented by forage crops increased annual net income from $90 per participating farm (average size 1,200 square meters) to more than $500. Planted forages to feed grass carp and other grass-eating fish increased net household income from $84 to more than $280 per pond with associated returns to labor increasing from $0.25 to $1.25 per hour. Improved feeding in cow-calf production increased net annual income from $441 to more than $750 per farm raising associated returns to labor from $0.18 to $0.69 per hour. Demonstrating these positive effects was important to scaling up the improved feeding systems and attracting the interest of farmers, traders, and government agencies. The capacity of researchers and extension workers to work together to develop and deliver improved feeding systems was strengthened, as demonstrated by the extent to which improved feeding systems were scaled-up to areas beyond the original project area.

Subproject 2 is rated successful as it scaled up the benefits of IWM to 25 demonstration watersheds in PRC, India, Thailand, and Viet Nam. Its achievements include (i) development of agronomic management approaches using

micronutrient fertilization that increased crop yields between 50% and 145%; (ii) establishment of seed banks in all four countries; (iii) establishment of cattle breeding centers to increase milk production; (iv) improved income diversification among farmers through development of new income-generating activities; (v) improvements in income, household food security, and family health through introduction of contour cultivation and fruit tree-based farming to combat soil erosion; (vi) construction of 200 water harvesting pits and water tanks; and (vii) enhanced incomes through application of balanced fertilizers and higher productivity.

Subproject 3 is rated partly successful. It was successful in delivering the envisaged outputs and using the allocated resources adequately; although, this was tempered by the 7-month delay in the subproject commencement and limited ADB contribution. Subproject accomplishments included the production of two research studies, formation of a network for exchange of agricultural policy analysis among participating countries, and identification of key policy reform needs for participating countries. For example, failures of rice stock and pricing policies in Bangladesh, and need for stepwise withdrawal of government interventions in food markets in Pakistan. Continuing leadership, either by IFPRI through its New Delhi Office or by participating national institutions, is needed in order for accomplishments of the subproject to be sustained.

Subproject 4 is rated successful. The subproject produced expected outputs, and results surpassed targets in several subproject activities. One simple measure of the subproject's success is the number of new IVs identified, developed, and disseminated in the eight countries covered by the subproject. In all, there were about 50 such IVs. The subproject successfully assembled 2,360 new varieties of IVs from six countries.

Major Lessons:

Subproject 1: Important lessons learned include (i) livestock intensification showed excellent potential as a stepping stone for poor households to escape poverty; (ii) improved feeding systems improved returns to labor and raised net farm income; (iii) planted forages were key in enabling intensification of livestock production and market-oriented animal production; (iv) participatory approaches built rapport between development workers and farmers, and contributed to the development of technologies with significant impact; and (v) poor households were able to make use of improved feeding systems through share cropping with micro-credit from villages and local government.

Subproject 2: Major lessons learned include (i) watershed programs need to be more effective with a livelihood approach (as opposed to a resource conservation-centered approach); (ii) establishment of good model watersheds facilitated scaling-up and technology dissemination by helping to sensitize policy makers to the benefits of IWM; (iii) improved water availability in rain-fed areas triggered private investments and fostered market-led diversification of farming systems; (iv) demonstration of tangible economic benefits from community participation and collective action in IWM was key to the uptake of recommended practices; (v) enabling local leadership, strong community participation, and technical backstopping each fostered success of IWM; (vi) capacity building was critical and offered opportunities for local farmers and NGOs to become trainers; and (vii) enhancing value adding activities and agricultural market linkages were vital in ensuring sustained success of IWM.

Subproject 3: Significant lessons which emerged include (i) the effectiveness of TA with a heavy policy and policy-networking focus would have been enhanced by greater involvement of ADB in identifying, processing, and implementing TAs; (ii) greater consideration should be given to how research outputs will be applied; (iii) for TAs which ADB financing represents only part of a broader research initiative, the TA design must clearly define ADB's role and include measures to ensure ADB's influence over implementation; and (iv) consultation and coordination with ADB resident missions during TA implementation offered a promising avenue for ensuring the TA addresses timely, country-specific policy research.

Subproject 4: Lessons learned include (i) hiring of a full time subproject manager facilitated effective implementation and helped ensure close monitoring and follow up of subproject activities; (ii) good linkages with other ongoing projects within AVRDC and in the participating countries enabled the TA to accomplish more than expected; and (iii) training of teachers, researchers, and extension workers from NARS, was particularly effective. Experience under the overall RETA suggests ADB's influence over the projects was greater when support was provided with less cofinancing from other institution, and that the outcomes of projects relying more heavily on ADB support tended to be better than those relying on a patchwork of various source of financial support with varying points of interests in the research.

Recommendations and Follow-Up Actions:

Overall, the positive achievements of the RETA suggest TA funds allocated to support practical and policy-relevant research at selected centers of the CGIAR can yield significant results and merits continuation.

Subproject 1: The favorable outcomes of this subproject suggest that livestock development merits closer consideration as a pathway to assist poor rural households out of poverty. Capacity development of national staff in livestock development and linking them through a knowledge network offer an opportunity for these individuals to contribute to the design and implementation of development projects.

Subproject 2: Results of this subproject suggest that community participatory approaches in NRM are useful. Diversified livelihood options fostered through this approach provide a cushion and increase household resilience in the face of droughts. However, participatory approaches require technological backstopping. Research carried out under the subproject suggested that more work is required in quantifying the monetary benefits of environmental services generated from community watershed management (particularly with respect to carbon sequestration benefits).

Subproject 3: Outcomes of this subproject suggest that there is a need for ADB to allocate greater resources in identifying, monitoring, and supervising RETAs, and that ADB needs to ensure that staff have sufficient technical expertise. Greater ADB staff involvement is vital for fostering policy relevance of the research, coordinating follow-on studies, and applying results in future operations. Under this subproject, the research papers produced should have been reviewed by concerned country teams and other relevant staff to better assess opportunities for incorporating TA research results into country strategies and plans.

Subproject 4: Results of this subproject suggest that activities such as seed production, commercialization of IVs, and linking IVs to market represent possible future projects to ensure the continued conservation and utilization of IVs. There was clearly a need for greater emphasis on the production of published outputs from the subproject. Distribution of IV seed kits, and information on IVs through CD-ROMs and via the internet should be continued by AVRDC.

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