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ON A

GRANT FROM THE

GLOBAL ENVIRONMENT FACILITY

IN THE AMOUNT OF US$ 6.75 MILLION EQUIVALENT

TO THE

STATE OF RIO DE JANEIRO

FOR A

RIO DE JANEIRO SUSTAINABLE INTEGRATED ECOSYSTEM MANAGEMENT IN PRODUCTION LANDSCAPES OF THE NORTH-NORTHWESTERN FLUMINENSE (GEF) PROJECT

May 15, 2012

Sustainable Development Department
Brazil country Management Unit
Latin America and the Caribbean Region

CURRENCY EQUIVALENTS

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Currency Unit = Real (R$)
R$ 1.00 = US$ 0.551
US$ 1.00 = R$ 1.814

FISCAL YEAR
January 1 to December 31

ABBREVIATIONS AND ACRONYMS

GEF	Global Environment Facility
CAS	Country Assistance Strategy
CEDRUS	State Council for Sustainable Rural Development
CMDR	Municipal Rural Development Council
CNPq	National Council for Scientific and Technological Development
COPPETEC	Foundation for Project Coordination, Technological Studies and Research
COGEM	Micro-catchment Management Council
CONAB	National Supply Company
COREM	Regional Micro-catchment Council
DPGE	State Public Defender's Office
DRM	State Mineral Resources Department
EA	Environmental Assessment
ECC	Statutes of Community Conduct
EMATER	State Rural Extension Agency
EMBRAPA	Brazilian Agricultural Research Enterprise
FAO	Food and Agriculture Organization
FAPERJ	Amparo Foundation for Research, State of Rio de Janeiro
FEALQ	Luiz de Queiroz Foundation for Agrarian Studies
FEEMA	State Environmental Management Foundation
FMR	Financial Management Report
FUNBIO	Brazilian Biodiversity Fund
FUNBOAS	Fund for Best Practice in Water Catchments
FUNDES	State Social and Economic Development Fund
GOB	Government of Brazil
GoRJ	State Government of Rio de Janeiro
IBAMA	National Environmental Institute
ICS	Information and Communication System
IEM	Integrated Ecosystem Management
M&E	Monitoring and Evaluation
MIS	Management Information System
Moeda Verde	State Credit Program for Agric. Production and Diversification

PEM	Sustainable Micro-catchment Land Management Plans
PES	Payment for Environmental Services
PESAGRO	State Agricultural research Enterprise
PID	Individual Farm-level Development Plans
POA	Annual Operating Plan
PRONAF	National Family Agriculture Program
RIC	Regional Information Center
Rio Rural	Micro-catchment State Program of Sustainable Rural Development
RPPN	Nature Protection Reserve
SEAAPI	State Secretariat of Agriculture, Fisheries and Rural Development
SEAPEC	State Secretariat of Agriculture and Livestock
SEINPE	State Secretariat of Energy, Naval Industry and Petroleum
SEMADUR	State Secretariat for Environment and Urban Development
SEP	Project Management Unit
SoRJ	State of Rio de Janeiro
USLE	Universal Soil Loss Equation

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BRAZIL
Rio de Janeiro Sustainable Integrated Ecosystem Management in Production Landscapes of the North-Northwestern Fluminense (GEF) Project

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1. Project Context, Global Environment Objectives and Design

1.1 Context at Appraisal

1.1.1 **State and sector background:** Long isolated from other major rainforest blocks in South America, the Atlantic Forest has a diverse and unique mix of vegetation and forest types. The State of Rio de Janeiro has the highest percentage of the Atlantic Forest biome in relation to total area, in Brazil. At project appraisal in 2005, less than 10% of that forest – an area of global importance and home to an estimated 20,000 plant species – was still standing. Centuries of sugarcane and coffee plantation had dramatically depleted forest habitats. Many unique and in some cases critically endangered vertebrate and bird species were clinging to survival.

1.1.2 The project area, the North and Northwestern Fluminense (NNWF) administrative regions, encompassing 22 municipalities covering an area of 15,000 km2 and with about 30,000 family farms, had the largest stands of remaining Atlantic Forest in the State. While some of these tracts were already under conservation in protected areas, most were dispersed, on private lands and not protected. The principal threats facing the Atlantic Forest in the NNWF region at the time of appraisal were deforestation stemming from land conversion and charcoal production, and soil erosion caused by deforestation, over-grazing, and inappropriate agricultural practices. From 1990-2000, the State of Rio de Janeiro had the highest rate of deforestation of all Brazilian states with tracts of Atlantic Forest, with most occurring in the NNWF region.

1.1.3 **Agriculture and Socio-economic conditions:** A significant portion of the NNWF population was (and remains) dependent on agriculture, characterized by extensive cattle-raising of low technical input and productivity. Pasture degradation, soil erosion and decreasing water availability had reduced productivity, while increased competition from other regions/countries along with declining prices had impacted most heavily on small family farms, reducing incomes, deepening rural poverty and prompting out-migration. Such farms depended on manual labor, lacked corrective measures to address soil fertility, made little use of technical assistance and rural extension, and showed only modest organizational capacity. Urgent interventions were warranted to introduce integrated ecosystem management (IEM) and sustainable land management (SLM) practices, given the potential for improved land use, the need to increase carbon storage in NNWF agro-ecosystems, the significance of the Atlantic Forest biome and associated agro-ecosystems for the conservation and sustainable use of biodiversity of global importance, and growing threats to remaining habitats.

1.1.4 While the NNWF region was the largest agricultural producer state-wide and had benefited from State Government efforts to boost the availability of agricultural credit and technical assistance, a positive foundation for conducting project activities (see 1.1.5), greater effort was needed on two fronts: a comprehensive, cross-sector approach to ecosystem management to ensure ecosystem integrity, justifying the use of IEM methodologies to plan and implement SLM activities; and, greater public awareness of SLM techniques to conserve natural resources and strengthen demand for them, as well as to adapt SLM techniques to the project area. Constraints affecting the adoption of IEM and SLM were: (i) insufficient human and institutional capacity and weak community organizations at the local and state levels; (ii) producers' lack of capital to undertake the fairly heavy, up-front investments needed to adopt SLM techniques; (iii) limited number of SLM practices adapted to specific agro-ecological conditions of the NNWF region; and (iv) insufficient organized data and information available to decision-makers to incorporate eco-system level considerations into productive activities. The project sought to address these deficits.

1.1.5 **Rationale for Bank assistance:** The project was seen as a key complement to the Bank-supported set of projects to improve natural resource management (NRM), environmental conservation and development in the States of Sao Paulo, Santa Catarina, Parana and Rio Grande do Sul and in other parts of Latin America. It was also consistent with a range of government programs

and external donor efforts, including in the area of payment for environmental services (PES). The project was consistent with the then-current Country Assistance Strategy (CAS), strengthening a key development pillar (Environment and Natural Resources Management) by fostering environmental protection and management, natural resources management, and global environmental externalities including carbon sequestration and biodiversity.

1.1.6 The project was also consistent with the GEF Operational Strategy and its Operational program on Integrated Ecosystem Management (OP 12); and with the Sustainable Land Management Operational Strategy (OP 15).[1] It also fit GEF Strategic Priorities for: (i) biodiversity (BD-SP2), facilitating the mainstreaming of biodiversity objectives within production systems and development of market incentive measures; and (ii) sustainable land management (SLM-SP1), by including a heavy focus on SLM capacity building.

1.2 Original Project Development Objectives and Global Environment Objectives, and Key Indicators

1.2.1 **Project Development Objective (PDO):** As stated in the PAD and Credit Agreement, the project sought "to promote an integrated ecosystem management approach to guide the development and implementation of sustainable land management practices, while providing environmentally and socially sustainable economic opportunities for rural communities living in the North and Northwest *Fluminense* administrative regions of the State of Rio de Janeiro". The main expected outcomes were improved capacity and organization for natural resources management, and increased adoption of IEM and SLM concepts and practices.[2] Progress would be measured by the following Key Performance Indicators (KPI - see also Data Sheet), shown aligned with their sub-objectives:

(a) ***Improved capacity and organization for natural resources management:***

- Coordinating bodies with significant stakeholder representation from MC and municipal levels active at the regional and local levels (1 regional committee (COREM) by PY 1), at least 40 local committees (Micro-catchment Management Councils (COGEM) by PY 2) to integrate project concepts and activities into ongoing rural development efforts.

(b) ***Increased adoption of IEM and SLM concepts and practices:***

- IEM/SLM practices adopted by at least 1,900 farmers in 40 communities in at least as many MCs by Project Year (PY) 5 (80% of the project target), thereby reversing land degradation and improving local livelihoods.

1.2.2 **Global Environmental Objectives (GEO):** The GEO sought to: (i) address threats to biodiversity of global importance; (ii) reverse land degradation in agricultural landscapes; (iii) enhance carbon sequestration; and, (iv) increase awareness at all levels of the value of adopting an IEM approach to the management of natural resources. The main, desired outcomes for the global environment were: conservation and sustainable use of biological diversity; and, increased carbon storage in terrestrial ecosystems. The following indicators, also aligned with their sub-objectives, would measure progress:

(a) ***Address threats to biodiversity of global importance:***

- Change in total land area characterized by biodiversity-friendly agricultural practices that enhance soil structure stability in micro-catchments (32,000 ha by PY 5);
- Total area of riparian and other native forests rehabilitated for biodiversity conservation and hydrology stabilization objectives (1,440 ha by PY 5); and,

[1] OP 12: promote adoption of comprehensive land and ecosystem management interventions that integrate ecological, economic and social goals to achieve long-term protection and sustainable use of biodiversity, reduction of net emissions and increased storage of carbon in terrestrial ecosystems, and the conservation and sustainable use of watersheds, providing benefits at the local, national and global levels. OP 15: address land degradation issues and support adoption of SLM practices.

[2] This statement of the PDO incorporates the fuller presentation included in the PAD Logframe.

- Area of biodiversity conservation-friendly land use mosaics established on private lands supporting corridor connectivity in project watersheds (1,240 ha by PY 5).

(b) ***Reverse land degradation in agricultural landscapes:***

- Reduced erosion (50 percent by PY 5) and downstream sedimentation (50 percent by PY 5) in at least 3 micro-catchments.

(c) ***Enhance carbon sequestration:***

- Amount of CO2 sequestered (1.5 tons of CO2/ha by PY 5).[3]

(d) ***Increase awareness at all levels of the value of adopting an IEM approach to the management of natural resources:***

- 40 rural community organizations created that have adopted and implemented IEM strategies in 40 micro-catchments (by PY 4);
- Education and training of beneficiary stakeholders (1,900 by PY5), project executors (150 by PY5), and schools (25 by PY5); and,
- Best practices and lessons learned disseminated through workshops, events and media campaigns in the NNWF region.[4]

1.3 Revised PDO/GEO (*as approved by original approving authority*) and Key Indicators, and reasons/justification

1.3.1 Neither the PDO nor GEO was revised. Key Performance Indicators were not changed.[5]

1.4 Main Beneficiaries

1.4.1 The primary, potential target group included about 4,000 small- and medium-sized farmers, rural youth, school teachers and community leaders in 50 pilot micro-catchments covering some 100,000 ha (about 15% of the aggregate micro-catchment area). In addition, a significant percentage of the total regional rural population (estimated at about 1.0 million) would be targeted with awareness-building media tools.[6] The stakeholder pool was broad, including relevant State, Federal and municipal institutions, NGOs, private sector bodies and academia.

1.5 Original Components (*as approved*)

1.5.1 Four components comprising 10 sub-components supported project objectives (see Annex 2):

Component 1: Planning for Integrated Ecosystem Management Actions (6% of total project cost) financed studies, based on lessons learned from land management investment activities, to influence policy-making and strengthen state and local frameworks to facilitate adoption of IEM principles and SLM practices. Sub-components: (i) Strengthening of IEM Incentive Structure and Ecosystem Management Systems; and (ii) Local Land Management Planning.

Component 2: Support Systems for the Adoption of IEM/SLM Practices (57.4% of total project cost) financed technical and financial support for investment subprojects[7] benefiting 1,900 small

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[3] Stated in the PAD Arrangements for Results Monitoring table as equivalent to 34,000 tons of CO2 by PY5.

[4] Included as an indicator in the PAD Log Frame but not the Main Text.

[5] The targeted number of beneficiaries (1900, a Key Performance Indicator) was synonymous with the number of Individual Farm Plans (PID), a target of 1900 mentioned only in the PAD Arrangements for Results Monitoring table. A project beneficiary's access to GEF incentive financing required a PID. Reduction of the PID target (to 1,450) automatically implied reducing the targeted beneficiaries, but the latter was a KPI and any formal change needed approval of the Country Director. Only the PID adjustment was mentioned in Aide Memoires.

[6] The incidence of poverty among rural households in the State of Rio de Janeiro was, at the time of appraisal, about 27% (440,000 people), or about 2.5 times the poverty levels of urban areas. This percentage increased to 35-39% in some municipalities in the NNWF region, levels similar to the poorest regions of Brazil, e.g., the Northeast.

[7] The PAD mentions a target of 4,400 "proposals", which was an indicative target within a demand-driven project framework - the first of its kind in this State. Farmer demand IEM/SLM investments, could not be projected with any accuracy. It should also be noted that a single PID could generate several proposals from an individual farmer for investments in different but complementary "practices" intended to maximize on-farm impact. A single subproject might constitute several "practices".

farmers/others (individuals or groups) to shift from non-sustainable farming practices to sustainable livelihood activities to improve biodiversity, reduce/reverse land degradation, and increase carbon sequestration. Sub-components: (i) Financial Support for Sustainable Natural Resources Management; and (ii) Support to Adaptive Management Practices.[8] Investments would be grouped under five lines of activity: (i) recuperation of degraded areas; (ii) use and sustainable management of biodiversity; (iii) management of water resources; (iv) re-orientation of productive systems to sustainable systems; and (v) commercialization of socio-environmentally sustainable projects.

Component 3: Organization and Capacity-Building for Integrated Ecosystem Management (16.0% of total project cost) financed improved farm- and community-level capacity to manage natural resources by strengthening rural organizations, and by sharing project implementation experiences and lessons with stakeholders at all levels, to broaden project impact. Sub-components: (i) Community Organization; (ii) Training of Project Executors; and (iii) Training and Environmental Education of Beneficiaries.

Component 4: Project Management, Monitoring and Evaluation (17.5% of total project cost) financed participatory management and monitoring activities to leverage project impact, effective project implementation and coordination, and results dissemination. Sub-components: (i) Participatory Management of the Project; (ii) Monitoring and Evaluation; (iii) Project Dissemination.

1.6 Revised Components

1.6.1 Components were not revised.

1.7 Other significant changes

1.7.1 There were two Level 2 restructurings, both dated November 9, 2010: (i) Project closing date was extended 12 months to November 30, 2011 to permit full disbursement of the GEF Grant and achievement of project objectives; and (ii) US$715,000 was reallocated from Category 6 Unallocated and US$40,000 from Category 5 Incremental Operating Costs to Category 1 Goods (US$55,000), Category 2 Consultants' Services (US$350,000), and Category 3 Training (US$310,000). No significant changes were made to project design, scope or scale, or implementation arrangements.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

Background analysis:

2.1.1 The Project took its lead – conceptually and technically - from several decades of Bank support for and evaluation of successful projects in Southern Brazil which had increased agricultural productivity and reduced soil loss through innovative approaches to sustainable land management and biodiversity conservation.[9] The lessons from those operations stressed: the micro-catchment as the optimal unit for conservation planning and management; technical changes delivering direct and early productivity benefits to farmers; greater impact and sustainability via integration with related, complementary programs and political support; extensive training using group and participatory approaches; and, socio-economic and environmental monitoring to quantify/demonstrate the national and global externalities from improved land management. These projects also promoted changes in agricultural research models and the provision of rural technical assistance services to more participatory, environmentally-friendly approaches. Project design reflected these lessons through: a defined set of micro-catchments; financial incentives to promote adoption of SLM practices directly on farmers' land; strengthening state and local policymaking and political support for IEM principles

[8] Access to project benefits - maximum amount of project support - was to be differentiated based on type of farmer, size of land-holding, whether market-oriented/not, and depending on the category of subproject chosen. This was to ensure support to the neediest while also garnering the participation of farmers with capacity to develop and implement successful, replicable subprojects. Even so, all residents of micro-catchments were to benefit from improved management of the natural resource base and future scaling up of the project strategy.

[9] These included: Parana Land Management I Project; Santa Catarina Land Management II Project; Sao Paulo Land Management III Project; and Ecosystem Restoration of Riparian Forests in Sao Paulo Project.

and SLM practices; and, strengthening rural organizational capacity and participatory monitoring systems.

2.1.2 The project drew on Socio-economic and Environmental Diagnostic Studies and a Social Assessment conducted during preparation to identify relevant issues, their consequences and the constraints needing solution. Relationships between smallholder agriculture, the environment and rural poverty were explored and defined. The strategy focused on developing mechanisms to complement specific elements of federal, state and local programs already underway. Many of the investment activities had potential to produce both global and local benefits, so GEF funding was limited to developing the enabling conditions (information, experimentation, collective action, access to technical assistance and inputs, monitoring and evaluation), to allow farmers to make informed decisions on management systems capable of reducing biodiversity loss and land degradation.

Assessment of project design:

2.1.3 **Objectives and Indicators:** Despite the characteristic breadth of the GEO, the project did not seek to finance the actual large-scale implementation of IEM. It was a pilot/demonstration operation, emphasizing on-the-ground actions which could be replicated and provide the foundation for scaling up. The PDO was more "local", with specific goals for the target population: improved capacity and organization for NRM, and increased adoption of IEM and SLM concepts and practices leading to better incomes. The PDO and GEO were clearly-stated (language added to the Logframe version (see footnote 2) focused even more tightly on the welfare of rural communities) and their Key Performance Indicators (KPI) were linked rationally to the main themes. The inclusion of a PDO and GEO with separate sets of indicators was typical of similar projects approved at that time; the GEF had begun to require that projects demonstrate real impact on people's welfare and include appropriate indicators, resulting in the PDO/KPI's language regarding improved production practices and rural livelihoods.

2.1.4 Even so, there was confusion and overlap in the wording, meaning and targets of key PDO, GEO and Intermediate Outcome Indicators, too many of the latter and some of questionable relevance. Social impact indicators were also included - separate from the Logframe – many unlikely to be measurable within the project period (PAD, Annex 3). The implied monitoring and evaluation burden was heavy. Certain targets should have been allowed to evolve in consonance with institutional capacity, pace of implementation on the ground, and emerging constraints.[10] Indicator targets for the challenging IEM/SLM activities were tough given the pilot nature of the project and time likely to be available for on-the-ground activities once the initial – and characteristically time-consuming – learning period had positioned project institutions to launch them.[11] Targets such as a 50% reduction in erosion and sedimentation at the micro-catchment level required longer-term and more massive interventions focused on changes in land use and management, difficult to achieve/measure from small-scale, dispersed demonstration efforts. The targeted 32,000 ha of on-land NRM improvements was also challenging.

2.1.5 C**omponents, technical design and organization:** The project's four components (and 10 subcomponents) were a logical projection of the key obstacles hindering improved NRM defined at appraisal (see 1.1.3). The inter-institutional and inter-sector integration and coordination – both vertical and horizontal – were as complex as the project's technical design, needing to align targets, objectives, timetables, modus operandi and commitment from numerous participating bodies.

[10] The Logframe targeted 1,900 farmers adopting IEM/SLM practices, assumed to combine 1,450 individual farmers and 150 groups averaging three members. The target of 1900 PIDs is mentioned in the "Arrangements for Results Monitoring" table of the PAD, not in the Logframe. However, "technical assistance and financial support for on-the-ground investments" under sub-component 2.1 targets "at least 1,000 producers and 150 groups", not the expected 1450/150 combination (1900) for farmers and PIDs, and is an error.

[11] As with similar projects where experience shows that it is not only technical/field activities which are being tested/piloted, but also institutional capacity and local organization, targets could have been lower. However, the original project team believed targets were reasonable and that the State could have handled even higher targets in some cases. Another factor driving targets was the then-bleak prospect of processing the planned larger loan and the resulting temptation to load up the GEF.

Technical design was drawn from successful, micro-catchment-focused Bank-supported operations within and beyond Brazil, and sought to integrate with existing federal and state programs combining rural and environmental support. However, the project's technical strategy and institutional framework/structure were new to Rio de Janeiro State and the difficult learning process was inescapable. Aide Memoires reveal the complex training, organizational measures and sequencing - the latter especially vulnerable to disruptive factors with few immediate solutions – required at all levels to position the project for take-off in the field.

2.1.6 As background to the design and targets, the State of Rio de Janeiro had been "outside" observers throughout the Bank-supported NRM projects in the southern states and wanted their chance. Given the delays and poor prospects for processing a full-scale Bank loan, that opportunity came via a GEF operation but a somewhat top-heavy one which evolved to incorporate key elements of the larger vision. The State was highly-motivated to pursue innovative approaches and had already brought new ideas to the wider micro-catchment discourse. The GEF operation was over-loaded and had not benefited from the long dialogue-building of the other states but despite this the Bank team maintains that specific targets were carefully-considered at the time and believed reasonable. In fact, the team aimed to exceed those targets, which in several key cases occurred, with the benefit of an extended closing date and the accumulated experience of key institutions.

2.1.7 **Project management, implementation arrangements:** The implementation framework was rational in principle, but demanding in practice for a small demonstration project testing unfamiliar technologies and relying on the collaborative capacity of multiple entities/programs with varying levels of commitment, understanding and/or experience. [12] Such entities were to sign agreements (*convenios*) with SEAAPI, the goal being to leverage their operational capacity while mainstreaming the project approach within them. Experience shows that their roles and responsibilities needed better definition up-front to avoid technical and operational disfunctionalities. Surprisingly for a project seeking to mainstream a technological approach within an existing State program, key project mechanisms did not apply to the co-financing agencies/programs. The primacy of their own rules and standards meant they were not obliged to use the PEMs and PIDs to guide subproject planning/investments, participate in the micro-catchment councils (COGEM), or share basic data on their project operations and results. The GEF-financed and co-financed activities, with some exceptions, moved largely in parallel. The regional offices of EMATER-Rio were to be the project's decentralized executive units interacting directly with micro-catchment stakeholders but EMATER-Rio was weak, technically outdated and lacked firm commitment to the project concept, requiring major effort over time to meet project demands. However, the seemingly complex and bureaucratic hierarchy of steering committees designed to guide the project at the State, regional, municipal and local levels actually worked well in practice. [13]

2.1.8 **Financing:** The Rio Rural/GEF was originally conceived as a blended operation to complement a proposed Bank loan but the State's uncertain creditworthiness delayed Federal Government consideration of the *Carta Consulta* for the latter. The GEF thus covered a smaller project area than that envisioned under the blended operation but given the State's improving macroeconomic situation and the GoRJ's interest in a loan, the GEF emphasized foundational activities for scaling-up and replication, e.g., sustainable production models and state-wide dissemination of experiences and lessons. The project was to complement activities from ongoing

[12] State Rural Extension Agency (EMATER) and State Agricultural Research Enterprise (PESAGRO) (SEAAPI agencies) supported extension and research; Brazilian Agricultural Research Enterprise/Soils Division (EMBRAPA-Soils, State Environmental Management Foundation (FEEMA, an agency of the State Secretariat for Environment and Urban Deveopment (SEMADUR) and the State Mineral Resources Department (DRM, an agency of State Secretariat of Energy, Naval Industry and Petroleum (SEINPE)) supported monitoring activities; also involved were the Public Defender's Office (DPGE), the NGOs SOS-Mata Atlantica and Conservation International Brasil (CI/Brasil), and a private Foundation for Project Coordination, Technological Studies and Research (COPPETEC).

[13] CEDRUS, COREM, COGEM, CMDR: respectively, State Council for Sustainable Rural Development; Regional Micro-catchment Council; Micro-catchment Management Council; and, Municipal Rural Development Council.

programs in the sector and region, and leverage their co-financing estimated at appraisal at around US$8.20 million equivalent, about 55% of total project cost.

2.1.9 **Participatory processes:** An intensive and broad-based consultation with national, state and local beneficiaries and stakeholders accompanied project preparation and under-pinned the Socioeconomic and Environmental Diagnostic Studies and the Social Assessment. Civil society stakeholders also shaped the initial project concept and selection of project areas. Two NGOs – SOS Mata Atlantica and CI-Brasil – were included as project executors. The missing element however, was gender; women were not part of this process, an omission highlighted by the 2005 Quality at Entry Assessment (see 3.5.2). This consultative framework was expected to consolidate during the implementation period via Project Steering Committees (see 2.1.5) and other project elements such as participatory monitoring, and collective implementation of the PEMs.

2.1.10 **STAP Roster Review (SRR):** The SRR agreed with the general thrust of the project but not with its assumed capacity to reverse deforestation or reduce poverty due to its pilot scope/scale and the likely limited impact of incentives and education. The SRR called for a shift from low value subsistence cropping to higher value-added products. The Bank/Project team responded that the project's main thrust was to strengthen the organizational and conceptual structure for self-management of natural resources by rural communities using a methodology developed by the Federal University of Rio de Janeiro. Post-harvest, value-added activities were already incorporated in project design but this was further strengthened and clarified, and specific examples provided by the reviewer were included as eligible for incentives under the five main lines of activity (see 1.5.1).

Adequacy of Government commitment:

2.1.11 The State and Federal Governments had established a policy agenda incorporating the following: (i) the State Credit Program for Agricultural Production and Diversification (*Moeda Verde*); (ii) State Micro-catchment (MC) Program for Rural Sustainable Development (*Rio Rural*) providing rural extension and infrastructure to rehabilitate micro-catchment resources (e.g., erosion control on rural roads); (iii) National Family Agriculture Program (PRONAF), providing credit and assistance for smallholders to improve productive capacity; and (iv) other, non-governmental initiatives to support State Protected Areas, e.g., KfW's Pro-Atlantic Forest Program in the NNWF, and the GEF-supported Critical Ecosystem Partnership Fund to help establish private protected areas in the *Serra do Mar* Corridor and conservation research. The project's focus on SLM, IEM and biodiversity conservation was consistent with government's established framework and sector development plans, was expected to contribute to implementation of Government's National Biodiversity Policy, and met eligibility for GEF funding according to guidelines of the National Commission on Biodiversity (CONABIO).

Risk Assessment:

2.1.12 Critical risks identified at appraisal were comprehensive and candid but ratings were uneven and mitigation measures varied in relevance and efficacy. The risk rating of modest for SEP's ability to function in a complex multi-institutional setting was under-stated, as was the likelihood that the many partner institutions would interact seamlessly and effectively. Greater clarity was needed at appraisal in defining the roles and responsibilities of participating agencies and programs and in mainstreaming the entire framework to promote durable forms of collaboration and intersection. Project complexity was not mentioned as a risk, but was substantial given the small size of the project, its technical innovations and its predictably difficult, initial learning trajectory in a State with little/no experience working with the Bank. And, the lack of local and institutional capacity was rated substantial but was expected to be addressed by ongoing programs of SEAAPI, PRONAF and state environmental agencies, an oddly hands-off approach but understandable given the small scale of the project and its integration goals. The project could not do everything.

2.2 Implementation

Factors affecting project implementation and outcomes:

2.2.1 **The SoRJ's difficult fiscal situation created budget and counterpart funding issues for the project.** Delayed release of State counterpart resources in the first two years disrupted Annual Operating Plans and sequencing, reverberating across the framework of activities designed to position the project for its next stages. Further, State budget resources were drawn away from the project (and other state activities/programs) to finance completion of the new Metropolitan Urban Transit system in Rio de Janeiro, in financial straits due to the appreciating value of the Real to the US Dollar. The State's permitted level of indebtedness under the Federal Fiscal Responsibility Law was also an issue, with the State seeking to negotiate an increase in its debt ceiling to create fiscal space for the many pending programs/projects. The GEF had to wait in line for funds, delaying key activities for several years. The erratic release of counterpart resources also affected farmers' land management decisions and agricultural activities, dependent on financing synchronized with seasonal production cycles. Apart from continuous pressure from the Bank team on the executing and related agencies, and their appeals for resources from the State, this situation was beyond the project's control.

2.2.2 **Project launching activities were caught between two mandates - the end of one administration and the start of another.** In Brazil, this period is typically characterized by a lack of resources in the final year of the outgoing government, and the desire of the incoming administration to acquaint itself with and "adopt" a project in its policy agenda before it commits budget resources. While the PIU/SEP team did not change, the leadership in virtually all other project-associated institutions did. The Bank team's experience and the strategy of project management by negotiation mitigated the risks associated with State institutions' initial lack of political will. Once convinced, the State came on board with important support, sustained throughout the implementation period, e.g., kept/supported the central-regional project structure; worked hard to improve the counterpart funding situation; authorized a public bidding process to contract new technical executors for EMATER/Rio; and, supported preparation of the new Rio Rural/IBRD project (and proposed Additional Financing).

2.2.3 **Institutional capacity and innovative project design delayed execution.** The multi-institutional nature of the project further complicated project launching/execution.[14] Training activities were protracted, duplicative and linear. A more agile system which bunched training in shorter periods interspersed with practical experience was needed, and was subsequently introduced. Project innovations, including the focus on micro-catchments, required an unexpectedly long period for municipalities, executing agencies/partners and targeted farmers to internalize and understand the project rationale/logic and gain sufficient confidence to engage. Previous, failed State and local initiatives had left farmers disenchanted and reluctant to get involved. The fact that project design reflected the Bank's extensive experience with similar operations in several southern states, and that the State was broadly familiar with those projects, had actively sought a similar project and already had a "domestic" variant (Rio Rural) ongoing, could not mitigate the need for Rio de Janeiro State to go through the learning cycle itself. Experience showed that this cycle - albeit unusually long in this case - typically resulted (and did result) in a sharp take-off and rapid progress.

2.2.4 **EMATER/Rio, responsible for technical assistance and rural extension (ATER) services, was challenged by the project's concept and methodology.** Its presence and effectiveness in the micro-catchments were uneven, with managers and technicians variously unwilling to innovate or be accountable for performance. Concerns arose about EMATER's capacity to respond to the

[14] The Project team noted in hindsight that activities could have been included to mainstream multi-institutional collaboration. Rio de Janeiro State both under the GEF and the Rio Rural/IBRD has tended to depend on strong project leaders/individuals within a weak – albeit evolving - institutional setting, entailing risks if that leadership is disbanded. While the core project objective was not entirely dependent on the multi-institutional arrangements/linkages, their comparatively informal nature suggests a potential future risk. As in other southern states, Rio de Janeiro needs to develop a culture of inter-institutional collaboration on its flagship rural programs.

accelerating demand for subprojects including under the new Rio Rural/IBRD operation for which EMATER-Rio also took the technical lead in the field. With the State's adoption of the Rio Rural program as a flagship development priority, EMATER-Rio was boosted by the contracting/training of 150 new field technicians; special spreadsheets were developed to monitor technicians' performance and achievement of ATER targets, and to hold managers accountable; and, consistent efforts were made to build institutional commitment to the project approach.[15] EMATER/Rio's performance had improved significantly by end- project (see also 2.2.2).

2.2.5 **Gradual strengthening of the Real to the US Dollar in the initial years reduced resources available to the project.** By 2009, when field activities were ready to launch, the Bank team noted that project targets would be difficult to achieve due to the 40% decline in the Real/US$ exchange rate. However, only minor changes were made to targets: the number of PIDs was reduced from 1,900 to 1,450; the targeted number of SLM-adopting "beneficiary" farmers was informally reduced in 2010 from 1,900 to 1,450 (due to its implicit linkage to the number of PIDs). The target of 32,000 ha expected to reflect changed, biodiversity-friendly practices, was not adjusted since it was an aggregate of GEF-financed and other-financed activities/subprojects and project authorities (correctly as it turned out) believed it was still achievable.[16] Project indicators, targets and/or their composition needed realistic analysis which would typically have occurred under the Mid-term Review (see below).

2.2.6 **The Mid-term Review (MTR) contributed to improving the project's pace and quality but a more formal, better-reported process was needed.** The MTR represented an analytical and practical process conducted from 2008 to 2010. The Bank team and State project counterparts were aware that more intensive management of project activities and institutions was required, given the protracted and difficult launching experience, but above all a more disciplined and realistic approach to improving the performance of EMATER/Rio and other extension agents crucial to the field activities was essential. The Bank/Client consensus emphasized greater attention to inter-institutional integration, communication and project monitoring, and the need for an extension of the closing date and a reallocation of funds. Monitoring and organized feedback on various issues were already underway while an MTR evaluation study was being prepared by independent consultants. However, the concluded study was not accepted by the PIU, it did not become the analytical guide for a systematic revitalization of the project, and the project archive lacks any discussion of its findings and recommendations (although some of the latter were consistent with project teams' independent assessments of the way ahead).[17] The informality of the MTR represented a missed opportunity inter alia, for a more timely and participatory analysis of project design including indicators, data collection arrangements, and institutional collaboration.

2.2.9 **Project at Risk:** The project was never declared at risk.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

[15] A related issue affecting the quality and timeliness of field operations was the delayed (procurement-related) contracting of the Foundation for Project Coordination, Technological Studies and Research (COPPETEC), responsible for training the technical executors in the various phases of local planning, an activity of fundamental importance to other project activities.

[16] There were no formal arrangements for systematic data collection/sharing between the PIU and the project's co-financing partner programs (e.g., PRONAF). End-project data aggregation in key cases was a protracted and difficult exercise.

[17] See "Relatorio de Avaliacao de Meio Termo", Fundacao de Estudos Agrarios "Luiz de Queiroz" (FEALQ), January 2010. The PIU asserts that the report did not follow a "classic" evaluation methodology, and put undue emphasis on recommendations concerning activities not directly related to the project. The report commended: (i) the project's partnership with the Public Defender's Office to institute the Community Conduct Statutes re environmental conservation; (ii) beneficiary empowerment through participatory management; and, (iii) the "incubation" methodology for building farmers' organizational commitment to the environment; but was critical of (iv) weak integration of involved institutions despite project efforts; and (v) the project's modest investment in educating beneficiaries to improve incomes and quality of life. Recommendations included sharing successful experiences more widely with internal and external audiences and putting a higher value on promoting inter-institutional collaboration. Such findings were incorporated into the already evolving and renovated managerial approach which included greater accountability from EMATER-Rio for the performance of annual rural extension activities/targets.

2.3.1 **Design:** The vision and framework for M&E was comparatively sophisticated especially for first-time implementers, covering the monitoring of project impacts (including social) and tracking of physical and financial execution through an MIS, with expected regular feedback. The approach was two-pronged, combining "complete" or full monitoring in three micro-catchments and participatory monitoring in all beneficiary micro-catchments. The framework also included a project portal to channel project-related information to policymakers and steering committees, and a coordination unit within SEP including EMATER-Rio, State University of North Fluminense (UENF), the Brazilian Agricultural Research Company (EMBRAPA) to monitor environmental activities/outcomes and socio-economic aspects. An M&E design issue which complicated the measurement of project achievements was the lack of agreed procedures for data collection/aggregation of GEF-financed and co-financed activities. Targets were aggregates but the PIU had little/no access to the databases of co-financiers, creating difficulties ex-post in constructing/reporting a complete picture of performance.

2.3.2 **M&E implementation:** Taken as a whole, M&E met its quantitative targets and the project was a successful example of participatory monitoring. The project financed baseline and MTR studies, and a well-organized and thoughtful final report, but was unable to monitor/collect social impact data to the extent foreseen at appraisal. The project also conducted all required local, state and regional dissemination seminars/events and established the planned project portal (www.microbacias.rj.gov.br) which by closing had registered some 42,000 visits. Bulletins were distributed, disseminating the project, its practices and results; brochures were prepared in classroom-accessible language; technical/operational and conceptual manuals for SLM practitioners and extensionists were produced and disseminated; and, folders encapsulating the demands of Micro-catchment Development Plans (PEM) were distributed, providing communities with a tool to leverage resources beyond the project. As standard practice, all project dissemination materials utilized data generated by project M&E (Annex 2). A summary of the two main monitoring mechanisms is as follows:

(a) **Complete monitoring:** [18] The complete or intensive monitoring of three micro-catchments generated important results including data/analysis on the impact of pollinizing species on economic crops; the importance of forest remnants to pollinizing species; and the identification and study of forest remnants in the micro-catchments and their importance to biodiversity conservation. Challenges included: the project's multi-institutional structure and difficulties in coordinating and operationalizing monitoring activities; the high cost of data collection and production of technical materials; a time-consuming baseline study of mixed relevance to the project; delayed and/or deficient feedback of data to micro-catchment communities and technicians; and, information collection campaigns not synchronized with the subprojects themselves to benefit from results and feedback; and,

(b) **Participatory monitoring**: This methodology evolved into a highly useful instrument, generating information from which important subproject results were detected. The product of this monitoring approach proved fundamental for the project's cost-effectiveness and economic/other evaluations and studies. The main weakness was lack of consistent dissemination/use of information generated to motivate and mobilize the participation of additional groups of micro-catchment residents.

2.4 Safeguard and Fiduciary Compliance

2.4.1 **Safeguards compliance:** Safeguards performance/compliance was rated uniformly Satisfactory by supervision missions. The project was classified Category B (Partial Assessment), with an Environmental Assessment (EA) and Environmental Management Plan (EMP) to ensure conformity with OP 4.01. The project also triggered Natural Habitats (OP 4.04) and Forests (OP 4.36). The project's basic thrust was to establish the organizational and practical foundation for long-term

[18] The project also launched a digital inclusion initiative enabling local farmers in 13 micro-catchments to use computer centers (installed in schools and community centers) for access to project information from the regional and state levels including from the project MIS.

integrated SLM with local and global environmental implications. The project team included senior environmental specialists/economists, and supervision of compliance with triggered Safeguards was thorough and consistent, aiming to avoid and/or minimize any potential negative impacts and enhance planned outcomes. Supervision found that the identification, preparation and implementation of activities on the ground followed recommended practices consistent with the project's EMP. In addition to ensuring that project-financed investment activities built environmental commitment while doing no harm to natural habitats and forests, project achievements included the Decree authorizing a system of Payment for Environmental Services (PES), the Action Plan to implement the Serra do Mar Biodiversity Corridor, the Statutes of Community Conduct mandating community compliance with environmental laws, and creation of Nature Protection Reserves in several micro-catchments, paving the way for sustainable compliance longer-term (see section 3.2).

2.4.2 **Fiduciary compliance:**

(a) Financial Management (FM) performance varied over the course of the project. FM supervision was intensive in the initial years. Problems were diagnosed and evaluated, training was provided, and time-bound action plans and close follow-up sought to correct multiple deficiencies. The root cause was lack of experience with Bank FM procedures/systems and human resource issues. FM staffing, organization, information, archiving and reporting were improved to varying degrees over time but internal controls remained problematic. With some exceptions, FM was rated Moderately Unsatisfactory up to mid-2010 due to overall inherent and control risks being rated as substantial and, at the project and implementation levels, high. An Action Plan with specific risk mitigation measures was designed to integrate all major FM functions. The rating was restored to MS when controls were examined by the Bank and found acceptable, and sustained at MS because project closure precluded a final FM supervision mission (which was expected to restore the rating to Satisfactory).

(b) Audit reports were delayed, quality was uneven and auditors' opinions swung between unqualified and qualified, the latter reflecting the same internal control risks/deficiencies detected by Bank FM missions. The Client worked hard with the Bank FM team to resolve the issues defined, since inter alia, they represented a risk to the preparation and approval of the Rio Rural/IBRD operation which was/is coordinated by the same Secretariat and PIU as the Rio/GEF. The 2010 and 2011 audits will be conducted jointly, with results due by June 30, 2012.

(c) Procurement performance was mixed due to: inexperience with Bank procurement and the resulting slow pace of acquisitions and consulting contracts; conflict between Bank and State procurement norms; and, weak organization of procurement (and FM) functions along with human resource issues. Bank procurement specialists delivered effective training and guidance to the PIU, which learned how to resolve bottlenecks and accelerate procurement processing. Procurement capacity had evolved by closing to a standard the Bank rated Satisfactory.

2.5 Post-completion Operation/Next Phase

2.5.1 **Post-completion operation:** The post-completion transition looks promising with some caveats. First, positive feedback from the end-project survey and the demonstrated productivity and income benefits of the shift to improved land management bode well. Farmers were convinced about the relationship between the new, environmentally appropriate practices they adopted and their improved productive situation and quality of life. Second, the importance of operation and maintenance (O&M) was inculcated in beneficiary farmers through tailored training from the project's technical executors to implement and maintain their investments. Farmers were not required to sign an up-front commitment, but O&M was a standard element of TA and training for the operational phase of specific SLM practices, and PIU management supervision and participatory monitoring reports routinely discussed O&M progress and performance. Third, institutional capacity has continued to grow as a direct result of the larger, even more demanding follow-on operation (see below), which has the same institutions in key roles. But whether participating institutions developed the synergies likely to sustain their collaboration beyond the GEF - under the Rio Rural/IBRD or within the State's wider Rio Rural efforts - is not known. Evidence suggests that a more formalized framework which maps the

intersection, responsibilities, policy linkages and incentives driving multi-institutional arrangements needs closer attention in the design of projects which adopt such approaches.

2.5.2 **Related operation:** As mentioned earlier, the Rio de Janeiro Sustainable Rural Development Project (known as Rio Rural/IBRD, total cost US$79.0 million, Bank loan US$39.5 million) seeks to increase the adoption of integrated and sustainable farming systems in specific areas of the State, thereby increasing small-farm productivity and competitiveness. Its incentives scheme is intended to address market failures through one-time matching grants, while improving the policy environment and investment climate, and helping economic agents manage up-front transaction costs associated with technology adoption and organizational innovation. Key elements of the Rio/GEF's operational and institutional structure were adopted by the Rio/IBRD: the Borrower is the State Secretariat of Agriculture and Livestock (now SEAPEC); the project is coordinated by the same PIU with the two NNWF regional offices supplemented by another three in different regions; EMATER-Rio plays a crucial technical and operational role; and the established GEF FM, Procurement, M&E units/systems were expanded and enhanced. About 65% of the Rio/IBRD overlaps geographically with the Rio/GEF. The Rio/IBRD is intended to complement and build on the Rio/GEF by focusing on farmers' productivity and income generation within a conservative environmental framework. The Rio/IBRD operation is implicitly but not overtly micro-catchment-based, and utilizes the participatory COGEMs and COREM organizational structure, as well as the PEMs and PIDs for investment targeting, good indicators of longer-term sustainability at more decentralized levels.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

3.1.1. Project objectives remain highly relevant to country and global priorities and to the Bank's assistance strategy for Brazil. The Country Partnership Strategy (CPS) for FY2012-2015 emphasizes among its four strategic objectives, the further improvement of sustainable natural resource management and enhanced climatic resilience while contributing to local economic development. The Bank group would expand support for sustainable development in the Amazon, the *Cerrado* and fragile eco-systems - the latter particularly relevant to Rio de Janeiro State. Project design – especially the micro-catchment organizational and productive focus – remains highly relevant to local conditions.

3.2 Achievement of Project Development and Global Environmental Objectives

3.2.1 **Project Development Objective (PDO):** The following results were achieved – citing key indicators followed by supporting evidence - cross-referenced to the GEO where indicators overlap (see also Data Sheet and Annex 2):

Substantially achieved: ***Improved capacity and organization for natural resource management leading to integration of project activities with on-going rural development efforts.***

- The project established one Regional Micro-catchment Council (COREM – 100%) with significant stakeholder representation from the micro-catchment and municipal levels; and 48 local Micro-catchment Management Councils (120%) providing active forums for integrating project concepts and activities into ongoing rural development efforts.

Other important outcomes:

- 1,292 (GEF-financed) farmers, individually or in groups, acquired Individual Farm-level Development Plans (PIDs – 89% of a reduced target of 1,450); and, 48 Micro-catchment Executive Plans (PEMs – 120%) were developed using participatory rural diagnoses, improving farmers' capacity for organized natural resources management activities;

- Local land management/NRM planning improved. Farmers and public programs targeting rural populations acquired - through the PEMs and PIDs - a "roadmap" for better-organized local development financing of SLM technologies/practices and other development needs;
- The PID/PEM planning process fulfilled a key project strategy – using GEF resources to increase and improve existing investments in sustainable agriculture through organized, participatory mechanisms (see Annex 2 regarding PIDs, PEMs, COGEMs and COREM);
- The multi-disciplinary Incubator of Sustainable Rural Enterprises (IRS) methodology was adapted successfully to the rural environment, boosting community organizations' capacity for collective action and self-management of natural resources. 588 farmers in 87 groups implemented small-scale agro-industrial ventures producing environmentally sustainable goods and services;
- Farmers/stakeholders idescribed the benefits of their strengthened organization: greater access to technical assistance, knowledge, local and state authorities, and new practices which conserved their green assets while increasing their productivity (see Annex 5);
- The Rio GEF integrated its activities via relationships with/links to a wide range of State and Federal public programs, most directly to the PRONAF, Moeda Verde and State Rio Rural programs, but including many others; and,
- Diverse awareness-building and educational events reached several thousand stakeholders who reported that project capacity-building initiatives were useful and rewarding, improving their understanding of the project approach integrating economic, environmental and social concerns (see GEO Sub-objective 4 below); and
- This was demonstrated by farmers undertaking similar subprojects at their own expense and by the State Government's sustaining this approach under the follow-on operation.

Substantially achieved: ***Increased adoption of IEM and SLM concepts and practices.***

- 2,254 farmers (155% of reduced target), members of 48 organized communities in 48 micro-catchments, adopted some 4,092 IEM/SLM practices on about 31,650 ha (106%), their investments aligned with the five categories defined at appraisal: recuperation of degraded areas, use and sustainable management of biodiversity, water resources management, reorientation of productive systems and the commercialization of "green" products (Data Sheet and Annex 2); [19]
- Land degradation was reversed by the introduction/adoption of these practices (see GEO sub-objectives below);
- Livelihoods were improved: ex-post economic and cost-effectiveness analyses of investments in pasture rotation, rustic poultry production, beekeeping/honey production and protection of water sources/springs, show average IRRs (for the first three) of 59%, 26.2% and 32.7% respectively, indicating strong potential for beneficiary income generation and increasing the likelihood that adoption rates of IEM/SLM will continue to increase (see section 3.3); and,
- The cost-effectiveness of environmental impacts in all four cases was very positive (see table, section 3.3), a further incentive promoting increased adoption.

[19] Many farm families - the 1,292 with PIDs providing a detailed guide to on-farm needs - got support for several "practices" under a single subproject (and some families got two or more subprojects), adopted to support a sustainable intensification of smallholder crop production. In many cases, two or more practices are needed to generate a "concept" or an "approach" such as Conservation Agriculture, i.e., zero tillage equipment, crop rotation, soil conservation (contour farming, terraces), soil mulching, which the project sought to promote. Final analysis also shows that, for some of the practices incentivated, beneficiaries financed, with their own resources (or even without the need for additional resources), additional sustainable practices such as water source protection, organic fertilization, and regeneration of vegetation in water recharge areas.

Other important outcomes:

- Some 2,728 investments in IEM/SLM practices were financed: 1,292 GEF-financed and 1,154 co-financed (mainly PRONAF) investments representing 1,292 and 962 families respectively;
- Adaptive research units (13) established on farmers' land, the participatory evaluation of results, and proactive dissemination activities, expanded technology adoption by farmers;
- Farmers were already independently adopting the technologies introduced on their land, expanding from experimental to larger areas at their own expense/risk (Annex 2, Box 2.1.19);
- A wide range of environmental education/awareness-building events, facilities and media tools promoted/expanded stakeholders' understanding of the project's concept and objectives, increasing their acceptance/adoption of new practices (see GEO Sub-objective 4 below); and,
- Stemming directly from the Rio GEF experience and demonstrating the project's multiplier effects, seven long-term research units were established (now being maintained under the Rio Rural/IBRD) to increase the scope of adaptive technologies available for farmer adoption.

3.2.2 **Global Environmental Objectives (GEO):** The following results were achieved, cross-referenced to the PDO where indicators overlap (see also Data Sheet and Annex 2):

Substantially achieved: ***Address threats to biodiversity of global importance***

- IEM/SLM practices were introduced on 31,650 ha (99%) to promote the conservation and sustainable use of biological diversity, reverse land degradation and promote green production techniques;
- Biodiversity conservation was fostered by establishing 792 ha of land use mosaics (64%) on private lands supporting corridor connectivity in micro-catchments. This activity was more complex and time-consuming than anticipated; and,
- 1,332 ha of riparian and other native forest were restored for biodiversity conservation and hydrology stabilization objectives (93%).

Other important outcomes:

- A Payment for Environmental Services (PES) mechanism was enacted by Decree and established, the direct outcome of project-supported studies and policy dialogue under a joint initiative of the Secretariats of Environment (SEA) and Agriculture (SEAPEC). The Decree – one of the most important project achievements - obligates the State to financially support such system within the State's Water Resources Management Policy. The PES was piloted - with EMATER and SEAPEC participation - in the São João River Basin. Signature of the Decree followed a transparent, negotiated process involving State environmental institutions, NGOs and civil society which, acting jointly through the PES Forum, are now defining priority areas for biodiversity/environmental conservation, valuation criteria, monitoring methodologies and institutional arrangements. The São João River Basin Committee, influenced by the project, adopted the PIDs and PEMs as planning tools and is now paying upstream farmers to provide environmental services;
- A study developed recommendations and an Action Plan to support implementation of the Serra do Mar Biodiversity Corridor in project watersheds; and,
- The project adopted a multi-institutional approach designed to build a longer-term framework supporting agro-ecological conservation in vulnerable areas, and to integrate, methodologically and financially, the project's IEM/SLM elements into existing programs.

Substantially achieved: ***Reverse land degradation in agricultural landscapes.***

- The targeted 50% reduction in erosion and sedimentation was not achieved. Telemetric monitoring stations and hydro-sedimentology points were installed near the outfall area of

three micro-catchments to identify possible changes in hydrologic variables resulting from SLM practices implemented on-farm. The effects on sediment reduction could not be detected because, to monitor such changes in small areas, this monitoring equipment needed to be installed immediately adjacent to treatment areas, i.e., where new practices were implemented, which is now occurring under Rio Rural/IBRD;

- Recent studies by Embrapa/Soils (2011) however, in two of the project micro-catchments showed reduced concentrations of sediments attributed to the project's effective control of erosive processes.[20] These results are taken to be representative of what is likely to have occurred in other project micro-catchments (see Annex 2).

Other important outcomes:

- Soil structural stability was enhanced in micro-catchments through investments including crop/pasture rotation, soil conservation equipment, agro-forestry systems, minimum tillage and riparian/other forest restoration (see Annex 2);
- Case studies on soil quality improvement, evaluated based on organic material and nutrients in the surface layer of soil in six subprojects monitored over three years showed: (i) increased organic material in four subprojects (67%) averaging 5.04 g/dm3 or 0.5%; and, (ii) increased potassium and phosphorus in five subprojects (83%) averaging 10.14 mg/dm3 for phosphorus and 2.14 mmolc/dm3 for potassium;[21]
- Watershed management strategies were developed in five micro-catchments, and 13 sustainable agro-ecosystem management methodologies were adapted to local conditions, tested/validated on-farm, and with independent replication by farmers underway by closing.

Substantially achieved: ***Enhance carbon sequestration***

- Evaluations conducted through participatory research, and associated closely with pasture rotation investments, indicate the storage/sequestration in the soil of 80 tons/ha and in the air, about 5 tons/ha (compared to a project target of 1.5 tons/ha);
- Taking into account that some 224 pasture rotation subprojects were implemented with an average area of 1 ha/subproject, carbon sequestration totaled 19,040 tons (19 tons per R$1,000 applied given the average subproject value of R$4,506.23);
- Based on 1.5 ha/subproject released for biodiversity conservation (336 ha in total), carbon sequestered in this area was a total 9,475 tons (or 28.2 tons/ha for each R$1,000 applied, resulting in a carbon "price" paid by the project of about R$35.00/ton).

Substantially achieved: ***Increase awareness at all levels of the value of adopting an IEM approach to the management of natural resources***

- The project established 48 rural community organizations (COGEMs) whose members adopted, individually and collectively, IEM/SLM strategies in 48 micro-catchments, exceeding targets in both cases;
- Environmental education and awareness-building – in various formats and forums, and stressing IEM approaches - reached 2,600 members of micro-catchment communities, 5,730 members of the wider regional population, and 20 local schools; and,

[20] Reductions of 26% in average values of sediment concentrations and 31% in maximum values of sedimentation in the Breja de Cobica micro-catchment; and 7% in average values for sediment concentrations in suspension, and 8% in maximum concentrations of suspended sediments in Santa Maria/Cambioco micro-catchment.[20]

[21] These results cannot be extrapolated to other subprojects since each area has its own soil characteristics and each subproject its own management system.

- Best practices and lessons learned were disseminated through 31 State events, four national events, five workshops and establishment of a Project Portal (webpage) <**microbacias@agricultura.gov.rj.br**>.

Other important outcomes:

- Beneficiaries and COGEM members described their improved understanding of the significance of the IEM approach integrating economic, environmental and social concerns;
- Surveys showed the project increased environmental awareness in 84% of municipalities surveyed; 36% noted better water quality, attributed to source protection activities; 68% favorably evaluated activities in re-forestation, soil conservation, use of organic fertilizer, reduced use of agro-chemicals, and activities to inculcate safe disposal of chemical containers;
- Municipalities noted the positive, motivating role of the COGEM Councils in these outcomes;
- Consistent and intensive efforts were made to explain and disseminate the project and its emerging results and lessons widely through numerous events, forums and media materials;
- Collaborative, participatory preparation of PIDs and PEMs built awareness of the holistic nature and value of IEM;
- Economic and environmental outcomes (see 3.3 and Annex 3) were convincing evidence of IEM's value to beneficiary farmers;
- The project successfully piloted innovative organizational and technical mechanisms focused on the micro-catchment and on farmer participation and self-management of natural resources;
- The Rio GEF was integrated - to varying degrees - with a large cohort of related programs, [22] gradually building awareness of and buy-in to the value of the IEM approach to NRM;
- Evidence suggests that the project's IEM message has reached the highest levels of the State, reflected in the State Governor's strong financial backing for the Rio Rural/IBRD operation, support for the PES Decree, and expansion of the State's Rio Rural program.

3.2.4 **Project costs and financing:** As shown in Annex 1, total project cost was US$18.31 million, 122.47% of the appraisal estimate. Cost sharing differed significantly from appraisal. The GEF Grant financed 36.3% of project cost compared to the appraisal estimate of 45%. The Recipient (State Government) contribution was barely 57% of appraisal, while the Federal Government's contribution was four times the original estimate at US$4.80 million, chiefly due to the declining US Dollar/Real exchange rate, as well as very high demand for PRONAF financing (which made up most of the Federal contribution) and the abundant flow of these funds nationwide. Contributions from beneficiaries and NGOs were about 28% and 3.2% respectively, of their original estimates. The expected contribution of beneficiaries was estimated at about 20% of GEF financing for subprojects (sub-component 2.1) but reached only 8% mainly because financing for environmental practices subprojects was exempt from the beneficiary counterpart requirement.

3.2.5 **Co-financing:** The project successfully leveraged an additional US$3.04 million in contributions from diverse sources (see Table 2.31.2, Annex 2). The methodology involved bidding events - based on Micro-catchment Development Plans (PEMs) - which disseminated financing opportunities to public and private entities involving environmental, social and cultural projects to be executed in the Rio Rural/GEF area (the NNWF). Lists of potential, interested co-financing entities

[22] Programs: Programa de Desenvolvimento de Territorios Rurais Sustentaveis; Territorios de Cidadania; Pacto para Restauracao da Mata Atlantica; Pacto pelo Saneamento; Plano Estadual de Mudanca Climatica; Mecanismo de Pagamento por Servicos Ambientais; Estrategia Saude da Familia; Pontos da Cultura; Programa de Apoio a RPPNs; Corredor Central de Mata Atlantica de Conservacao da Biodiversidade; Programa Observadores de Agua, Agenda 21 Escolar; programa Nacional de Alimentacao Escolar; Programa de Aquisicao de Alimentos; Programas Setoriais da Secretaria de Estado de Agricultura e Pecuaria (Cultivar Organica, Multiplicar Frutificar, Prosperar, Florescer, Rio Leite, Rio Genetica, Moeda Verde); and Programa Nacional de Fortalecimento da Agricultura Familiar (PRONAF).

were compiled and distributed to local EMATER technicians, regional offices, farmer associations and individual producers who then prepared and transmitted specific proposals to these interested bodies. The process was monitored/supported by specialist consultants within the Sustainable Development Superintendency (SDS) of the State Agriculture Sectretariat. Communities received technical assistance to prepare projects whose financing was submitted to public bid or presented directly to "listed" agencies such as the Amparo Research Foundation of Rio de Janeiro (FAPERJ), the National Council for Science and Technology Development (CNPq) and various foundations for financing. The longer-term goals of this effort were: (i) sustainability of project activities beyond closing; (ii) to bring other sector institutions and programs to the rural development and SLM "table"; and, (iii) to create mechanisms for the integration and consolidation of public policies/planning and co-investment programs with a rural focus. This co-investment strategy enabled development institutions to reach down to the local level, overcoming the time and distance challenges of micro-catchment residents, while fostering their autonomous, self-managed development.[23]

3.3 Efficiency

3.3.1 Due to the demonstration/pilot nature of the activities and relatively modest GEF investment, project design included cost effectiveness considerations to promote maximum implementation effectiveness and multiplier effects beyond the project, but did not conduct an economic analysis. An ex-post analysis utilized an internal rate of return approach to derive economic results, and cost-effectiveness factors for environmental impacts, the latter based on GEF guidelines.[24] The outcomes for four types of subprojects are summarized below (see full analysis, Annex 3).

Table 3.3: Summary of Economic and Cost-effectiveness Outcomes for Subprojects

Subproject	Economic Results	Cost effectiveness of Environmental Impacts
Pasture Rotation	(a) 80% increase in milk production in 90% of subprojects monitored under participatory monitoring activities. (b) Average IRR of 59% for 6 subprojects evaluated. (c) Profitability ranging from R$ 0.11 to R$ 0.48 per Real expended.	(a) Increase of 66.6% in organic material for the subprojects monitored via participatory methods, with an average increase of 5.04 g/dm^3 or 0.5%. (b) Capture/storage of a total 19,040 tons, that is, 19 tons for each R$ 1,000 applied given the average value of subprojects was R$ 4,506.23. (c) Average release of 1.5 ha per subproject for biodiversity conservation, making a total of 336 ha within the project area, or, 0.366 ha for each R$1,000 applied to pasture rotation. (d) Carbon sequestration in this area was 28.2 tons for each R$1,000 applied, while the "carbon price" paid by the project would be around R$35.00 per ton.
Rustic Poultry Kit (*Kit galinha caipira*)	(a) Average IRR of 26.2% for 4 subprojects evaluated. (b) Sale of eggs at local fairs and to institutional markets (school lunch program). (c) Profitability ranging from R$ 0.52 to R$ 0.84 for each Real expended.	(a) Annual production of 2,475 tons of organic fertilizer/manure with a market value of around R$ 222,750. (b) Return of R$ 0.40 per Real applied, just on the production of manure, resulting in a reduced need to purchase synthetic fertilizers (opportunity cost) and reduced potential pollution through the use of wastes for fertilizer. (c) The environmental practice most used in association with the Kit Galinha was organic fertilization, highlighting the environmental sustainability of this type of subproject.
Protection of water sources/springs	The economic results of water source protection are indirect and are presented in terms of the cost-effectiveness of their environmental impact.	(a) Recuperation of native vegetation and local biodiversity. (b) Increased availability of water. (c) Utilization of water available in critical periods: (i) **Case study 1**: Irrigated pineapple cultivation: With increased availability of water, farmers were able to increase the irrigation period on one hectare, leading to an increase of about 12% in production representing 2,666 kg/ha, which at a value of R$0.85/kg

[23] Relatorio Final de consultoria com recomendacoes sobre acompanhamento da aprovacao dos projetos junto a entidades financiadoras e novas possibilidades de captacao de recursos, D. Versari/SEAPEC/SDS, 2011

[24] Cost Effectiveness Analysis in GEF Projects: Global Environmental Facility 2005.

		represented a gain of R$2,261.10/ha or, R$0.77 per Real applied by the Project; (ii) **Case study 2**: Use in future pasture to be irrigated. The expectation with pasture irrigation is for an increase of 5,300 liters of milk/year, compared to actual production without irrigation. Considering a value of R$ 0.75/Liter, the gain in Reais/year will be R$ 3,975.00. Further, in this area farmers are also producing meat and the expected increase in *arrobas*[25]/year with irrigation will be 1.5. Considering the value of *arroba* of R$ 93.00, the annual value will be R$ 139.50. Taking into account the application of R$ 2,930.00 for water source protection, results indicate a return of R$ 1.40 per Real applied (without considering the cost of implementing the irrigation system).
Honey Production (*Apicultura*)	(a) Average IRR of four subprojects evaluated was 32.7%. (b) Profitability ranged from R$ 0.50 to R$ 0.90 per Real expended/invested.	(a) Release of an average 2 ha per subproject for biodiversity conservation associated with beekeeping and honey production activities.

3.3.2 The PAD referred to the relatively high cost to farmers of introducing SLM practices on-farm as a disincentive to making such investments. Undoubtedly, certain SLM practices do imply significant costs at the initial implementation stage, especially when they require construction or renovation of structures and a higher labor input. Project incentives enabled farmers to surmount this obstacle, tiding them through to the results phase where they saw initial costs diluted and understood better the cost-benefit of SLM adoption. Among diverse possibilities within the State's technological stocks, the project selected the most economical and always those adapted to local eco-climatic conditions. Criteria considered included: (i) degree to which on-farm structures needed to be changed; (ii) low labor requirements; (iii) low requirement for the acquisition of external inputs; (iv) little need for sophisticated equipment, and the use of predominantly low-cost, and easily learned and applied technologies; and (v) potential for replication and continuity/sustainability (as a practice per se).

3.3.3 To summarize, in regard to economic results, project-financed subprojects contributed directly to sustainable income improvements - due to increased productivity with low costs - and indirectly by the opportunity cost and cost effectiveness of environmental impacts. In relation to environmental impacts, the project made an important contribution to biodiversity preservation directly from the regeneration of native forest associated with environmental subprojects (e.g., protection of springs), and indirectly, through the release of areas for preservation of biodiversity associated with productive investments (e.g., pasture rotation). Other important results observed included improved soil quality, carbon storage, and increased water quantity and quality.

3.4 Justification of Overall Outcome Rating

Rating: **Satisfactory**

3.4.1 This rating is based on the following: (i) The development priority and project objectives were and remain, relevant to the environmental conditions affecting thousands of small and medium-scale farms in the State of Rio de Janeiro, and to the increasingly fragile eco-systems of Atlantic Forest areas of Brazil, and globally; (ii) The project's GEO and PDO were substantially achieved when viewed - as intended at appraisal - as the technical, operational and institutional framework for more extensive efforts state-wide (and already under expansion through the Rio Rural/IBRD operation); (iii) Project sustainability is boosted by strong evidence of its methodological institutionalization within state public policy including importantly, the State's Climate Change Plan, multiplier effects observed in independent local replication of the project methodology beyond the project regions, and capacity to

[25] Measure of weight equivalent to about 15 kg

attract/leverage public and private resources; (iv) Analysis indicates project efficiency judged by its positive direct and indirect economic and environmental benefits; and (v) The project disbursed just under 100 percent of the Grant with a one-year extension of the closing date.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

3.5.1 **Poverty impacts and social development:** The project's technical design was based on the confluence between smallholder agriculture, environmental degradation and rural poverty. The NNWF region showed the worst socio-economic indicators in the State stemming, in rural areas, from a moribund agriculture sector, precarious living conditions, lack of organization and poor natural resources management. An ambitious set of social impact monitoring indicators was developed, not all of which were measured or even measurable within the timeframe and resources available.[26] The following is relevant to the indicators developed:

- 2,254 farm families (GEF and co-financed) saw the socio-economic and environmental benefits of adopting the IEM/SLM approach, and of participatory mobilization and organization of micro-catchment communities;
- Most beneficiaries were poor, small-scale farmers whose agricultural profitability/prospects increased as a direct result of their shift to more sustainable farming methods (Table 3.3 and Annex 3);
- Some subprojects from adaptive research started to use certification of origin labeling;
- Successful demonstration activities on-farm resulted in replication by farmers using in many cases, their own resources, but the overall extent/intensity ot replication was not studied;
- Beneficiary surveys suggest that organizational capacity and social capital improved substantially but formal validation is needed;
- Better-organized farmers with PEMs and PIDs, and organized in their COGEM councils, now have - and confirmed having - greater access to public programs, and Government's targeting of such programs is likely to be more effective based on these guides; and,
- Beneficiaries also reported a reverse migration effect in their immediate areas indicating that their localities had become more promising, economically and socially, to live and work.

3.5.2 **Gender:** The project made strong efforts to include women including investments in 245 subprojects valued at some R$607,000 under the direct leadership/responsibility of women. Subprojects included diverse SLM investments, small-scale agro-industries, crafts, clothes-making and group equipment acquisitions. This was a QAE/supervision-driven development since project design made no technical or operational distinction in regard to gender, and the participation of women was not mentioned in the PAD. The QAE noted this omission, stating that the role of women in sustainable agriculture and the need for a gender-sensitive approach were standard practice by the time of appraisal and women should have been part of the consultation process at preparation. The Bank team asserted that the operational strategy relied on ongoing programs with lines of support geared to women and that several specific activities supported by sub-components were typically those embraced by women and had been selected as a direct result.

(b) Institutional Change/Strengthening

3.5.3 The institutional "platform" for SLM and rural poverty reduction – both for the immediate benefit of the Rio Rural/GEF and by definition, the Rio Rural/IBRD project, and longer-term, the State's agro-ecological support programs - was strengthened through institutional partnership formation horizontally and vertically, and the intense and often difficult learning process involved in positioning the project for, and implementing, field operations. Innovative partnerships with

[26] The depth and complexity of the social impact indicators (PAD, Annex 3) were beyond the project's capacity, time or resources to monitor and evaluate.

international environmental NGOs improved conservation strategies and led to the more efficient use of resources and scientific knowledge to promote and implement/mainstream conservationist activities in private areas/property.[27] However, this broad institutional foundation, involving inter alia, five state secretariats and many dependent agencies, proved ambitious for a pilot, demonstration project. Participating institutions/leaders showed uneven engagement with the project over time, sought to impose their own modus operandi and objectives, and/or resisted critical input designed to improve their/project operations, generating some conflict within the project, and demonstrating that multi-institutional collaboration remained a pilot effort.[28]

3.5.4 On the other hand, partnerships such as that with the Public Defender's Office generated important results, establishing participatory norms and procedures for NRM via the legally-binding Statutes of Community Conduct (ECC). Further, a new culture of co-responsibility and local empowerment emerged from the COGEMs' partnership with micro-catchment residents to implement the project vision locally, as evidenced from interviews conducted with COGEM members (see Annex 5). Even within this dense institutional environment, limited/no experience with the project methodology, and the pilot nature of the intervention in the NNWF, the PIU/SEP management team was able to improve institutional integration which has in turn been beneficial to the Rio Rural/IBRD project and to the State's own broader Rio Rural program.

3.5.5 EMATER-Rio and PESAGRO were pivotal project institutions importantly due to their capillarity and reach in the countryside. Projects covering extensive territory require support from the public institutional "apparatus" but their adaptation to farmer demands and new methodological approaches, and attempts to overcome old ways can be slow and difficult. Both institutions evolved markedly over the course of project execution but important needs remain - specifically in the case of EMATER: greater technical presence in the field; stronger, more consistent commitment and engagement in project decision-making and willingness, as a principal executing agency, to put project priorities first; stronger technical preparation and renovation of field teams; and, a more proactive and strategic vision to make structural adjustments and keep abreast of project demands.

3.5.6 The planned coordination forums/arrangements (COGEMs, CMDRs, COREM and CEDRUS) generally functioned well. The original premise was to strengthen existing entities (CMDRs and CEDRUS) and establish new forums at the micro-catchment and regional levels to promote farmer participation and integrate activities, programs and institutions. The 48 COGEMs, albeit of varying capacity and organizational levels, generally performed their assigned functions – supporting beneficiary selection, coordinating activities at the micro-catchment level and supervising the submission of statements of expenditure. Many members of the COGEMs also participated in the CMDRs, facilitating a two-way flow of information about progress in the micro-catchments and the municipal discourse. The COREM considered and approved subproject proposals, communicating with the COGEMs and ATER technical executors in the micro-catchments about all related activities. In the final phase of the project, joint evaluations were conducted between the COGEMs, CMDRs and

[27] Participating NGOs had a crucial role in mainstreaming the design and implementation of activities compatible with the objectives of the Serra do Mar Biodiversity Corridor. They prepared TORs for studies, provided satellite images, analysed eco-system fragmentation and landscape connectivity. These activities created greater knowledge/awareness of biodiversity richness and threats in the Corridor area, and prompted farmers to implement conservation measures such as restoration of riparian zones.

[28] The Client Completion Report cites the example of the project's collaboration with the State Secretariat of Education (SEDUC) to implement the planned Telecenters where participatory, decentralized management and farmers' access did not conform to the project vision. Protracted technical and operational problems also affected the performance of EMATER-Rio, responsible for the field investments. The Mid-term Review study attributes institutions/agencies' resistance to constructive critiques to: their belief that the larger, Rio Rural/IBRD had resolved/minimized most problems; an inability to come to terms with/consolidate new technologies and multi-disciplinary approaches; and, the inability to determine why some micro-catchments and some inter-institutional collaborations did better than others. This study also notes, as further explanation for uneven institutional collaboration and engagement with the project, the fact that all state secretaries associated with the project were changed during the project execution period, with the exception of the project's Secretariat of Agriculture, Livestock and Supply, and the same was true for the mayors of most NNWF municipalities.

the COREM resulting in proposals for regionalized as well as micro-regional activities designed to facilitate the State's wider Rio Rural program and to integrate other public policies. The CEDRUS forum pre-existed the project and was kept regularly informed about project performance and results from involved municipalities to support its primary function of integrating initiatives and institutions in environment, health, education and culture.

(c) Other Unintended Outcomes and Impacts

3.5.7 The project was the catalyst for important, unanticipated outcomes:

- Organizational and social elements of the project approach are being used by the State Government in the "unidades de pacificação" to restore social coherence and empowerment in areas being "re-taken" from the drug cartels;
- Government increasingly acknowledged the methodology's productive benefits, supporting expansion of the Rio Rural/IBRD, not only to reimburse the project for disaster emergency measures implemented in 2011, but new funds to consolidate, expand and pilot new activities;
- Case studies/interviews revealed that the principles of transparency, participation and social control which guided project activities on the ground, restored a measure of confidence in the public sector, easing the path for the Rio Rural/IBRD and new State initiatives;
- Several municipalities adopted Special Nature Protection Reserves (RPPN) based on the project's conservation principles and organization; and
- The Fund for Socio-environmental Best Practice (FUNBOAS) was created to remunerate farmers who contribute to conservation of the regional environment. Resources are derived from water usage charges and at closing, some R$60,000 had been transferred to small-scale collective and individual projects using Rio/GEF planning, mapping and selection criteria.[29]

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

3.6.1 The project evaluation team surveyed project beneficiaries, municipal authorities and COGEMs with the following results: (i) ***Social organization:*** Beneficiaries/others believed, despite weaknesses, that project-sponsored organization in a region where most pre-existing forms of organization were moribund was empowering, enabling a solid front in their representations to authorities and specifically, to accessing programs, projects and public policy. The overall conclusion was that while COGEMs varied significantly in capacity and organization they had demonstrated potential to organize and energize local groups; (ii) ***Technical assistance and rural extension (ATER):*** Beneficiaries observed that interaction between the Rio Rural/GEF and other programs and projects was common, and that the project provided three major benefits in relation to ATER services: their improvement; the incorporation of environmental concerns; and farmers' improved access to ATER per se. The presence and involvement of the ATER technician was viewed as fundamental to the credibility of the new practices proposed; and, (iii) ***Subprojects:*** The project's innovative interface with environmental concerns was repeatedly noted by beneficiaries in all micro-catchments surveyed. Farmers reported increased productivity and income generation from the Rustic Poultry Kits and Pasture Rotation investments and understood the relationship between the new practices adopted under Rio/GEF and their improved productive situation. They saw the project/subprojects as improving local conditions and as a key factor in their decisions not to out-migrate.

4. Assessment of Risk to Development Outcome

[29] The FUNBOAS projects are included in the PIDs and PEMs and activities supported so far include sanitation, water source protection, riparian forest restoration, pasture rotation, coffee processing and the fencing of Permanent Preservation Areas (APP).

Rating: **Moderate**

4.1.1 The following factors impact on the sustainability of project outcomes:

- Beneficiary farmers and their representative bodies clearly "bought" the project methodology, seeing positive direct and indirect benefits on their incomes, wellbeing and physical environment from the IEM/SLM approach, and the established organizational framework;
- Evidence, as noted earlier, of the project's methodological incorporation within State public policy including the State's Climate Change Plan, multiplier effects observed in independent local replication of the methodology beyond the project regions, and capacity to attract/leverage public and private resources;
- Building the PID, PEM and COGEM framework into the Rio Rural/IBRD is sustaining farmers' organizational links to the overall package of approaches constituting IEM/SLM;
- Cross-sector institutional growth from the collaboration needed for projects of this type, even though this aspect of project planning and execution was far more difficult and less successful than expected, remaining largely a pilot.

5. Assessment of Bank and Borrower Performance

5.1 Bank

(a) Bank Performance in Ensuring Quality at Entry

Rating: **Moderately Satisfactory**

5.1.1 A Quality at Entry Assessment in FY2005 rated the project Satisfactory overall. Strong features were cited as: impressive ownership of the project by Brazilian counterparts who took the lead on the initiative and financed it even before GEF funds became available; clear strategic relevance, and high priority for the need to address biodiversity and sustainable land management issues in Rio de Janeiro State; and, the good track record of other, similar projects addressing land management issues in other Brazilian states, and thus good prospects for the Rio GEF. Areas needing improvement included: more attention to future scaling up, given the high rates of loss of remaining forest in this region; design was not based on a strategic analysis of state aims, including large farmers, other policy interventions, actions of other agencies such as electricity and transport, and hence the plausibility of the project's expected impacts on small farmers was uncertain; lack of clarity in the project's articulation and presentation, possibly caused by an intense focus on meeting internal operational deadlines; and, need for a stronger analysis of the basis for expecting that small farmers would change their behaviour.

5.1.2 The ICR broadly agrees with this assessment but not with the rating, taking into account that the QAE was conducted soon after effectiveness before the implications of design issues had become evident. While the State's initial difficulties were familiar to the Bank team from experiences in other southern states, the framework of objectives, activities and multi-institutional arrangements exceeded the State's capacity in the initial years and in some cases throughout – even bearing in mind other obstacles such as fiscal. The lessons from those states did not ease the burden on Rio State of having to undergo the same learning process, in this case unusually long. The QAE's reference to unclear articulation and presentation is assumed to include over-designed and confusing indicators and inconsistencies in the PAD, creating difficulties for project monitoring and the desired optimal focus on biodiversity results. On balance, the ICR rates quality at entry as Moderately Satisfactory.

(b) Quality of Supervision

Rating: **Moderately Satisfactory**

5.1.3 Supervision missions were regularly spaced and comprised experienced specialists. The project benefited from stable Bank task management from appraisal to its final year, and the Rio GEF task team had extensive experience with similar projects upon which the Rio State GEF was modeled. The Bank team was proactive in cultivating strong relationships with the client and related institutions and in helping them work through the many complex organizational, institutional and technical issues arising from project design. While the record shows 10 supervision missions in six years, below the

Bank standard and the needs of a project with implementation challenges requiring more intensive coverage, this was mainly a function of inadequate reporting/recording of the informal but substantive supervision of the GEF conducted during preparation and implementation of the Rio/IBRD operation, which involved the same State (lead) institution and PIU, and saw substantial leveraging of the GEF experience to enhance the larger project. Ratings for the GEO and Implementation Progress in the first three years were unduly optimistic given the low level of disbursement but reflected the team's expectation that this was the normal precursor to a second phase of accelerated implementation and successful conclusion, as seen in other states. Safeguards policies were well-supervised and missions included senior Bank and FAO environmental expertise. The Mid-term Review however, was problematic, as described in 2.2.6. On balance, the ICR rates supervision as Moderately Satisfactory.

(c) Justification of Rating for Overall Bank Performance

Rating: **Moderately Satisfactory**

5.1.4 This rating acknowledges that while the project addressed clearly-defined issues affecting natural resources management and rural poverty in a highly degraded and vulnerable area of global importance, using methodologies tested successfully in other states and regions, it was over-designed for ambient conditions, especially institutional, and the description, design and number of indicators and some aspects of the PAD created monitoring challenges and confusion at the project evaluation stage. Taking into account supervision performance, where an otherwise skilled oversight of a difficult project by an experienced Bank team is compromised by several concerns relating to supervision reporting, the MTR and realism of ratings, overall Bank performance is rated Moderately Satisfactory.

5.2 Borrower

(a) Government Performance

Rating: **Moderately Satisfactory**

5.2.1 The State Government was committed to the project concept from the earliest days and supported preparation of both the Rio Rural/GEF and its successor, Rio Rural/IBRD. Even with a change of government in 2006, the project management team was left intact, of fundamental importance for overall stability in the early years, especially of a project facing many challenges. Government supported the PES Decree including the incorporation of project results and lessons, and the project's efforts to attract/leverage additional, complementary sources of financing. However, as noted elsewhere, deficits in government's performance constrained project implementation: delayed disbursements and erratic counterpart funding in the first three years due to acute fiscal difficulties saw the project struggle to gain traction; delayed internalization of Bank project norms and administrative procedures by the State institutions sharing project execution, distorted the institutional reformulation process underway during the project's launch years; and, government could have provided greater political guidance and proactivity by fostering the engagement of State secretariats and municipal administrations in project activities.[30]

(b) Implementing Agency or Agencies Performance

Rating: **Satisfactory**

5.2.2 The regionalized structure of the PIU/SEP with an Executive Secretary at the center and two regional Executive Secretaries worked well, steering the project through its initial difficulties and accelerating an almost-moribund project to meet or exceed most of its key targets with a one-year extension. Obviously, the project's improving budget and counterpart funding situation over time, along with agreed internal restructuring of the PIU breathed new life into project operations after an unusually slow start. Notably, the same PIU/SEP team was also coordinating the much larger Rio Rural/IBRD operation from 2009 onwards, a major task indicating (and further stimulating) significant institutional growth. SEP's creation of thematic management units was also effective in injecting

[30] As background, it is worth noting that agriculture and the rural sector generally, still have little political currency in Rio de Janeiro State, aggravated by the State's massive investment in petroleum, plus the Olympics and World Cup. As the project consolidates over time, and beneficiaries assert their demands, rural development may gain more traction in the interior of the State but its ability to become a powerful player in the State's future policy dialogue will be difficult.

rigor into the supervision of project executing teams. Finally, as noted in 3.5.4, the PIU/SEP, even with limited/no experience with the project methodology, improved institutional coordination and supported the strengthening of EMATER-Rio's field operations, benefiting the larger Rio Rural/IBRD operation and the State's own wider rural program.

(c) Justification of Rating for Overall Borrower Performance
Rating: **Moderately Satisfactory**

5.2.3 This rating balances the difficult but ultimately significant maturation of key project coordinating and executing bodies, reflected in the many project achievements/successes, against a series of obstacles impeding the progress of this project especially in its first half. Some of these impediments were beyond the control of project executors, and others resulted from fundamental institutional weaknesses, all set against a backdrop of competing State priorities with greater political weight.

6. Lessons Learned

6.1.1 The following lessons are among the more important:

Projects seeking methodological change and requiring a strong, committed field presence need careful upstream analysis of the institutional profile and capacity of proposed partners and co-executors. Mechanisms must be designed up-front for formalizing partnerships and integrating cross-sector efforts for IEM projects which experience demonstrates, require shared implementation. Such frameworks also require joint agreement on roles, relationships, responsibilities and budgets bearing in mind institutions' inherent, differentiated characteristics. Clear, measurable targets, inter-institutional commitments not dependent on individual relationships, channels of communication between institutions and with the coordination unit, and oversight mechanisms which measure performance of individual partners, are all essential.

Collaborative monitoring, data-collection and storage need to be negotiated between the executors and partners to ensure that a Bank-supported project co-financed by other programs can access project-related data reflecting the performance/achievements of all players. Monitoring, evaluation and dissemination can have a material impact on a project's ability to detect and resolve critical issues affecting immediate execution and to support related, larger-scale and longer-term efforts. Joint project databases and agreed data formats are needed to support whole-project evaluation, especially where co-financing partners have their ownmanagement structures, field operations and procedures.

To secure genuine collaboration on IEM longer-term, mechanisms are needed to create intersection and communication between the Recipient/Borrower and the other co-financing programs or institutions. The trajectory of the two major financing groups under the Rio Rural/GEF essentially ran in parallel with co-financiers not obligated to use the organizational or financial instruments developed to empower farmers and facilitate the application of IEM principles to their development. Nor, as mentioned above, were co-financiers obliged to share their project data with the project/PIU. While the mechanics of a more collaborative, co-financing effort may have exceeded the GEF's capacity, the principle is valid for larger operations.

GEF projects can tend to have sweeping objectives which envision global impacts from localized, demonstration/pilot-scale activitie while the "companion" Project Development Objectives tend to be more grounded and local. A clear distinction is needed between demonstration/foundational goals and those requiring a full measure of development. Expecting both can be difficult to deliver as in the case of the project's ambitious erosion and sedimentation goals more likely to be detectable in larger, more concentrated areas, and the project's complex social goals - not even overtly evident from the PDO - which were clearly beyond its capacity to deliver or measure.

The qualifications of the technical teams and their adequate presence on the ground, as well as their close and regular contact with beneficiaries, promote farmer confidence and the credibility of the project and its institutions. Technicians' motivational role - even more than technical - the use of participatory methodologies, the strength of the technical strategy and its consistency with project objectives are indispensable elements. Further, the training process is not linear. Experience shows that training is best conducted as project activities evolve, at critical points and for short, intensive periods targeting specific capacity gaps. This approach requires a strategy, planning and flexibility.

The project demonstrated that a conjunction of mechanisms and events is needed to mobilize and motivate small farmers to engage with/in biodiversity conservation through their agricultural practices and indeed as activities in their own right, on their properties. The project effectively combined decentralized, participatory governance mechanisms, stakeholder education including the dissemination of results, financial incentives and the direct demonstration of technologies on-farm. The critical element was undoubtedly the GEF-financed grant mechanism to trigger/incentivate adoption of initially unacceptable technologies, which would likely not have happened as rapidly without the financial incentive.

Related to the above, financial sequencing is critical: using the GEF instrument for demonstration effects through non-lending technical assistance and grants produced results which became incentives in their own right to spur farmers to further, independent adoption/utilization. In addition, government recognized that biodiversity conservation through technological innovation on-farm has a legitimate longer-term place at the table in the public policy dialogue on rural development. Demonstration effects also undoubtedly prompted government's acceptance of the PES concept and approval of the Decree – the new Law was approved after Rio/GEF results began to appear – and promoted/consolidated its support for the larger Rio Rural/IBRD operation.

Establishing a PES system and actually launching its physical and financial component on-farm, demonstrated the value of inter-institutional and multi-disciplinary collaboration at each stage: analytical, political, technical, financial and physical. The participation of farmers in the evolving policy dialogue and the value of their PIDs and PEMs to providing a disciplined, decentralized organizational and sequencing framework supporting successful PES activities, were also critical.

6.1.2 **Other Lessons:** Other important lessons are highlighted in the Client Completion Report, the Executive Summary of which, with lessons, is presented in Annex 7.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

The Implementing Agency, SEAPEC, on behalf of the Borrower, confirmed its overall concurrence with the findings of this ICR (see Annex 7). The main divergence in the Implementing Agency's evaluation of the project relates to the overall performance of the Bank and that of the Borrower, which they both consider to be satisfactory, given the results which have been achieved despite the initial difficulties encountered by the Project. The Bank considered the Borrower's implementation trajectory and the consensus was that an MS rating was appropriate, reflecting a balanced assessment of positive and negative factors throughout project implementation.

(b) Cofinanciers

N/A

(c) Other partners and stakeholders

N/A

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Planning for IEM Actions	**0.936**	**1.332**	**142.3**
- Strengthening of IEM incentive structure and eco-system planning systems	0.151	0.164	108.3
- Local land management planning	0.784	1.168	148.9
Support Systems for Adoption of IEM/SLM Actions	**8.805**	8.939	101.5
- Financial support for sustainable NRM	8.429	8.532	101.2
- Support to adaptive management practices	0.375	0.406	108.2
Organization and Capacity-building for IEM	**2.468**	**1.531**	**62.0**
- Community organization	0.426	0.618	145.1
- Training of project executors	0.410	0.562	137.0
- Training and environmental education of beneficiaries	1.631	0.350	21.5
Project Management, M&E	**2.740**	**3.280**	**119.7**
- Participatory management of the project	1.805	2.412	133.7
- Monitoring and Evaluation	0.720	0.744	103.2
- Project dissemination	0.215	0.123	57.3
Total Baseline Cost	**14.949**	**15.080**	**100.9**
Physical Contingencies	0.00		
Price Contingencies	0.00		
Total Project Costs	**14.949**	**15.080**	**100.9**
Project Preparation Facility (PPF)	0.00		
Front-end fee IBRD	0.00		
Total Financing Required	**14.949**	**15.080**	**100.9**

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower/Recipient		6.31	3.60	57.07
Global Environment Facility (GEF)		6.75	6.65	98.52
Federal Government of Brazil		1.11	4.80	432.43
Other Co-financiers		---	3.04	---
NGOs, Beneficiaries		0.95	0.22	23.15
Total:		**14.95**	**18.31**	**122.47**

Annex 2. Outputs by Component

2.1 Drawing on the project archive including the Client's Final Report (SEAPEC/SEP 2012), the following summarizes the main achievements/outputs under individual components/sub-components and end-project results.

2.2 **Component 1: Planning for Integrated Eco-system Management Actions** (US$0.94 million, 6.0% of total project cost) intended to provide national and beneficiary stakeholders with a strengthened framework at the state and local levels to support IEM approaches to sustainable rural development and protection of critical eco-systems. The main components and activities were to drive a stronger support framework and planning for IEM, the former as studies and the latter as action planning of IEM/SLM activities to be conducted under Component 2. Component 1 activities would intregrate with the State Rural Extension Service (EMATER) regular program, and with other existing programs addressing biodiversity conservation, protected areas, environmental legislation enforcement and environmental monitoring.

2.3 ***Subcomponent 1.1: Strengthening of IEM Incentive Structure and Ecosystem Planning Systems.*** Implemented by SEP, the subcomponent financed studies and workshops to strengthen the foundation of existing incentive and planning structures for sustainable eco-system and land management in the NNWF. The sub-component achieved most of its targets.

A**chievements:**

- Decree (2011) obligating the State Government to financially support a Payment for Environmental Services (PES) system within the State's Program to Revitalize and Conserve Water Resources, itself instituted within the State's Water Resources Management Policy;
- Seminars to divulge the results of the Study of a Strategy for Biodiversity Conservation Integrated with the Serra do Mar Corridor Initiative, in partnership with Conservation International-Brasil and the State University of North Fluminense; 180 technicians trained by Conservation International in biodiversity conservation strategies;
- Study to improve institutional integration intended to improve governance and access to rural development public policies;
- Study to design an incentives program to support the economic sustainability of rural communities' productive and NRM practices;
- Integration of the Rio Rural/GEF with State and Federal public institutions/programs, and NGOs to improve project activities;[31]
- Five Watershed Management Strategies updated and fine-tuned on basis of the first 20 PEMs;
- The land suitability analysis was not conducted due to time, expertise and financing factors.

2.4 **Payment for Environmental Services:** Up to 2011, when the project-promoted Decree was signed, there had been only isolated experiences of PES in Rio de Janeiro State financed by the State's

[31] Programa de Desenvolvimento de Territorios Rurais Sustentaveis; Territorios de Cidadania; Pacto para Restauracao da Mata Atlantica; Pacto pelo Saneamento; Plano Estadual de Mudanca Climatica; Mecanismo de Pagamento por Servicos Ambientais; Estrategia Saude da Familia; Pontos da Cultura; Programa de Apoio a RPPNs; Corredor Central de Mata Atlantica de Conservacao da Biodiversidade; Programa Observadores de Agua, Agenda 21 Escolar; programa Nacional de Alimentacao Escolar; Programa de Aquisicao de Alimentos; Programas Setoriais da Secretaria de Estado de Agricultura e Pecuaria (Cultivar Organica, Multiplicar Frutificar, Prosperar, Florescer, Rio Leite, Rio Genetica, Moeda Verde); and Programa Nacional de Fortalecimento da Agricultura Familiar (PRONAF). As examples of specific collaborations: (i) Territorios de Cidadania (coordinated by the Federal Minstry of Agrarian Development): The project financed improvement of two territorial plans to eliminate their "shopping list" design and to bring community demands into the plans; and (ii) Food Acquisition Program (PAA) and National School Feeding Program (PNAE): The project organized groups of farmers to provide food/agricultural products to both programs.

Rio Rural program and some water catchment committees using resources from water use charges. The involvement of FUNBOAS (Fund for Good Practices in Water Micro-catchments) pioneered in the area of financing SLM, adopting the Rio Rural methodology even though it was not located in the same area. Today it channels 50% of resources collected in the Lagos Sao Joao catchment to foster SLM designed to improve water quality and maintain hydrological function. The project also supported PES piloting with small farmers in the São João River Basin - via its Basin Committee - led by SEA with strong support from EMATER and SEAPEC, prior to approval of the PES Decree. The Decree was transparently negotiated between the Government and civil society, using seminars and joint coordination between the Secretariats of Environment and Agriculture as well as NGOs from the PES Forum which is now defining priority areas, valuation criteria, monitoring methodologies and institutional arrangements, while linking PES development to other sources of funding to expand its coverage. The São João River Basin Committee is now paying farmers to provide environmental services. In this case, the project also had an impact on State water resources management policy as the Basin Committee adopted the PIDs and PEMs as one of their planning tools and the committee is now paying upstream farmers for their provision of environmental services.

2.5 ***Subcomponent 1.2: Local Land Management Planning*** to be implemented by EMATER and the Public Defender's Office, would cover a planned 50 micro-catchments (subsequently understood by the Bank and Client to be 40) and include: (i) formulation of PEMs; (ii) preparation of PIDs from which would be selected certain proposals for financing as subprojects; and (iii) participatory preparation of ECCs. PEMs would be collectively implemented by micro-catchment beneficiaries, monitored by SER (the two regional offices of SEP).

Achievements:

- Participatory Rural Diagnoses (PRD) prepared;
- 48 Micro-catchment Development Plans (PEM) prepared (120%);
- 1,292 Individual Development Plans (PID) prepared (for GEF-financed farmers), based on a reduction of the 1900 PIDs targeted to 1,450 (of which 89% achieved);
- 10 Statutes of Community Conduct (ECC) established (100%), supported by the State Public Defenders Office (DPGE).

2.6 **Component 2: Support Systems for the Adoption of IEM/SLM Practices** (US$8.80 million, 57.4% of total project cost) financed technical support to small farmers and other relevant ecosystem managers at the micro-catchment, municipal and watershed levels to move from conventional, unsustainable smallholder agriculture to sustainable livelihood activities which would enhance biodiversity and carbon sequestration in the agricultural landscape. It financed technical assistance, investments, and targeted research demands identified in the Watershed Management Strategies (WMS), PEMs, PIDs and PID-derived subproject proposals. GEF would finance incremental resources to support the transition but once this transition was achieved, outputs from those activities were intended to help ensure ongoing financial support to sustainable activities designed to create environmental benefits at the local, regional and global level without further GEF involvement, i.e., GEF would jump-start a process of boosting existing financial support programs and establish a foundation for other self-sustaining financial mechanisms, e.g., Payment for Environmental Services (PES). Notably, 70% of the cost of Component 1 would be financed by ongoing State and Federal programs (*Rio Rural, Moeda Verde* and PRONAF).

2.8 **Challenges during implementation:** This component supported the adoption of IEM/SLM practices. It faced a number of challenges including: (i) exceptionally weak institutions with little/no prior experience with the project strategy or World Bank projects, inadequate technical and operational resources, budget constraints and lack of priority within GoRJ's tight fiscal space; (ii) challenges inherent in the project's multi-institutional and multi-sector integration strategy, combined with a complex coordination, monitoring and decision-making structure, both vertical and horizontal;

and (iii) the need to integrate GEF resources with other official sources of co-financing (PRONAF, Moeda Verde, State Rio Rural) and other co-financiers.

2.9 ***Subcomponent 2.1: Financial Support for Sustainable Natural Resources Management*** provided technical and financial support to promote the shift to sustainable farming activities mentioned above, financing subproject proposals for support services and environmentally appropriate investments derived from the PEMs and PIDs. The sub-component comprised two activity streams: (i) Activity 1 (not GEF-financed): small infrastructure (erosion control on rural roads and small sustainable irrigation schemes) and productive systems in farms in project-supported micro-catchments; (ii) Activity 2 (GEF-financed): transition to sustainable livelihood activities within the IEM framework.

2.10 **Incentives system:** The grant-based incentives were demand-driven, based on the PEMs and PIDs with the participation of municipal and regional decision-making bodies. Technical assistance was delivered by EMATER and/or contracted technicians. EMATER financed staff salaries, infrastructure, vehicles and other, while the GEF financed operational costs. Grants were up to R$6,000 per beneficiary smallholder family and up to R$4,000 for other types of beneficiaries, later increased to R$7,500 per family and R$5,000 for other types due to evidence of inflation-based escalating costs for equipment, materials and labor. Applications were initially evaluated by the COGEMs, endorsed, consolidated by municipality (local EMATER) and submitted to SEP for final approval. Disbursement occurred against receipts/statements of expenditure (SOE) submitted by beneficiary groups/individuals. Beneficiaries received/spent the approved subproject resources and submitted statements of expenditure/accounts. They were expected to contribute about 20% of the GEF financing for subprojects but in practice, their contribution was around 8% mainly because the financing of subprojects supporting environmental practices was exempt from the beneficiary cost-share requirement.

2.11 **Integration of co-financiers:** The GEF and other co-financiers followed essentially parallel tracks except on the primary objectives which were the same in both cases. The main difference between the GEF and other financing was the former's more holistic approach, integrating the social, economic and environmental sectors and vision, and supporting sustainability goals. The portfolio of subprojects eligible for GEF incentives was larger while the focus of the other financing sources was narrower, supporting mostly economic, environmental or cultural initiatives. However, to attract financiers, besides the project resources, the entire methodological strategy was utilized and shared as the guarantee of a set of socio-environmental best practices to be adopted by beneficiaries. While the other co-financiers were not obligated to use these same tools, the fact that beneficiaries were organized in COGEMs and/or possessed an instrument prepared in a participatory manner for planned activities which were socially and environmentally balanced (the PIDs and PEMs), qualified beneficiaries to access these other financing sources.

Achievements:

- Financed – with GEF and other co-financiers (mainly the State's Rio Rural and Moeda Verde programs, and Federally-financed PRONAF) – implementation of an aggregate 2,728 IEM/SLM subprojects (there was no subproject target per se, only an indicative estimate of 4,400 proposals, from which a minimum 1900 subprojects – equal to the projected number of PIDs – would be financed);
- Of this total, 1,292 investments were GEF-financed, and 1,154 were solely co-financed (mainly PRONAF) under the Incentives Scheme, attending a total 2,254 families; and,
- These 2,254 families implemented IEM/SLM practices on about 31,650 ha of land.
- Provided technical assistance to support the implementation and maintenance of those subprojects in 48 micro-catchments; and,
- Leveraged some US$3.04 million of co-financing from public and private programs to support/complement these investment activities.

2.12 The project strategy of utilizing GEF resources incrementally to increase and improve existing investments in sustainable agriculture was successful. This result was possible via the methodology for preparing Individual Development Plans (PIDs) and Micro-catchment Executive Plans (PEMs) whereby project technicians and beneficiaries, in a participatory manner, sought to integrate different sources of counterpart funding to maximize and put into effect the PIDs/PEMs, attending in the process at least one of the Lines of Support.

2.13 That said, the Rio/GEF was a pilot project which sought to demonstrate that investments premised on equal weight between environmental, economic and social concerns are possible. It was not assumed that the investments financed by other sources would necessarily adhere to the five categories of investment, or be based on the PIDs/PEMs, since they already had their own objectives, methodologies and instruments. Importantly, the project did not require them to conform. The Rio/GEF with its participatory methodology of activities in micro-catchments (Participatory Rural Diagnoses, PIDs and PEMs) initiated a process of integration of investments within micro-catchments, whether derived from the State's Rio Rural program, beneficiary resources or rural financing/credit. The expectation is that project results will build awareness in beneficiaries and managers of financial institutions to promote the educative benefits of rural financing, improving the overall quality of rural investments and their greater sustainability.

2.14 Evidence suggests this process is underway: new lines of credit for sustainable agricultural activities were recently established under federal policies, e.g., Low Carbon Agriculture (Agricultura de Baixo Carbono – ABC) and PRONAF Sustentavel. Out of a total R$123 billion for Government's 2011/2012 Agriculture and Livestock Plan, the ABC program has already logged demand of R$400 million from July 2011 to Januaary 2012. In the same period, R$65 billion were applied to agriculture. (nationwide)

2.15 **Subproject categories/types:** Subprojects eligible for grants - so-called incentives - fell into five categories and all activities were intended to have demonstration effects and be representative of one or more of the four major eco-systems in the project area. See table 2.15.1, which covers only GEF-financed investments. Similar data was unavailable for co-financed subprojects.

Table 2.15.1: Rio Rural-GEF – Lines of Support and GEF-financed Investments

Summary Table		
Lines of Support	**Nº of Subprojects**	**Value (R$)**
1. Recuperation of Degraded Areas	238	311,922.00
2. Use and Conservation of Biodiversity	120	250,058.75
3. Water Resources Management	329	684,708.15
4. Re-orientation of Productive Systems to Sustainable Systems	730	2,082,324.90
5. Support for Commercialization of Socio-environmental Products	157	1,274,209.50
Total:	**1,574**	**4,603,223.30**

Erosion and sedimentation control results:

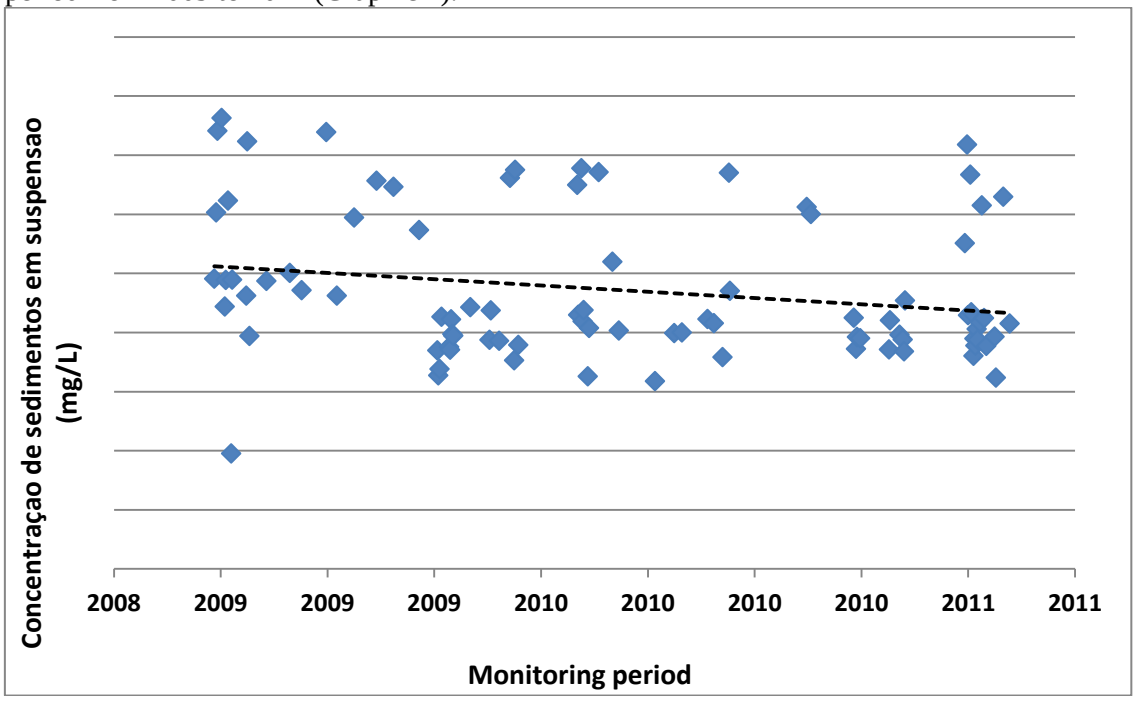
2.16 Based on the project monitoring plan, telemetric monitoring stations were installed near the outfall area of the three micro-catchments targeted for "complete" monitoring to identify possible changes in hydrologic variables resulting from sustainable natural resource management practices

implemented by farmers with project support. Bearing in mind the pilot nature of erosion control activities, adopted by a limited number of farmers, the effects on reduction of sediments could not be detected due to the decision to instal hydro-sedimentology points on the micro-catchment outfall areas intended for monitoring. To detect such changes in small areas, the installation of monitoring equipment would have needed to be installed immediately adjacent to where the practices were implemented (treatment areas). As a direct outcome, the Rio Rural/IBRD project has been installing the equipment and structures associated with soil conservation subprojects in areas of the micro-catchment where such subprojects/practices are concentrating.

2.17 Further, EMBRAPA/Soils recently reported some data on the concentration of sediments in two of the project micro-catchments indicating a tendency to reduction throughout the project execution period in these two micro-catchments. This tendency suggests that the practices introduced to control erosive processes were effective. However, taking into account the project's demonstration character and the implementation of practices in localized areas, there was not the 50% impact foreseen on the reduction of erosive processes and sedimentation. The following information is derived from micro-catchments which showed some reductions.

Micro-catchment Brejo da Cobiça – Municipality of São Francisco de Itabapoana

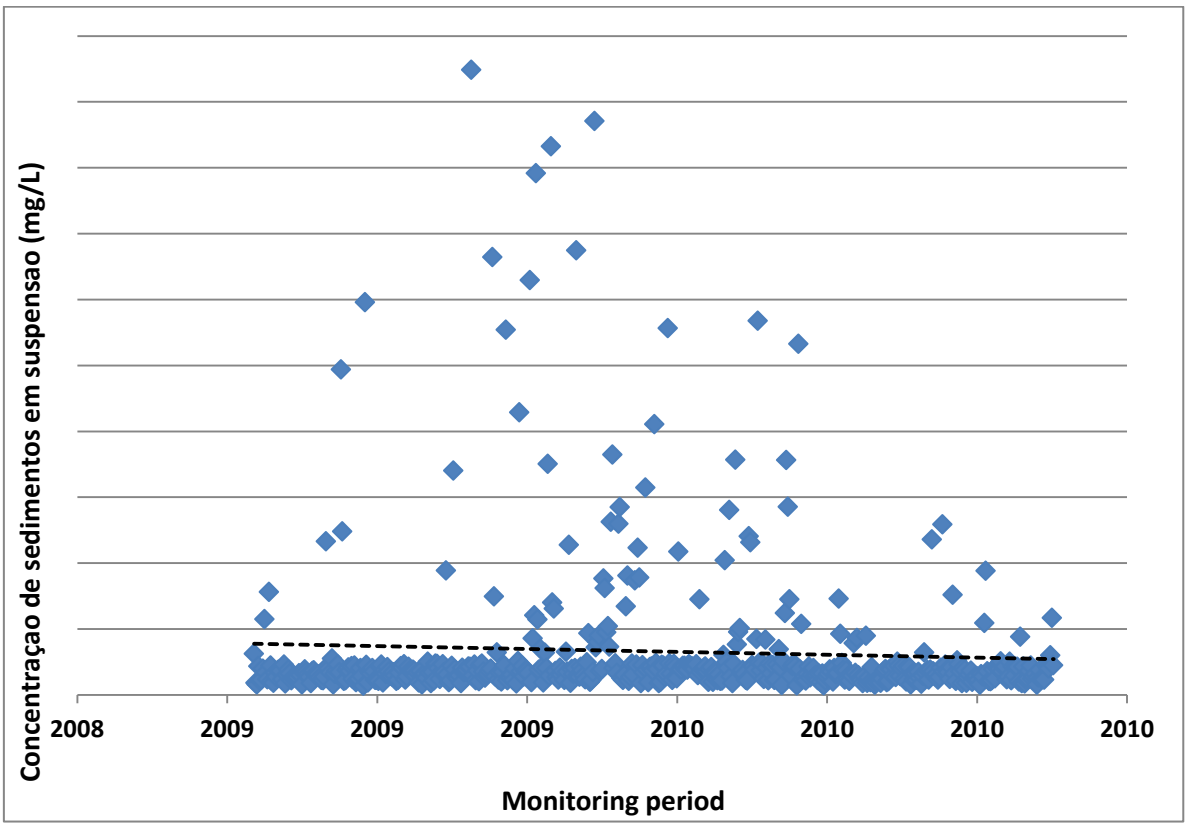
2.18 In this micro-catchment, sustainable natural resources management practices were implemented as follows: (i) 14 riparian forest recovery and conservation subprojects; (ii) 10 spring protection subprojects; (iii) 4 pasture rotation subprojects; (iv) 3 crop rotation subprojects; and (v) 2 green/organic fertilizer subprojects. Data show a reduction of 26% in average values of sediment concentrations and of 31% in the maximum values of sedimentation in this micro-catchment in the period from 2009 to 2011 (Graphic 1).



Source: EMBRAPA/Soils 2011

Micro-catchment of Santa Maria/Cambiocó – Municipality of São José de Ubá

2.19 Data show a reduction of 7% in average values for sediment concentrations in suspension, and of 8% in maximum concentrations of suspended sediments in the micro-catchment of Santa Maria/Cambiocó, in the period from 2009 to 2010 (Graphic 2).



Source: EMBRAPA/Soils 2011

2.20 ***Sub-component 2.2: Support to Adaptive Management Practices*** financed the adaptation of existing soil management practices and adequate technological solutions for unsustainable land usage identified by the farming community at the micro-catchment level. Activities included: improvement and validation of practices for the integrated management of natural resources; adaptation and validation of cropping, agro-forestry and pasture management systems to increase carbon stocks and biodiversity; implementation of pilot units to improve the use of rural space and in buffer zones of ConservationUnits.

Achievements:

- Implemented and validated 13 adaptive research units on farmers' land, in partnership with and monitored/overseen by PESAGRO-Rio, designed to adapt existing technologies to varied agro-ecological conditions in micro-catchments;
- Principal themes studied were: pasture rotation, agro-ecological cultivation of tomato, organic coffee cultivation, and subterranean dams;
- Dissemination of results occurred using special field days (*dias do campo*), technical visits to farmers and exchange of information among farmers at the research sites, publication of expanded summaries through the Project Portal, and the presentation of results at seminars and congresses;
- Stemming directly from the Rio GEF experiences, seven long-term research units are being maintained under the Rio Rural/IBRD project: Pasture Rotation (Itaocara, Miracema, Quissama); the PAIS System or Integrated, Sustainable, Agro-ecological Production (Sao Jose de Uba); Agro-forestry Systems (Cambuci); Alternative Controls of Fruit Pests and Diseases (Cambuci); and Sustainable Fruit Culture (Itaocara).

2.21 The participatory research methodology included an evaluation of results with the experimenting farmers. In this way, the adoption/otherwise by farmers was observable by the

responsible technician. The technologies introduced and evaluated following the advent of the Research Units were adopted by farmers who then expanded from experimental areas to larger areas – with some adaptations – at their own expense and risk. These included: (i) use of green fertilizer in fruit cultivation; (ii) use of *vermicompostagem* on vegetables; (iii) semi-intensive systems of rustic poultry production; (iv) the PAIS System (Integrated Sustainable Agriculture Project); (v) use of bio-fertilizer in coffee and in vegetables; (vi) use of green fertilizer in manioc production; (vii) access to the National School Food Program; (viii) use of the water from subterranean dams; (ix) agro-ecological technologies for tomatoes; and (x) establishment of a corn seed bank.

Box 2.21.1: Adaptive Technologies Developed by the Project

1. **Introduction of green fertilizer**: The introduction of *Arachis Pinto* sought to control the incidence of infestedplants and reduce the use of herbicides, and improve the protection and quality of the soil. The planting of Arachis Pinto was done using seedlings spaced at 0.35 meters by 0.35 meters. This plant was the cultivar selected to be introduced in *caqui* sub-systems because it presented certain favorable characteristics such as: easy management; capacity to promote soil surface coverage; promote the recycling of soil nutrients, making orchards self-sufficient in some nutrients; promotes excellent production of biomass; controls invasive species, avoids soil loss, and can be propagated by seedlings and seeds.
2. **Semi-intensive production system for Galinha Caipira:** Some 60 birds aged 60 days, of the Label Rouge brand, were introduced on the property of each partner farmer. As part of the food restriction process associated with the semi-intensive system, it was stipulated that part of the conventional diet would be substituted by alternative rations obtained from farmers' properties (left-over vegetables, banana leaves and stems, medicinal herbs and grasses, and freely available in parks. These parks were planned tomeasure 30 by 20 meters, divided into four parts. These were adapted, forming just one park, without any division and with existing vegetation. The required food was established, according to production phases and the potential of the partner farmers.
3. **Establishment of varietal corn Seed Bank:** The Seed Bank was carried out with the corn variety BE 106 which is rustic and fully adaptable to diverse edafo-climatic conditions. As a rustic variety it is stable and adaptable. The first seeds produced were distributed during a field day with 29 interested producers – about 600 kg were distributed between the farmers to form the second generation planted in the community. Farmers received guidance on how to preserve the seeds and the genetics of the variety in order to multiply production on their own properties.
4. **Introduction of *vermicompostagem* (worm composting) in the production of leaf kale:** The use of humus as the main source of fertilizer for the leaf-kale subsystem was introduced. Worm compost is an organic fertilizer (humus) capable of improving the attributes of soil chemically (better retention and cycling of nutrients), physically (improved structure and formation of aggregates), and biologically (increased biological organisms). A suspended earthworm container formed from two rings of concrete with a volume of about 0.8 m3 aquired through the local construction industry. Each ring received 200 to 300 kg of manure and 25 liters of California red earthworms (*Eisenia foetidae*) acquired from a specialist source, which produced, each 45 to 60 days, 100 liters of worm-compost ready to be used in the field.
5. **Agro-ecological practices for tomato:** In the tomato sub-system, alternative forms of controls of pests and diseases were introduced, carried out through the use of Bordeaux mixture (*calda bordaleza*), vegetable extracts,[32] wrapping the stalks with glassine paper, and using home-made traps attached to the tomato plant with tape.
6. **Green fertilizer for manioc cultivation:** Green fertilizers (Guandu and Crotalaria) were introduced into manioc sub-systems in consortia arrangements. The green fertilizers were seeded simultaneously with the manioc. The producer's preferred system is a consortia in alternating lines, with Guandu.
7. **Alternative controls of pests and diseases in coffee:** An alternative control for pests and diseases was introduced for coffee sub-systems. This occurred through the utilization of alternative mixtures among which were Agrobio, Bordeaux mixture, BMBio and Metabio. The bio-fertilizer Agrobio isproduced from fresh bovine manure, water, molasses and mineral salts in open containers. The Bordeaux mixture is a colloidal suspension, light blue, obtained by mixing a solution of copper sulphate with a suspension of natural or hydrated lime, also with nutritional effects and disease control. BMBio is a by-product which contains, in its formulation, spores of fungus *Beauveria bassiana* applied in powder form to the plant. It contains control agents such as fungi and bacteria which colonize the pathogens attacking the fields. Metabio is also a by-

[32] Fungicide made of copper sulphate, lime and water

product which contains in its formulation fungus spores of *Beauveria bassiana* and *Metarhizium anisopliae*, applied directly to the soil, thereby biologically controlling pests.
8. **Green fertilizer interspersed with manioc:** The use of green fertilizer was introduced interspersed with beans in manioc production sub-systems cropped in simple rows – 1.0 m by 0.8 m and in double rows – 2.0 m by 0.8 m by 0.8 m with and without the fertilizer interspersed with the beans.
9. **Use of alternative protection in pimentos:** Biofertilizers were introduced in pimento sub-systems reducing the use of agro-chemicals. The biofertilizer Agrobio is produced from fresh bovine manure, water, molasses and mineral salts in open containers. The same is the case with organo-mineral fertilization which is a mixture of organic composts complemented by mineral sources. With the greater supply of fertilizer in the soil, the organo-mineral is such that the farmer can reduce by 35-40% the source of nutrients, a significant reduction in production costs.
10. **Sustainable, integrated agricultural production (PAIS):** An adapted PAIS system was introduced and evaluated based on the exploration/analysis of 17 cultivars including onion, cilantro, kale, carrots, lettuce, capsicum, peppers and arugula.
11. **Marketing of health foods from family agriculture to institutional markets:** Family farmers were trained to participate in the Federal Government's Food Acquisition Program (FAP). Data were collected concerning production and delivery for institutional markets.
12. **Subterranean dams:** The subterranean dam is a technology for capturing rainwater from surface run-off as well as infiltrated water, to improve soil humidity/moisture content. The damming of water occurs in the soil profile, creating a reservoir or elevating the water table, preventing losses through evaporation. Use of the subterranean dam has positive environmental impacts such as the reduction of surface run-off and erosion, a strategic mechanism in areas suffering frequent dry period, which can reach 10 months in duration annually, affecting agro-livestock production as well as the supply of water for human consumption. The subterranean dam is an alternative for water capture and for increasing agricultural productivity of small and medium rural enterprises, mainly those which lack water for irrigation use.
13. **Silvi-pastoral systems:** Despite the research project being initiated, the results were not evaluated or disseminated due to the sale of the property.

2.22 **Long-term research units:** The Rio/GEF also financed seven long-term research units, now being maintained and concluded by the Rio Rural/IBRD project. These research units are testing: sustainable management of dairy pasture; sustainable production of limes; agro-forestry systems; use of alternative pest control in fruits; and adaptation of seasonal crops to the integrated agro-ecological, sustainable production (PAIS) system.

2.23 **Component 3: Organization and Capacity-building for Integrated Ecosystem Management (IEM)** (US$2.47 m, 16.0% of total project cost) financed training, education and community engagement efforts to facilitate the formation and strengthening of rural organizations for the self-management of natural resources. These activities were to complement productive and marketing group activities fostered by the ongoing State Rio Rural and Federal PRONAF programs. Direct beneficiaries were to be about 6,000 technicians, smallholders, rural youth and micro-catchment residents, trained in natural resources management, and to participate in rural collective undertakings to promote beneficiaries' socio-economic development.

2.24 ***Sub-component 3.1: Community Organization*** entailed diagnostic studies of existing community organizations and facilitating the development and implementation of pilot community self-management activities focusing on the production and delivery of environmentally sustainable goods and services. An innovative, multi-disciplinary methodology - known as Incubation of Sustainable Rural Enterprises (IRS) – was applied for strengthening local organizations through collective action and self-management. Two rural incubator centers were planned within Information/Communication Centers. [33] An interactive project Communication Plan was also supported.

[33] The methodology is based on a World Bank award-winning program developed by the Technology Incubator for Popular Cooperatives (ITCP) at the Federal University of Rio de Janeiro to establish viable and sustainable collective enterprises and networks.

A**chievements:**

- The EMATER-Rio team was trained to act as an incubator of collective/group enterprises within the micro-catchments, improving their delivery of ATER services to support community groups organizationally and in their capacity to conduct collective business activities/ventures;
- Community organizations were strengthened via the project's adaptation of the incubator methodology for popular cooperatives of ITCP/COPPE/UFRJ to the rural environment (known as the IRS – Incubator of Sustainable Rural Enterprises);
- 40 community organizations were created, adopting and implementing IEM/SLM strategies via the incubator mechanism;
- Incubator groups were strengthened through the implementation of a communication system between technicians and beneficiaries;
- The IRS resulted in the financing of some 588 small-scale agro-industrial ventures/subprojects in 24 municipalities, including: milk chilling tanks; beekeeping/honey production; crafts, seedling nurseries, manioc mills, fruit orchards, processed fruit products, dairy livestock, and confectionary production;
- Implemented one Telecenter to promote communication and market/organizational networking.

2.25 ***Sub-component 3.2: Training of Project Executors*** supported training and environmental awareness efforts for project-related inter-sector and rural extension staff including management and technical capacity building programs for some 420 staff.

Achievements:

- The project trained 370 technicians including local NGOs (185%) to improve their managerial and technical capacity to manage natural resources adequately and communicate such messages to micro-catchments residents;

2.26 ***Sub-component 3.3: Training and Environmental Education*** for beneficiaries to enhance local capacity and increase support for sustainable NRM, complementing existing training by the base programs in agro-processing, improved cropping, animal health and aquaculture; training for teachers and support for environmental projects in schools; and, demand-driven technical training in the five broad subproject investment categories.

Achievements:

- Trained 2,600 members of micro-catchment communities (87%) through environmental education;
- Provided training/environmental awareness-building to 5,730 members of the wider regional community (191%); and
- Conducted 20 environmental education programs (80%) through local schools.

2.27 **Component 4: Project Management, Monitoring and Evaluation** (US$2.74 million, 17.5% of total project cost)

2.28 ***Sub-component 4.1: Participatory Management of the Project*** supported technical assistance, office equipment, administrative and operational aspects to ensure effective project implementation and resources management; the Project management Unit (SEP); and, establishing the participatory, consultative external project coordination structure (Coordination Forums) at State, municipal and micro-catchments levels.

Achievements:

- The Project Executive Secretariat (SEP) was established as planned, supported by two decentralized Regional Executive Secretariats (SER).
- The coordination structure of COGEMs, COREM and CMDRs was successfully established and while quite complex, functioned well/as intended;
- The high level Project Steering Committee (the pre-existing State Council for Sustainable Rural Development – CEDRUS) was also kept regularly informed about project progress, results and performance in different municipalities. CEDRUS activities focused on integrating government/non-government institutions and initiatives in the health, education, culture and environment sectors.

2.29 **Micro-catchment Management Councils** (**COGEM) and Regional Micro-catchment Councils (COREM):** To constitute the COGEMs, EMATER extension staff worked as "animators" of a participatory process to identify the scope of stakeholders within a micro-catchment and to promote the sense of common purpose and identity. Various groups congregated (women, youth, cultural, dairy farmers etc) to form a pre-COGEM. Following a diagnostic process, each group nominated their representative to form the COGEM. At least 80% of these groups had to be part of the COGEM but there was no required minimum percentage of small farmers. The experience in applying the methodology showed that generally, at least 70% of COGEM members were beneficiaries (commonly men, women and young small farmers). In the case of the COREM, the PIU identified and invited doe a public meeting the major actors in the NNWF region including public institutionms (municipal, state and federal), trade unions, NGOs, universities and River Basin Committees. Subsequently, participants divided into groups and elected representatives from the various sectors and levels (one focal point and one alternate). COREM has 14 members/focal points and 14 alternates. Overall, the COREM is 50% public sector and 50% private.

2.30 **PEM and PID:** The PEM consolidated community demands/needs across sectors (including agriculture, infrastructure, environment, education, health and leisure) to facilitate the delivery of solutions in each case. The project methodology included elements to strengthen community self-management can now approach relevant programs to address key deficits using the PEM as a community "business plan", incrasing their access to public policies and resources. The project also had a simplified version of the PEM (without physical targets and more qualitative) called the "PEM *vendavel*" (saleable PEM) used by communities to approach potential donors in the public and private sectors. SEP also has a role in assisting this integration with on-going programs and policies, e.g., in some micro-catchments, the demands stemming from the PEM for the health sector were taken to the State Secretariat of Health resulting in the training of health agents for rural districts to improve services and increase their relevance in rural areas. Demands for sanitation services are also being responded to by relevant state programs. In regard to the link between the PEM and the PID, project managers provided (and still provide under the Rio Rural/IBRD) guidance to project technical staff that the PID must reflect the demands of the PEM in those themes eligible for project financing. The subproject screening and analysis criteria include a detailed analysis of a PID's coherence/consistency with the PEM. If they are not consistent, the PID can be (on occasion) returned to the farmer for adjustment, but in general, the PID reflects a wide range of needs/proposed activities.

2.31 ***Sub-component 4.2: Monitoring and Evaluation*** financed the physical and financial monitoring of the project, socio-economic and environmental monitoring in pilot micro-catchments and overall project evaluation. GEF activities complemented the State's Rio Rural monitoring program in pilot micro-catchments and were to support: (i) continuous monitoring of the results of project actions through established indicators; (ii) with CI-Brasil and SOS Atlantica, evaluate the positive impacts of IEM on the increase inregional biodiversity and carbon stocks in agriculture and livestock; (iii) support project planning and adjustments; (iv) provide essential data for the MTR and

final evaluations; (v) establish a database showing project evolution. Two full evaluations were planned in addition to a baseline study.

Achievements:

- Baseline (2006) and Mid-term Review (FEALQ 2010) studies were conducted, as well as a final report by independent consultants which became the Client Competion Report (SEAPEC/SDS 2012);
- Within SEP, units were created linked to different themes/components to facilitate project decentralization and the assignment/allocation of responsibilities and activities. Each unit ad its own set of performance monitoring indicators to oversee the evolution of activities and correct and deviations. This arrangement permitted a greater project presence in the micro-catchments and strengthened the dialogue with local and regional co-management bodies (COREM, COGEMs and Municipalk Rural Development Councils (CMDRs), as well as with the mayors, partner institutions and direct executors/technicians;
- Comprehensive monitoring was conducted in three micro-catchments and participatory monitoring – very successfully - in the entire 48 micro-catchments (see Main Text, Section 2.3);
- Comprehensive monitoring of soil use in micro-catchments indicated a decline in area of degraded pasture (especially in the Santa Maria/Cambioca – Sao Jose de Uba micro-catchment) and regeneration of vegetation especially in areas near springs and water-courses in the Brejo da Cobica – Sao Francisco de Itabapoana micro-catchment (see paras. 2.15 and 2.16 above); and,
- The micro-catchment simulator methodology using the Universal Soil Loss Equation (USLE) was almost completed by project closing, designed to support the sustainable management of natural resources through the adoption by farmers of practices adapted to local realities – soil, climate, vegetation. An important function of this methodology is to simulate soil loss through erosion stemming from inadequate management, much of the time imperceptible to farmers. Using the USLE, cited frequently in specialist studies, published data was adapted to the areas where the project was active.

2.32 ***Sub-component 4.3: Project Dissemination financed*** the project information dissemination strategy to share information both within and outside the project.

A**chievements:**

- Dissemination was local, regional and global through seminars, field days, the production and distributionof materials and distribution of press releases. Global dissemination occurred via the project-supported Project Portal (website) www.microbacias.rj.gov.br .

Results of dissemination activities included:

- 114,000 copies of **Rio Rural News** were distributed to farmers and project stakeholders reporting events, activities, SLM items, best practices and resource mobilization opportunities for SLM; this bulletin attended to the very broad demand for information from people lacking access to the internet;
- Project Portal (see above) had some 43,000 visits and 137,000 page viewings. The number of site visits grew by 105% in the second year of the Portal's availability;
- Brochures in accessible language for school distribution/other audiences were produced, and distributed through EMATER-Rio's local offices, dealing with socio-environmental issues, sustainable development, and the flora/fauna of specific micro-catchments. The Portal was also uploaded with a virtual library of such material;
- Practical manual of operational procedures was produced to support technicians and field extension workers from the subproject initiation through results dissemination stages;

- A Visual Identification Manual was developed to establish a standardized usage of the "brand" Rio Rural/GEF and contribute to its rapid identification/recognition by strategic project stakeholders/public and dissemination of its key concepts. The Manual is available on the Project Portal;
- 29 Technical Support Manuals were produced in three series, prepared in partnership with PESAGRO/Rio. The purpose of the manuals is to support technicians and stakeholders to prepare projects designed to incentivate sustainable natural resources management practices in micro-catchments, with suggested projects adhering to the five main categories of investments; and,
- As an incentive to mobilize communities to capture/leverage resources to execute activities defined in their Micro-catchment Development Plans (PEM), folders containing a resume of communities' principal demands in three micro-catchments (so-called "Saleable PEMs"), folders were prepared containing a resume of principal demands/needs and basic information about each micro-catchment; their preparation was participatory, with micro-catchment residents contributing ideas and perspectives, and formulating local strategies; and;
- The project supported – through scholarships - research conducted by EMBRAPA/Soils with results presented at the 22nd Brasilia Soil Sciences Congress in Fortaleza. Studies were authored by research groups from EMBRAPA/Soils and graduate students from the Federal University of Rio de Janeiro (UFRJ) and Santa Ursula University, contributing to appropriate soil management and identification of local priorities for soil recuperation and conservation.

2.33 **Project costs and financing:** As shown in Annex 1 tables, total project cost was US$18.31 million, 122.47% of the appraisal estimate. The GEF Grant financed 36.3% of the project cost compared to the appraisal estimate of 45%. Cost sharing differed significantly from appraisal: The Recipient contribution was barely 57% of appraisal, while the Federal Government's contribution (mostly PRONAF) was over 400% the original estimate at US$4.80 million, chiefly due to the declining US Dollar/exchange rate, but also because of high demand for PRONAF financing and liberal flow of these funds nationwide. Contributions from beneficiaries and NGOs were about 28% and 3.2% respectively, of their original estimates. The expected contribution of beneficiaries was about 20% of GEF financing for subprojects (sub-component 2.1) but reached only 8% due mainly to the exemption of the counterpart requirement in the case of financing for environmental practices. The project was able to leverage about US$3.04 million in contributions from other sources. The tables below show co-financing outcomes by principal source and component, and a breakdown of the US$3.04 million from diverse contributors.

Table 2.33.1: Co-financing by Component – End-project

Co-financing Rio Rural GEF (R$ ´000)					
Co-financing	State Government Rio de Janeiro	Federal Government	Beneficiaries	Other Sources (NGOs, FAO, Private Sector, Municipality)	Total Financing
Subcomponent 1.1	160,400.00	189,281.40			349,681.40
Subcomponent 1.2					
Subcomponent 2.1	718,395.00	1,882,512.45	2,850.00	1,283,476.00	3,887,233.45
Subcomponent 2.2	142,000.00				142,000.00
Subcomponent 3.1		1,374,647.00			1.374,647.00
Subcomponent 3.2					
Total R$	**1,020,795.00**	**3,446,440.85**	**2,850.00**	**1,283,476.00**	**5,753,561.85**
Total US$	**540,103.17**	**1,823,513.68**	**1,507.94**	**679,087.83**	**3,044,212.62**
Loan	5,725.29	1,823.51	1.51	679.10	8,229.40

Source: SEAPEC/SEP, 20

Table 2.33.2: Co-financing Rio Rural GEF (R$)

Source	Total Co-financing (R$)
Cultural projects - Pontos Cultura	1,260,000.00
Projects supporting creation of conservation units (RPPN)	14,850.00
Food Security Projects	
National Food Aquisition Program – PAA/CONAB	122,606.45
PAA (Brejo da Cobiça)/2009	37,000.00
PAA (Brejo da Cobiça)/2010	78,000.00
More Food Program	45,000.00
Participatory research project including incubator methodology financed by CNPq	114,647.39
Productive project supporting rice cultivation - FAPERJ	75,000.00
Think about Rio Research Project - FAPERJ	12,000.00
Project to Regulate Organic Agriculture - FAPERJ	130,000.00
Project for Eco-certification - FAPERJ	179,000.00
Pear Project (Porciuncula)	2,881,327.00
Iniciatives in Varre Sai	
Partnership to obtain seedlings of native species	0
Equipment and infrastructure for rural producers	250,000.00
Plastic/other container collection campaigns	4,500.00
Courses and workshops for rural producers	7,500.00
Marcelo Trindade Projects	
Development of biotechnologies applied to the propagation of native tree species of Atlantic Forest as a strategy for the conservation and recovery of impacted eco-systems and areas – FAPERJ	64,400.00
The use of functional attributes as an auxiliary tool in the evaluation of the structure of communities in fragmented forest areas, envisaging ecological restoration - FAPERJ	96,000.00
Biodiversity, bio-geographic standards, and conservation of arbustive-tree flora in standing forests of the North-Northwest – CNPq	19,500.00
Maria Cristina Projects	
Conservation and management of pollinizers of tomato in different conditions of landscape and agricultural management in the principal planting areas of the States of Sao Paulo, Minas Gerais, Rio de Janeiro and Goiás-MCT/CNPq/CT-Agro 24/2009 -Pollinizers' Network	93,000.00
Communities of bees: genetic diversity, pollinization services, conservation management - PROCAD/CAPES 158/2007	76,781.40
Counterpart – Municipal Mayors of the North (2010)	192,450.00
TOTAL R$ (equiv. US$ 3,044,212.83)	**5,753,562.24**

2.34 **Adjustments to allowable subproject support:** The ceilings on allowable subproject support to beneficiaries were adjusted due to price inflation for inputs (materials, labor and equipment) and exchange rate fluctuations. When the project was approved in December 2005, the ceiling per farm family was R$6,000 and R$4,000 for other participating farmers. Of this value, family farmers would receive 80% and other farmers would receive 40%. By 2008-9 when the project started to release incentives financing to beneficiaries, evidence showed that the ceiling was no longer adequate to implement the practices envisaged and an increase was needed. The ceiling was adjusted to R$7,000 and R$5,000 respectively. Family farmers would receive a maximum R$5,600 (80%) while the others would receive R$2,000 (40%). In 2010, a new adjustment was agreed with the Bank, with the maximum for a family farmer increasing to R$8,750 of which they would effectively receive R$7,000 (80%) while the others would get a maximum R$5,000 (corresponding to 40% of R$12,500).

2.35 Group investments were established in quotas with the value of a quota calculated by dividing the total value of the enterprise/investment by the number of participants in the group. The quota for project support to each group participant/member could not exceed the limit per beneficiary cited above. The project support quota varied based on the composition of the group, with 80% for groups of family farmers and 60% for groups comprising other types of farmers.

Annex 3. Economic and Financial Analysis

Introduction:

3.1 Given the project's demonstration/pilot nature, the PAD did not include an economic and financial analysis but project design did include cost-effectiveness considerations to promote maximum implementation effectiveness, replication and impact both within and outside the project area. Thus, project activities would be fully integrated with complementary, ongoing, public and private efforts including those to financially support improved production systems and supply of technical assistance. Cost effectiveness considerations also drove the distribution of target micro-catchments for development of environmentally and financially sound demonstrative models with maximum representation of the diverse situations within the five targeted micro-catchments.

3.2 For this evaluation, direct economic impacts and positive environmental impacts were considered in the case of productive subprojects and, positive, direct environmental impacts and indirect economic impacts for environmental subprojects. According to GEF (GEF 2005)[34], the evaluation of environmental impacts is not simple due to the difficulty of quantifying such impacts and relating them in a direct manner with the resources applied (especially those related to biodiversity) suggesting the need to adopt a qualitative approach which would include cost-effectiveness.

3.3 The subprojects examined by the evaluation, especially Rustic Poultry Production Kit (*Kit Galinha Caipira* – 339 investments), water source protection (226 investments), and pasture rotation (224 investments) were the most commonly demanded by beneficiaries. Another aspect to take into consideration is the economic importance, in the case of pasture rotation, the social significance in the case of kit galinha caipira and the environmental importance associated with the notorious scarcity of water in drought periods in the two project regions, for the case of source protection subprojects. Table 1 below shows the 10 most-demanded subprojects.

Table 1: Most-demanded subprojects

Subprojects	Nº of Subprojects	Resources Released (R$)	% of total resources released
Rustic Poultry Production Kit	339	579,388.00	12.51
Water Source/Spring Protection	226	402,356.25	8.69
Pasture Rotation	224	1,009,396.40	21.79
Organic Fertilizer	168	174,092.00	3.76
Cane Fodder equipment	144	421,620.50	9.10
Beekeeping/Honey Kit	99	183,378.00	3.96
Native Riparian Forest Recuperation	78	210,836.80	4.55
Coffee Washing and De-shelling	19	556.629,50	12.02
Implem. of Small Processing Units	19	270,938.00	5.85
Coffee Drying Equipment	7	196,000.00	4.23

Source: SEP 2012

Methodological approach:

3.4 The approaches taken into account were: (i) use of Internal Rate of Return (IRR) to evaluate economic returns; (ii) use of the cost-effectiveness approach (GEF, 2005), to evaluate environmental impacts. Each subproject was considered as a case study and certain results of environmental impacts were extrapolated to the total number of such subprojects and resources applied/invested.

[34] GEF (2005). Cost Effectiveness Analysis in GEF Projects. GEF/C.25/11.

Criteria for selection of subprojects:

3.5 For the selection of subprojects, the following criteria were adopted: (i) number of beneficiaries who demanded those subprojects and resources applied. The Rustic Poultry Kits (336 beneficiaries), Water Source Protection (226 beneficiaries) and Pasture Rotation (224 beneficiaries) were the most frequently demanded and totaled the sum of R$ 1,991,140.65; (ii) subprojects monitored and availability of information, especially for pasture rotation subprojects and water source protection, for which the following elements were monitored: soil quality; degree of vegetative covering; carbon sequestration, and productivity (pasture rotation); (iii) reconomic versus environmental impacts, especially for rustic poultry kits and pasture rotation; (iv) potential positive environmental impacts (for all subprojects selected) and negative (for rustic poultry kits). Honey production subprojects, while not demanded in large quantity, but still within the 10 subprojects receiving most of the resources, was selected both for its importance in relation to biodiversity conservation and for the pollinization process for native vegetation species, and for its economic interest.

Selection of farmers:

3.6 For the selection of farmers, within each subproject, the following criteria were used: (i) farmers with pasture rotation and water source protection subprojects: availability of information from participatory monitoring; use of available areas for biodiversity conservation (in the case of pasture rotation) and utilization (or planning for the use) of water available in periods critical for irrigation; (ii) in the case of kit de galinha caipira, the main criteria were the availability of information necessary to conduct evaluations – economic and cost-effectiveness – of environmental impacts, as well as the existence of results provided from the sale of eggs and use of waste; (iii) in the case of honey farmers, the main criterion was the availability of information for an economic-financial analysis.

Table 2: Types of subprojects considered by the evaluation

Type of Subproject	No. of Subprojects Selected
Pasture Rotation	6
Rustic Poultry Production Kit	4
Honey/Beekeeping	4
Protection of Water Source	2

Source: SEP 2012

Table 3: Characteristics of properties selected for the evaluation of environmental impacts

Municípality	Micro-catchment	Subproject	Area of Property (ha)	Average Area of Project Beneficiaries in the Micro-catchment (ha)	Principal Activities of Properties Selected	Principal Activities within the Micro-catchment
Campos	Rio Preto	Pastoreio Rotacionado	4.4	11.0	Bovinocultura de leite	Bovinocultura de leite Cana de Açucar , Olericultura
Itaperuna	Córrego do Marambaia (Campinho)	Pastoreio Rotacionado	16.9		Bovinocultura de leite	Bovinocultura de leite
Natividade	Bela Vista/Conceição	Pastoreio Rotacionado	9.6		Bovinocultura de leite	Bovinocultura de leite, fruticultura (laranja)
Porciúncula	Bonsucesso	Kit Apicultura	9.1		Cafeicultura	Cafeicultura e bovinocultura de leite
Porciúncula	Bonsucesso	Pastoreio Rotacionado	6.3		Cafeicultura e bovinocultura de leite	

Quissamã	Brejo da Piedade	Pastoreio Rotacionado	5.0	8.0	Bovinocultura de leite	Bovinocultura de leite Cana de Açucar
Quissamã	Brejo da Piedade	Kit Galinha Caipira	2.4		Grãos , olericultura e avicultura de postura	
São Francisco do Itabapoana	Brejo da Cobiça	Proteção de nascente	19.4	12.0	Abacaxi	Bovinocultura de leite Olericultura ,Cana de Açucar
São Francisco do Itabapoana	Fazenda Tipity	Kit Galinha Caipira	7.7	15.0	Bovinocultura de leite e olericultura	Bovinocultura de leite Olericultura ,Cana de Açucar
Santa Maria Madalena	Médio Imbé	Kit Apicultura	5.0	6,0	Bovinocultura de corte e apicultura	Bovinocultura Leite Bovinocultura Corte, Apicultura
Santa Maria Madalena	Médio Imbé	Kit Apicultura	4.9		Apicultura	
São José de Ubá	Córrego Ubá	Kit Galinha Caipira	2.3		Olericultura, grãos e avicultura de postura	
Varre-Sai	Ribeirão Varre-Sai	Pastoreio Rotacionado	38.7		Cafeicultura e bovinocultura de leite	Bovinocultura de leite, cafeicultura e bovinocultura de corte
Varre-Sai	Ribeirão Varre-Sai	Kit Galinha Caipira	2.3		Cafeicultura	
Varre-Sai	Ribeirão Varre-Sai	Kit Apicultura	29.3		Cafeicultura, bovinocultura de leite e de corte e apicultura	

Source: SEP 2012

Methodology for calculation of Internal Rate of Return (IRR) and profitability:

3.7 **Internal rate of Return:** This involved the following calculations: (i) **variable costs** are those whose values change as a function of a firm's volume of production. For example: raw materials and inputs used in the productive process. Variable costs increase as production increases; (ii) **fixed costs** are those whose values remain the same whatever the firm's volume of production. This is so in the case for example, of rental of the factory, taxes, salaries, depreciation. This will be charged at the same value whatever the level of production, including in the case of a factory which produces nothing; (iii) **cash flow** has as its main objective a projection of incoming and outgoing financial resources of the company in a determined period of time. In this case the flow will be the result between costs and receipts which will serve to calculate the internal rate of return of the investment; (iv) **useful life of the project,** to verify the maximum time in which it is possible to obtain information. Year Zero means the moment when the investment is made and from the start of Year 1 one is going to obtain receipts and expenses for production; (v) **Internal Rate of Return (IRR)** of a flow of cash is a mathematical goal which provides the real rate of interest in a financial operation, understanding the values in their real time (present value) Cane fodder(see Table 4, for a pasture rotation subproject, considered for this evaluation). The subprojects evaluated are on average three years old and the times considered (k) vary as a function of the type of subproject, the average being (a) pasture rotation subproject: average 8 years; (b) rustic poultry kit: average 5 years; and (c) honey production: average 6 years.

3.8 **Profitability:** To calculate profitability, the gross income/return on the activity (cash flow) and operational 43xpenditures were considered. The profitability was obtained by dividing the gross

margin (cash flow) by the total operational expenditures, and given as a percentage, and the net return for each R$ invested[35] (see Table 4(a)).

Table 4: Example of IRR Worksheet

Years (k)	Initial Invest.	Operacional Expenses (R$) (a)				Receipts (b)			Cash Flow (R$) (b-a)	IRR
		Fixed Costs	Variable Costs	Deprec.	Total (R$)	Quantity produced (litres)	Unit Price (R$)	Total (R$)		
0	**8.955,00**								(8.955,00)	
1		67,00	4.930,00	895,50	5.545,50	10.800,00	0,75	8.100,00	2.554,50	
2		67,00	7.360,00	895,50	8.042,50	16.200,00	0,75	12.150,00	4.107,50	
3		67,00	10.870,00	895,50	11.552,50	21.600,00	0,75	16.200,00	4.647,50	
4		67,00	10.870,00	895,50	11.485,50	21.600,00	0,75	16.200,00	4.714,50	
5		67,00	10.870,00	895,50	11.485,50	21.600,00	0,75	16.200,00	4.714,50	**39%**
6		67,00	10.870,00	895,50	11.485,50	21.600,00	0,75	16.200,00	4.714,50	
7		67,00	10.870,00	895,50	11.485,50	21.600,00	0,75	16.200,00	4.714,50	
8		67,00	10.870,00	895,50	11.485,50	21.600,00	0,75	16.200,00	4.714,50	
9		67,00	10.870,00	895,50	11.485,50	21.600,00	0,75	16.200,00	4.714,50	
10		67,00	10.870,00	895,50	11.485,50	21.600,00	0,75	16.200,00	4.714,50	

Table 4(a): Example of Calculation of Activity Profitability

Year	Operational Expenses	Receipts	Bross Margin (cash flow)	Profitability (%)	Net Return for each R4 spent
1	5.545,50	8.100,00	2.554,50	39	0,39
2	8.042,50	12.150,00	4.107,50	46	0,46
3	11.552,50	16.200,00	4.647,50	37	0,37
4	11.485,50	16.200,00	4.714,50	38	0,38
5	11.485,50	16.200,00	4.714,50	38	0,38
6	11.485,50	16.200,00	4.714,50	38	0,38
7	11.485,50	16.200,00	4.714,50	38	0,38
8	11.485,50	16.200,00	4.714,50	38	0,38
9	11.485,50	16.200,00	4.714,50	38	0,38
10	11.485,50	16.200,00	4.714,50	38	0,38

Methodology for Carbon Sequestration:

3.9 The amount of carbon sequestered was calculated in a Participatory Research Unit (pasture rotation subproject), in partnership with family farmers, beneficiaries of the Rio Rural/GEF project. The methodology compares two pasture management rotation systems, that which uses fixed terms of occupation and repose, and one which uses variable terms – Voisin Rational Pasture – and aims to propose an agro-ecological solution for family farmers.

3.10 The sample collection period was weekly for the variable term system, and every 28 days for the fixed-term system. Comparisons are based on averages obtained for each of the treatments, in the respective periods. Average productivity in kg of Dry Material was obtained for the drying of green material collected in random samples of 1.0 m2, in a force-ventilated stove, maintained at 58^{o}C up to constant weight. Soil organic material was calculated deducing the mineral fraction of Dry material and its equivalent in Carbon was calculated based on an equation proposed by Oliveira & Millioli (2005).

3.11 A hypothesis considered by the study is that well-managed pasture eco-systems contribute in diverse ways to a sustainable environment, noting inter alia, an increase in the accumulated organic matter in the soil.

[35] EMBRAPA, 2006. Technical instruction for milk producer – to calculate proitability of milk production activities. Juiz de Fora, State of Minas Gerais.

Actual situation and possible results for the subprojects considered:

3.12 Presented below is a consideration of the situation before the project and the hypotheses of results expected by the project, as well as a conceptual model for pasture rotation, rustic poultry kits and water source protection subprojects, which were the most heavily demanded of those included in this evaluation.

Pasture Rotation Subproject

(a) **Previous situation (without the subproject)**: In the case of livestock the conventional system has brought a cycle of soil degradation and consequently of water resources, and of reduced production as a consequence of inadequate soil, water and pasture management. The cycle starts with land clearing of vegetative cover in sloping areas with soils susceptible to erosion. From the over-grazing and pisoteio of livestock occurs superficial "glazing" (soil compaction) which, associated with rain impact and reduced filtration leads to erosion, impact on water resources and loss of production. To balance such losses, the farmer increases the area of pasture, extending the degraded area within the micro-catchment, thus closing the cycle.

(b) **Actual Situation (with project)**: With the pasture rotation subproject, even though the cattle are concentrated in smaller areas, a cycle of environmental recovery and milk production is initiated, caused by: (i) increased vegetative cover from the resting of areas for pasture recuperation, and (ii) by the concentrated waste load, associated with improvements in the pasture itself with the introduction of species with greater potential to produce green mass. These aspects lead to a virtuous cycle with increased productivity, improved soil quality, less erosion, less impact on water resources, less extension of pasture for the same levels of production, releasing in this way areas for environmental restoration, like for example, biodiversity conservation.

The project hypothesis, in relation to pasture rotation, was a sustained increase in production n: greater production, with recuperation of soil and less area utilized. The major challenge was to convince farmers to change their system of management and implement measures to preserve biodiversity in areas released/set aside due to the implementation of subprojects (especially on river margins, recharge areas and springs).

Rustic Poultry Production Kit (*kit galinha caipira*)

(a) **Previous situation (without project)**: It needs to be considered that for the selection of regions for project interventions, one of the criteria was the rural poverty index. The profile of families in these conditions demanded practices with the possibility of utilization of small areas and in a short time to get a return which ensured their subsistence, increased their food security and provided the possibility of selling surpluses.

(b) **Actual situation (with project):** The benefits of the project practice were most notably: (i) use of manure for crops (horticulture, fruticulture, coffee etc.), leading to a reduction of environmental risk and sustainably increasing production; (ii) subsistence production and the possibility of selling surpluses; (iii) the use of wastes implies a reduced dependence on synthetic fertilizers which present, in addition to high cost, possible environmental impacts in specific situations. Due to the lack of both economic and subsistence options of these families, there was very strong demand for the rustic poultry production kit, leading to the project adopting it as an incentivating practice and, negotiating so that beneficiaries would use the waste for fertilization of subsistence and economic crops, minimizing the potential environmental risks associated with this activity.

It can be seen in Table 5 that the hypothesis initially suggested by the project – that beneficiaries would utilize the waste as a source of fertilizer – was confirmed, since the environmental practice most commonly used in conjunction with the poultry kit was organic fertilization. In visits to the field to collect information for the project's final evaluation, it was noted that beneficiary farmers are still/already using the waste generated as a source of organic fertilizer.

Table 5: Environmental and Productive Subprojects associated with Kit Galinha Caipira

Environmental Subprojects	Nº	Productive Subprojects	Nº
Adubação Orgânica	60	Cana Forrageira	25
Proteção de Nascente	50	Kit Apicultura	14
Mata Ciliar Nativa – Recuperação	18	Pastoreio Rotacionado	14
Área de Recarga – Isolamento	15	Lavador e Descascador de Café	13
Adubação Verde	11	Secador de Café	7
Canais de Contenção	8	Implant. De Peq. Unid. Proc./Benef.	5
Área de Recarga – Recuperação	6	Máq. E Equip. – Conservação do Solo	5
Caldas Fitossanitárias – Grupal	5	Adensamento de Cafezal	3
Manejo Florestal	2	Cambona	3
Sistema Agroflorestal	2	Esterqueira/Composteira	2

Source: SEP 2012

The potential environmental risks are mainly: (i) soil erosion in the pens where the birds are kept, from the removal of vegetative cover and consequent impact of rain drops/fall and surface run-off. This risk, however, could be considered irrelevant due to the very small areas assigned to poultry pens; and, (ii) transport of waste into water courses (in the case of inadequate management).

The project hypothesis for the rustic poultry kit was: attend the demand of micro-catchment residents, offering a source of income with the possibility of using organic fertilizer, avoiding impact on the environment. The major challenge was convincing beneficiaries of the importance of using waste as a soil fertilizer, avoiding in this way the impact on the environemt (and especially on water resources), besides the utilization of other associated environmental practices, to be implemented with project or their own resources.

Water Source Protection Subproject

(a) **Previous situation (without project)**: The vast majority of springs in the project area can be found in pasture areas, unprotected, and permitting the direct access of animals. They have low vegetative cover with consequent pollution of water from animal waste and gradual reduction in water quality, especially in periods of drought.

The reduction in water quantity is effected by the pressure exerted on the area around the source re-charge area by cattle stamping on the ground, causing modifications in soil attributes, especially soil density, reducing infiltration and water flow and compromising the re-charging (*recarga*) of the aquifer. This fact favors direct surface run-off, promoting gradual silting up of the spring.

In addition to this, the type of cover influences the process of interception and collection of precipitation. In this case, cover in the form of forest, besides intercepting and retaining a large parcel giving more time for infiltration, and as a consequence, re-loading humidity in the soil profile and consequently the subterranean water table. It is worth remembering however, that the size of the recharge area, the use of the soil and the state of preservation of spring recharge areas influence the value and performance over time of the specific yields of same.

In the case of domestic consumption and animal watering, this situation leads to families depending on neighbors to guarantee water and/or water capture in distant locations with consequent higher costs. In the case of irrigation, the low availability in dry periods implies non-viability or diminution of irrigation time and consequent reduced production.

(b) **Actual situation (with project)**: With the protection of springs, the project hoped to achieve the following results: (i) increase in the index of vegetative cover and in the diversity of species around the protected springs; (ii) improvement in the quality and increase in availability of water, for the different uses for which it was intended; (iii) increased awareness of beneficiaries and other residents in the micro-catchments (through demonstration effects), about the need for protection of water resources and biodiversity.

The project hypothesis was: recuperate springs and biodiversity through protective practices, with positive impacts on the quantity and quality of water. The greater challenge was to convince potential beneficiaries to open up/set aside one hectare to be dedicated to biodiversity and water resources conservation.

Honey Production (*Apicultura*)

Honey production/beekeeping is an activity related directly to biodiversity and agri-biodiversity in the micro-catchments, due to the role of bees in the generalized pollinization of vegetative species. They also represent an important economic potential in two respects: (i) through the direct sale of their products and by-products; and (ii) through the indirect gains from the action of bees in pollinization of productive species.

The project faced the challenge of attending to the demand from the micro-catchments while at the same time, stimulating new residents to adhere to this activity, because in addition to the issues noted earlier, beekeeping represents a path for building awareness in producers regarding the non-application of agro-chemicals because these can stop beekeeping/honey activities. In addition, beekeeping represents an important potential activity for organizing producers around honey processing centers, stimulating the formation of small associations which could become future cooperatives.

The Honey Kits are composed of an average 5 hives with an annual expected production of 125 kg of honey.

Results observed:

Pasture Rotation

Economic results: In relation to milk production, it can be seen in Figure 4 that of the 10 subprojects monitored via participatory monitoring there was an increase in 9 (90%), with an average increase of 80% in productivity. Only one subproject showed a slight reduction in productivity. The average Internal Rate of Return (IRR) of projects evaluated by the case study was 59% and profitability ranged from R$0.11 to R$0.48 for each Real expended/invested (see Table 6).

Figure 4 – Baseline (*marco zero*) Milk Production vs December 2011, for subprojects monitored via Participatory Methods (Source: Database Rio Rural/GEF, 2012)

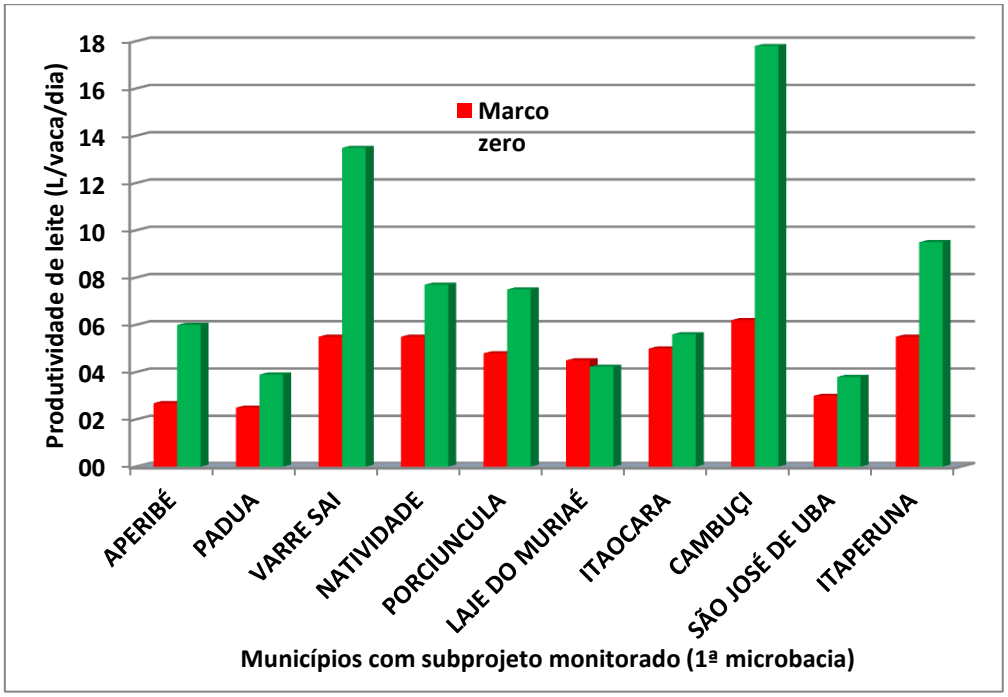


Table 6: Internal Rate of Return (IRR) and Profitability for Pasture Rotation Subprojects

Municipality	Micro-catchment	IRR (%)	Profitability of the activity (annual average)	
			%	Net Return (R$/R$ invested)
Natividade	Bela Vista/Conceição	49.0	11	0.11
Itaperuna	Córrego do Marambaia	86.0	39	0.39
Porciúncula	Ouro	71.0	48	0.48
Varre-Sai	Ribeirão Varre-Sai	65.0	12	0.12
Campos dos Goytacazes	Rio Preto	39.0	38	0.38
Quissamã	Brejo Piedade	44.0	37	0.37

Environmental impacts (cost-effectiveness)

3.13 Specifically in the case of improved soil quality, evaluated based on organic material (g/dm^3 e % M.O.) and nutrients in the surface layer (0 – 20 cm) of soil in six subprojects accompanied by participatory monitoring over a three-year period, the following results were noted, when comparing the third year with the baseline – when the practice was initially implemented: (i) increased organic material in 66.6% of subprojects, with an average increase of 5.04 g/dm^3 or 0.5%; reduced organic material in 33.4%, with an average reduction of 2.07 g/dm^3 or 0.2%; (ii) in the case of phosphorus and potassium, 87.5% of subprojects had an increase, showing an average increase of 10.14 mg/dm^3 for phosphorus and 2.14 mmolc/dm^3 for potassium.

There is no way to extrapolate these results for all subprojects since each area has its own specific soil characteristics and each subproject had its own management system.

In regard to the liberation of areas for conservation, the case studies conducted indicate the release of an average 1.5 ha per subproject, amounting to a total 336 ha within the project area, taking into account that some 224 pasture rotation subprojects were approved in total. These areas have been utilized primarily for the restoration of riparian forest (*mata ciliar*), protection of water springs and protection of water resource re-charge (*recarga*) areas. Bearing in mind that about R$1.0 million were invested in pasture rotation subprojects, there was a release of 0.336 ha for each R$1,000 applied.

In relation to carbon sequestration, evaluations conducted through participatory research, associated with pasture rotation indicate the storage/sequestration in the soil of 80 t/ha and in the air about 5 t/ha. Bearing in mind that some 224 subprojects were approved with an average area of 1 ha/subproject, there was a storage totaling 19,040 tons, that is, 19 tons per R$1,000 applied, since the average value of subprojects was R$ 4,506.23.

As 1.5 ha/subproject was released for biodiversity conservation (336 ha in total), carbon sequestration in this area was 28.2 tons for each R$1,000 applied, so that the "carbon price" paid by the project would be approximately R$ 35.00 per ton.

Rustic Poultry Production Kit (*Kit galinha caipira*)

3.14 **Economic results:** In regard to the socio-economic result, it was noted during field interviews that a percentage of beneficiaries with the Rustic Poultry Production Kit are selling surplus production of eggs in local markets/fairs and institutional markets such as the school lunch program. The average Internal Rate of Return of subprojects evaluated by the case studies was 26.2% and the profitability varied between R$0.52 and R$0.84 for each Real invested/expended (Table 7).

Table 7: Internal rate of Return (IRR) and Profitability for Kit Galinha Caipira

Municipality	Micro-catchment	IRR (%)	Profitability of the activity (annual average)	
			%	Net Return (R$/R$ expended)
Varre-Sai	Ribeirão Varre-Sai	47.7	72	0.72
São José de Ubá	Córrego Ubá	27.1	52	0.52
Quissamã	Brejo Piedade	15.0	84	0.84
São Francisco de Itabapoana	Tipiti	15.0	76	0.76

Environmental impacts (cost-effectiveness):

3.15 The case studies showed that the introduction of the rustic poultry kits provided an annual production of 2,475 tons of organic fertilizer[36] with a market value of around R$90.00/ton, resulting in a total R$ 222,750.00. Bearing in mind that the project applied/invested approximately R$580,000.00 in this practice, the result indicates a return of R$0.40 per R$1.00 invested, just for the production of manure (opportunity cost). Considering that the percentage of N, P_2O_5 e K_2O in poultry manure is respectively: 3.04; 4.70 e 1.89 (KIEHL, 1985)[37], the 2,475 tons of manure are equivalent to: 75.2 tons of Nitrogen; 116.3 tons of Pentoxide of Di-phopherus - P_2O_5 and 46.7 tons of Potassium Oxide - K_2O, it is possible to fertilize 247 ha of coffee, or 165 ha of fruits, or 82.5 ha of oil plants (based on average data on dosage in the project regions).

As a positive externality, the reduced use of synthetic fertilizers contributed to a reduction in environmental impacts in areas where raw materials are obtained for those same products.

Protection of water springs

3.16 With the protection of springs, important results were noted both by participatory monitoring and by case studies conducted for this evaluation.

(a) Recuperation of native vegetation and of local biodiversity was noted in subprojects monitored by participatory monitoring, where 9 subprojects were monitored and in all cases the recuperation of native vegetation and species diversity were observed. Also, beneficiaries interviewed for the case studies on the adoption of SLM practices: "*The forest is growing and there are many new seedlings*".

(b) Increased availability of water: Increased water availability was noted in three subprojects of the four monitored by participatory monitoring. Beneficiaries interviewed during preparation of the case study also noted incrresed water availability: *"The water is flowing more"*; *"When you protect the spring, nature shows the difference rapidly". "The water is extending more over the course of the drought period"; "The water is increasing and it is cleaner". "It's normal even with the drought".*

(c) Utilization of water from protected springs: Two case studies were conducted on the utilization of water from protected springs and the results showed:

(i) In the case study conducted in São Francisco de Itabapoana, the farmer utilizes the water for irrigation of pineapple. According to the farmer, with increased availability of water from the protected spring, it is possible to increase the irrigation period on one hectare leading to a production increase of approximately 12% as a function of the extension of the irrigation period. This increase represented 2,666 kg/ha with a value of R$0.85/kg representing a gain of R$2,261.10 or R$0.77 per Real invested/applied by the project (considering that the farmer applied, in order to protect the spring a value of R$2,330.00 of project funds and R$600.00 of counterpart financing.

[36] According to information from project technicians, 1 kit with 60 adult birds produces 20 kg of manure per day. Since some 339 kits were financed, the daily production of manure is 6.78 tons or, 2,474.7 tons/year.

[37] KIEHL, E. J. 1985. Organic Fertlizers. São Paulo: Agronômica Ceres. 492 pp.

(ii) In the case study conducted in Campos dos Goytacazes, from the increase in water available from the protected spring, the beneficiary farmers is planning to plant irrigated pasture. The farmer's expectation with irrigation of pasture is an increase of 5,300 liters of milk/year, compared with actual production, without irrigation. Considering the value of R$ 0.75/Liter, the gain in Reais per year will be R$ 3,975.00. In addition, in this area the farmer produces meat and the increase expected in arrobas[38]/ano with irrigation will be 1.5. Considering the value of one arroba (15 kg) of $ 93.00, the value per year will be R$139.50. Taling into account that some R$ 2,930.00 was invested in protecting the spring, the results indicate a return of R$1.40 per Real invested (without considering the cost to implement the irrigation system).

The project applied R$402,356.25, that is, an average value of R$1,780.34/subproject. With project support some 226 springs were protected. Considering that each protected spring encompasses 0.75 ha (according to the current Federal Forest Code, the protection area must cover a radius of 50 meters around the spring), 169.5 ha were protected, that is to say 0.42 ha for each R$1,000.00 applied by the project.

Even though carbon sequestration in the area of the project protected springs was not directly measured, studies indicate the air storage of an average 1.5 tons/ha/year in forests in process of natural regeneration.[39]. This average would give a sequestration of carbon in the order of 294.75 tons/year associated with spring protection subprojects, that is, 0.73 tons for each R$ 1,000.00 applied by the project.

In regard to water quality, while participatory monitoring has not adopted quantitative parameters which could prove improvements in water quality associated with springs protection, results from other projects indicate the improvements associated with the physical protection of springs and to their isolation: Reduction of up to 89% in the presence of heat-tolerant coliforme bacteria in springs protected by the Rio Grande do Sul Project (RS Rural).[40]

Honey Production ***(Apicultura)***

3.17 **Economic Results:** Honey production kits comprise an average 5 hives and an expected annual production of 125 kg of honey. The average Internal Rate of Return for subprojects considered by this evaluation was 21.8% and profitability ranged from R$0.50 to R$0.90 for each Real invested/applied (Table 8).

Table 8: Internal Rate of Return (IRR) and Profitability for Honey Production Subprojects

Municipality	Micro-catchment	IRR (%)	Profitability of the Activity (annual average)	
			%	Net Return (R$/R$ expended)
Porciúncula	Bonsucesso	23.0	50	0.50
Varre-Sai	Ribeirão Varre-Sai	40.3		
Santa Maria Madalena	Médio Imbé	11.0	90	0.90
Santa Maria Madalena	Médio Imbé	13.0	89	0.89

Environmental Impacts (cost-effectiveness):

[38] Arroba: a measure of weight equivalent to about 15 kg

[39] TANIZAKI, K.F.; *Impacto do uso da terra no estoque e fluxo de carbono na área de domínio da mata atlântica: estudo de caso estado do Rio de Janeiro.* Tese (Doutorado em Geociências). Instituto de Geociências. Universidade Federal Fluminense, 2000. 197 pp.

[40] Program to Manage and Conserve Natural Resources and Fight Rural Poverty (***RS RURAL)***, Loan Nº 4148 – BR, from the World Bank (IBRD). Final Report (2005).

3.18 A study conducted in Minas Gerais on the effect of pollinization by *Apis mellifera* and other genus of bees in the productivity of coffee[41] indicated that: "open pathways for the visit of pollinizers produced a greater number of fruits per flower compared to pathways without contact with pollinizers, demonstrating that pollinization is an important process in coffee productivity, increasing production by 5% on average". The study noted that the presence of *Apis mellifera* was 56% of total pollinizers.

3.19 The study also noted: "If we consider that on a property of one hectare, 4,000 coffee plants can be planted, spaced at 2.5 m by 1 m and that a 5-year old coffee plantation produces on average 4,680 beans per plant (collection data), we would have a production of 18,720,000 beans corresponding to 176.56 sacks of coffee. Thus, an average increase of 5% associated with pollinization services in these areas means 8.8 sacks or more of coffee per farmer, per ha, when the forest is maintained. If the market value of a sack of coffee is today, [2008] around R$245.00 (http://www.abic.com.br), a farmer has an asset of R$ 45,413.20 per year from coffee production. Under these terms, the value of pollinization as an eco-system service for crops near native forests would be about R$ 2,156.00 per hectare, per year".

Conclusions:

3.20 From this evaluation it can be concluded that, from the subprojects analyzed by these case studies, the economic results and positive environmental impacts are consistent with the initial project hypothesis.

- In regard to economic results, the contribution of subprojects to the sustainable improvement of income in a direct manner (due to the increased productivity with low costs) and indirectly, by the opportunitry cost and cost-effectiveness of environmental impacts.

- In regard to positive environmental impacts, the important contribution to biodiversity preservation is notable, from the regeneration of native forest associated with environmental subprojects (such as protection of springs) and indirectly through the release of areas for preservation of biodiversity associated with productive subprojects, as in the case of pasture rotation. There are also important results observable in improved soil quality, from increase in organic material and nutrients such as phosphorus and potassium, carbon storage and increased water quantity and quality.

- Specifically in regard to the *kit galinha caipira*, the fact that organic fertilizer has been the most demanded subproject in association with the former indicates that beneficiaries are aware of the importance of the use of waste as a source of soil fertilization, providing environmental sustainability to this activity. The results of the case studies indicate that the introduction of this practice into beneficiaries' routine was an important strategy for negotiating the project as a means of attending to demand from micro-catchment residents, gaining their commitment to environmental preservation.

[41] FERREIRA, C. M. F. 2008. Pollinization as an ecosystem service: an economic strategy for conservation. University of Minas Gerais, Belo Horizonte.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Alvaro Soler	Agricultural Economist	LCSER	Task Team Leader (from 07/2003)
Graciela Lituma	Consultant	LCSER	Task Team Leader (to 07/2003)
Maria Isabel Braga	Environmental Specialist	LCSEN	Environment
Judith Lisansky	Sr. Anthropologist	LCSEO	Social Assessment
Claudio Mittelstaedt	Financial management Specialist	LCOAA	Fin. Management
Emilio Rodriguez	Procurement Specialist	LCOPR	Procurement
Keiko Ashida	Operations Analyst	LCSES	Operations
Susana Amaral	Financial Management and Disbursement	LOAG3	FM/Disbursement
Katia Medeiros	Sr. Environmental Specialist	FAO	Environment
Nestor Bragagnolo	Micro-catchment Spec. (Cons)	FAO/CP	
Francisco Guimaraes	Rural Economist (Cons)	FAO/CP	
Waldir Pan	Agronomist (Cons)	FAO/CP	
Marta Irving	Env. Education Specialist (Cons)	FAO/CP	
Arthur Sofiatti	Historian/Ecologist (Cons)	FAO/CP	
Dana Frye	Junior Professional Associate	LCSER	Operations
Supervision/ICR			
Maria Isabel Junqueira Braga	Sr Environmental Specialist	AFTEN	
Nestor Bragagnolo	Consultant	LCSAR	
Joao Vicente Novaes Campos	Financial Management Specialist	LCSFM	
Matthew Cummins	Junior Professional Associate	LCSAR	
Nicolas Drossos	Consultant	LCSFM	
Judith M. Lisansky	Sr Anthropologist	LCSSO	
Graciela Lituma	Consultant	LCSAR	
Katia Lucia Medeiros	Environmental Management Specialist	FAO/CP	
Claudio Mittelstaedt	Consultant	LCSFM	
Paula Silva Pedreira de Freitas	Operations Analyst	LCSEN	
Anemarie Guth Proite	Procurement Specialist	LCSPT	
Emilio H. Rodriguez	Consultant	LCSPT	
Luciano Wuerzius	Procurement Specialist	LCSPT	
Anna Roumani	Consultant	LCSES	ICR

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY02	2.44	12.56
FY03	6.47	34.37
FY04	15.43	69.30
FY05	18.66	104.50
Total:	**43.00**	**220.73**
Supervision/ICR		
FY06	10.62	55.37
FY07	15.03	70.00
FY08	14.39	59.25
FY09	8.42	48.91
FY10	9.59	66.82
FY11	3.41	32.13
FY12	5.20	19.21
Total:	**66.66**	**351.69**

Annex 5. Beneficiary Survey Results

5.1 The evaluation team surveyed project beneficiaries, municipal authorities and Micro-catchment Management Councils (COGEMs) in eight municipalities and micro-catchments in the project area. In the case of beneficiaries, the process was organized but not structured, i.e., seeking to measure relative responses for data collection purposes; responses of COGEM members were quantified. The scope of enquiry covered: (i) social organization; (ii) technical assistance and rural extension (ATER); (iii) the productive and environmental aspects of subprojects; and (iv) an assessment of the COGEMs.

Meetings with Beneficiaries

5.2 **Social organization:**

- Forms of local organization pre-existed the project - productive, religious and social - but in many cases were described as in difficulty or moribund. Opinion remained strong however, that organization was empowering and enabled, among other things, a solid front for representations to authorities and specifically, for accessing public/other resources and training, and more generally programs, projects and public policies.
- Beneficiaries viewed the COGEMs as a project-sponsored framework for achieving these same goals, with the added element of its environmental responsibilities. The COGEM, even with its specific project responsibilities, was seen as fundamentally a mediator between local groups and external agents and an instrument for variously, rescuing or reviving diverse local forms of organization/collective action.
- Limitations on the evolution of beneficiary/farmer associations and COGEMs tended to align around the logistical difficulties encountered by farmers in attending physically, and time aspects, considered more a reflection of their underlying lack of interest.
- COGEMs initially encountered skepticism due to farmers' inability to understand the project methodology and the manner in which resources were transferred, reinforced by past experiences with rural credit and public programs. This disbelief, along with the protracted period before resources actually reached farmers (2009), plus COGEM members' difficulties in physically monitoring/overseeing beneficiaries, were factors which weakened farmers' adherence to their Council.
- Even so, farmers viewed the COGEM as a training instrument, a conduit to information, to accessing technical assistance and to learning new environmental and agricultural/livestock practices.
- Farmers' believed that the future of COGEMs depended on efforts to stimulate farmer participation, more regular meetings, and reorganization of some COGEMs, interpreted as farmers' demand that the project continue. (Such demand was formally presented at two regional forums of COGEMs in late 2011).
- The overall conclusion from farmers' opinions was that the COGEMs remained at an early stage of development, with potential to organize and catalyze local groups but lacking detail as to their future form and function.

5.5 **Technical assistance and rural extension (ATER):**

- In half the micro-catchments surveyed, EMATER-Rio was one among several technical assistance providers which included the Brazilian Service for Support to Small Business (SEBRAE) and the Ministry of Integration; municipal mayors; commercial agricultural

input and other private providers. Interaction between Rio-GEF and other programs, projects and public policies was common.

- Farmers were aware of the benefits of partnerships, in part to allay their concerns about their micro-catchments, their future and the likelihood of another project;
- Farmers observed that the Rio/GEF provided three major benefits in relation to technical assistance services: their improvement; their incorporation of environmental concerns; and, farmers' greater access to these services per se;
- The project was an opportunity for farmers to have closer relations with EMATER/Rio technicians, while at the same time demanding better quality and more intensive services. Losses (e.g., in Kit Galinha and seedlings subprojects) were seen as indicative of fragile services needing improvement, and also needing greater engagement of farmers in such processes. In other cases, the presence/involvement of the ATER technician was fundamental to the credibility of the new practices being promoted;
- In many cases, farmers had had little if any contact with ATER services and the Rio/GEF was their first experience; this initial contact was critical for their sense of future access to training, and new projects/initiatives and to their growing concerns about and ability to judge ATER quantity and quality and demand better.

5.6 **Subprojects: Productive and Environmental**

- The project's "interface" with environmental concerns was a constant in all micro-catchments surveyed; riparian forest restoration, protection of water sources and access to information on the Forest Code were specifically mentioned as innovations;
- The COGEM was described as an instrument for environmental action and as stimulating environmental awareness and innovation;
- Future demands of farmers interviewed stressed sanitation, water quality and quantity, and garbage management. The project was seen as having notable impact in the latter via the separation of organic waste for composting and its subsequent use for fertilization. Septic tanks and sanitation systems were stressed for future programs/projects;
- Farmers in many micro-catchments had grasped the importance and urgency of the project's environmental goals more broadly, while in others, farmers' still-fragile engagement was evident;
- Farmers especially noted the increases in productivity and income generation stemming from Kits Galinha Caipira and the crop rotation investments; farmers were well aware of the relationship between the new practices adopted under Rio/GEF and their improved productive situation, e.g., drying equipment associated with coffee cultivation; pasture rotation and forage equipment associated with better milk production;
- Farmers saw the project as improving local conditions and promoting farmers' decisions to remain in rural areas and not migrate; this was cited as needing more intensive action/additional projects to reverse the broader tendency to migrate.

<u>Meetings with the COGEMs</u>:

5.7 **Social organization:**

- Among the 25 municipalities where meetings were conducted with COGEMs, 64% related difficulties in organizing social groups including the total absence of local organizations such as associations and cooperatives. Only six municipalities had prior experience with such organizations and only four reported good farmer participation;

- Nine municipalities 36%), among those reporting previous failings, said there were now both associations and coops. Local social organization had increased with farmers participating and the COGEM was described as a motivating element; and,
- Some 14 municipalities (56%) stressed the need for strengthening of COGEMs and other forms of social organization, seen as intermediaries in securing new resources for the micro-catchments.

5.8 **Technical assistance and rural extension (ATER):**

- In 12 of the 25 municipalities (48%), ATER services had not existed prior to the project; at the time of the consultations with the COGEMs, such services were freely available in 10 municipalities and still being established in the remainder.
- Some 36% of COGEMs reported no partnership arrangements prior to the Rio/GEF.
- Eight municipalities expressed lack of confidence in the grant-based nature of a Rio/GEF-type project, (presumably its sustainability in terms of ongoing resources or lack of understanding that it was a demonstration/pilot operation);
- There was a general sense that the quality and quantity of ATER had improved, and that more intensive services were needed, along with training;
- The project was seen as a mechanism for greater access to and intensification of ATER, directly linked to and the avenue to satisfying demand for continuation of environmental activities, greater organization of beneficiaries, their training, improved local productive activities and access to other projects and programs.

5.9 **Subprojects: environmental and productive:**

- About 40% of COGEMs stated that environmerntal awareness did not exist priot to the project. Many problems were cited: indiscriminate use of agro-chemicals and random disposal of containers; lack of garbage collection; poor or no sanitation and poor water quality/quantity;
- The project had increased environmental awareness in 84% of municipalities surveyed; 36% noted better water quality, attributed to source protection activities; 68% favorably evaluated activities in re-forestation, soil conservation, use of organic fertilizer, reduced use of agro-chemicals, and activities to inculcate safe disposal of chemical containers. Municipalities noted the positive, motivating role of the COGEMs in these outcomes;
- 88% of municipalities surveyed called for the continuation of environmental awareness-raising and SLM activities and for carrying through on the Community Conduct Statutes (ECC);
- Municipalities recalled past practices prejudicial to soil conservation, to sustaining small farmers on the land, to adequately feeding livestock and to dairy production;
- Some 56% of surveyed municipalities reported that diversification of production (Kit Galinha, Honey Kit, fish farming, seedling production, and fruit cultivation) as well as new techniques for fertilization, esterqueira and pasture rotation were associated with increased farmer incomes;
- The project's role in introducing and intensifying the subject of the environment was acknowledged; via actual on-the-ground practices and through the promotion of environmental conservation; demand appeared strong for a continuation of such activities;

Conclusions

- Social organization, successful productive and environmental outcomes and access to technical assistance were the most noted achievements acknowledged by both beneficiaries and the COGEMs;
- The potential for scaling up these successful activity streams was widely confirmed.

Annex 6. Stakeholder Workshop Report and Results
(if any)

N/A

Annex 7: Summary of Borrower's ICR and/or Comments on Draft ICR

A. Executive Summary of Borrower Completion Report (Informal Translation)

Project Description

7.1 The project "Integrated Management of Agro-ecosystems in the North-Northeast Fluminense (Rio Rural/GEF)" was a demonstration effort and considered the water micro-catchment as a the unit for planning, interventions and monitoring, stimulating the adoption n of approaches to the Sustainable Management of Natural Resources (MSRN) and Integrated Management of Eco-systems (MIE)[42] in productive processes, with a view to integrating global efforts to conserve critical eco-systems.

7.2 The project was developed by the State Secretariat for Agriculture and Livestock of Rio de Janeiro (SEAPEC), through its Superintendency for Sustainable Development (SDS). The World Bank was the implementing agency through Credit Agreement nº TF 054999 signed between the World Bank and the Government of the State of Rio de Janeiro. According to the PAD, the total projected investment was US$14.95 million, of which US$6.75 million financed by the Global Environmental Facility (GEF), US$6.31 million from the State Government, and US$1.89 million from co-financiers. The project had four components and 10 subcomponents. It became effective in late 2005 and closed at end-November 2011.

7.3 The central problems requiring solution, to which the project sought to contribute were: land degradation, reduced availability and quality of water resources, and loss of biodiversity, the consequence of deforestation of primary forest for charcoal production, expansion of family agriculture and planting of extensive pastures. Associated with the degradation of eco-systems was the impoverishment of the populations in the micro-catchments and consequent rural exodus.

7.4 The Project Development Objective (PDO) was "promote an integrated eco-system management (IEM) approach to orientate the development and implementation of sustainable natural resources management practices (MSRN) in the North and Northeast regions of the State of Rio de Janeiro. The Global Environmental Objectives (GEO) were: (i) confront threats to biodiversity of global importance; (ii) reverse soil degradation in agricultural landscapes; (iii) increase carbon sequestration; and (iv) increase awareness at all levels regarding the adoption of an IEM approach to natural resources management.

Methodology

7.5 The methodology is based on evidence from the concept and design of the project, its implementation and effects, results and impacts, as set out in the Log Frame, and conducted in a participatory manner, seeking to build a consensus concerning what was achieved and the lessons learned. Specifically from the point of view of beneficiaries, the methodology was divided into two parts: the first is developed based on field work conducted in January 2012 when interviews were done with beneficiaries in eight selected micro-catchments; the second part is based on material produced by the representatives of the COGEMs during municipal meetings of those Councils in December 2011.

[42] Equivalent to Sustainable Land Management (SLM) and Integrated Eco-system Management (IEM) respectively.

7.6 The economic-financial and cost-effectiveness evaluation of the project's environmental impacts took the following methodological elements into account: (i) use of the Internal Rate of Return (IRR) to evaluate economic results; (ii) use of the cost-effectiveness approach (GEF, 2005), to evaluate environmental impacts. Each subproject was considered as a case study and some environmental impact results were extrapolated for all subprojects and the resources applied. The evaluation considered the following types of subprojects: (i) Pasture Rotation, 6 subprojects; (ii) Kit Galinha Caipira, 4 subprojects; (iii) Water Source Protection, 2 subprojects; and, (iv) Honey Production, 4 subprojects, a total of 16 subprojects.

Project Implementation

7.7 Project implementation was influenced by various factors which affected the flow of planned activities, some of which were under the control of the management team, of which the following were notable: (i) initial difficulties provoked by delays in the release of counterpart resources motivated in part by the fact that the project was initiated between one State administration and another. The final and initial periods of governments are characterized by scant budget resources, both on the part of the outgoing administration in its final year, and the new administration which needs time to internalize the project and "adopt it" in its policy agenda and financial priorities. Associated with this delay, the Bank's release of GEF resources only occurred one year after project effectiveness; (ii) the US$/Real relationship was unfavorable by around 40% during project execution, prejudicing the achievement of targets initially proposed; (iii) some targets were very ambitious and the absence of procedures to revise them during implementation influenced what was actually achieved; (iv) other factors such as methodological innovation, complexity of the institutional structure/framework and delayed internalization of the project both at the local and institutional levels and even the time needed to prepare project execution teams also influenced to varying levels the implementation of distinct components of the project. Even when these initial difficulties had been overcome and the project was launched, the period remaining, including the extension phase, was too short to consolidate all the expected results both from the perspective of innovative mechanisms as well as results and impacts at the micro-catchment level (MIE/MSRN).

Monitoring and Evaluation System

7.8 Complete monitoring: The monitoring and evaluation system was implemented in a complete form (including technical, environmental and socio-economic indicators) in three micro-catchments representative of the project regions, and in a participatory form in all micro-catchments benefited. It generated important results, noting in particular, the monitoring of biodiversity where the best results occurred such as: (i) monitoring of pollinizing species (especially bees and wasps); (ii) importance of the presence of forest remnants associated with pollinizing species (bees and wasps); (iii) identification and study of forest re-birth in the monitored micro-catchments and their importance for biodiversity preservation; (iv) production of brochures on flora and biodiversity in monitored micro-catchments, for public dissemination; and (v) publication of documents and studies and participation in events to divulge project results and biodiversity monitoring. However, some deficiencies needed to be overcome, especially in cost-benefit information, greater participation of beneficiaries and greater and more rapid feedback of information to the micro-catchments. These aspects led to an evaluation of complete M&E as Moderately Satisfactory, according to GEF criteria.

7.9 Participatory monitoring: Parallel to complete monitoring a system of participatory monitoring was designed to be implemented in all project micro-catchments. This was designed so that the actors directly involved in the project at the local level (beneficiaries, COGEM and technical executors) could supervise/accompany project results of subprojects through quasi-

quantitative environmental and socio-economic indicators, and simple data collection tools. In contrast to complete monitoring, which proved to be high cost and low return of information especially for soil and water, participatory monitoring demonstrated itself as a highly useful tool. The information generated permitted the detection of important subproject results which were fundamental to give sustainability to cost-effectiveness evaluation of environmental impacts of the project and economic results, such as: (i) soil quality; (ii) availability of areas for biodiversity conservation associated with pasture rotation; (iii) availability of water associated with water source protection subprojects; and, (iv) milk/dairy production. Aspects to be improved in participatory monitoring relate to the need for greater dissemination and use of information generated to motivate and mobilize residents of micro-catchments.

Project Results

7.10 In many aspects, the project was unique in the regions where it was operational, most notably in the following: (i) the process of planning and intervention in water micro-catchments; (ii) establishment of a local management structure (COGEM), providing empowerment and introducing transparency; (iii) establishing innovative mechanisms such as incubators, telecentros and other; (iv) integrated actions with environmental entities, NGOs and partners of SDS which contributed to the creation of the PSA decree.

7.11 Apart from the creation of the law in question, there was continuity in the discussion which resulted in contributions to the State Climate Change Plan. This initiative is a lead in to the Rio + 20 which will occur in June 2012. In addition, there is an effort to make sure that good agricultural practices can be linked by the Project Executive Secretary to the mitigation of the effects of climatic change.

7.12 In this vein, a partnership was signed in 2009 between the Committee for Sao Joao Lagos Committee and the Rio-Rural Program, resulting in the implementation of the Fund for Socio-environmental Best Practice (FUNBOAS). FUNBOAS, created by Committee in 2007, is a mechanism for remunerating farmers who contribute to the conservation of the regional environment. A large part of the funds resources are derived from charges for water usage in the municipalities of the Lagos Region and the objective is to gain the commitment of rural producers, managers and other social actors with conservation and sustainability policies. Since its creation, the Good Practices Fund has ransferred R$60,000 to 25 collective projects and six individual, using the methodology of planning, mapping and selection criteria of the Rio Rural Program. The projects are included in the PIDs (Individual Development Plans) and the PEMs (Micro-catchment Development Plans). Activities incentivated by the Fund include rural sanitation, local road repairs, agro-forestry systems, protection of water sources and riparian forests, pasture rotation, coffee processing and the fencing of Permanent Preservation Areas (APPs). For the implementation of individual projects, farmers receive R$5,000 and technical assistance.

7.13 Throughout the project's development, as results were emerging, important local initiatives were being developed/coming on stream within the institutional/government sphere, derived from project results and demands, of which the following are noted: (i) establishment of Special Nature Protection Reserves (RPPN) in the Municipality of Varre-Sai; (ii) adoption of GEF criteria in Catchment Committees. At least one committee is supporting activities in a micro-catchment in its area, replicating the project methodology; (iii) more dynamic municipal councils with new roles; (iv) creation of the PSA Decree incorporating project experiences; (v) training of COGEMs enabled improvements in formal micro-catchment associations (leadership renewal), and administrative overhaul; and (vi) through the incubator methodology, structured business groups were established.

7.14 Within the institutional sphere, EMATER held a public bidding to assign new technicians to the project. It was found, during interviews with technicians when the case studies were being prepared, that there had been change in the perception in relation to planning and the manner for conducting rural extension activities in communities. There was more proactive activity using the project methodology. Still in the institutional area, the project promoted the incorporation of participatory research into PESAGRO's routines, improving EMATER's technical assistance strategy for community organizations through the creation of IRS. The activities of public and private institutions, government and non-government, in promoting sustainable development of rural areas were improved (DPGE, INEA, CI, SOS Mata Atlântica, Secretariat for Health, Secretariat of Education, etc.).

7.15 Among the main impacts and positive aspects of the project, the following are noted: (i) improved governance from the integration of multi-sector institutions (health, education, environment, DPGE) and by strengthening local organizations (municipal councils, associations, COGEMs, etc.); (ii) self-management of natural resources – increase in the perception of farmers, women and young people for local, regional and global environmental problems, and of the adoption of integrated management practices (IEM and SLM) in productive systems; (iii) technological innovation – micro-catchment simulation – supporting decision-making for sustainability; (iv) financial sustainability – leveraging of public and private resources and design of a system for financial sustainability; (v) inclusion of biodiversity conservation in the agenda of services provided by farmers/productive units and integration of project activities in the State PSA Program; (vi) contribution to reducing threats to biodiversity of global importance through the generation and dissemination of knowledge about the Atlantic Forest of the North-Northwest Fluminense and environmental services provided by the project to productive systems; (vii) participatory construction of commitments assumed collectively by rural communities adopting the micro-catchment and not rural properties as the best and most balanced mechanism for environmental conservation/management (ECC); (viii) potential for integration of conservation activities in carbon markets; and, (ix) insertion in/integration with public policies.

Achievement of Global Environmental Objectives (GEO)

7.16 The achievement of the Global Environmental Objectives (GEO) and project Development Objectives (PDO) was satisfactory, even though some targets associated with these were not fully achieved, due to the factors noted earlier which influenced project implementation. In regard to the Key Indicators associated with the project objectives, there was an achievement level averaging 104%; in 47% of the indicators, the achievement exceeded 100%. The erosion reduction indicator (besides being over-dimensioned) was not monitored in subprojects associated specifically with soil conservation practices, where there was assuredly a reduction in erosion especially associated with the construction of rainwater capture facilities and surrounding canals, based on reports by farmers visited (and especially in coffee fields). The target related to implementation of sustainable, biodiversity-friendly agricultural practices which improved the stability of the soil structure were partially reached, in part because they were over-dimensioned in relation to the resources available to support such activities, and due to the demonstration nature of the project.

7.17 The following results related directly with project objectives, should be noted: (i) biodiversity conservation generating knowledge which was disseminated and supported the implementation of concrete activitiespromoting the IEM approach through the adoption of sustainable practices in rural areas, generating environmental services, conservation of small forest fragments, among others; (ii) recuperation of water resource recharge and riparian forest areas, and water source protection, with positive impacts on water resources; (iii) adoption of a management system which led to improved soil quality – physically, chemically and biologically

and to carbon storage; and, (iv) improved income and quality of life of micro-catchment residents beneficiting from the project.

Results by Component

7.18 Considering the resources programmed by the PAD, Component 1 applied 142.31% of the resources projected and reached on average 80% of programmed targets. Component 2 applied 101.52% of programmed resources and reached an average 86% of its expected physical targets. Component 3 applied 62.02% of expected resources and reached an average 131% of targets, while Component 4 applied 119.69% of resources and reached an average 125% of targets. Execution between components was heterogeneous, however, reallocation of resources and adjustments to activities permitted optimal use of resources and balanced expenditures.

7.19 Results of the components were reached in a differentiated manner, having been influenced at different levels by the factors affecting implementation; thus, components dependent on external resources (credit) had greater difficulty in achieveing their targets due to the unfavorable US$/Real relationship. The failure to review targets also affected results to different extents.

Partnership Strategy

7.20 To strengthen the project's institutional platform/base, partnerships were established at the municipal, state, federal and international levels, with governmental and non-governmental, multi-sector agencies such as: EMATER, PESAGRO, State Secretariats of Health, Environment, Education and Economic Development, Public Defender's Office, the State Center for Data Processing, municipal Secretariats of Agriculture and Environment, EMBRAPA, INEA, Water Catchment Committees, producer associations, cooperatives and NGOs. Worth noting is the innovative partnership with international environmental NGOs. This initiative promoted improvement in conservation strategies and the more efficient application of resources and scientific knowledge to effect conservationist activities in private areas.

7.21 Even within a complex institutional environment, with limited experience of the project methodology and bearing in mind the pilot character of this initiative in the regions of intervention, the management team adequately led the process, conducting an ever-improving institutional integration and with other initiatives and programs to be continued under the Rio Rural/BIRD. Even so, the lessons learned from this and other projects indicate the need to establish agreements and responsibilities of each partner institution as early as the design stage and preparation stage of the project, including specific targets and resources.

Beneficiaries' Evaluation of the Project

7.22 From visits and direct interviews with beneficiaries: (i) in the total micro-catchments studied, references were made to three dimensions within which the project would be acting: social organization, environmental and productive; (ii) from all interviews conducted, it can be said that the Rio Rural/GEF is considered by interviewees as an instrument for intervention in the environment; (iii) apart from the panorama encountered, the activities of Rio Rural/GEF can be considered as, similar to social organization, promoters of the urgency of the environmental theme in the micro-catchments, due mainly to the association between the project and the micro-catchments; (iv) the Rio Rural/GEF project was noted as an instrument of intervention capable of promoting improvement in local consitions, considering its environmental and productive activities, which would stimulate the permanence of the farmer in his rural setting.

7.23 In regard to the results of municipal evaluations of COGEM members: (i) the Rio Rural/GEF project can be considered as a mechanism for accessing and intensifying technical

assistance, this directly linked and one of the possible pathways to carry out the demands presented, such as: continuity and intensification of environmental activities, increased organization of farmers, their training, improved local productive activities and access to other projects, programs and public policies, as well as the continuity of Rio Rural/BIRD; (ii) in regard to the present situation with the Rio Rural/GEF, the increased environmental awareneness was evident in 21 municipalities (84% of the total surveyed); (iii) for the future, 22 municipalities (88% of the total surveyed) expect/hope for continuity of environmental awareness-building and sound use of natural resources, and asked for more activities of an environmental character; (iv) references to the results of productive activities were made in meetings with the COGEMs, through their association with increased income of beneficiary farmers.

Economic-Financial Evaluation and Cost-effectiveness of Environmental Impacts

7.24 From this evaluation it was concluded that, based on the subprojects analyzed by the four case studies, the economic results and positive environmental I mpacts are consistent with the initial project hypothesis.

7.25 In regard to the economic results, one notes the contribution made by the subprojects to the direct, sustainable improvement in income (from increased productivity with low costs), and indirectly from the opportunity cost and cost-effectiveness of environmental impacts. In regard to the positive environmental impacts, one notes the important contribution to preservation of biodiversity, from the regeneration of native forest associated with the environmentaql projects (as in the case of protection of springs) and indirectly through the release of area for biodiversity preservation associated with productive subprojects, as in the case of pasture rotation. One can also observe other important environmental results such as improved soil quality from increased organic matter and nutrients such as phosphorus and potassium, storage of carbon and increased availability and quality of water.

Performance of the World Bank and Counterpart

7.26 The performance of the World Bank during preparation and appraisal of the project was Satisfactory, despite changes in project management. The supervision process of the Bank was satisfactory. Ten supervision missions were conducted over the five years of project execution and in the period of project extension. Interventions by the supervision team at times and on themes crucial to project execution were opportune.

7.27 The performance of the State Government was considered satisfactory, because there was political will to support the preparation and implementation of the project. Even with the election-derived changes of government, the project management team (SEP and SER) was maintained, which was fundamental to the project's not suffering any loss of continuity and changes to its basic path.

7.28 Project management, through its structure was satisfactory and achieved its goals within its established responsibilities, leading to timely actions and driving the project to its completion. Maintenance of the same team throughout the project was a positive factor which contributed to a permanent flow of activities. Another notable factor in the activity of SEP was the establishment of management centers (nucleos) responsible for the large project themes, facilitating supervision and guiding the execution teams.

7.29 The performance of executing institutions was also satisfactory with the actions of EMATER and PESAGRO fundamental to the results obtained by the project due to their evolution throughout project execution and their ability to overcome institutional difficulties in terms of the availability of technical personnel and institutional structure.

Financial Execution

7.30 Based on PAD data (2005), for its execution the Rio Rural/GEF project had US$6.75 million of GEF resources and US$6.31 million in State Government counterpart. These resources were distributed among the components and subcomponents and categories of expenditure. Some 98% of total available resources were applied to the project, demonstrating the project's ability to overcome problems encountered in the initial phase of the project, since up to 2008 only 25% of project resources had been used. The qualification of mechanisms of supervision and control over project activities and adjustments to technical and administrative procedures, aligned with political will, permitted the project to overcome difficulties in aligning and making compatible State structures and procedures with those of the Bank. Extension of the project for one year, besides contributing to achieving most project targets and project objectives, permitted the project's financial performance to improve.

7.31 The State Government counterpart resources projected by the PAD at appraisal were around US$6.31 million. During project execution some US$8.43 million, reflecting the importance of the project to the State Government.

7.32 In regard to execution by component, considering the resources programmed in the PAD, Component 1 applied 142.31%; Component 2 101.52%; Component 3 62.02%; and Component 4 119.69%. Execution among components was heterogeneous but, as noted above, reallocation of resources and adjustments to activities permitted optimal use of project resources and balanced expenditures.

7.33 The value of co-financing foreseen by the PAD was US$ 1.89 million, provided from diverse sources. In practice, co-financing resources amounted to approximately US$3.0 million. It should be noted that at the time of preparation of this report, a portion of these resources was still being applied to project activities. Exceeding by 59% the co-financing initially programmed, demonstrates the great capacity of the project to leverage resources, its replicability and efficiency in integrating with other initiatives and state and federal public policies, contributing to greater financial sustainability.

Lessons Learned

7.35 From the lessons learned, the following should be noted:

(i) The fundamental need to plan for the guaranteed provision of counterpart resources and their release in a continuous/smooth and timely manner to permit the implementation of diverse activities;

(ii) The need to seek greater synchronization between the time expended in State administrative routines with that of the agricultural calendar, because delayed relaease of resources, which may be tolerable for non-agricultural activities, can in the case of agricultural activities mean the loss of a whole year due to the seasonality of production cycles;

(iii) The use of methodologies which favor participation, such as the DRP, is of fundamental importance for the identification, discussion and prioritization of problems and demands guaranteeing in this way greater permanence in the adoption of the practices implemented;

(iv) During the planning and design stage of the project, there needs to be adequate time to define in a realistic manner, the targets, schedules and periods, providing greater implementation efficiency and avoiding exhaustion and loss of interest;

(v) The system of monitoring and evaluation is an integral part of the project's day to day operations and as such should generate, in a participatory manner, the information for timely decision-making to facilitate management and to support local planning, cost-effectively. Neste

sentido o monitoramento participativo foi um importante aprendizado do projeto a ser incorporado no Rio Rural/BIRD;

(vi) The motivational role, more than executive, the use of methodologies which favor participation, the pre-eminence of the project's technical strategy and consistency with project objectives are indispensable attributes for greater success of technical assistance and rural extension.

B. Letter from Client commenting on the Bank's ICR:

GOVERNO DO ESTADO DO RIO DE JANEIRO
Secretaria de Estado de Agricultura e Pecuária

Niterói, 21 de maio de 2012

A Sra. Marianne Grosclaude

Economista Agrícola Sênior da Equipe de Agricultura e Desenvolvimento Rural para a América Latina do Banco Mundial

Prezada Senhora,

Inicialmente gostaríamos de agradecer ao Banco Mundial pela disponibilização da minuta do IMPLEMENTATION COMPLETION AND RESULTS REPORT (ICR) ou Relatório Final de Implementação do Projeto "Gerenciamento Integrado de Agroecossistemas em Microbacias Hidrográficas do Norte-Noroeste Fluminense (Rio Rural/GEF)", fruto do Acordo de Doação nº TF 054999 firmado entre o Banco Mundial e o Governo do Estado do Rio de Janeiro, cujo encerramento ocorreu em 30 de novembro de 2011.

Salientamos que o referido relatório, de um modo geral, reflete a trajetória do projeto Rio Rural/GEF, no que tange aos resultados alcançados, esperados e não esperados, tangíveis e intangíveis, bem como as potencialidades e dificuldades desencadeadas durante a execução, sendo coerente com o relatório elaborado pela equipe do Projeto, o que demonstra sintonia entre as análises realizadas pelo Banco e o Estado.

De forma bastante simplificada, considera-se que a principal divergência entre os relatórios se refere à avaliação final da performance, tanto do Banco Mundial quanto do Governo do Estado, as quais foram classificadas como satisfatória do ponto de vista do Projeto, e moderadamente satisfatória do ponto de vista do Banco. No entendimento do Governo, as deficiências e desafios enfrentados na fase inicial do Projeto não se diferenciaram das experiências de outros projetos similares apoiados pelo Banco nas regiões Sul e Sudeste do país. O Banco tem ciência de que a abordagem participativa e sustentável de gestão em microbacias requer procedimentos preparatórios de consultas públicas para o envolvimento de atores em diferentes esferas e níveis, planejamento das ações e treinamentos específicos das equipes executoras, aprimoramento de processos e procedimentos e inovação tecnológica, incorrendo inevitavelmente em um arranque lento para a grande maioria desses projetos. No decorrer da implementação do Projeto, as dificuldades foram superadas pelo esforço conjunto das equipes, fazendo com que as estratégias acordadas lograssem um alcance satisfatório e, em alguns casos, altamente satisfatório de seus objetivos e resultados. Isto denota a evolução na vontade política do Estado, ao longo da execução do projeto, o permanente apoio da equipe do Banco Mundial e a grande dedicação da equipe de gerenciamento e das instituições executoras e parceiras, refletidas na resposta positiva dos beneficiários aos estímulos do Projeto.

O Projeto enfrentou importantes desafios e teve que superar obstáculos fortes motivados pelo estabelecimento de algumas metas ambiciosas em relação ao seu caráter piloto e demonstrativo; atrasos na liberação inicial de recursos de contrapartida do Estado e da liberação dos recursos GEF e; relação R$/US$ desfavorável. Além destes, outros fatores

como inovação metodológica, complexidade da estrutura institucional e demora na internalização do projeto tanto no âmbito local como institucional e ainda o tempo necessário para preparar as equipes de execução também influenciaram em diferentes níveis a implementação dos distintos componentes do projeto.

Além da superação das dificuldades supracitadas, o projeto logrou importantes resultados e impactos dos quais se destacam: (i) aprimoramento da governança pela integração de instituições multisetoriais e pelo fortalecimento das organizações locais; (ii) aumento da percepção dos agricultores, mulheres e jovens rurais para os problemas ambientais locais, regionais, estaduais e globais e da adoção do manejo integrado de práticas de MSRN e MIE nos sistemas produtivos; (iii) conservação da biodiversidade gerando conhecimentos que foram disseminados e apoiaram a implementação de ações concretas atingindo a promoção de uma abordagem de MIE através da adoção de práticas sustentáveis em áreas rurais, gerando serviços ambientais, conservação de pequenos fragmentos florestais, dentre outros; (iv) recuperação de áreas de recarga e matas ciliares e proteção de nascentes, com impactos positivos sobre os recursos hídricos; (v) adoção de sistema de manejo que levaram à melhoria na qualidade do solo, do ponto de vista físico, químico e biológico e ao armazenamento de carbono; (vi) melhoria da renda e da qualidade de vida dos moradores das microbacias beneficiados com o projeto; (vii) comprovada sustentabilidade financeira por meio da alavancagem de recursos públicos e privados e desenho do sistema de sustentabilidade financeira; (viii) construção participativa de compromissos assumidos coletivamente pelas comunidades rurais adotando a microbacia e não as propriedades rurais como como mecanismo mais justo e equilibrado de adequação ambiental (ECC).

No âmbito institucional destaca-se a performance das instituições executoras em especial da atuação da Secretaria Executiva do Projeto (SEP), da EMATER e da PESAGRO, a qual foi fundamental para os resultados obtidos pelo Projeto. Estas instituições apresentaram importante evolução ao longo da execução com a superação de dificuldades institucionais do ponto de vista da disponibilidade de técnicos e da estrutura institucional, bem como com a incorporação das novas metodologias no seu dia-a-dia, visando o aprimoramento de procedimentos e processos, e a introdução de uma abordagem descentralizada, democrática, participativa, integrada e de autogestão junto aos agricultores e suas famílias. Esse aprimoramento propiciou ainda uma melhor coordenação e integração com instituições parceiras governamentais e não governamentais e com setores estratégicos como ambiental, saúde, educação e cultura, para uma ação mais efetiva e eficiente em prol do Desenvolvimento Rural Sustentável. Essa integração gerou tanto resultados tangíveis significativos em termos de alavancagem de recursos financeiros adicionais de co-financiamento, quanto ações mais duradouras visando ao estabelecimento de políticas púbicas que viabilizassem a sustentabilidade além do tempo do Projeto. Nesse sentido, o Projeto foi essencial ao realizar ações demonstrativas, instrumentalizar e fomentar a participação dos atores do setor rural na discussão de normas e conceitos que culminaram na criação de sistemas de pagamento por serviços ambientais no âmbito estadual e municipal. Além disso, as ações do Projeto possibilitaram estabelecer uma base referencial teórica para a determinação de metas ao Plano Estadual de Mudanças Climáticas, como forma de contribuição do setor agropecuário à mitigação dos efeitos nocivos dos gases de efeito estufa no ambiente.

Esse ambiente mais favorável estabelecido em diferentes níveis e setores do Estado, bem como a solidificação da abordagem metodológica e o aprimoramento da capacidade institucional elevou substancialmente a confiança do Banco Mundial nas estratégias gerenciais e técnicas da SEAPEC, demonstrada na aprovação de uma nova operação de crédito no decorrer da implementação do Projeto, com vistas à expansão e ampliação ações de ATER e Pesquisa para a execução do Projeto Rio Rural/BIRD, atualmente em execução.

Vale destacar ainda que foram aprendidas importantes lições na fase GEF as quais estão sendo aplicadas na execução da fase BIRD, buscando com isto superar as deficiências apresentadas e evoluir para uma ação mais efetiva do Estado na condução das políticas públicas relacionadas com o setor rural. Destas lições, destacam-se: (i) necessidade de planejar para garantir os recursos de contrapartida; (ii) necessidade de buscar maior sintonia entre os tempos gastos nas rotinas administrativas do Estado com os dos calendários agrícolas; (iii) na fase de planejamento e desenho do projeto, deve haver tempo hábil para definir com segurança e realidade as metas, cronogramas e prazos, dando maior eficácia na implementação e evitando desgastes; (iv) o sistema de monitoramento e avaliação é parte integrante do dia-a-dia do projeto e como tal deve gerar, de forma participativa, as informações para a tomada de decisão em tempo oportuno para facilitar a gestão e para apoiar o planejamento local, a custo-benefício favorável. Neste sentido o monitoramento participativo foi um importante aprendizado do projeto a ser incorporado no Rio Rural/BIRD; e (vi) o papel animador, mais do que executor, o uso de metodologias que privilegiam a participação, o domínio da estratégia técnica do projeto e a consonância com os seus objetivos são atributos indispensáveis para o maior êxito da assistência técnica e extensão rural.

Finalmente, temos uma expectativa muito positiva quanto ao fortalecimento e consolidação da relação com o Banco Mundial, notadamente no âmbito do Projeto Rio Rural/BIRD que, para lograr os resultados a que se propõe, está gradativamente aprimorando o aprendizado do Rio Rural/GEF inserindo conceitos estratégicos como a intensificação sustentável da agricultura, adequação à legislação sanitária e ambiental e às normas de conformidade, formação e fortalecimento de redes e o estabelecimento de alianças produtivas e contratualização de vendas, visando o acesso mais eficiente e efetivo dos produtos da agropecuária fluminense, em especial da agricultura familiar, aos mercados consumidores, para o qual o Governo do Estado do Rio de Janeiro espera contar com o fundamental apoio do Banco ao longo de sua trajetória.

Sendo o que havia a ser tratado, e, mais uma vez, agradecendo o apoio que nos foi dispensado, despedimo-nos.

Atenciosamente,

ALBERTO MORATI
Subsecretário de Estado

NELSON T. ALVES FILHO
Secretário Executivo do Projeto

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Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

N/A

Annex 9. List of Supporting Documents

Project Appraisal Document

Credit Agreement

Operational Manual

Social Assessment

Environmental Assessment

Environmental Management Plan

Supervision Aide Memoires

Implementation Supervision Reports (ISR)

Procurement Post-reviews

Financial Management Supervision Reports

Audit Reports

Quality at Entry Assessment (QEA7)

Baseline diagnosis of the main socio-economic, environmental and legal issues affecting the NNWF (2006)

Mid-term Review Study (FEALQ 2010)

Client's Final Evaluation Report (SEAPEC/SDS 2012)

Final Consultant's Report with Recommendations on the Monitoring of Approvals for Projects with Joint Financing, and New Possibilities for Capturing Resources, D. Versari/SEAPEC/SDS (2011)

MAP IBRD: BRA39119