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**IMPLEMENTATION COMPLETION AND RESULTS REPORT
(GEF Grant No. TF-55471)**

ON A

GLOBAL ENVIRONMENTAL FACILITY GRANT

IN THE AMOUNT OF US\$ 4.3 MILLION

TO THE

REPUBLIC OF RWANDA

FOR A

INTEGRATED MANAGEMENT OF CRITICAL ECOSYSTEMS PROJECT

December 27, 2011

Environment Unit
Sustainable Development Department
Country Department 2, Rwanda
Africa Region

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ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
APL	Adaptable Program Loan
BIS	Biodiversity Information System
CAS	Country Assistance Strategy
CBMP	Community-based Management Plan
CDC	Community Development Committees
DDP	District Development Plan
DFID	UK Department for International Development
EDPRS	Economic Development and Poverty Reduction Strategy
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ENR	Environment and Natural Resources
EU	European Union
GEF	Global Environment Facility
GEO	Global Environment Objective
GIS	Geographic Information System
GIZ	German Agency for International Cooperation
GOR	Government of Rwanda
ha	hectare
ICR	Implementation Completion Report
IDA	International Development Association
IEM	Integrated Ecosystem Management
IMCE	Integrated Management of Critical Ecosystems
ISR	Implementation Status Report
IT	Information and Technology
KPI	Key Performance Indicator
LVEMPII	Lake Victoria Environmental Management Project Phase 2
M&E	Monitoring and Evaluation
mil	million
MINAGRI	Ministry of Agriculture and Animal Resources
MINELA	Ministry of Environment and Lands
MINIRENA	Ministry of Natural Resources
MINITERE	Ministry of Lands, Environment, Forestry, Water and Mines
MTR	Mid-Term Review
NGO	Non-Governmental Organization
NRM	Natural Resource Management
PAD	Project Appraisal Document
PDO	Project/program Development Objective
PEI	Poverty and Environment Initiative
PMU	Project Management Unit

PRSP	Poverty Reduction Strategy Paper
PV	Present Value
RBIS	Rwanda Biodiversity Information System
REMA	Rwanda Environmental Management Authority
RFLR	Rwanda Forest Landscape Restoration (Project)
RNRA	Rwanda Natural Resources Authority
RSSP	Rural Sector Support Project
RSSP2	Rural Sector Support Project Phase 2
SIDA	Swedish International Development Corporation
SLM	Sustainable Land Management
SPIU	Single Project Implementation Unit
TTL	Task Team Leader
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WAMACO	Watershed Management Committees

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RWANDA

Integrated Management of Critical Ecosystems Project

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MAP

1. Project Context, Development and Global Environment Objectives and Design

1.1 Context at Appraisal

The Integrated Management of Critical Ecosystems (IMCE) project was originally designed as a GEF component of a larger IDA Rural Sector Support Project (RSSP). Midway through IMCE's implementation period, it was delinked from RSSP upon that project's completion, and it became a standalone project. This ICR concerns the IMCE, but necessarily provides the background context of its connection to the RSSP.

IMCE was one of the few GEF projects under Operational Program Twelve (OP12): *Integrated Ecosystem Management* (IEM) – a pioneer initiative for integrated approaches to global environmental challenges. Linked to an agricultural intervention, the GEF/IMCE component of the RSSP would contribute to, and build capacity for, conservation and sustainable use of wetlands. It would benefit the global environment through sustainable land management (SLM) activities in the wetlands and surrounding cultivated hillsides, thereby protecting wetland biodiversity and improving carbon sequestration.

The RSSP/IMCE project was developed in accordance with Rwanda's 2002 Poverty Reduction Strategy Paper (PRSP), and the Bank's Country Assistance Strategy (CAS) for Rwanda. The PRSP identified natural resource degradation as the constraint to poverty reduction and economic growth. The rehabilitation of degraded land and forests, and the sustainable development of marshlands were considered essential to improve the agricultural sector. The 2002 CAS focused support to Rwanda in the implementation of its PRSP. Among the four themes that were identified under the CAS, the objective of the RSSP/IMCE project was consistent with the revitalization of the rural economy through sustainable agricultural intensification that protects the land resource base and the environment. IMCE's goal of building environmental capacity at the national and decentralized levels was also consistent with the CAS focus on the development of technical and institutional capacity for effective delivery of public sector actions.

When the IMCE component (of the RSSP) was designed, there was little country capacity to address environmental degradation issues. Environmental legislation and regulation was just being developed. A new comprehensive Environmental Law had recently been adopted (2005); and the Rwanda Environmental Management Authority (REMA), a national agency to support environmental policy-making, implementation and enforcement, had just been created.

The combined involvement of the Bank and GEF to increase agricultural production while preserving the resource base was expected to fill a critical gap. Much of donor support following the civil war and the genocide focused on emergency aid for social needs. The RSSP/IMCE project was intended to address poverty-induced environmental degradation and biodiversity loss by creating a national policy framework for wetland management, strengthening a new environmental institution, and demonstrating community-based activities to provide biodiversity and socio-economic benefits.

1.2 Original Global Environmental Objectives (GEO) and Key Indicators [as approved]:

PDO/GEO: Although key IMCE documents indicate that the project objective is to promote an integrated approach to ecosystem management, the wording of the GEO for IMCE differs substantially across the documents (see Table 1).

The intent of the project was to help develop a framework for effective wetland (used interchangeably with marshland throughout project implementation and in this ICR) management for ecosystem and community benefit, and there are a few common themes across all versions of the GEO. These include a focus on integrated ecosystem management and improvement of farming livelihoods (except in the RSSP PAD which was trying to probably distinguish the IMCE activities from the other RSSP activities that were aimed at improving farming livelihoods). There are a few notable differences as well, the RSSP PAD also including reference to protected areas (which was dropped to concentrate on non-protected areas in later stages of preparation as UNDP supported work on protected areas), and a reference to “increased carbon sequestration” in the IMCE PAD.

Regardless of the precise wording of any one of these GEOs, all are ambitious. This is probably because IMCE was one of the first projects designed to contribute to the GEF OP12 integrated ecosystem management objective to “*achieve multiple national and global benefits by promoting the widespread adoption of farming practices that integrate ecological, economic, and social goals and reduce land and wetland ecosystems degradation.*”

Table 1: GEO Formulations for the IMCE Project

Source Document	IMCE Global Environment Objective
RSSP PAD March 1, 2001	The primary objective of the related GEF operation of the RSSP is the conservation and sustainable use of natural resources through the integrated ecosystem management of critical ecosystems, with emphasis on wetlands/watershed management; dryland ecosystem management; and reducing pressure on the Protected Areas through community-based management of the buffer zones (which presently only exist around Nyungwe Forest) and areas adjacent to the protected areas (mountain ecosystems).
IMCE PAD June 2, 2005	To promote the adoption of an integrated ecosystem approach using improved farming technologies that improve farmers’ livelihood and increase productivity in a way that protects the resource base for biodiversity conservation outside protected areas, and for increased carbon sequestration.
GEF Grant Agreement August 11, 2005	The objective of the Project is to assist farmers to adopt sustainable agricultural intensification technologies that increase productivity and improve livelihood while protecting the natural resource base, through the development and implementation of community-based integrated ecosystem management plans, using watershed and micro-catchment areas as primary units for resource planning.
Mid-Term Review (MTR) Aide Memoire December 2, 2008	To promote the adoption of practices which integrate ecological, economic and social goals into the sustainable management of critical marshland ecosystems.

Key Performance Indicators (KPIs): The IMCE KPIs also differ across key documents. The KPIs from the IMCE PAD are strongly connected to those contained in the RSSP PAD reflecting its earlier blended status. Up until the IMCE project was delinked from the RSSP project, there was no separate reporting of IMCE standalone performance. With the delinking, new KPIs for the project components were adopted at the MTR for more meaningful tracking of IMCE’s progress as a standalone project. Although worded differently, the new KPIs are more connected to those in the IMCE Grant Agreement.

Table A2.1 in Annex 2 lists all the KPIs found in different IMCE project documents. The KPIs indicated at the MTR (Aide Memoire December 2, 2008) were the basis for project ISR monitoring since that time, but others (especially the ones in the Grant Agreement) are critical for this ICR.

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

The GEO was not formally revised.

1.4 Main Beneficiaries:

The intended project beneficiaries included:

- *National Institutions:* Capacity building (policy, technical, information, and institutional) to promote integrated ecosystem management (IEM) approaches for wetlands and their watersheds. REMA (the PMU) was particularly targeted for capacity strengthening.
- *Farmers in the four Project Sites:* Development and promotion of improved farming practices to increase productivity and food security, while preserving the ecological functions of wetlands.
- *Communities in and near Project Sites:* Development and implementation of community-based management plans (CBMPs) and community-level infrastructure.

1.5 Original Components (as approved):

Component 1: Development of a policy and regulatory framework for sustainable wetland and natural resource management. This component aimed to integrate biodiversity conservation issues into sectoral policy formulation and program implementation through (a) the development and adoption of regulations and legislation for environmental management, especially wetland use and protection, and (b) the development of institutional arrangements required to support the management of critical ecosystems.

To achieve the GEO, this component would provide support for developing the legal and policy framework for the effective management of critical ecosystems. It should be noted that environmental management as a public policy domain was in its early stage of development at the time in Rwanda.

Component 2: Capacity building and institution strengthening for integrated ecosystem management. This component aimed at building institutional capacity for IEM and a critical mass of trained individuals at the central, district and local levels to design, implement and monitor IEM plans, associated with the rehabilitation of wetlands for agricultural production and biodiversity protection.

To achieve the GEO, this component would address the lack of technical and institutional capacity for IEM. A needs assessment during project preparation identified technical assistance, workshops, on-the-job training, degree training, and empowerment of local communities in natural resource management (NRM) as ways to fill policy development and implementation capacity gaps. An environmental information knowledge base was also identified as needed in this regard.

Component 3: Development and implementation of community-based IEM plans for critical ecosystems, including community-based conservation and sustainable of biodiversity resources in and around four major wetland systems. This component intended to develop and implement community-

based IEM plans that integrate soil, water, and biodiversity conservation into the rehabilitation of the wetlands for agricultural production. Four critical habitats in major wetland ecosystems were targeted for improved management.

To achieve the GEO, this component sought to realize community-level benefits of improved IEM.

Component 4: Project management, monitoring and evaluation, and information dissemination. This component supported activities to (a) ensure effective coordination of the project implementation activities; (b) monitor and evaluate these activities; and (c) disseminate lessons learned from targeted research, and promising ecosystem management practices.

To achieve the GEO, the component would provide support for developing and disseminating environment information and for decentralized environmental management.

1.6 Revised Components:

The components were not formally revised.

1.7 Other significant changes:

IMCE was designed as a *partially blended* IDA (RSSP)/GEF (IMCE) project. RSSP (IDA) was the first phase of a 14-year Adaptable Lending Program initiated in 2005. The first phase of RSSP closed in June 2008, and a Second Rural Sector Support Program Project (RSSP2) followed with a scheduled implementation over the period 2008-2012. When RSSP (IDA) closed, IMCE became a *standalone* project. It was officially delinked in December 31, 2008; but its closing date remained the original October 15, 2009. Uncommitted and undisbursed funds from the GEF Grant in October 15, 2008 amounted to US\$ 2.9 million (US\$ 2.3 million of which was uncommitted). Thus, over half of the grant was uncommitted with only one year remaining at that time to implement its activities.

The project was restructured three times by the Bank at Client request to enable it to better achieve its objectives and have an orderly closure, although the GEO or KPIs were not formally revised. **The first restructuring** of IMCE (in September 14, 2009) addressed the revisiting of the project after delinking from RSSP and revised IMCE's closing date, extending it by 14 months from October 15, 2009 to December 31, 2010. This first extension provided for a phased completion of priority activities within all components, plus a six-month monitoring and reporting period. In addition, an Implementation Framework was developed for the uncommitted amount of the grant, and disbursement allocations were revised to reflect revisions to activities.

The second restructuring of IMCE on December 30, 2010 again revised IMCE's closing date, extending it by 6 months from December 31, 2010 to June 30, 2011. It also reallocated Grant Funds among existing disbursement categories. Delays in project implementation had resulted from staff changes and affected the procurement schedule, and extending the closing date was required to complete all intended project activities. The restructuring reallocated funds across disbursement categories especially using the "Unallocated" category, which reflected lessons learned during project implementation, reduced workshop costs due to synergies with other activities, and additional support required for goods and consultancies required for the Biodiversity Information System (BIS).

The third and final restructuring (on June 30, 2011) related only to a reallocation of funds across existing categories to enable an orderly closure in the reconciliation of project finances across categories at the end of the project implementation and till project financial closure. The changes were due to the

increase in civil works costs as a result of improving construction standards of the watchtowers, changes in training, workshop, and IT needs and costs, as well as recruitment of additional interns and consultants to help with the biodiversity catalogue development.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design, and Quality at Entry:

Soundness of the Background Analysis

The background analysis for IMCE was reasonably sound for defining the project context. Rwanda's diversified landscape had several wetlands that were important from a biodiversity perspective, including an internationally recognized Ramsar site that is home for endangered and rare bird species. The rationale for the project had stemmed from the fact that, due to the increasing population (one of the densest in Africa) and poverty, there was increasing pressure for rural populations to cultivate unsustainably on hillsides and in wetlands. The resulting land degradation and wetland conversion was threatening land productivity, water sources, and Rwanda's rich biodiversity.

The GOR, while rebuilding its country and economic base after the genocide, had created a new policy and institutional framework for environmental management. It had adopted a new Environmental Law and set up REMA as a new environmental regulator in 2005.

The background analysis identified key constraints for effective decentralized IEM, including inter-sectoral coordination, limited environment technical capacity, and an inadequate action-orientated knowledge base to support IEM activities. Decentralization was at an early stage, and there was little experience with community-based NRM and stakeholder consultation. The four critical wetland ecosystems identified for project implementation were all of international importance, which became even more evident as data on the sites were collected.

Project Design Assessment

The project design was very relevant, but also very ambitious because it tried to address multiple issues (biodiversity, land degradation, carbon sequestration, agriculture productivity, poverty reduction, etc.) with limited financial resources and institutional capacity. The project components were well suited to its objective. However, the biggest challenge was the fact that it was starting from a base of very low institutional and technical capacity, and its implementation period was only 4 years. A project such as IMCE, starting-up in an institutional setting that is newly forming, should either be provided a longer term of implementation, or set out to do less.

In retrospect, the project design could have better identified the institutional constraints that came to bear on the functioning of the partially blended RSSP/IMCE project. There should have been indicators to track the collaboration between RSSP activities (overseen by the Ministry of Agriculture and Animal Resources, MINAGRI) and those of IMCE (overseen by REMA under the then Ministry of Lands, Environment, Forestry, Water and Mines, MINITERE). Furthermore, project preparation did not explain how the RSSP and IMCE projects would coordinate to co-locate activities and provide mutual synergy.

Many of the IMCE's proposed activities – especially those related to community-level investments – were not adequately described in the PAD, nor was an implementation framework provided. However, the flexibility that this allowed later helped to make the IMCE project a good example of adaptive management. The Project design underestimated the implications of potential capacity problems in the Project Management Unit (PMU). It made the new PMU both the administrator of the project, and a

critical facilitator of all cross-sectoral activities, as well as those between national and local governments and communities. Also, the project would have benefitted from additional attention to procurement readiness and capacity. Key technical, fiduciary, and administrative staff to facilitate early project implementation should have been in place during preparation. The detailed design and costing of some of the activities (especially the BIS) would have benefitted from additional preparation.

The project design could have better formulated its indicators. For example, one of the indicators was observed *changes in flora/fauna from project activities*. Although IMCE succeeded in establishing baseline flora/fauna information; it was unrealistic to assume that changes from that baseline could be observed before the project closed, particularly without clear identification of relevant species.

The project would likewise have benefited from more collaboration and linkages with local, regional, and international non-governmental organizations, universities, and research centers. It failed to develop strategies – early in the project implementation – that could have improved the benefits of biodiversity-related activities.

Government Commitment Adequacy

The GOR was reasonably committed to the IMCE project from start to finish. In the project preparation, Rwanda's growing environmental awareness was clear in several of its policy documents: PRSP, Land Policy, Biodiversity Strategy, Water Policy, Agricultural Development Strategy, and Food Security Strategy, as well as in its new Environment Law. The GOR recognized the importance of reversing land degradation through sustainable use of natural resources and conservation of critical ecosystems.

REMA was newly created when IMCE started, but in the years since, it has grown into a strong institution with political and cross-sectoral support and respect. REMA and its Ministry (MINITERE) remained committed to the IMCE project, despite the challenges posed in recruiting and keeping adequate staff. The local administrations (district, sector, and cell levels) also showed continued interest and commitment for the implementation of project activities, and many of the local Watershed Management Committees (WAMACOs) created with the project continue to function.

The GOR showed its commitment in turning the RSSP/IMCE project around after a few initial years of lack-lustre performance. In fact, the entire project was in danger of being closed when President Kagame stressed the need to turn it around, after a discussion with the Bank President who visited Rwanda and highlighted the project's non-performance. Many steps were then taken to make the overall project more simplified and results-oriented. To facilitate this process, RSSP and IMCE were delinked to refocus implementation arrangements so that they could independently pursue their objectives.

Although the split reduced the need to coordinate the operational aspects of specific project activities across the two ministries responsible for RSSP and IMCE, there still was a need for strategic coordination. There was insufficient coordination on targeting RSSP activities in specific IMCE areas. However, the need for agriculture (and other sectors) to more systematically consider (through EIAs and EMPs) any proposed activities in wetland areas was eventually mainstreamed.

Assessment of Risks

Political risk was noted in terms of a potential lack of sustained political commitment to reforms in NRM (particularly decentralized). However as the project was consistent with and supportive of the GOR's decentralization policy, and with its PRSP to reverse land degradation and promote sustainable agricultural development, the risk was considered moderate.

Weak policy capacity was noted in the PAD. It was due mainly to the lack of adequate technical capacity within the MINITERE (later succeeded by Ministry of Environment and Lands, MINERA). Also noted was a lack of inter-sectoral coordination mechanisms to enable MINITERE to influence the consideration of environment in sector programs in other line ministries. The institutional structures for environment and natural resources (ENR) management were fairly new; the Environment Law had only been approved in 2005, and there were no implementation decrees to provide guidelines for enforcing environmental law and developing and enforcing standards; the fledgling REMA did not have much capacity to effectively manage wetland areas.

While the risks identified were relevant, the project preparation may have underestimated the institutional coordination risks among the different ministries and initiatives involved in the operation of this project. Lack of inter-ministerial coordination was one of the reasons for the separation of the RSSP and IMCE projects at the mid-term of the project. Moreover, assessment of the operational capacity of relevant institutions during preparation could have been better, in order to refine the institutional arrangements as well as capacity building needs.

2.2 Implementation:

Overall, project implementation was reasonable despite several problems, including problems with the design. The initial implementation performance was very poor, primarily due to the new institutions involved (RSSP and REMA), the cumbersome linkage with RSSP, and the lack of project implementation capacity in REMA. There were also issues with inter-sectoral coordination and lack of good paradigms for participatory natural resources management.

The delinking of the IMCE project from RSSP was a significant turning point in the project implementation. Its rationale was to address a few problems that had emerged:

- *Lack of synchronization:* RSSP (expected to be a long-term program) became effective on October 24, 2001 and was expected to close on December 31, 2005 (eventually extended to June 30, 2007); and IMCE became effective on February 9, 2006 and was expected to close on October 15, 2009 (eventually extended to June 30, 2011). GEF financing lagged IDA financing, given the later start of the IMCE project and processing delays in making the GEF financing effective.
- *Lack of coordination:* Implementation responsibility for the overall RSSP was assigned to MINAGRI while that of IMCE was with MINITERE (REMA) with little coordination between the two entities.
- *Lack of performance of both RSSP and IMCE:* Both the RSSP and IMCE did not perform well during the early years of implementation. As part of a concerted effort to improve performance, many decisions were taken to simplify and focus RSSP activities (as documented in the RSSP ICR), including dropping IMCE as a component of RSSP.
- *The partially blended status of RSSP/IMCE was untenable:* RSSP had to be delinked from IMCE to enable orderly closure and ICR preparation for the RSSP (to facilitate RSSP2 initiation) because IMCE still had over two years of implementation remaining (even after extensions to RSSP and before extensions to IMCE).

The Bank team and management decided that the delinking did not warrant a formal restructuring because there was no change expected in the IMCE objective and overall financing plan. However, IMCE was a partially blended operation with RSSP and delinking effectively converted it into a standalone project. This meant that alternative strategies were needed to ensure that the original RSSP-financed complementary baseline activities instrumental to the successful achievement of IMCE's

objective would continue to be conducted at an adequate level. In the minutes of negotiation for RSSP2 dated April 25, 2008, the GOR confirmed that it would continue to finance baseline activities as described in the IMCE PAD through the national budget or through the RSSP2 under its Component 1. At the MTR, the funding gap was estimated to be US\$ 6.6 million. It is unclear what level of complementary activities under RSSP was actually accomplished given the delinking.

The delinking strengthened ownership and enabled further mainstreaming of IEM approaches in other projects management by REMA, including establishing a dedicated unit responsible for ecosystem management. However, at the same time, due to the delinking of the two projects, its impact of mainstreaming IEM in the agriculture sector was reduced as the RSSP and IMCE teams did not have to work closely together.

A significant contribution to improving project performance appeared to be changes in both the GOR and Bank project teams at the MTR. The addition of a qualified technical advisor to REMA was key in getting the project back on track, although the project remained understaffed. The project MTR provided a new implementation roadmap and a new set of agreed realistic key performance indicators for the project, in addition to formalizing the delinking with RSSP.

The project restructurings provided additional time to complete and consolidate various delayed project activities, as well as facilitate reallocation of project proceeds across categories. Due to lack of adequate expertise in the country, the activities related to biodiversity were delayed, however the extension of the project closing date enabled implementation and completion of critical biodiversity related outcomes, including progress on the Biodiversity Cataloging, development of a Rwanda Biodiversity Information System (BIS) spatial platform, and a detailed Biodiversity Inventory and Atlas in the four critical ecosystems of project focus.

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

M&E Design: The project did not have a consistent M&E framework. The project was highlighted as having a “highly satisfactory” baseline from an OP12 global review for the GEF Council in May, 2005. However, there were different KPIs in different documents (see Table A2.1). Some of these indicators were very ambitious and, thus, difficult to measure; e.g., tracking changes in the number of flora/fauna species without having baseline information. Although there was sporadic reporting of progress, there was no systematic reporting on these indicators. Mapping activities were undertaken at the start of the project to facilitate implementation.

M&E Implementation: The M&E indicators were revised at the MTR (but not formally) when the project was delinked from the RSSP. They were more realistic and directly related to the activities in the delinked project; and they provided the basis for the new implementation framework developed at that time. M&E during implementation was not systematic – especially given that there was no full-time M&E officer in the PMU, despite the provision in the PAD to have a dedicated PMU staff member for this purpose. The project ISRs, especially those based on supervision missions after the MTR, provide useful information on the various project indicators. Biodiversity indicators were developed, a wetland inventory was conducted, and a BIS was established to track biodiversity and natural resource use trends. A wetland inventory was conducted in the early stage of the project.

M&E Utilization: Data collected through the wetland inventory was utilized for the nation-wide mapping of the wetlands. This in turn formed the basis for the country’s policy and legislative framework for the categorization and protection/use of its wetlands. The information generated by knowledge development, and the tracking of project activity performance, formed the basis of many of

REMA's awareness-building activities. It also created international recognition for Rwanda's wetlands and REMA's performance. In April 2006, Rwanda joined the Ramsar Wetlands Convention with its first Ramsar site designated at *Rugezi-Bulera-Ruhondo*, one of IMCE's focus ecosystems. Professional quality videos were made and disseminated to document REMA's IMCE activities. REMA received international recognition with a *Green Globe Award* in 2010 for its documented work on IEM and livelihood improvement in the Rugezi wetlands.

The BIS, with associated GIS information and biodiversity cataloguing, was developed near the final stages of project implementation, and was thus not able to be used as effectively as planned for decision-making during the project implementation. However, the EIA/EMP processes now required for development activities in certain wetland areas are an opportunity to both use the emerging information on wetlands and contribute to its strengthening. The BIS can also provide the means for continual monitoring of the nation's biodiversity and related natural resources after project closure. In this regard, there is a need to continue and further institutionalize the work on biodiversity inventory and information systems.

2.4 Safeguard and Fiduciary Compliance:

Safeguards: Environment Assessment (OP4.01) and Pest Management (OP4.09) were the only two safeguard policies that were triggered for the IMCE, due to the co-financing arrangement with the RSSP. An EA was conducted and several provisions were made to ensure compliance. When IMCE became independent from the RSSP, the issue of potential negative environment and social impacts were less relevant for the standalone GEF/IMCE project.

The project supported community-based small works as part of a highly successful demonstration of "radical" terraces in the steep slopes of the Burera district. This work, originally intended to support the RSSP program, involved building terraces with community involvement for erosion management and agricultural productivity improvement in the buffer zone of the wetlands, to reduce pressures on the wetland itself. REMA provided technical and financial support for this work through the IMCE project. This work was later recognized as a significant new paradigm to reduce wetland encroachment and provide secure land tenure to farmers on the new terraces. REMA worked closely with the Ministry of Lands to ensure that the ongoing national work for land titling was piloted first in these new terrace areas. In retrospect, appropriate safeguards should have been triggered during project preparation, if such investments were envisaged under IMCE. However, the IMCE MTR noted that the work done was consistent with the RSSP safeguards in this regard.

Financial Management: The IMCE financial management and internal control arrangements were weak from inception due to the inexperienced PMU staff. The PMU also suffered from availability of qualified accounting staff and a high staff turnover throughout the project life. Maintenance of books of account and reporting was inadequate due also to poorly-programmed accounting software that did not allow adequate capture of accounting information. After the MTR and the first project restructuring, financial management performance improved as a result improved accounting software, and increased stability in staffing. Interim financial reports were submitted to the Bank on a quarterly basis, and annual audit reports were conducted in accordance with international standards. The staffing problem was eventually resolved by assigning a REMA accountant to the project under the supervision of REMA's Finance Director (who was also acting project coordinator during this time), who has managed to resolve all reconciliation issues, bringing the project to a satisfactory closure. Disbursements lagged expectations throughout the project life, although final disbursements were about 92% of the grant amount.

Procurement: The IMCE procurement was slow to start. After the first project restructuring, the MTR, and the recruitment of the IMCE Technical Specialist, project procurement advanced according to the procurement plans that were revised from time to time. However, there was high PMU staff turnover on and absence of full time project staff for some period on procurement, which affected institutional memory in relation to Bank procurement procedures. This caused frequent delays in critical procurement, and adversely affected activity implementation schedules. The Bank team worked closely with REMA to improve the understanding of Bank procurement procedures, and helped support the development of overall procurement capacity at REMA. A short-term procurement consultant was hired in the final months of the project to support the final set of procurement activities.

2.5 Post-completion Operation/Next Phase:

REMA, with IMCE project support, has undertaken several activities to ensure consolidation and sustainability of its achievements under the project as summarized below (more detail in Annex 8):

- *Policy Sustainability:* Various ENR-related policy frameworks have been initiated due to the perceived need of the Government, and refined through extensive consultation across various departments. These frameworks should help ensure the sustainability of the policy-level recommendations of the IMCE project.
- *Institutional Sustainability:* REMA's capacity for wetland management and IEM approaches to conservation has increased significantly as a result of IMCE. REMA is now a strong advocate of environment and has been recognized internationally for its efforts on wetland and biodiversity management. District environmental and agriculture officers, and community leaders through the WAMACOs have been trained to mainstream IEM in their work.
- *Technical/Information Sustainability:* A major achievement of the IMCE project is to have built the technical and information capacity to support decentralized IEM. The sustainability of these activities is to be supported by the process of biodiversity cataloguing, along with the use of the BIS platform for knowledge management, for which REMA has hired a person.
- *Natural Resources Sustainability:* The policy and implementation support for decentralized wetlands conservation and SLM have started to reverse the degradation of wetlands and hillsides and demonstrate system-wide benefits. The biodiversity inventory and information system provides an appreciation of Rwanda's significant biodiversity, wetland habitats, and ecosystem benefits, and provides a framework to track changes over time.
- *Financial Sustainability:* REMA has committed to sustain the operations and maintenance of the activities initiated under the IMCE. The Ministry of Natural Resources, MINIRENA (successor of MINERA and MINITERE) and REMA are also committed to mainstream the IEM approaches that were applied and proven effective. They are planning to upscale the initiatives through various ongoing and upcoming projects such as the Lake Victoria Environmental Management Project II (LVEMP II) that includes Rwanda; a proposed GEF Rwanda Forest Landscape Restoration (RFLR) Project; and various climate change related initiatives.

Performance Indicators (suggestions for continued M&E)

The following indicators may be used for post completion evaluation of the project:

- The Policy and Strategic framework for effective integrated ecosystems management is enforced, monitored, and routinely strengthened.
- The GOR has adequate and well-trained staff (e.g., in REMA), mandate, and budget to effectively manage the critical ecosystems in Rwanda.
- Community-level institutions (WAMACOs, District/Sector Environment/Agriculture officers) continue to effectively engage in decentralized wetland conservation and sustainable use activities.
- The three categories of wetlands are effectively managed, and Rwanda's critical wetlands of global importance are conserved effectively; and management plans for all wetlands are effectively formulated, implemented, and monitored.

- Biodiversity cataloging is continually refined and updated to monitor trends, the BIS is effectively utilized as a public resource and platform for decision support, and related knowledge management and awareness efforts are enhanced.

Existing REMA administrative and technical systems should track these indicators in the future. Impact evaluations of the IMCE in a few years could help evaluate the sustainability of its achievements.

Follow-up by the Bank

In Rwanda, the Bank should continue its engagement in biodiversity/wetland monitoring, capacity building, and climate risk management, given the partnership it has established with institutions such as REMA. There is a need to build REMA capacity further in a systematic manner across all its emerging mandates. The Bank has ample opportunity to do so through its many activities. These include: a Technical Assistance for NRM/Climate Change, the LVEMP II; the ongoing RSSP2 and the RSSP3 now under preparation; the Land Husbandry, Water Harvesting and Hillside Irrigation Project; annual budget support especially related to agricultural development; the proposed GEF-funded RFLR project; and a proposed regional Africa Climate Risk Management and Green Growth Project. It is essential that the Bank remains involved with monitoring and supporting the environmental sustainability of these programs, especially related to wetland conservation and water quality implications of the enhanced use of agro-chemicals. Annex 8 elaborates more on the potential avenues for Bank follow-up.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation:

The IMCE project objectives and activities remain highly relevant for Rwanda, given the population and economic development pressures on its rich ecosystems. The GOR's strategies under the PRSP/Economic Development and Poverty Reduction Strategy (EDPRS) and other projects promote sustainable development for wetlands and hillsides. The project is also consistent with the GOR thrust for decentralized management of natural resources. The next EDPRS (under development) places an even stronger emphasis on environmentally sustainable natural resources management to improve system resilience to climate variability and change. The policy, institutional capacity building, and decentralized, community-based IEM activities for ecosystem and socio-economic co-benefits are still relevant. The achievements of IMCE in terms of policy support, capacity development, knowledge generation, formulation of a shared vision with synergistic IEM capacity across sectors, and new paradigms for community-level investments (wetland conservation/hillside development, ecotourism development, water source improvement) are as relevant as ever for Rwanda's future development context. The project is also relevant for continuing Bank activities in Rwanda and the region relating to biodiversity, agriculture, infrastructure, and climate resilience.

3.2 Achievement of Project Development Objectives and Global Environmental Objectives:

Evaluation of the achievement of the IMCE is complicated by the various GEO and KPI formulations. Overall, the Project is considered moderately satisfactory because although most of the KPIs (those adopted at the delinking of IMCE from RSSP) were met, there were shortcomings in fully achieving some of its outcomes. The IMCE project outputs are summarized below; more detail is provided in Tables A2.1 and A2.2 in Annex 2.

The IMCE GEO elements to promote the adoption of practices that integrate ecological, economic, and social goals into the sustainable management of critical marshland ecosystems was achieved as the outputs of the project components unfolded. A legal framework was established (Component 1); national and local technical and institutional capacity for IEM was built (Component 2 and 4); and concomitantly the new laws and capacity were piloted at community-level to demonstrate how IEM can achieve ecological, economic, and social goals (Component 3).

A policy and regulatory environment was developed for the sustainable management and protection of wetlands. The project supported the development of ministerial orders that were adopted in 2009 to establish the first policy framework for wetlands management in the entire country, by categorizing wetlands and determining their protection and use status (Table 2). This landmark wetland management policy framework was expedited through issuing decrees for the 2005 Land Law rather than waiting for a new Marshland Law, and has had the intended effect of fully protecting wetlands of international importance, permitting conditional use (with appropriate frameworks) of wetlands of national importance, and requiring an EIA for wetlands of local importance. These ministerial orders also enforced protection and conservation of lands around rivers, lakes, and wetlands. A new national Marshland Law and supporting ministerial orders have now been drafted with extensive multi-sectoral consultation for additional refinement and strengthening of this framework and are expected to be adopted in early 2012. Combined, these initiatives would provide an effective national legal and policy framework for wetland management and broader NRM.

Table 2: Categorization of Rwanda's Wetlands

Category	Area (hectares)	% of Total Wetland Area	No. of Wetlands
Full Protection	56,120	20%	38
Conditional Use (with appropriate frameworks)	206,732	74%	475
Use with EIA	15,689	6%	347
Total	278,536	100%	860

The Project had originally also envisioned the development of a National Strategy and Action Plan for Wetlands. However, this outcome was dropped at the MTR, and was recommended as a post-project activity that could benefit from an improved biodiversity knowledge base and a few years of experience in implementing these policy frameworks. A Biodiversity Policy and Action Plan was adopted by Rwanda's cabinet in October, 2011.

As part of the partially blended RSSP/IMCE project, an outcome of the IMCE component included the establishment of a *permanent* inter-ministerial coordination mechanism for IEM and wetlands protection – this remained as an intermediate output indicator at the MTR. The project established an inter-ministerial *steering committee*, which was chaired and led by the Minister of MINELA but a permanent mechanism was not implemented. Instead, REMA participates actively in broader alternative mechanisms such as discussions in Sector-wide “Clusters”, especially the one regarding Economic Growth, and annual “National Dialogues”, which are active in addressing environment (including wetlands) and development trade-offs. Additionally, REMA has facilitated the placement of environmental specialists in other ministries (e.g. Finance and Economic Planning, Local Government, Agriculture, Industry and Trade, Infrastructure, and Environment and Natural Resources) to provide mainstreamed advice on environmental laws, regulations, and issues.

An unexpected output of the IMCE is a contribution to efforts (primarily supported by DFID) for building climate change and adaptation capacity. In October 2011, Rwanda's cabinet adopted a Climate Change Strategy and Action Plan. With support from the IMCE project and a related World Bank Climate Change/Natural Resources Management Technical Assistance, guidelines have been drafted for key sectors to mainstream climate change considerations.

Capacity for IEM at local and national levels was built. Through IMCE, REMA built significant institutional and technical capacity at national and decentralized levels. National, district and local authorities were sensitized regarding the importance of wetlands, and the need for IEM approaches. Water Management Committees (WAMACOs) were established in 53 sectors (subdivisions of districts) to develop and implement watershed and wetland management plans. A range of training materials, DVDs, and various publications were developed for distribution to schools and the general public. Numerous training activities for IEM were provided to 159 WAMACO members, including training for soil and water conservation, tree nurseries, and ecotourism. Study tours were organized and farmers were trained on several issues including soils, land and water management and water quality testing.

Through the IMCE project, all Rwandan wetlands were mapped and classified. For the first time, a climate change vulnerability assessment on these wetlands was conducted to examine the impact and adaptation needs of changing climate patterns in Rwanda. A Biodiversity Catalogue was initiated to catalogue all key flora and fauna so far identified in Rwanda. Wide consultations were held on biodiversity indicator development, and a BIS platform was established. The first detailed inventory (vegetation, birds, mammals, reptiles, and amphibians) of the four most important wetland ecosystems in Rwanda (in Table 3 also targeted by the IMCE) has been created with the help of international expertise. A high quality Biodiversity Atlas was also created for these ecosystems.

Table 3: The Four Critical Ecosystems in the IMCE Project

IMCE Sites	Area (hectares)	Location
Akagera Complex	430,000	Wetland complex at the end of the Kagera river in eastern Rwanda. Part of the Nile basin.
Rweru-Mugasera Complex	122,000	Contiguous with the southern Akagera complex in southeast Rwanda. Part of Nile basin.
Rugezi Complex	19,000	Along north-central border of Rwanda, and designated as a Ramsar wetland. Part the Nile basin.
Kamiranzovu	9,500	South of Lake Kivu. Both wetland and lake are part of the Congo basin.

Community projects demonstrated IEM. Four *watershed management plans* (original target was two) were developed for the four critical ecosystems targeted in the project (see Table 3 and Map): Rweru-Mugesera, Akagera, Kamiranzovu and Rugezi (first identified in 1966 as Rwanda’s critical ecosystems). These plans were supported by demarcation (important for seasonal wetlands) and categorized for protection and use.

District Development Plans for IEM were developed in four districts, which is reasonably consistent with the target of “half of the districts (ten in total) involved in the project”. It should also be noted that REMA, with UNDP support, has additionally been helping mainstream such sustainable wetland management activities into DDPs in half of the country’s 30 districts.

Nine critical wetlands in the targeted ecosystems have Community-based Management Plans, exceeding the target of four such plans envisaged in the PAD. A demonstrative investment in radical terracing and land tenure provision was undertaken in the Burera district to reduce pressure on the Rugezi wetlands. Technical and financial support was provided to farmers to help implement sustainable agriculture practices, including terracing and agro-forestry. Farmers and district officials indicate that agricultural productivity has significantly increased through these practices in the 120 ha of newly terraced land.

Potential yield gains are estimated to be in the order of 126 tons/yr for maize; and 720 tons/year of potatoes (Annex 3).

Small works projects demonstrated the range of wetland ecosystem benefits: from meeting basic needs to promoting nature appreciation activities. Twenty-four spring sources were upgraded, improving water supply and quality to a few thousand people. The water sources were protected with concrete casements and basic upstream protection, and communities trained on water quality testing. Eight watchtowers were constructed to improve community and visitor appreciation of the wetland biodiversity, and to catalyze ecotourism in the area. Other community-level activities included establishment of tree nurseries in 42 sectors, and planting of *Pennisetum* (elephant grass) to protect boundaries of marshlands in 40 locations.

An important and unexpected outcome that demonstrated the benefits of IEM was the restoration of hydroelectricity production in two of the country's most critical electricity-generating plants (Ntaruka and the Mukungwa) that rely on the Rugezi-Bulera-Ruhondo watershed. Stakeholder support for terracing and reducing agricultural pressure and reducing consumptive use in critical upstream wetlands were also sustained by providing secure land titles, and by benefit-sharing arrangements between the electric utility and the local community.

The RSSP project, with which the IMCE project was partially blended, also turned around after an initially poor performance to meet or exceed its indicator targets. The RSSP ICR indicates that about US\$ 19.6 million of the US\$ 54 million project was spent on rehabilitation and development of about 3,018 ha of marshlands and 14,485 ha of hillsides, and the remainder on agricultural support services, small-scale rural infrastructure, capacity building and technical assistance, support to rural micro enterprises, and program support. About 5,365 Farmers Agricultural Services Delivery Organizations (FASDOs) were trained in hillside protection and management, including agro-forestry, terracing, and soil protection. 6,832 FASDO lead farmers (4,166 men and 2,666 women) were trained in improved crop management, input use, and IPM practices. Improved techniques were adopted in rice cultivation in newly developed irrigated marshland schemes, where 121,366 direct RSSP beneficiary farmers reported an increase of over 50% of their rice production during the last two seasons. Fertilizer use also increased significantly. Harvest values were surveyed to be significantly higher for hillside as well as marshland farmers. Farmer associations improved management of their finances, production, infrastructure, and marketing, including 23 market management committees with improved management and maintenance of marshland infrastructure. However, the RSSP project undertook these activities with very limited coordination with the IMCE project.

3.3 Efficiency:

The IMCE PAD identified numerous benefits that were likely to result from the project. In addition to improvements in technical and institutional capacities for IEM, direct and indirect domestic and global environmental benefits from the project were also anticipated. The PAD noted that given the multiple ecosystem functions of wetlands, a full assessment of the project's benefits would require, at minimum, a catchment-wide approach. The PAD did not undertake a quantitative economic or financial analysis of the IMCE project. Rather, IMCE was analyzed only in terms of its incremental cost to components of the RSSP project, which was considered to be the baseline cost scenario. The incremental cost of IMCE was US\$ 4.3 million.

IMCE was efficient in utilizing GEF resources to achieve global benefits by also addressing national and local benefits through the effective protection and management of wetlands for their ecosystem and

livelihood goods and services. The final disbursements for the IMCE project were about US\$ 3.94 million (see Annex 1 for details). An assessment of the benefits that followed from that expenditure is limited by information constraints. However, the indications are that the project had significant achievements for what was a small GEF investment, making it efficient in spite of the implementation problems.

Project activity costs were low compared to the benefits and similar projects in other countries. The PMU operated with minimum staffing. The project activities drew on both in-country and regional expertise. The development of the BIS was more expensive than envisaged in the project design, but the biodiversity outcomes were nonetheless achieved by employing university experts, and interns/young professionals to do the normally expensive biodiversity activities of surveying and cataloguing biodiversity.

Benefits of project activities were quite substantial. The country developed and implemented an effective policy framework for wetlands, REMA was supported at a critical formative stage, IEM paradigms were demonstrated at community levels, and a good biodiversity knowledge base was established. Two project benefits were also quantified. Agriculture gains resulting from SLM activities on hillsides (to reduce erosion and protect wetlands) have an estimated present value of US\$ 1.3 million. The benefit of restored hydropower generation due to improved water flow from protected wetlands (the Rugezi complex) has a present value of about US\$ 100 million. Annex 3 provides details on these estimates, and other (non-monetized) benefits.

3.4 Justification of Overall Outcome and GEO Outcome Rating:

Rating: *Moderately Satisfactory*

The overall outcome rating of the project is considered *Moderately Satisfactory* as the substantial contributions of the project were tempered with a few shortcomings.

The relevance of IMCE's objective and initiatives were particularly high at the time of project design and more so at the closing of the project. During preparation, there was a lack of effective policy frameworks, knowledge base, institutional capacity, and IEM paradigms to address rampant wetland conversion, land degradation, soil erosion, and biodiversity threats. With project support, an effective policy framework for wetland management is in place and REMA has emerged as an advocate for IEM. All wetlands are now legally categorized for protection and use potential. Public awareness about wetlands and associated laws is widespread, and Rwandans – local officials, national officials, and the public – tend to abide by the laws of the country. Rampant wetland conversion has been halted, and all wetland activity is monitored by local and national authorities. IEM has been demonstrated at community-levels and incorporated into decentralized planning, even if not exactly as envisaged during project design. An effective knowledge base has been built to illustrate the notable biological diversity in the targeted ecosystems.

IMCE had shortcomings in its inability to effectively coordinate with and leverage RSSP investments and establish a permanent inter-sectoral collaboration mechanism for wetlands. It also dropped the development of a Wetlands Strategy and Action Plan.

3.5 Overarching Themes, Other Outcomes and Impacts:

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

Rwanda has major problems of poverty, lack of basic services, food security, and ENR degradation. The project created a framework for the sustainable development of wetlands for livelihood improvement of the rural poor. Local stakeholders were trained as community partners for IEM, with new techniques for fodder enhancement and soil and water management; possibilities for ecotourism development (through support for watchtowers, community training, and partnerships) and local benefit sharing from improved performance of downstream water infrastructure. Communities gained a better understanding of the direct and indirect livelihood and ecosystem benefits of sustainable wetland management. Improved water sources have decreased the water-fetching time and access to clean water for women and their families, and demonstrated the value of protecting water sources for amenity and health reasons.

(b) Institutional Change/Strengthening:

The IEM approaches of the IMCE project have significantly increased overall government capacity to effectively regulate and manage wetland ecosystems. This includes policy frameworks, improved capacity in REMA, decentralized capacity development, and knowledge and awareness development. IMCE, along with a few other projects such as UNDP's Poverty and Environment Initiative (PEI), have successfully demonstrated the need for mainstreaming biodiversity and environment into Rwanda's production sectors. The country now requires appropriate environmental frameworks for permitted wetland development. For example, EIAs or EMPs are now required for all proposed development in wetland areas, including for projects such as the ongoing RSSP2 and other similar agricultural interventions in wetland areas.

(c) Other Unintended Outcomes and Impacts:

The project has helped address some climate change and climate risk management concerns. It helped undertake studies on the climate vulnerability and carbon sequestration implications of Rwanda's wetlands. REMA also reports that the project-supported conservation of the wetlands has helped regulate brick making, and prevented the indiscriminate destruction of biodiversity-rich wetlands for peat beds or agriculture. The project had unintended benefits for rejuvenating hydroelectric power generation in two of the country's main hydropower plants (Annex 3). Through various inter-sectoral coordination mechanisms ("Clusters", Sector Working Groups, the Cross-Cutting Issues teams), IMCE outputs informed the National Land Use and Development Master Plan, the Irrigation Master Plan, the Biodiversity Policy and Law, and the work of the emerging Rwanda Natural Resources Authority. The outputs of IMCE also informed the Government's EDPRS 2008-2012, and will continue to do so in the next EDPRS that is currently under formulation.

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

A workshop held during the ICR preparation indicated that the project was well appreciated for its contribution to strengthening IEM for biodiversity and development outcomes, as well as to REMA capacity building.

4. Assessment of Risk to Development and GEO Outcome

Rating for Risk to GEO Outcome: *Moderate*

Risks that could affect the sustainability of IMCE project outcomes are tabulated and analyzed in Table A2.3 Annex 2. The most significant are risks associated with technological change and climate. If

REMA cannot keep its information systems up-to-date with changing technologies, the BIS platform, the biodiversity knowledge base and its usefulness will be compromised. If extreme weather events displace populations, threaten water supplies, and endanger human health, pressures on ecosystems may become unmanageable. All other types of risks – financial, economic, social, political, environmental, and governance – are considered to be moderate.

Although the GEO outcome is ambitious, there is no substantial risk of backtracking on project achievements given Rwanda's strong commitment to the environment and sustainable development. There will be, however, a need for continued activity to promote and build enforcement capacity, knowledge development, awareness building, and scaling-up of new community-level investment paradigms to achieve environmental and development co-benefits.

Government commitment and ownership on the project initiative is strong, with relevant policies and strategies in place to further promote and enhance the methodology and initiatives on IEM that have been implemented by the project (see Annex 8). However, further coordination is required with the production sectors, particularly agriculture, to mainstream IEM approaches. In addition, additional protection status could be pursued for the remaining valuable wetland ecosystems in Rwanda.

The governance and economic conditions in Rwanda are currently favorable to further promote a balanced approach economic growth and environmental conservation. There is increased awareness among decision makers and the public to consider environmental impacts while promoting productivity. However, there will be a need for continued monitoring, knowledge base development, institutional development and coordination, promotion of decentralized approaches, and awareness building to effectively mitigate the impacts of the existing and evolving risks faced by Rwanda.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry:

Rating: *Unsatisfactory*

- The project context and the four critical ecosystems of Rwanda were correctly identified, especially in terms of managing biodiversity in non-protected areas and productive landscapes. REMA as the primary implementing agency was appropriate. Project preparation was supported by a US\$ 350,000 GEF PDF-B grant that was implemented over a very long period (from 2001 to 2005).
- However, there were a number of serious shortcomings during the very long preparation. The linkage with the RSSP was operationally not well planned and the risk of poor coordination was underestimated. Objectives and KPIs were significantly inconsistent across project documents, and the monitoring framework was weak. Greater attention to early adequate staffing of REMA's PMU team could have improved technical and fiduciary performance. Additional attention to the safeguards framework for possible physical investments envisaged would have been useful. The *Unsatisfactory* rating for Bank performance in ensuring quality at entry is consistent with that of the ICR of the RSSP, which was initially blended with the IMCE project.

(b) Quality of Supervision:

Rating: *Moderately Unsatisfactory*

- Focus on development impact was reasonably consistent but supervision was uneven. Attention from Bank staff was inadequate, especially in the early years of the project. Technical support could have been better. Three TTLs for the project affected Bank institutional memory and approach consistency.
- Placement in Kigali of a senior Bank biodiversity specialist (who was on leave from the GEF), specifically for implementation support towards the end of the project, helped improve project performance.
- Bank implementation support improved after the MTR and after delinking the IMCE from the RSSP. KPIs were then clarified. ISR quality improved over time, especially after the MTR. IMCE was also restructured to extend implementation timeframes and reallocate project resources across categories, but not to formally revise or clarify the GEO or KPIs. The rating reflects a long stage of being moderately unsatisfactory followed by a short period of more moderately satisfactory performance.

(c) Justification of Rating for Overall Bank Performance:

Rating: *Moderately Unsatisfactory*

This is based on the ratings of the Bank during both preparation and implementation. Overall, the Bank played a supportive role with some significant shortcomings.

5.2 Borrower Performance

(a) Government Performance:

Rating: *Moderately Satisfactory*

- Government provided strong support to establish an effective and pragmatic policy and legal framework for ENR management in the country, including support to wetlands conservation and management. It was also committed to promoting decentralized and participatory NRM.
- Inter-sectoral coordination remains an issue that requires continual improvement.
- The lack of an effective partnership with MINAGRI through RSSP, and the absence of systematic leveraging of RSSP resources was a missed opportunity to consolidate inter-sectoral IEM coordination.
- Government could have worked with the Bank to develop and implement an improved M&E system during project preparation.

(b) Implementing Agency Performance:

Rating: *Moderately Satisfactory*

- REMA was a committed environmental agency. With consistent and strong leadership, it has become an effective advocate for environment and has been internationally recognized for its efforts. It has gradually improved its staffing and outreach to other ministries and has led efforts to further improve the policy and regulatory framework for environmental management in the country.
- The performance of the IMCE PMU at REMA dramatically improved after the project delinking from RSSP, when it was given full responsibility for the project, new staff were appointed, and a

framework for IMCE's remaining activities was developed. The PMU played a significant role in knowledge base development, decision-making, dissemination, and outreach.

- Staffing for the project was never as envisioned. PMU capacity was aggravated by the serious illness of the project coordinator during the first half of the implementation period. Upon his death, he was replaced by an acting project coordinator (not full-time) who continued in that capacity until the end of the project. A qualified technical specialist hired in 2008 turned around the project; but he left in 2010 and his position remained vacant. Not replacing IMCE-dedicated staff on a full-time basis affected implementation quality. High turnover of the project's procurement and financial management staff delayed procurements and slowed disbursements. M&E and project reporting could have been better.
- REMA managed, with Bank support, to reasonably complete the remaining activities despite uncertainties about project extensions, and lack of a full quorum of anticipated staff. Young professionals were hired to help the biodiversity cataloguing, and partnerships were established with local universities and international entities such as IUCN (Ramsar) and Conservation International.

(c) Justification of Rating for Overall Borrower Performance:

Rating: *Moderately Satisfactory*

This is consistent with the performance of the Government and Implementing Agency ratings.

6. Lessons Learned

The key lessons learned from this project are categorized and summarized below.

Project Design: Key lessons during the preparatory phase of the project include:

- *Biodiversity is not just critical in protected areas:* In countries like Rwanda, there is significant biodiversity wealth in areas beyond official protected areas. Considering the rapidly growing population and associated competing land use, it is also not realistic to dramatically increase protected areas, but rather consider conservation and sustainable use in the larger production landscapes including agriculture and forest lands.
- *Inter-sectoral coordination:* It is difficult to leverage coordination and resources across sectors without clearly defining the roles and establishing *a priori* the required commitment for inter-sectoral coordination. It is also important to build capacity and raise awareness on the functions of wetlands for particular sectors, and to the economy as a whole. In the IMCE project, the lack of inter-sectoral coordination was part of the reason that it was changed from a *partially-blended* to a *standalone* GEF operation. Operations blending GEF and IDA financing should be examined carefully during preparation for viability and implications on design and implementation arrangements.
- *Monitoring and Evaluation Framework:* It is critical that project objectives and key performance indicators be consistent across project documents, and be realistic given the project timeframe and proposed activities. In retrospect, given serious existing capacity constraints in a new implementing agency, the project implementation period should have been longer or the project should have been less ambitious. Close attention during the preparation phase is required to set up effective monitoring, learning, and reporting systems.

- *Institutionalization:* There is a need to consider ways to mainstream project activities into existing institutions. For example, in this case, the implementing agency REMA had many PMUs, including one for this project, with independent working arrangements and no requirement to work closely together. The ongoing formation of a new Single Project Implementation Unit (SPIU) should help improve harmonization among REMA projects.

Project Implementation: Key lessons from the operational phase of the project include:

- *Size matters?* Although small projects may result in inadequate attention by both clients and development partners such as the Bank, this project illustrates how a small but focused project can make a big difference. A small investment of about US\$ 4 million managed to help create a policy, institutional, and knowledge framework to support the conservation of critical wetland ecosystems in the entire country of Rwanda; improve public awareness and develop new paradigms for IEM; and set a framework for new investments in wetland areas.
- *Need for capacity development:* The existence of adequate and consistent technical, procurement, and financial management capacity is critical for project implementation, even in a small project. This project was hampered by the lack of such capacity, and thus required extensions to complete its original mandate. However, the project also demonstrated the power of partnering local expertise with international expertise for biodiversity work.

Project Achievements: The project has had several lessons in its achievements in various areas:

- *Community-level Investments:* Although small, these investments can have a transformative effect in terms of developing new participatory development paradigms, and empowering local communities to realize direct and indirect benefits from integrated ecosystem management. It is especially useful to demonstrate and document the linkages between biodiversity/ecosystem management, sustainable land management, and climate resilience as was attempted during this project.
- *Knowledge is Power:* As in most systems, we cannot manage what we cannot measure. The development of an appropriate knowledge base in terms of biodiversity cataloging and associated information systems should be considered part of a long-term activity for awareness raising and use in management/investment planning. It is also critical that such information resides in the public domain to inspire a new generation of documentation and innovative tools (mobile apps, web portals) to improve access and use of such information.

Many of these lessons are already reflected in designing the next generation of projects. For example, the LVEMP II reflects the lessons on community-level activities, and will continue capacity-building and information development for IEM. The new RFLR project under preparation will upscale the IEM in productive landscape approach to a larger area. New agricultural investments (such as RSSP2) now systematically prepare EIA and management frameworks when operating in marshland areas.

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

(a) *Borrower/implementing agencies:*

The ICR has substantively captured the key elements of the project deliverables in the course of IMCE implementation. It is hoped that the context of the ICR will find a forum that can influence further the mainstreaming of environment through consolidation and scaling up of technical outputs as well as partnerships that were successfully initiated under the IMCE project. Specifically, the Bank country office, Rwanda, as a co-chair for the agriculture sector working group, happens to be in a strategic position to assume a leading role in engaging the agriculture sector towards effective environment mainstreaming for sustainability. This can involve the scaling-up of integrated ecosystems management approaches, building on the outputs from IMCE projects. This approach has huge potential benefits particularly in linking policy and regulatory processes and local level implementation with increasing reliance on local level watershed/ecosystems management planning.

(b) *Cofinanciers:*

Not Applicable.

(c) *Other partners and stakeholders:*

Not Applicable.

ANNEXES

Annex 1. Project Costs and Financing

(a) Project Cost by Component

Components	Appraisal Estimate (US\$ million)	Actual /Latest Estimate (US\$ million)	Percentage of Appraisal
Component 1: Development of a policy and regulatory environment for sustainable natural resource management	0.3	0.47	155.7%
Component 2: Capacity building and Institutional Strengthening for Integrated Ecosystem Management	1.5	1.13	75.5%
Component 3: Integrated Protection and Management of Critical Ecosystems	1.7	1.49	87.4%
Component 4: Project Management, Monitoring and Evaluation, and Information Dissemination	0.8	0.85	106.3%
Total Project Cost	4.3	3.94	91.6%
Project Preparation Grant (PPG)	0.35		

(b) Co-financing

Source of Funds	Type of Financing	Appraisal Estimate (US\$ million)	Actual/Latest Estimate (US\$ million)	Percentage of Appraisal
Borrower		1.0	0.91	91.2%
IDA	RSSP & RSSP2	48.0	54.42 IDA in RSSP ICR + 35.0 IDA in RSSP2 PAD	113% for RSSP (Note: Unclear link to IMCE activities)
GEF	Grant	4.3	3.94	91.6%

Annex 2. Key Performance Indicators, Outputs by Component, and Risk to Outputs

Table A2.1: Evaluation of Various IMCE Project KPIs found in Different Documents

Key Performance Indicators (from key documents)	PAD Main Text	PAD Annex	Grant Agreement	MTR	Achievement/ Comments
Policy					
A National Wetlands Policy/Strategy and Action Plan is prepared and approved by end of project first year, and implemented by end of project year 2.	•	•	•		Not achieved as indicated. Poorly worded indicator with target timeframe in indicator formulation. This was dropped at MTR stage. REMA has facilitated adoption of a Biodiversity Policy and Action Plan in 2011.
National Marshland Law is drafted.				•	Achieved. Law and ministerial orders drafted and expected to be adopted in early 2012.
Marshland decrees drafted under Environmental Law.				•	Achieved but under different Law. The marshland decrees were drafted and adopted under the more relevant Land Law.
Four critical wetlands (or areas thereof) are designated as community-based biodiversity conservation and sustainable use areas, and four community-based IME plans are formulated and implemented.	•		•		Achieved. Nine critical wetlands (target was four) have community-based management plans.
Institutional					
All the project staff (central and local) and at least 90% of beneficiary farmers (training of trainers) are trained in integrated natural resource management, biodiversity conservation and sustainable resource use by the end of the project.	•				Significantly achieved. Poorly worded indicator and inadequate quantification. National, district, sector, and other officials as well as targeted WAMACOs and community members sensitized on the importance of wetlands and the need for IEM approaches.
An inter-sectoral governmental coordination mechanism to support integrated ecosystem approach and protect wetlands is put in place.		•	•		Not achieved as planned. Alternative arrangements such as sector-wide cluster mechanisms used; the new Marshland law envisages stronger coordination mechanism.
50% of the Districts involved in the Project have adopted an IEM approach in their DPs.			•		Largely achieved. As in Map, about 10 districts are wholly or partially in the targeted ecosystems. Four out of these ten districts have adopted IEM approaches in their DPs (being scaled up to 15 additional districts by REMA with UNDP support).
Two watershed management plans are prepared and approved by the inter-ministerial committee or alternative coordination mechanism.			•		Achieved. Four watershed management plans (target was two) completed.
Development plans in target districts integrate priority activities from Watershed Management Plans.				•	Partially achieved. District Development Plans for IEM developed in four districts. This is being scaled up with UNDP support.

Technical/Implementation				
New technological packages aiming at improving agricultural productivity and reducing resource degradation, and enhancing biodiversity conservation (on and off-farm) adopted by 80% of smallholder farmers benefiting from the project support.	•			Achieved. The IMCE IEM training was provided to WAMACOs and other community stakeholders. The Burera terracing and Rugezi work demonstrated new approaches. The partially-blended RSSP project (and ongoing RSSP2 that was to continue complementary RSSP efforts for IMCE) has made significant achievements on farmer training.
Technical and financial support is provided to farmers to help them make the transition to enhance productivity and environmentally friendly technologies.		•		Achieved. Limited support provided to farmers (e.g. to create 120ha of terraced farmland, grass planting, etc.) under IMCE. The associated RSSP had very significant achievements in this regard.
Uncontrolled conversion of wetlands to agricultural production has ceased and improved land and water management practices adapted in 80% of the wetlands rehabilitated by RSSP.		•		Largely achieved. Rampant wetland conversion has stopped. RSSP ICR indicates widespread adoption of improved land and water management practices, including in marshland cultivation.
Stable or increase in two or three indicators of biodiversity (fauna and flora) in four major wetlands.		•		Uncertain. Poor indicator. Probably reduced biodiversity loss, but no supporting data.
The income of farmers using improved and tested technologies in rehabilitated wetlands and in watershed/catchment areas has increased by at least 50%.			•	Largely achieved. The IMCE activities in the Burera district for improved watershed management indicated high benefits for the small targeted areas (see Annex 3). RSSP activities indicated that incomes in both marshland and hillside areas rose substantially. Direct beneficiaries reported increased market sales of 50% (compared to 15% for non-beneficiaries), hillside harvest value increase of 14% over non-beneficiaries, and marshland harvest value increase of over 25-fold compared to non-beneficiaries.
Community level projects developed and implemented.			•	Achieved. Poor indicator with target of “53” and baseline of “5” introduced at MTR. The project has supported upgrading of 24 spring sources, 8 watchtowers, tree nurseries in 42 sectors, and elephant grass planting in 40 locations.

Table A2.2: Outputs by Component

Component	Output Indicator (as per IMCE PAD)	Achievements
Component 1: Development of a policy and regulatory environment for sustainable natural resource management.	Inter-ministerial Permanent Coordination Mechanism established.	<p>Given de-linking from RSSP, the need for the inter-ministerial coordination mechanism for operational management was changed.</p> <p>No permanent coordination mechanism was established for the sustainable use and protection of wetlands, and alternative institutional coordination arrangements such as thematic “clusters” and national dialogue are used. Inter-sectoral coordination (especially with Agriculture) remains an issue to be strengthened. The regulatory requirements (e.g., EIAs) for marshland development are in place, but coordination on co-locating investments needs to be strengthened.</p>
	Comprehensive National Wetlands Policy adopted.	<p>The Government of Rwanda has developed a number of policy and legislative tools to promote comprehensive wetlands management, many supported by the IMCE and other initiatives:</p> <ul style="list-style-type: none"> • Ministerial Orders were adopted in May 2009 under the 2005 Land Law to set the framework for wetland categorization and management in the country. • A separate Marshlands Law supported by Ministerial Orders (addressing the criteria and procedures for wetland demarcation, procedures and standards for classifying marshlands, and minimum standards for District Marshland Management Plans) is drafted, and is expected to be adopted in early 2012. • A Biodiversity Policy (incl. implementation plan) and Law were adopted by Cabinet in October 2011, which addresses issues of biodiversity, protection, invasive species, and the management of biodiversity inside and outside protected areas. • The Government passed an Organic Law on Environment (2005) that sets and regulates activity in 50-meter buffer zones for wetlands, lakes, and rivers.

	National Strategy and Action Plan for the conservation and wise use of wetlands approved.	<p>All wetlands have been classified into different categories for protection and sustainable use through the project. Wetlands of global importance are fully protected, and cannot be converted to other uses. Appropriate environmental assessment is required in all wetlands prior to conversion (where allowed), which has systematically ceased uncontrolled conversion of wetlands into agriculture and other uses.</p> <p>The preparation of a specific national wetlands strategy and action plan was dropped at MTR, and was recommended as a post-project activity that could benefit from an improved knowledge base and implementation experience.</p> <p>A Biodiversity Policy & Law and a Climate Change strategy and action plan were adopted in October 2011. With the support of the IMCE project and a related Climate Change/Natural Resources Management Technical Assistance, guidelines are being formulated for key sectors to mainstream climate change considerations.</p>
Component 2: Capacity Building and Institutional Strengthening for Integrated Ecosystem Management.	Human resource and institutional capacities strengthened to develop, implement, monitor and evaluate IEM.	<p>REMA has built technical capacity for integrated ecosystems management. A range of training materials, DVDs, & various publications were developed at REMA.</p> <p>Training activities (including biodiversity workshops) were undertaken at the national and decentralized levels. Sensitization of District Environmental Officers on integrated ecosystem management was undertaken. WAMACOs were created in 53 sectors (sector is the smallest administrative unit). Members (up to 159) received training on a range of issues: wetlands management planning, soil and water conservation, tree nurseries, and ecotourism. Study tours were conducted (in 2008 and 2009) for WAMACO members. Farmers were trained in water quality testing.</p> <p>All Rwandan wetlands are mapped and classified. A Biodiversity Catalogue has been systematically initiated for all key flora/fauna (significant progress has been made in the taxa of mammals, birds, amphibians, fish, reptiles, insects, and herbaceous and woody plants). Wide consultations were held on biodiversity indicator development. A Biodiversity Information System platform has been established and has increased REMA IT capacity. A Biodiversity Atlas has been created.</p>

<p>Component 3: Integrated Protection and Management of Critical Ecosystems.</p>	<p>Local development planning takes critical ecosystems protection and water resource management into account.</p> <p>Wetland critical ecosystems and water resources are managed in a sustainable way.</p>	<p>Four watershed management plans developed (supported by mapping efforts) for all the four critical ecosystems targeted in the IMCE – Rweru-Mugesera, Kagera, Kamiranzovu, and Rugezi. This exceeded the target of two such plans envisioned in the PAD.</p> <p>District Development Plans for IEM developed in four districts - Ngoma, Burera, Kirehe, and Nyamasheke (one in each of the Watersheds targeted).</p> <p>Nine critical wetlands in the targeted ecosystems have Community-based Management Plans (CBMPs). This exceeded the target of four such plans envisioned in the PAD.</p> <p>A demonstrative investment in radical terracing and land tenure provision was undertaken in the Burera district to reduce pressure on the Rugezi wetland. Technical and financial support was provided to farmers to help implement sustainable agriculture practices, including terracing and agroforestry. There is evidence that productivity has significantly increased through these practices on the 120 hectares of terraced land created. The increase of downstream hydropower production was a significant unexpected benefit of this work.</p> <p>Establishment of tree nurseries in 42 sectors, and planting of <i>Pennisetum</i> (elephant grass) to protect boundaries of marshlands and provide fodder in 40 locations in 6 districts. Nurseries helped reforestation efforts in the Ntende-Nyamweko, Rweru-Nyabarongo, Sake-Mugesera, and Kabondo-Karangazi areas.</p> <p>24 spring sources were upgraded in 2 districts. Community reforestation programs including nurseries in 7 Districts</p> <p>8 watchtowers were constructed to improve community and visitor appreciation of the wetland biodiversity, and to catalyze ecotourism in the area.</p>
<p>Component 4: Project Management, Monitoring and Evaluation, and Information Dissemination</p>	<p>Project implementation is satisfactory, and project results are adequately monitored and reported. Management Unit (PMU) established, staffed, and functional.</p> <p>Project Management is satisfactory</p>	<p>IMCE PMU established in REMA with key staff after a slow start. Performed adequately despite not having all the staff envisioned.</p> <p>Initial project management poor and constrained by RSSP linkage. Post-MTR project performance dramatically improved.</p>

Table A2.3: Risk Analysis for IMCE Outputs

Risk	Detrimental Changes and Likelihood	Impact to Development Outcomes
Technical <i>Significant</i>	<ul style="list-style-type: none"> • Technological changes in software, hardware, IT services are inevitable in a rapidly changing IT world. • Inability to maintain appropriate updated and technical skills (e.g., on BIS, website management, IT) at REMA 	<ul style="list-style-type: none"> • The BIS Platform is not maintained and emerging technologies (mobile applications, cloud computing) require it to be re-developed/updated regularly. • Information updating, data security, integrity, and biodiversity databases and catalogue are compromised.
Financial <i>Moderate</i>	<ul style="list-style-type: none"> • Inadequate budgetary allocation (including from development partner support) for integrated ecosystem management activities. • Inadequate budgetary support to decentralized institutions (e.g., at district or sector levels) 	<ul style="list-style-type: none"> • Inadequate budget for REMA reduces its capacity to maintain the momentum developed during IMCE. • Lack of adequate budget support to district and sector levels results in effective community involvement in wetland system management.
Economic <i>Moderate</i>	<ul style="list-style-type: none"> • Global, regional, and country economic challenges. • The pressure for economic growth outweighs consideration of the environment. 	<ul style="list-style-type: none"> • Global and regional economic downturn exacerbates the poverty-environmental degradation low growth cycle, and reduces ecotourism demand. • Low investment in SLM or unregulated economic pressures further exacerbates land degradation, creates pressure on critical ecosystems, and threatens local livelihoods.
Social <i>Moderate</i>	<ul style="list-style-type: none"> • Local communities are not interested in continuing to support integrated ecosystem management. 	<ul style="list-style-type: none"> • Return to pre-IMCE patterns of widespread wetland degradation and conversion without continuing awareness-building and partnership activities with local communities.
Political <i>Low</i>	<ul style="list-style-type: none"> • Lack of sustained high-level commitment to the policy reforms initiated by Rwanda on environmental and ecosystem management. 	<ul style="list-style-type: none"> • Lack of systematic framework for conservation and sustainable development of wetlands to produce economic, social, and environmental benefits. <i>Ad hoc</i> and unsustainable development of wetlands and resulting ecosystem degradation.
Environmental <i>Moderate</i>	<ul style="list-style-type: none"> • Water resources planning and development in larger basin/systems context not pursued. • Water pollution significantly increased from evolving increased agro-chemical use, and increased water demand for a growing population, and industrialization combined with resource over-utilization. • Continuing deforestation and unsustainable land management practices in watersheds. 	<ul style="list-style-type: none"> • Biodiversity threats in critical ecosystems from changed or more polluted water inflows. • Increased pressures for conversion of wetland areas.
Governance (Government Ownership/ Commitment; Stakeholder Ownership; Institutional Support) <i>Moderate</i>	<ul style="list-style-type: none"> • Inter-sectoral coordination inadequate; various sectors pursue development paths without regard to ecosystem consequences. • Local stakeholders not adequately trained or empowered to be effective partners in and beneficiaries of IEM. • Staffing and skill development inadequate. 	<ul style="list-style-type: none"> • The country's institutions are not well equipped or coordinated to sustainably manage their ecosystems for this and future generations. • Rwanda's ecosystems, habitats, and species biodiversity are threatened from unplanned and uncoordinated development and

	<ul style="list-style-type: none"> • Project-by-project approaches threaten institutionalization of achievements. 	unsustainable exploitation of natural resources.
Natural Disasters/ Climate Risks <i>Significant</i>	<ul style="list-style-type: none"> • Recurrent natural disasters such as floods and droughts continue to threaten the country. • Climate change exacerbates the existing high climate variability and brings new challenges. 	<ul style="list-style-type: none"> • Recurrent natural disasters increase food insecurity and trigger landslides displacing populations and disrupting communications, which increases pressures on forests and wetlands. • Temperature increases increase evaporation/evapotranspiration from wetlands, and also increase crop water requirements; significantly affecting flow flows in combination with more uncertain precipitation changes. Climate change increases the incidence of malaria and other diseases, which increases pressures to drain wetlands.



Figure 1: Example of IMCE-supported Terracing in Burera



Figure 2: Example of IMCE-financed Watchtowers



Figure 3: IMCE-supported Spring Source Improvement

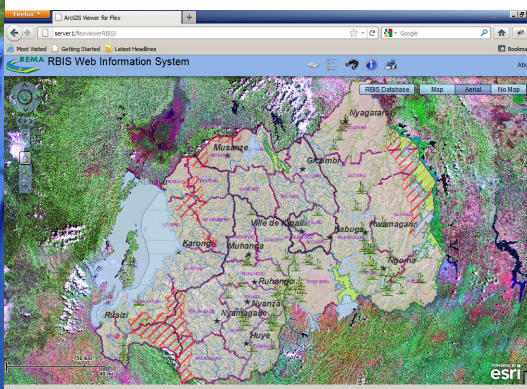


Figure 4: Biodiversity Information System Platform

Annex 3. Economic and Financial Analysis

The IMCE PAD identified numerous benefits that were likely to result from the project. In addition to local and national improvements in technical and institutional capacities for integrated ecosystem management, direct and indirect domestic and global benefits from the project were also anticipated. The PAD noted that given the multiple ecosystem functions of wetlands, a full assessment of the project's benefits would require, at minimum, a catchment-wide approach. The PAD did not undertake a quantitative economic or financial analysis of the IMCE project. Rather, IMCE was analyzed only in terms of its incremental cost to various components of the RSSP project – considered to be the baseline cost scenario.

A full assessment of the project's benefits is fraught with complexity and information constraints because of the nature of wetland resources. However, some indicators of the project's benefit impacts can be estimated, and they illustrate that the IMCE project was very cost-effective. Economic benefits from the project stem from improved functioning of wetland and cropland ecosystems. These benefits to local communities are described below, and indicative economic values for improved hydropower generation and agriculture productivity are provided. The costs of the project consisted of about US\$ 4.0 million in GEF Grant funding and US\$ 1 million in complementary Government of Rwanda investments. Among the project's many benefits, the quantified monetary benefits include incremental yield gains in cropland ecosystems with a present value of US\$ 1.3 million/yr; and restored hydropower generation with a present value of US\$ 100 million/yr.

Wetland Ecosystems

Wetlands are known to provide a large number of ecosystem services that benefit local users in terms of water quality and quantity, waste treatment, sediment retention, flood control, and climate modulation. The evidence at the focus sites shows that the activities of the ICME project restored many wetland ecosystem services and their attendant benefits. These include:

- Provisioning services for improved water supply and increased fodder.
- Regulating services for improved water flow, water purification, and erosion control.
- Cultural services for protection of biodiversity, and related nature activities.

Information on the impacts of some of these benefits is provided below in Table A1. An economic valuation of the (unexpected) hydropower benefit from restored water flow from the Rugezi wetland is also provided.

Increased Hydroelectric Power Generation

The Rugezi wetland dominates the Rugezi-Bulera-Ruhondo watershed that feeds the downstream lakes that serve as reservoirs for Rwanda's two main hydroelectric power stations: Ntaruka and Mukungwa. Lake levels had declined due to poor management and increasing agricultural activities in the upstream wetland area, and degradation of the surrounding watershed. Various protection and sustainable land management activities undertaken by the IMCE project helped to restore the functioning of the Rugezi wetland ecosystem, which improved water flow into the lakes.

The average annual power generation of the combined power plants between 1997 and 2003 was about 65 GWh. Due to wetland degradation, water levels in Lakes Bulera and Ruhondo had fallen to 50 percent, and power hydropower generation at the stations had to be restricted. By 2007, their combined power generation had fallen to about 20 GWh per year. Up until that time, these two stations provided 90% of Rwanda's power generation demand. With constrained capacity to produce hydroelectricity, Rwanda had to install diesel generators to meet the shortfall in electricity supply. The operational cost of these generators can reach US\$ 65,000 per day.¹

The interventions in the Rugezi wetland restored its water regulation service, allowing increased flow into the downstream lakes. By 2010, power generation at the two power plants returned to the 2003 annual level of some 65 GWh, representing restored hydroelectric generation of 45 GWh per year. At electricity rates prevailing in 2005-2006 of 22 US cents/kWh, that translates into an annual benefit of nearly US\$ 10 million, for a present value of nearly US\$ 100 million.

The improved functioning of the Ntaruka station brought immediate electric power benefits to local communities. The Butaro hospital, health center, and commercial center benefit from increased power availability, as does some 375 households. The improved water flow from the Rugezi wetland also permitted the Government of Rwanda to increase its investment in hydropower. A mini hydropower station with installed capacity of 2.2 MW has recently been built on Lake Bulera. Assuming its power generation potential is around 9.4 GWh per year, it represents a yearly benefit of US\$ 2 million, made possible by a well functioning wetland.

Improved Water Supply

In the districts of Ngoma (Eastern Province) and Burera (Northern Province) the IMCE project upgraded a total of 24 spring sources. The sources were protected with concrete casements and basic upstream protection, and communities were trained on water quality testing. Local people reported that the upgrades had significantly improved water access, and the time required to fetch water had declined considerably. A site visit to one of these springs in Burera District found that about 300 people were benefiting from improved access to water.

The population density in these districts ranges from 220 (Ngoma) to over 500 (Burera) persons per sq km. Most of the springs (18) were in Ngoma. If each spring source in Ngoma is serving only half of the District's average population density per sq km, nearly 2000 people may be benefiting from improved water supply. In Burera, if the remaining 6 springs are each used by 300 people, as observed, another 1800 people are benefiting from the activity. In total, the IMCE project could have improved the water supply access for nearly 4000 people.

Increased Supply of Fodder

The project included the planting of *Pennisetum* (elephant grass) to protect 3.5 km of marshland border. Livestock farmers indicated that they were benefiting from the resultant increased supply of fodder for their animals. Lack of data on the number of farmers involved, and the value of the fodder input to livestock production prohibits an estimation of the economic value of this benefit.

¹ World Resources Report (2011).

Cropland Ecosystems

The increased agricultural output from terracing activities in the Rugezi wetland area is estimated to provide a potential value of the benefits to farmers from the use of soil and water conservation farming techniques. The IMCE project included activities for improved hillside land management. Although data on actual agricultural productivity improvements are unavailable, farmers in the project sites indicate that productivity improvements have occurred, which is consistent with information from the RSSP project. The latter provided activities complementary to IMCE on hillsides, and reports that a large majority of farmers have benefited from improved crop investments.

Farmers on the 120 ha of newly terraced hillside land in Burera are reportedly farming maize and potatoes. Yield data for crops grown in Rwanda (FAOSTAT, 2009) show that cereal crops yield on average about 1.5 tons per ha; and tuber and root crops yield about 6 tons per ha. Rwandan farmers can typically produce two crops per year; hence it is reasonable to assume that during the year farmers produce both a crop of maize, and one of potatoes.

A survey of World Bank projects found that in rain-fed farming systems, soil and water conserving agricultural techniques increased the productivity of cereals by 70%; and that of roots and tubers by just over 100% in.² Applying these potential yield gains to the 120 ha of newly terraced land, maize output could increase by 1.05 tons per ha for an total production gain of some 126 tons per year; and potato output per ha could double, for a total production gain of 720 tons per year. At average prices for these two crops, the potential total value of the combined incremental output is about US\$ 127,674 per year, which at a 10% discount rate implies a present value of US\$ 1.3 million.³

Table A1. Indicative Benefit and Cost Summary

<i>Benefits</i>	<i>Potential Impacts</i>
Water supply	Increased access and reliability of local water supply for 4000 people across 24 villages.
Fodder for Livestock Farmers	Increased availability of fodder input to local livestock production. Number of farmers unknown.
Agriculture productivity gains	Increased agricultural output to at least 240 households and 2000 people. PV of incremental output: US\$ 1.3 million
Hydroelectric power generation	Increased electric power to local hospital, health centre, commercial center, and 375 households. PV of restored power generation: US\$ 100 million
<i>Costs</i>	
GEF Grant	US\$ 4 million
Government Contribution	US\$ 1 million

The increased agricultural output is spread over a considerable number of households. The average farm size in the Rugezi area ranges 0.15 to 0.20 ha per household. Assuming, conservatively, that the hillside terracing activity in Burera district permitted farming households a 0.5 ha plot of land, the 120 ha of newly terraced land impacts about 240 households, and at least 2000 people.

² Pretty J, Noble AD, Bossio D, Dixon J, Hine RE, Penning de Vries F, Morrison J. (2006). Resource-Conserving Agriculture Increases Yields in Developing Countries. *Environmental Science and Technology*. V40:4.

³ Maize is about US\$ 139 per ton, and potatoes are about US\$ 153 per ton. (FAOSTAT 2009).

Other Benefits: Increased Capacity Benefits

Tree Nursery Capacity for Alternative Livelihoods

The IMCE project supported the establishment of three nurseries in 42 communities. The trees grown are to be used for hillside and riverbank erosion prevention. As well as providing a local source of inputs for sustainable management of local resources, this activity develops expertise in tree growing for alternative income opportunities.

Integrated Ecosystem Planning and Farming Techniques

Many benefits generated by project-supported activities are realized outside the marshlands and hillsides rehabilitated. Based on the experience elsewhere (e.g., the RSSP project), many farmers can be expected to transfer their knowledge to others in their localities who were not part of the IMCE project-supported activities. The value of benefits from training and capacity building in integrated ecosystem management directed at WAMACOs can be expected to continue to inform local planning and implementation processes through WAMACO member participation in District Environment Committees. Given Rwanda's broad-based consultative process for national planning (for EDPRS and Vision2020), the benefits of the WAMACO capacity for integrated ecosystem management will eventually inform national planning.

National Level Capacity for Integrated Ecosystem Management

Technical and institutional capacity for Integrated Ecosystem Management at the national level was significantly enhanced by the IMCE project. Biodiversity indicators were developed; and a Biodiversity Information System has been established to track trends in land use, biodiversity, and other natural resources. A wetland inventory collected valuable information on hydrology, land use, and vegetation cover, which was incorporated into a GIS based information system to enable monitoring and evaluation of wetland areas. This technical capacity will benefit strategic planning for wetlands; the latter, in turn, facilitated by strengthened national institutional capacity for IEM – another significant benefit attributable to the IMCE project.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending (from Task Team in PAD Data Sheet)			
Remi Kini	Senior Environmental Economist	AFTS3	Task Team Leader
Fofana Soulemane	Operations Analyst	AFTS3	Operational Support
Marie-Claudine Fundi	Language Program Assistant	AFTS3	Team Assistance
Desird Coquillat	Consultant	AFTS3	Technical Inputs
Remileku Rakey Cole	Consultant	AFTS3	Technical Inputs
Prosper Nindorera	Procurement Specialist	AFTPC	Procurement
Emmanuel Tchoukou	Financial Management Specialist	AFTFM	Financial Management
Sameena Dost	Counsel	LEGAF	Legal
Michael Fowler	Senior Finance Officer	LOAG2	Finance/Disbursement
Juvenal Nzambimana	Finance Analyst	LOAG2	Fiancee
Maria Mims	Consultant	AFTSI	Operational Support
Joseph Baah-Dwomoh	Sector Manager	AFTS3	Quality Assurance
Christophe Crepin	Program Manager	AFTS4	Quality Assurance
Enos E. Esikuri	Technical Specialist	ENV	Quality Assurance
Thomas E. Walton	Lead Regional Coordinator	AFTSD	Quality Assurance
Supervision (from Task Team Members in all archived ISRs)			
Remi Kini	Senior Natural Resources Management Specialist	AFTEN	Task Team Leader
Nathalie Weier Johnson	Senior Natural Resources Management Specialist	AFTEN	Task Team Leader
Nagaraja Rao Harshadeep	Senior Environmental Specialist	AFTEN	Task Team Leader
Yoko Watanabe	Senior Biodiversity Specialist and Program Coordinator	GEF/AFTEN	Biodiversity, Implementation Support and ICR Team
Otieno Ayany	Financial Management Specialist	AFTFM	Financial Management
Chantal Kajangwe	Procurement Specialist	AFTPC	Procurement
Herman Jack Ruitenbeek	Environmental Consultant	AFTEN	Environment and Natural Resources Management
Soulemane Fofana	Senior Rural Development Specialist	AFTAR	Rural Development
Margory-Anne Bromhead	Sector Manager	AFTEN	Quality Assurance
Antoinette Kamanzi	Procurement Assistant	AFMRW	Procurement
Aline Dukuze	Team Assistant	AFMRW	Team and Operational Support
Marie Bernadette Darang	Team Assistant	AFTEN	Team Support
Joseph Kizito Mubiru	Financial Management Specialist	AFTFM	Financial Management
Marie Jeanne Uwanyarwaya	Senior Executive Assistant	AFRVP	Operational Support
Amal Talbi	Senior Water Resources Management Specialist	AFTWR	Water Resources

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of Staff Weeks	US\$ Thousands (including travel and consultant costs)
Lending		
FY01	12.85	94.7
FY02	10.85	73.0
FY03	10.40	41.8
FY04	20.10	111.5
FY05	14.98	60.5
TOTAL:	69.18	381.5
Supervision/ICR		
FY06	11.16	41.8
FY07	16.51	74.1
FY08	15.80	90.5
FY09	1.67	53.7
FY10	2.46	59.0
FY11	0.00	31.4
FY12	0.00	16.0
TOTAL	51.91	366.6

Annex 5. Beneficiary Survey Results (if any)

Not Applicable.

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

Not Applicable.

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

Introduction

Following the completion of the activity implementation of the IMCE project, a project completion report will need to be submitted as a requirement to fulfill all the terms and conditions of the project. This is the context within which this report is being prepared first as project completion report in its own right as well as an input into the Implementation Completion Report (ICR) of the World Bank.

Project Objectives, Framework and Activities

High population pressure, constantly diminishing land parcels per household resulting in increasing use of marginal lands, such as very steep and fragile slopes which are prone to severe erosion have compounded the problem of unsustainable land use practices mostly for agricultural purposes in an effort to ensure food security for an ever growing population. Additionally, massive deforestation to meet energy demands and high rates of erosion in the upland watersheds has had serious downstream implications. This has increasingly accelerated the encroachment of fragile lands such as hill sides and wetlands, degradation of water resources and loss of critical habitats and biodiversity.

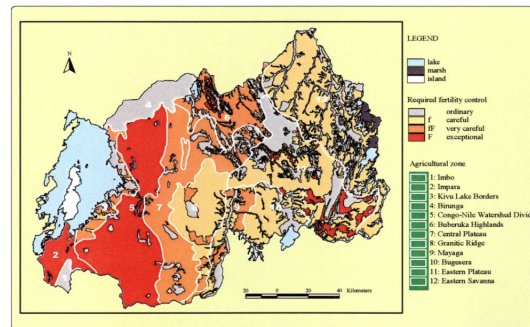
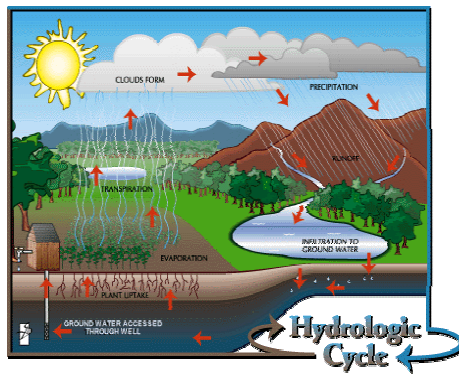
The Integrated Management of Critical Ecosystems (IMCE) project was developed to protect and rehabilitate critically degraded land and water resources, loss of critical habitats, biodiversity and help regenerate and maintain vital ecosystem functions by strengthening policy and regulatory framework and institutional capacity at both central and local levels in support of critical ecosystems management. The objective of the IMCE project was to promote the adoption of integrated ecosystem management in agricultural landscapes with a particular focus on rehabilitation of farmed wetlands and hill-side areas. The framework of implementing involved the identification of 4 components that would adequately deliver on the global project objectives.

Project Outputs by Component

1. The first component focused on the development of policy and regulatory framework for sustainable wetland and natural resources management.
 - a. Drafted the Law on marshes
 - b. Developed Ministerial Orders on Rwandan marshes
 - c. Conducted an inventory of marshlands in Rwanda
2. The second component identified capacity building and institutional strengthening needs with a specific focus on strengthening decentralized institutions and communities in integrated ecosystem management.
 - a. Developed partnerships with stakeholders in integrated management of critical ecosystems at local, national and international level for capacity-building such as:
 - i. participation in Joint Action Development Forum (JADF),
 - ii. revitalizing, engaging and strengthening ties with the inter-ministerial committee around wetland management;
 - b. Organized training of local communities and Youth on sustainable management of natural resources as well as environmental officers and Agriculturists in the Districts where the project had interventions;



Local level capacity building initiatives and concepts: Training WAMACOs

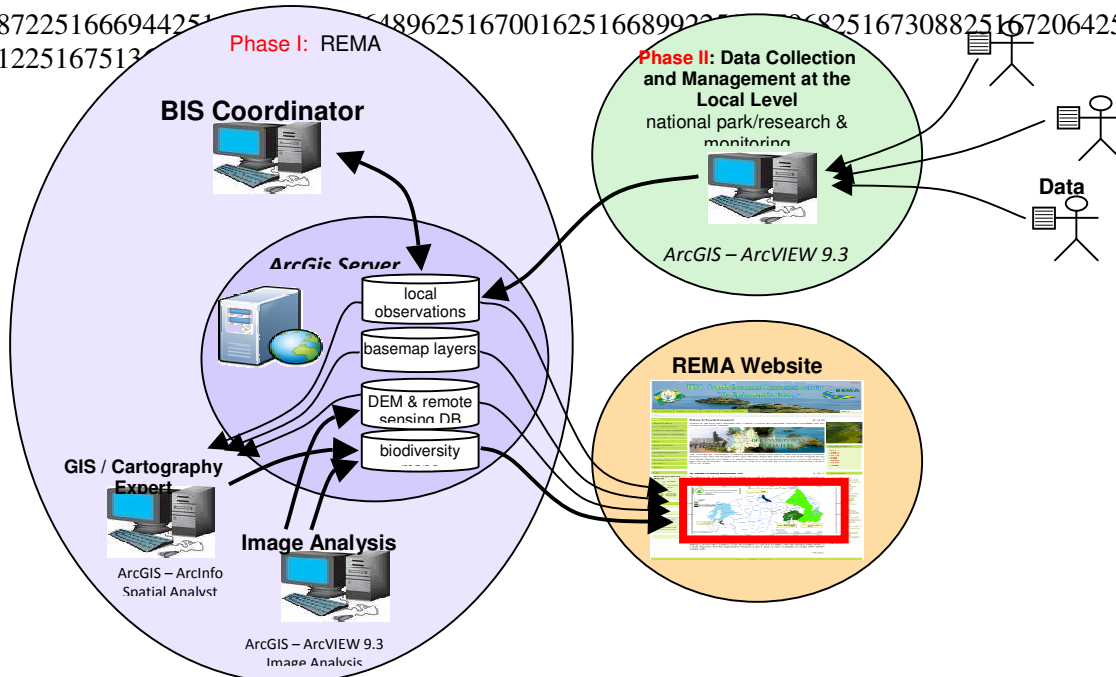


Map 3.15: Capability subclasses for fertility control of the dominant soil units in Rwanda (derived from soil map at scale 1:250,000)

- c. Facilitated capacity building in information, communication and environmental education
- d. Trained local communities in management of conflicts related to the exploitation of wetland resources
- e. Put in place an Information System on Biodiversity including biodiversity cataloguing and biodiversity atlas.

Rwanda Biodiversity Information System (BIS) Architecture and Data Flows

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25167411225167513



3. The third component identified development and implementation of community-based integrated ecosystem management plans for critical ecosystems including community based conservation and sustainable use of biodiversity resources in and around four major wetland systems: Rweru-Mugesera, Kagera, Kamiranzovu and Rugezi.
 - a. Development and execution of watershed management and integrated community management plans of critical ecosystems
 - b. Protection of ecosystems including delineating marshes, planting agro-forestry on hill slopes of marshes, construction of terraces and water sources around Rugezi and Rweru – Mugesera complexes as well as measures to prevent invasion of exotic species.
4. The fourth component identified project management and coordination as support elements for successful implementation of the other components.
 - a. Setting up and supporting coordination and project management structures and operations.
 - b. Monitoring and reporting results and overall progress on the project.

The project was designed to support farmers to adopt sustainable agriculture technologies that increase productivity and improve livelihood while protecting the fragile ecosystems. Therefore, the GEF supported Project was planned in a way that would complement costs and activities of the Rural Support Sector Project (RSSP) that was being implemented by World Bank support funds through the Ministry of Agriculture and Animal Resources (MINAGRI) at the country level. The core aim of the project was transformation of agricultural practices to those that improve agricultural productivity and promote conservation of biodiversity particularly targeting those outside of the protected areas. This served as a significant contribution to sustainable development, a national development aspiration that underlies the EDPRS, MDGs and Vision 2020.

This would be achieved by developing and implementing community based integrated ecosystem management plans, using basic watersheds units as entry points for planning and management of the natural resources

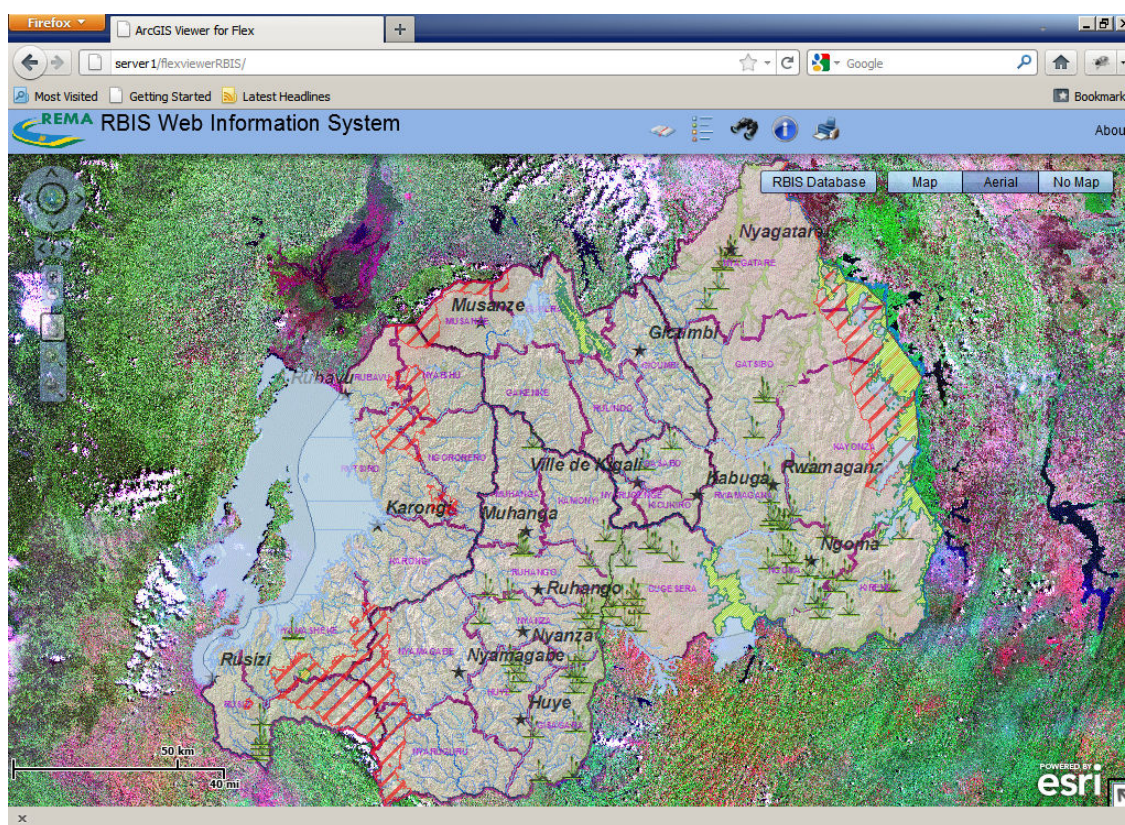
Lessons Learned from IMCE Implementation in Rwanda

The implementation of the project provided a number of lessons that other projects, strategies, programmes and plans can use to improve ecosystem management, health and productivity. Moreover, the experiences drawn from the planning and implementation of the project indicate that benefit to cost ratio overwhelmingly favor investments in ecosystem protection in broader terms and more specifically in wetland management. The case of hydropower production in Rugezi wetland as well as the resiliency and reduction in vulnerability to climate change impacts resulting from rehabilitated wetlands serves as evidence of global benefits that cut across productive sectors which contribute to sustainable national growth. The outline below captures key lessons from the experience with IMCE implementation.

- a. The formulation and subsequent implementation of the project highlighted the crucial role of policy and legislative measures in wetland protection and conservation. In an effort to ensure protection of the wetlands, a Ministerial Order establishing the list of marshes and their boundaries was developed based on the Organic Law on Land. Ideally, the Ministerial Order would have had to rely on the existence of the Marshland Law that was yet to be developed by IMCE. The reliance on the Land Law that was operational at the time is indicative of the sense of urgency that was evident to ensure protection and conservation of national wetlands.
- b. IMCE applied tools and instruments including Geographical Information Systems (GIS) and the Biodiversity Information Systems (BIS) to build a knowledge and evidence base that will continually guide policy and legislative development. As an example, the Ministerial order determining the shores of rivers up to the length measured from the remotest line reached by the water in terms of successive floods could not be developed. The reason lies in the fact that the determination of maximum and minimum level of flooding was not possible by interpreting satellite images. This demonstrates the efforts as well as the comparative advantage IMCE applied to identify tools and instruments that were critical to policy and legislative development for ecosystem management.
- c. The outputs on IMCE project demonstrated that national ownership reinforced by improved policy and regulatory environment promotes rational use of environment and natural resources. This directly leads to ecological, socio-economic as well as community livelihoods benefits. This has additional benefits of increasingly informing climate change adaptation strategies.
- d. The outputs from the project will continually inform planning at various levels of strategic development such as EDPRS II, DDPs, and other local level planning initiatives. The linkage between the rehabilitation of Rugezi wetland and resurgence of water levels to quantities that were exploited for construction of a new 2.2 MW hydropower station at the junction of the wetland and the falls to Lake Burera in addition to full-scale power production for the existing power plants is attributed to sector collaboration around critical resources. This has been a powerful lesson to the country and the subject of feature films (COP15 in Copenhagen) that have demonstrated the value of prudent ecosystem management and its link to climate change. Thus, the lessons from this experience have provided the rationale for climate resilient approach, which Rwanda is currently integrating as a long-term development strategy.
- e. Watershed management plans will be used to continually inform soil and water management issues, which have particular value towards improving agricultural

productivity through irrigation planning and other regulated water use issues. Watershed management planning has significant implications for sustainable land use and management and has started informing decisions in land administration, land use planning and water resources management at national and sub national levels. The land use decisions that led to land consolidation targeting agricultural productivity improvements in Kivuye sector of Bulera District was a result of collaboration between REMA and the National Land Commission with the support of IMCE. Consequently, the sector served as a pilot in the land registration programme and was considered highly successful in ensuring land tenure security for the sector residents

- f. There is need to enhance the analytical capacity and expand and diversify the data collection that IMCE has initiated. The BIS is envisaged to continually inform the indicator development and application processes in ensuring progress monitoring for environmental protection and conservation. This serves as a good entry point for cross sector participation in gathering, consolidating and sharing information that will improve ecosystem conservation, protection, management, and health. It also presents a unique opportunity for academic and research institutions, government institutions and other non government actors to establish and share a common ground that creates an opportunity to enrich knowledge and experience that promotes ecosystem management.



Rwanda Biodiversity Information System-based Ecosystem Mapping, REMA BIS

- g. IMCE project was designed to respond to the Rural Sector Support Project that is affiliated with MINAGRI, and which targets increasing production in wetlands and hillsides. The IMCE project was to specifically address rehabilitation of wetlands and

hillsides. In the initial stages of the project, it was planned to be implemented by MINAGRI. It was promptly realized that MINAGRI would not be ideally positioned to effectively implement IMCE. This was a powerful lesson in that wetlands resources have multiple users and therefore varied interests that must strike a balance in order to optimize their value to society. In Rwanda wetland use decisions had for a long time been shaped by the agriculture sector as the dominant user for farming and irrigation. This is increasingly becoming questionable as a result of increasing water resource use demands by multiple heavy users including energy, industry and domestic sectors. This very debate has had implications on the way wetlands must be managed. The implementation of the first three components on the project have among others laid out a policy and regulatory framework and initiated management plans which are guiding multiple wetland users to undertake collective planning that will ensure sustainable use of the fragile resource.

- h. The level of awareness on wetlands as fragile but vital ecosystems of national importance gained momentum from robust public awareness programmes that were initiated by IMCE. There will be need to build and improve on the campaigns for greater understanding and partnership in order for sufficient national capacity to generate momentum necessary to influence wetland protection and use to the benefit of sustainable national development.
- i. The project commissioned and has indeed supported development of climate change guidelines for health, agriculture, environment and natural resources, infrastructure and energy sectors. There is a national debate on revising the Vision 2020 to integrate climate change. The development of climate change guidelines under the project and the potential link with the Vision 2020 revision clearly demonstrates the increasing appreciation of the role and influence of wetland management in national development planning.
- j. The local level capacity constraints and challenges have impeded successful execution of community-based projects particularly in technical ecosystem management issues. The training of communities in technical areas of watershed management in the course of the project implementation served as powerful lesson that communities have the capacity to learn technical concepts and translate them into practical applications for improved livelihoods and ecosystem health.
- k. Identification of wetlands that are categorized for protection and others for wise use was an important milestone in regulated use of the wetlands as fragile ecosystems and the application of the organic law on environment. This is providing much needed guidance for institutions with various mandates to apply coherent approaches to ensure protection of fragile ecosystems and wise use of national resources.
- l. The existence of a clear results framework is critical to successful project implementation. Although the project suffered setbacks in implementation in the initial stages, the components had clear measurable indicators that continually guided the monitoring of progress. This helped keep the project on track in achieving results.

Sustainability of Project Outputs

The IMCE project registered achievements that have the potential to influence long-term planning for ecosystem management, wetland protection and conservation and sustainable livelihoods benefits through community based participatory approach to sustainable national development. The foregoing provides project-based lessons that will continue to serve as inputs towards sustainability of project

outputs. The presentation below highlights key areas that demonstrate sustainability resulting from IMCE project implementation in Rwanda.

Policy and regulatory framework for sustainable wetland and natural resources management:

- a. The policy and regulatory framework has laid out a firm foundation for ecosystems management and wetland protection. The law on marshland drafted with the technical and financial support of the project and the Ministerial order on marshes that are protected and the manner of organization, management and exploitation of marshes in Rwanda based on the land law is in place and will continually serve as reference point in guiding the use of wetlands. Other tools such as the wetland inventory and management plans have set baselines and standards for decision making to the benefit of ecosystems management and rational use. These tools are complementing other nationally recognized instruments such as the irrigation master plans, the land use planning and administration and resettlement planning to serve as key inputs into wise use and overall management of environment and natural resources.
- b. The current national policy, strategic and programming initiatives are ideally positioned to ensure ecosystem management and wetland protection and conservation objectives benefit livelihoods improvement. The Vision 2020 is undergoing review to integrate climate change. The second generation of EDPRS is being formulated and the highly participatory process is likely to open up opportunities for cross sector engagement around wetland protection as a key component of ecosystems management that is critical to delivery of a significant number of sector objectives. Wetland use and management is critical to agricultural productivity, energy generation and availability of water resources for domestic and industrial supply and as such serve a key input towards sustainable national development. IMCE outputs on the policy and regulatory aspects will continually inform national development planning and implementation for the foreseeable future.

Capacity building and institutional strengthening for effective support to integrated ecosystem management:

- a. The development of DDPs, which is parallel to the EDPRS process, should serve as a key mechanism for integrating wetland management issues into District and local level planning and implementation of wetland priority interventions. All these are key strategic national planning processes that should create an opportunity for integration of ecosystem management and wetland protection and conservation including emerging issues such as climate change.
- b. The project was highly successful in mapping national wetlands and watersheds, improving management practices through support of regulatory frameworks and planning for wise use of the ecosystems. The linkage between project outputs with ecosystem health portends benefits for livelihoods improvement through enhanced agricultural productivity primarily, and other secondary benefits such as incomes and ability to purchase health insurance (Mutuelle). In this way, the project brought a mix of tools and instruments that improved the policy and regulatory conditions for ecosystem management for socio-economic wellbeing.
- c. There is still need to integrate vulnerability assessments and the associated capacity building to integrate risk analysis in adaptation and mitigation measures to climate

- change. The complementarities of project activities with other REMA projects will provide an avenue for IMCE activities to be taken up by projects such as LVEMP II and DEMP II. Thus, the outputs on IMCE project were extremely useful in the identification and selection of intervention areas and activities of national significance on the livelihoods of Rwandans. The World Bank supported LVEMP II regional project will be implemented during its 2011 – 2017 phase and will increasingly rely and build on IMCE outputs.
- d. At the national level, it has been widely recognized that project outputs can be consolidated and streamlined to ensure coherency and feed into national programming. The Single Project Implementation Unit (SPIU) has been identified as the ideal instrument to ensure long-term sustainability of IMCE outputs. REMA must take on and integrate IMCE outputs to improve policy implementation and legislative and regulatory functions on wetland management. There are opportunities to consolidate IMCE products under LVEMP II, DEMP II and other projects and programmes in REMA. The newly formed SPIU serves as an ideal mechanism to achieving this goal.
 - e. The IMCE technical outputs will continue to be of particular interest and value to the Rwanda Natural Resources Authority (RNRA). This presents an opportunity to take the results from IMCE forward since some of the watershed protection activities fall under the water resources management department. The water resources sector in the Rwanda Natural Resources Authority (RNRA), which is currently reorganizing, will rely on data and information that was generated on the project to inform the department's priorities.
 - f. IMCE was well positioned to take on critical activities for which the water resources department did not have the needed capacity to provide the support. Thus, information the project generated on watershed management will be critical in guiding national water use decision across sectors that are considered heavy water users such as agriculture and energy.
 - g. With the rising interest in ecosystems management approach to development, the outputs will become even more useful in informing sustainable development processes.
 - h. It has continued to be a challenge to bring together inter-ministerial committee members to agree to form a permanent team that provides oversight over wetland management issues. This presents extreme challenges in sector ownership of ecosystem based management and makes it difficult to manage ecosystems at programmatic levels limiting wetland management issues to project based approaches. The sector working groups organized to implement the EDPRS and the Sector Wide Approaches (SWAp) increasingly adopted by sectors including the agriculture, and the environment and natural resources sectors, serve as ideal arrangements for harmonization of policies and strategic approaches for improved ecosystems management in general, and wetland use and management in particular.
 - i. IMCE facilitated the development of guidelines to mainstreaming climate change adaptation and mitigation in health, agriculture, infrastructure, energy and natural resources sectors. The recent CCLCD strategy and the growing need to align national development planning with emerging issues including climate change will benefit from the knowledge base set by IMCE. This is an entry point and an opportunity for the outputs of IMCE to increasingly inform national planning for the foreseeable future. Most immediately, the project outputs serve to inform the EDPRS II development and the review of Vision 2020.

- j. The Biodiversity Information System has been designed to accommodate expanding data and information that will continually support national planning through uptake of updated information with particular focus on biodiversity outside protected areas. It is worth noting that the key performance indicator for the EDPRS known as the Common Performance Assessment Framework indicator is on Biodiversity. Thus, the increasing capture of accurate data on biodiversity is crucial to national planning informed by accurate monitoring of improvements in biodiversity.

Development and implementation of community-based integrated ecosystem management plans:

- a. The watershed management committees initiated and functional under IMCE have demonstrated effectiveness in catalyzing communities to effectively manage technical challenges through training and participatory planning for development. The organization of WAMACOs around community development initiatives will increasingly inform other formal community platforms such as the Joint Action Forums (JAFs) and the legally recognized environmental committees on technical issues. It is envisaged that the relevancy of the inputs they provide will form the basis for development planning.
- b. The project was highly successful in mapping national wetlands and watersheds, improving management practices through support to regulatory frameworks and planning for wise use of the ecosystems. The linkage between project outputs with ecosystem health portends benefits for livelihoods improvement through enhanced agricultural productivity. In this way, the project has brought a mix of ecosystem management for socio-economic benefits including increased access to clean and safe water and electrification of community centers.
- c. IMCE has played a key role in the protection of Rugezi wetland through investments in allocating alternate land parcels to populations that encroached the wetland for productive use. Populations formally occupying fragile wetlands and hill slopes were allocated productive land and supported in applying appropriate interventions such as terraces and other soil protection measures to ensure improved agricultural productivity and overall livelihoods through increased incomes. One of the key interventions of the project has also been support to land registration and land titling for the populations. Land ownership through titling has broadened livelihood options for the beneficiaries in that they can access bank loans using land titles as collateral. The project outputs will continue to inform ecosystem management to continually improve ecosystem functions as well as other socio-economic benefits. This is crucial to achieving MDG 1 and 7 particularly for majority of the Rwandan rural poor.

Project management and coordination:

- a. The project encountered challenges from limited procurement support in the initial stages of implementation. It promptly became obvious that procurement tools and systems needed to be in place for a smooth transition to project implementation. REMA has accumulated knowledge and evidence, in part due to the experience from the project, and has identified the procurement position as an essential component of the SPIU staffing to provide smooth transition of new projects toward effective implementation.

- b. As part of the more elaborate strategy for environment mainstreaming, REMA through SPIU and other pertinent projects is well positioned to use IMCE outputs to continue to engage national partners in wetland management.
- c. The project completion report as well as the implementation completion report by GEF/World Bank captures the key areas for sustainability and will serve as reference documents to ensure that outputs from the project initiatives are consolidated to guide watershed and ecosystems management. The ICR in particular will create an opportunity for the WB country office in mainstreaming ecosystems approach to the country level support. The Bank co-chairs the agriculture sector working group and should use this position to influence sustainable agriculture by deliberately integrating the ecosystems approach to agricultural systems and practices.

Conclusions and Recommendations

- a. REMA must take on the task of mainstreaming IMCE outputs in order to improve policy implementation and legislative and regulatory functions on wetland management. There are opportunities to consolidate IMCE products under LVEMP II, DEMP II and other projects and programmes in REMA. The newly formed SPIU serves as an ideal mechanism to achieving this goal.
- b. The water resources sector in the Rwanda Natural Resources Authority (RNRA), which is currently under reorganization, will rely on data and information that was generated by the project to inform the department's priorities.
- c. With the rising interest in ecosystems management approach to development, the outputs will become even more useful in informing sustainable development processes. In particular, the BIS and the climate change components will continue to provide opportunities for cross sector collaboration and as such provide reliable information for planning and implementation of national sustainable priorities.
- d. The project outputs have opened up opportunities to apply integrated ecosystems approaches to climate change management with potential to position ecosystems management and climate change in Vision 2020.

With the beneficial role that IMCE has played in improving agricultural productivity of hillsides and wetlands, the World Bank/GEF through the WB country office has the opportunity to use the ICR report as a key reference document in ensuring that support to sectors such as agriculture benefit from environment and climate change mainstreaming broadly and more specifically from improved watershed management and ecosystems protection.

Annex 8. Post – Completion Operation/Next Phase

REMA, with IMCE project support, has undertaken several activities to ensure consolidation and sustainability of its achievements under the project. These include:

- *Policy Sustainability:* Rwanda has been diligently pursuing the implementation of the ministerial orders under the Land Law that categorized wetlands and determined their protection/use status, which affects all new investments in marshland areas. A Biodiversity Policy and Law was adopted by the Cabinet in October, 2011. A Climate Change Strategy and Action Plan was adopted in October 2011. A new Marshland Law and supporting ministerial orders are drafted, and expected to be promulgated in early 2012. A Water Management Policy and Strategy was prepared and adopted in 2011, which incorporates the significant lessons from the IMCE project in terms of the important link between water and wetland management. All these policy frameworks have been initiated due to the perceived need of the Government, and refined through extensive consultation across various departments. These policy frameworks should help ensure the sustainability of the policy-level recommendations of the IMCE project. It is unlikely that the policy momentum created to improve the framework for sustainable wetland management will be reversed. In the future, it would also be useful to consider the development of a Wetlands Strategy and Action Plan based on the evolving knowledge base and implementation experiences of these policy frameworks.
- *Institutional Sustainability:* REMA's capacity, particularly on wetland management and IEM approaches to conservation, has been significantly built as a result of the IMCE project. REMA is now a strong advocate of environment and has been recognized internationally for its efforts on wetland and biodiversity management. It now has technical capacity to improve biodiversity cataloguing, biodiversity information system development, awareness building, and training. From a skeletal staff at the beginning of IMCE implementation, REMA now has some 39 staff and 30 project consultants and is now organized to manage activities related to protected areas, other critical ecosystems, climate change, environmental assessment quality management, awareness building, administration/fiduciary, etc. In the initial stages, REMA activities (including IMCE) remained at a project level without much institutionalization. REMA has now also recently established a unit that is responsible in promoting and monitoring ecosystem management, and has approved a new position for an information officer, who would be engaged in maintaining and strengthening the information database, and monitoring related to natural resources including the GIS-based Biodiversity Information System that was established through the IMCE project. REMA has also led the national efforts at forming an overall Single Project Implementation Unit (SPIU) to better institutionalize and harmonize the various project-supported activities. At the site level, the Watershed Management Committees (WAMACOs) have been established and trained through the project, and some have now become official Cooperatives engaged in conservation and sustainable use of marshlands. These Cooperatives are not only conserving the marshlands, but also promoting ecotourism and sustainable agriculture and forest management activities. With further support from the local administration and legal backing, many of the WAMACOs could continue to engage in IEM activities that have been initiated under IMCE, especially working with district-level Environment Committees and Joint Action Forums.

- *Technical/Information Sustainability:* A major achievement of the IMCE is to have built the technical and information capacity to support decentralized IEM. The sustainability of these activities is to be supported by the process of biodiversity cataloguing that has been systematically initiated, along with the use of the BIS platform for knowledge management. Well-made videos, the REMA website, and an interactive touch-screen REMA kiosk are now used to promote awareness about participatory integrated ecosystem management, climate change, and IMCE achievements and project documentation. Further efforts are being made to translate some of the IMCE documents into English (Rwanda has experienced shift in educational language from French to English during the project implementation) so that the wider public can access the documents. Future plans include developing public-domain interactive platforms (e.g., web/mobile applications) to promote crowd sourcing of biodiversity information and improving awareness.
- *Natural Resources Sustainability:* The IMCE project has made significant contribution to the national resources sustainability in Rwanda. The policy and implementation support for decentralized wetlands conservation and sustainable land management have reversed the unplanned degradation of the wetlands and hillsides. The biodiversity inventory and information system also provides an appreciation of Rwanda's significant biodiversity, wetland habitats, and ecosystem benefits, and provides a framework to track changes over time. Community-level infrastructure development such as the 24 water source improvements have contributed to improving domestic water availability, quality, and access, as well as to protecting the sustainability of the sources. The eight watchtowers were constructed to higher standards based on Bank input, and should provide a boost to local ecotourism and promote conservation.
- *Financial Sustainability:* REMA has committed to sustain the operations and maintenance of the activities initiated under the IMCE, including the biodiversity cataloguing and BIS. MINIRENA and REMA are also committed to mainstream the IEM approaches that were applied and proven effective through the IMCE project. They are planning to replicate and upscale the initiatives through various ongoing and upcoming projects. Lessons from, and requirements identified, under the IMCE have helped inform the design of the newly-approved World Bank-supported Lake Victoria Environment Management Project (LVEMP) Phase II that includes Rwanda; a proposed GEF Rwanda Forest Landscape Restoration Project (RFLR); and various climate change related initiatives. Ecotourism initiatives undertaken in IMCE show promise for scaling-up, especially with the information (e.g., biodiversity information), institutional capacity (e.g., WAMACO training), and infrastructure (e.g., watchtowers) investments made in the IMCE. A new fund for environment and climate change is being set up to provide a more sustainable source of financing for environment and natural resources management and climate resilience.

Follow-up by the Bank

In Rwanda, the Bank should continue its engagement in this area (biodiversity/wetland monitoring, capacity-building, and climate risk management), given the long-term partnership it has established with institutions such as REMA. This will, however, be dependent on the Government of Rwanda and World Bank Country Management priorities in the future.

One follow-on Bank-supported activity that is already under implementation is the LVEMP II project, which will support knowledge development, and follow-up on the implementation of watershed management in at least one of the four IMCE project sites at the Bugesera complex.

The Bank is currently supporting the second RSSP that promotes sustainable development of several wetland and hillside areas. A third RSSP is also under preparation. The World Bank supported Land Husbandry, Water Harvesting and Hillside Irrigation Project is under implementation. The Bank also provides significant annual budget support especially related to agricultural development. It is essential that the Bank remains involved with monitoring and supporting the environmental sustainability of these programs, especially related to marshland conservation and water quality implications of the enhanced use of agro-chemicals.

There is also an ongoing discussion to develop a new GEF-funded program on Rwanda Forest Landscape Restoration that would further institutionalize and replicate the IMCE's approach on IEM in a larger scale, and also in the forest landscape. A regional Africa Climate Risk Management and Green Growth Project is being prepared to support capacity building for preparation and implementation of investments that have both climate (adaptation, mitigation) and development (economic, social, environmental) co-benefits, working with regional institutions (e.g., African Union Commission, the East African Community) and countries.

Other development partners are also providing support to various environmental and climate-related activities. UNDP supports the implementation of a (GEF) project to strengthen the management capacity of protected areas in the montane forest (which has significantly increased Rwanda's capacity to manage national parks in partnership with the surrounding communities); a poverty and environment initiative (that has supported mainstreaming of environmental expertise in various ministries); district environmental management plans (that have also helped mainstream wetland management issues into half of Rwanda's 30 districts); a National Youth Environment Project (to protect rivers); and improvement in early warning systems. DFID has supported a study on the economics of climate change in Rwanda, a draft Climate Change Strategy and Action Plan, setup of an environment and climate change fund, and land registration. SIDA, who currently co-chairs the Sector Working Group on Environment and Natural Resources, is supporting related capacity building, and investments in projects such as LVEMP II. The EU supports a Strategic Environmental Assessment on environment and agriculture linkages, and community-level investments in terracing. The USAID, who co-chairs the Water Sector Working Group, supports activities in protected areas and water resources. The AfDB supports activities on climate change, energy, and capacity building. GIZ has supported activities on integrated water resources management and renewable energy. Several international NGOs are also supporting Rwanda on activities related to protected areas and decentralized capacity building for climate change.

Annex 9. List of Supporting Documents

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