



1. Project Data:		Date Posted: 07/02/2015	
Country:	Africa		
Project ID:	P103639	Appraisal	Actual
Project Name:	Eastern Nile Planning Model	Project Costs (US\$M):	6.504.65
L/C Number:		Loan/Credit (US\$M):	0.000.00
Sector Board:	Water	Cofinancing (US\$M):	0.000.00
Cofinanciers:		Board Approval Date:	09/01/2009
		Closing Date:	10/30/201212/31/2012
Sector(s):	General water sanitation and flood protection sector (95%); Public administration- Water sanitation and flood protection (5%)		
Theme(s):	Water resource management (97% - P); Environmental policies and institutions (3% - S)		
Prepared by:	Reviewed by:	ICR Review Coordinator:	Group:
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## 2. Project Objectives and Components:

### a. Objectives:

The Nile Basin Initiative Trust Fund Grant Agreement (NBITFGA) and the Project Appraisal Document both stated that "the objective of the Project is to operationalize an improved decision support modeling framework to identify water-related investments, by the Eastern Nile Countries, and evaluate them in a regional context."

The project was fully funded by a grant of US\$6.50 million from the multi-donor Nile Basin Trust Fund (NBTF) administered by the World Bank.

### b. Were the project objectives/key associated outcome targets revised during implementation?

No

### c. Components:

The PAD (p.3) identified three project components.

#### Component A: Knowledge Base Development (Appraisal: US\$ 2.13 million; Actual US\$ 1.05 million )

Provide a shared, synoptic view of the Eastern Nile basins, including its opportunities and risks as viewed from an economic, environmental and social perspective. Baseline data would be organized systematically in a Geographic Information System (GIS) platform with an associated web portal. Effective use will be made of modern datasets from satellite remote sensing and other global/regional datasets.

#### Component B: Modeling System Development (Appraisal: US\$ 2.12 million; Actual US\$ 1.92 million)

The Eastern Nile Planning Model (ENPM) modeling system would include a suite of simulation, optimization and multi-criteria analytical tools. The models would build on a water systems "spine" using tools developed by the Nile Basin Decision Support System (DSS) with analysis of the economic, environmental and social aspects of proposed investments within a water resources systems framework. Alternative future scenarios would also be assessed. The

tools developed will draw upon and contribute to the Knowledge Base (Component A) and will be flexible to adapt to changing needs and increasing information availability.

**Component C: Institutional and Human Capacity Building (Appraisal: US\$ 2.19 million: Actual US\$ 1.68 million)**

The ENPM would support a structured stakeholder process to ensure that the systems developed are driven by multi-sectoral stakeholder demand and are appropriate to support decision-making. The proposed ENPM (developed in collaboration with the Nile DSS) and associated training would strengthen ENTRO as well as improve the capacity of national institutions. Networking with academia and other international river basins will also be pursued to improve cross-fertilization of ideas and sustainability.

There was no formal revision of the approved project components. However, in July 2011, during the course of Project implementation, South Sudan was declared a sovereign state. South Sudan was then treated as another Project beneficiary.

**d. Comments on Project Cost, Financing, Borrower Contribution, and Dates:**

**Project Cost.** The Grant was approved on 09/01/2009 with effectiveness on 09/09/2009 and project closing 12/31/1999. At Appraisal, project costs were estimated at US\$ 6.50 million. According to Annex 1 of the ICR (p. 40), the actual total cost of the project was US\$4.65 million. Actual costs were lower than appraisal estimates due to the use of smaller consultancy contracts and the implementation of the internship program. No Bank or IDA financial resources were dedicated to this project.

**Financing.** The Grant disbursed 72% of the original amount. The ICR (p. 35) notes that Bank management decided to close all NBI projects effective December 2012 which did not allow the project to use the undisbursed funds of approximately US\$1.8 million.

**Borrower Contribution.** Counterpart funds at appraisal were estimated at US\$ 0.60 million. The actual was US\$0.30 million.

**Dates.** The project was extended one time from 10/30/2012 to 12/31/2012 to: (i) allow for orderly closure of the Project activities after a delayed start; (ii) align with the Nile DSS closing; and (iii) ensure continuity of ENTRO activities with a new project investment the Nile Cooperation for Results Project.

**3. Relevance of Objectives & Design:**

**a. Relevance of Objectives:**

**High**

The objective of the project was clearly defined and at the time of Appraisal was relevant to the Region's development priorities and the development priorities of the countries which make up the basin (Egypt, Ethiopia and Sudan). It was consistent with Egypt's reform agenda which was articulated around three pillars including "enhancing the provision of public services (macroeconomic stability, infrastructure services, environment, education, public sector performance). The objective was aligned with the Bank's Country Assistance Strategy (CAS FY 06-08) for Egypt which emphasized the need to improve public services including water resources management and promote the role of user associations and develop PPPs. It was also consistent with the Bank's Interim Strategy (2012) which specified water availability and water quality, particularly in the Delta, as critical issues. The objective was also consistent with Ethiopia's Country Partnership Strategy (CPS FY 2013-2016) which identified the need for increased and improved delivery of infrastructure as an element of Pillar One. In this context, the CAS reported that the GoE in collaboration with their development partners has made progress towards establishing a harmonized and integrated Water Supply, Sanitation and Hygiene (WASH) program. Rural water requirements continue to grow as the agriculture sector continues to grow while the sector remains the number one source of employment. Finally, the objective was relevant to the Sudan's Interim Strategy Note which noted the country's dependence on rainfed and irrigated agriculture and the need to improve and make more efficient the use of water resources including ground water.

In July 2011, during the course of Project implementation, South Sudan was declared a sovereign state. South Sudan was then treated as another Project beneficiary. While the Bank's Interim Policy Note (FY 13-14) did not specifically mention ENTRO, the project was consistent with the broader goals of: (i) sustaining key functions of the state; (ii) supporting the most vulnerable, through funding for food security and protection of basic services; and (iii) engendering governance and fiduciary reforms so as to allow for more efficient absorption of foreign aid.

**b. Relevance of Design:**

**Substantial**

Overall the project's design supported the implementation of the project's objectives. The design was anchored in the

Eastern Nile Subsidiary Action Program (ENSAP) within the framework of the Nile Basin Initiative (NBI). The Eastern Nile Council of Ministers (ENCOM) launched ENSAP to address the need for efficient water management and optimal use of resources, target poverty alleviation, and promote economic integration through cooperative investments. The ENPM has been prepared within the context of the Joint Multipurpose Program or JMP (the process for which is being led by the Bank at the request of the Eastern Nile Council of Ministers) to provide the analytical underpinnings to support investment planning on the Eastern Nile. The project's outcomes were expected to be a critical input to the objectives of the NBI and the work of the World Bank.

The ICR (p. 34) reports that a design weakness was the heavy reliance placed on a large consultancy contract to develop most of the knowledge products and deliver the technical assistance. The choice of this approach was due to the initial limited management capacity within ENTRO to manage numerous consultancy contracts. During implementation, the choice was made more difficult due to the deterioration in the regional cooperation environment related to the Cooperative Framework Agreement. At the Mid-term Review (MTR), the project's implementation modality was altered from using a large consultancy firm to building in-house capacity at ENTRO. Under the new implementation modality ("Plan B"), substantial emphasis was given to the use of young professionals from the riparian universities and ministries through the implementation of an internship program, university partnerships, specialized smaller firm and individual consultancies (including in-house consultants) for the development of key Project products.

#### 4. Achievement of Objectives (Efficacy):

Details on outputs and outcomes related to the project's objectives are presented below. Many of the outputs lacked specific quantification which is likely due to the lack of quantifiable indicators in the Results Framework.

**"The objective of the Project is to operationalize an improved decision support modeling framework to identify water-related investments, by the Eastern Nile Countries, and evaluate them in a regional context." Substantial**

- A large number of professionals working in regional and national institutions that are using ENPM products
- Large number of well attended workshops organized at regional and national level in Egypt, Ethiopia, Sudan, and recently South Sudan
- Systematic geodatabases development and institutionalized; State of Eastern Nile Report developed in addition to EN Atlas and EN in a Changing Climate Report; Sharing improved
- Collaboration established with several ENTRO and other NBI projects
- Several interfaces developed (GIS, interactive PDFs, EN One System Inventory interactive tool, thematic and sub-basin toolkits, web portal, model results visualization); Software adapters co-financed with WRPM for NileDSS
- A suite of ENPM modeling tools developed (including SWAT, Ribasim, RiverWare, HEC suite, NileDSS, Mike Basin, ENMOS, flood forecasting, Toolkits, etc.)
- Large number of people trained (10 decision makers, 8 senior professionals, >60 younger professionals) in >21 workshops (many associated with study tours) and training. Reports, factsheets developed; Internships, meetings, web portal help sharing
- Knowledge base developed (projects, climate, hydrology, economic, social, and environmental)
- Web Portal with online mapping
- Appropriate interfacing with other activities (especially NBI Nile DSS)
- Data management and analysis interfaces developed
- Fully-functional ENPM Models developed
- Adequate Capacity-building and Training activities undertaken
- Strengthened Institutions: Over 50 senior and junior level professionals from Regional and National Institutions using ENPM
- Strengthened Institutions: Three regional and six national meetings were facilitated by ENPM outputs
- ENPM mainstreamed into ENTRO Water Planning Unit; substantial in-house capacity developed; National units and RWGs not active after preparation; good university networks built
- A range of Eastern Nile regional and national project options were analyzed using ENPM tools related to irrigation, watershed management, power systems, etc. to contribute to the development of investment strategies
- Models used to evaluate many more than the 3 projects targeted under different scenarios.
- ENPM Model used to evaluate Multi-Sectorial Investment Opportunities for sustainable planning and management of the Eastern Nile.
- Regional and National ENPM institutions created and operationalized.
- According to comments from the project team, "Bank water resources experts that have reviewed the quality and comprehensiveness of the knowledge base and tools developed under ENPM have noted that these are probably the best in any river basin in the developing world."

#### 5. Efficiency:

## Modest

At Appraisal, the PAD (Annex 9: p 55) reported ENPM costs compared favorably to the initial phases of similar DSS in other parts of the world. Its potential impact on designing and selecting investment scenarios that were expected to cost in the billions of dollars suggests that the level of investment (under US\$ 7.0 million) would be cost-effective. It was also expected that the benefits arising from the early identification of "win-win" investment strategies (analyzed at regional level through the ENPM) and strengthening regional interaction would far outweigh the actual cost of the ENPM project, US\$ 4.60 million.

Creating information systems could lead to lower costs for future analysis and improve decision making. Once the databases are in place, in-house staff can do the updating rather than through consulting contracts. The project was completed on time and with less resources than originally estimated (\$4.65m compared to \$6.50 estimated).

While the project team's comment that "similar basin investments have incurred a wide range of costs from US\$2.0-US\$ 100.00 million" is noted, in the absence of a comparative cost analysis of the most similar/comparable basin investments, 'value for money' for this project cannot be established and efficiency is rated as modest.

### a. If available, enter the Economic Rate of Return (ERR)/Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation :

	Rate Available?	Point Value	Coverage/Scope*
Appraisal	No		
ICR estimate	No		

\* Refers to percent of total project cost for which ERR/FRR was calculated.

## 6. Outcome:

The relevance of objectives is High considering the direct relevance to a number of current country-level and global environmental priorities. The relevance of design is Substantial. Efficacy is Substantial. Efficiency is rated Modest.

### a. Outcome Rating: Moderately Satisfactory

## 7. Rationale for Risk to Development Outcome Rating:

The risk to development outcomes is moderate based on the following:

- the knowledge base will need continuous updating to reflect stakeholder feedback along with geophysical changes associated with impacts of development and climate change.
- technical staff will require ongoing training to insure state-of-the-art skills for knowledge management
- IT strategy and policy within ENTRO needs to continue so ENTRO is able to adapt to the rapidly changing IT world.
- In order to sustain outcomes, ENTRO requires reliable financing. Such financing would need to come from the NBI/ENTRO member states as well as development partners.
- While the NCORE Project will extend support to ENTRO for three years, a more long-term strategy needs to be developed to ensure ENTRO's financial sustainability after this project comes to an end.

### a. Risk to Development Outcome Rating : Moderate

## 8. Assessment of Bank Performance:

### a. Quality at entry:

The project was built on the Bank's prior experience with activities in the Nile Basin and other major international river basins. The ICR (p.14) reports that:

- Strong emphasis was placed on the development of knowledge base and analytical capacity as reliable information and analysis was considered essential for good investment planning. Information sharing among riparian countries, (which commenced before Project implementation) was considered as the first step towards analytical work and riparian cooperation.
- Risks were identified but no mitigating measures were proposed to address the risk of insufficient inter-county cooperation.
- Stakeholder participation was a key element in the project's design as evidenced by the high level of participation by representatives of Egypt, Ethiopia, and Sudan.

- The flexibility embedded in Project design enabled implementation during challenging periods such as the freeze in Egypt and Sudan.

Additionally it is worth noting that:

- Alternatives to the proposed project were considered during project preparation
- Key factors contributing to the sustainability of project outcomes were identified.

**Quality-at-Entry Rating:** Moderately Satisfactory

**b. Quality of supervision:**

The ICR (p.34) reports that Bank supervision missions were regular, instrumental in identifying critical problems, and according to the interviewed ENTRO staff, added value. Missions were all led by the same Task Team Leader, who was involved in the conceptualization and preparation of the Project. The Bank team worked closely with ENTRO counterparts and showed flexibility in modifying implementation modality at MTR as an adjustment to the changing political situation.

Bank team members located in Addis Ababa also added value to the overall management and supervision of the Project. Proximity to ENTRO allowed closer monitoring and on-the-ground implementation support. The Bank team also mobilized support from the Bank Africa Spatial Help Desk to build capacity of ENTRO staff and interns in using modern global datasets, earth observation and climate products, and a range of innovative visualization and interactive tools and knowledge products. However, no measures of the quality of the products were included.

**Quality of Supervision Rating :** Moderately Satisfactory

**Overall Bank Performance Rating :** Moderately Satisfactory

**9. Assessment of Borrower Performance:**

**a. Government Performance:**

For this Project, the "Government" should be understood to include the ENTRO (the recipient of the Nile Basin Trust Fund(NBTF) grant, and the Eastern Nile countries (Egypt, Ethiopia and South Sudan) represented through the ENCOM.

Regional projects are quite challenging from in getting all parties to trust the process and acknowledge common goals. The ICR reports that while water ministries staff from Egypt, Ethiopia, and Sudan provided inputs into project design and in mobilizing stakeholders, their lack of consensus on the location of the regional coordination office for the Project caused Project preparation to be delayed. During implementation both Egypt and Sudan froze NBI activities that limited their government's official participation in key ENPM Project activities. In spite of the "freeze", the project found innovative ways to work such as regional forums and the development of internship programs.

This resulted in implementation delays. During the implementation period, Ethiopia was the only country to meet its annual contribution to ENTRO.

**Government Performance Rating** Moderately Satisfactory

**b. Implementing Agency Performance:**

The implementing agency for the Project was ENTRO. In-house capacity was strengthened as evidenced by the qualified staff in key positions such as Regional Coordinator, Water Planning Head, and Executive Director. Procurement processes were implemented according to guidelines. The reorganization of ENTRO improved considerably the performance of the Project by institutionalizing Project activities within its evolving structure and by putting excellent technical experts from its Water Planning Unit in charge of the Project. ENTRO focused its activities towards achieving the PDO. ENTRO also strived to maintain a balanced composition within its internship program by involving interns from each of the riparian countries including South Sudan.

**Implementing Agency Performance Rating :**

Satisfactory

**Overall Borrower Performance Rating :**

Moderately Satisfactory

## **10. M&E Design, Implementation, & Utilization:**

### **a. M&E Design:**

The M&E Framework provided a list of outcome indicators to measure achievement of the PDO as well as intermediate indicators and output indicators to measure progress on each of the components but the quality of outputs was not sufficiently measured. It also called for the use of questionnaires and surveys (including on-line/web-surveys) to obtain regular stakeholder feedback on Project's progress and impacts as well as on Project activities. In general, the M&E framework provided practical guidance for carrying out M&E of the Project and for measuring progress towards achievement of PDO.

The ENPM generated considerable technical and socio-economic data in building the project's knowledge base. According to the PAD (p. 26), the knowledge base was designed to be used both in a stand-alone model (e.g. for pre-customized and interactive queries on the database and to visualize the results in tabular, graphical, schematic or map-based formats) as well as in conjunction with various simulation and optimization models (to provide information for the model runs and to store results). The Knowledge base provided a shared, synoptic view of the Eastern Nile basins, including its opportunities and risks as viewed from an economic, environmental and social perspective.

### **b. M&E Implementation:**

The ICR (p. 17) reports that ENTRO was responsible for the M&E of the Project. Throughout project implementation, ENTRO was assisted by an M&E Officer. The Officer undertook :

- tracking Project results and feeding the ENTRO's results-based work planning, budgeting and reporting system.
- preparation of monthly, quarterly and annual reports on project results and financial resources utilization.
- preparation of the MTR and Project Completion Report (PCR).

While the M&E system was in general good to monitor Project progress, more could have been done in terms of getting feedback from stakeholders to gauge Project implementation, assessing effectiveness of training and workshops and gathering information from NBI institutions on the use of Project products. Delays were encountered in implementing stakeholder opinion surveys.

### **c. M&E Utilization:**

The ICR (p.18) reported that the M&E system was used by ENTRO management, ENTRO Project Team, and the Bank Project Team to track Project implementation and results. Monthly progress reports were disseminated within ENTRO and quarterly and annual progress reports were disseminated to all key stakeholders, including ENCOM and Eastern Nile Subsidiary Action program (ENSAP) Team.

The Project was covered by the NBI's ENSAP's dedicated website (<http://nilebasin.org/newentro/> ) linked at a later stage to ENTRO's new website (<http://entroportal.nilebasin.org/> ), which was developed under the Project and disseminated Project activities and outputs.

**M&E Quality Rating:** Modest

## **11. Other Issues**

### **a. Safeguards:**

A 'Strategy for Addressing Environmental and Social Safeguards' was developed under the NBI Institutional Strengthening Project in 2008. That strategy provided the framework for all TA projects which fall under the NBI.

The PAD (p. 12) reports that the recipient-executed trust fund technical assistance project was not expected to have any adverse environmental or social impacts. The aim of the project is to build local and regional knowledge, stakeholder processes, and institutional capacity to better handle environmental and social issues in water resources planning. The project was categorized as Category C.

Safeguards were monitored as part of the regular Bank supervision missions and received a rating of satisfactory in

Implementation Status and Results (ISRs) reporting throughout the Project's period. Guidance on stakeholder consultation including in the Strategy for Addressing Environmental and Social Safeguards (SAESS) were adopted to engage stakeholders during the development of database and modeling tools. The assembled data and developed tools would allow conducting meaningful stakeholder consultations and participatory planning in the future.

**b. Fiduciary Compliance:**

**Financial Management:** The overall responsibility for the project's financial management rested with ENTRO who had prior experience implementing Bank financed projects including Watershed Management, Eastern Nile Flood Prevention among others. ENTRO uses Microsoft Dynamic Solomon accounting software which has adequate capacity to produce project's financial statements. The financial management system, including accounting, reporting and auditing arrangements, was adequate and satisfactory to the Bank. Quarterly Interim Financial Reports (IFRs) were on schedule and were acceptable to the Bank. The Project benefitted from a stable, adequate and well-trained financial management staff in ENTRO. Annual financial audited statements and associated management letters were submitted for the periods 2010/2011 and 2011/2012 and had unqualified opinions. Out of the NBTf grant amount of US\$6.5 million, the Project was able to utilize US\$4.32 million (66%).

**Procurement.** Procurement compliance was rated Moderately Satisfactory in ISRs throughout the Project period. In general, procurement planning and procurement were acceptable to the Bank. Changes in scope of work along with the freeze on NBI activities affected procurement. ENTRO procurement staff was familiar with Bank procurement procedures and was stable throughout implementation. The Project would have benefitted from additional procurement support at ENTRO to speed up some of the procedures, particularly during the last year of Project implementation. Project implementation was also hampered by ENTRO's procurement capacity as their limited procurement staff were supporting several major procurements in other ENTRO projects. Some final procurements related to satellite imagery were not completed.

**c. Unintended Impacts (positive or negative):**

The ICR (p.28) reports that the Project has resulted in several positive impacts.

- ENTRO has become more interested in building in-house capacity, networking young professionals in the region, putting more information in the public domain, and develop a more service orientation to its clients.
- Possible future collaboration with other organizations is being planned. MOUs have been signed with UNESCO-IHE and the Ethiopia Tana and Beles Integrated Water Resources Development Project, the Abbay Basin Authority and several Universities.
- A delegation from Malawi recently visited ENTRO and wishes to have follow-up collaboration as they embark on basin planning exercises in the Shire basin.

**d. Other:**

none

12. Ratings:	ICR	IEG Review	Reason for Disagreement / Comments
<b>Outcome:</b>	Satisfactory	Moderately Satisfactory	There is insufficient evidence to rate efficiency substantial.
<b>Risk to Development Outcome:</b>	Moderate	Moderate	
<b>Bank Performance:</b>	Satisfactory	Moderately Satisfactory	No disconnect. The ICR wrongly aggregated its moderately satisfactory rating for Quality at Entry and satisfactory rating for Quality of Supervision into a satisfactory rating overall Bank Performance -- it should have been moderately satisfactory per the harmonized evaluation criteria.
<b>Borrower Performance:</b>	Moderately Satisfactory	Moderately Satisfactory	
<b>Quality of ICR:</b>		Satisfactory	

**NOTES:**

- When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade



the relevant ratings as warranted beginning July 1, 2006.

- The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

### 13. Lessons:

The following lessons were selected, condensed and edited from the Lessons Learned section of the ICR (pp.36-38). Some of the lessons identified in the ICR were more statements of fact than lessons.

**Flexible Design:** One of the key lessons was the need to adopt a project design that focussed on end goals without using rigid implementation modalities. For example, although regional tensions and the environment for regional cooperation were at times difficult, the Bank and ENTRO through adaptive management made project implementation changes which helped the project achieve objectives, meet or exceed key indicator targets.

**Working Closer with Academia:** A key lesson learned was the need to broaden the stakeholder pool for engagement. For a knowledge-driven project such as the ENPM, it is essential to involve academia. ENTRO decided to expand the academics network to include all the key technical universities in the Eastern Nile countries through these three focal universities. Through collaboration, ENTRO developed a wide range of knowledge and modeling products and disseminated ENPM Project outputs. Based on this experience, the NBI has decided to expand such academic partnerships and internships to all the countries of the Nile Basin in future activities.

**Variety in Knowledge Products:** For effective communication of complex issues in the Eastern Nile and to effect change in entrenched mindsets, it is critical that information be communicated in customized ways to different stakeholders. A lesson in the ENPM implementation is to try to develop a range of knowledge products to help better interface with each stakeholder group.

### 14. Assessment Recommended?

☐ Yes ☒ No

### 15. Comments on Quality of ICR:

The ICR is well-written and comprehensive but lacked a measurement of the qualitative aspects of the project's outcomes. It covered with adequate detail all sections of the template. The overall document is a little long and could have been tightened up.

The ICR adequately analyzed the weaknesses and shortcomings in both design and implementation of the project. It provided details on a range of implementation challenges including the problems associated with the use of one large consulting firm and the freeze by two partners which impacted implementation. It also covered in some detail aspects of NBI governance and related project investments which were inter-linked efforts to foster Nile cooperation.

**a. Quality of ICR Rating:** Satisfactory