1. Project Data

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Project Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>P111556</td>
<td>East Afr Publ Hlth Laborat Net (FY10)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Practice Area(Lead)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Africa</td>
<td>Health, Nutrition &amp; Population</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L/C/TF Number(s)</th>
<th>Closing Date (Original)</th>
<th>Total Project Cost (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDA-47310,IDA-47320,IDA-47330,IDA-56140,IDA-56150,IDA-56160,IDA-D0470,IDA-H5930,IDA-H7740</td>
<td>30-Mar-2016</td>
<td>124,870,698.41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bank Approval Date</th>
<th>Closing Date (Actual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-May-2010</td>
<td>30-Mar-2021</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IBRD/IDA (USD)</th>
<th>Grants (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Commitment</td>
<td>63,660,000.00</td>
</tr>
<tr>
<td>Revised Commitment</td>
<td>127,306,841.78</td>
</tr>
<tr>
<td>Actual</td>
<td>124,870,698.41</td>
</tr>
</tbody>
</table>

Prepared by: Salim J. Habayeb
Reviewed by: Judyth L. Twigg
ICR Review Coordinator: Eduardo Fernandez Maldonado
Group: IEGHC (Unit 2)

2. Project Objectives and Components

a. Objectives

The objective of the project was to establish a network of efficient, high quality, accessible public health laboratories for the diagnosis and surveillance of tuberculosis and other communicable diseases (Financing Agreements with participating countries, 2010, p. 5). The PDO statements in the PAD (p. 9) and ICR (p. 8) were identical.
The project consisted of a regional operation in the East African Community (EAC) involving Tanzania, Kenya, Uganda, and Rwanda. Burundi joined the regional operation in 2012, supported by an additional grant, as discussed below in Section 2e. The 2015 additional financing (AF) revised associated outcome targets upward, and therefore a split evaluation is not warranted.

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

Did the Board approve the revised objectives/key associated outcome targets?  
Yes

Date of Board Approval  
07-Jul-2015

c. Will a split evaluation be undertaken?  
No

d. Components

I. Regional Diagnostic and Surveillance Capacity (Appraisal: US$45 million; Revised: US$92 million; Actual: US$87.9 million).

The first component was to provide support to create the regional laboratory network and make it functional. Uganda was assigned a leadership role in laboratory networking and accreditation, working in close collaboration with the East, Central, and Southern Africa Health Community (ECSA-HC). Other country-specific leadership roles in thematic areas are discussed below.

Three sub-components consisted of the following:

1. **Diagnostic Services for Vulnerable Populations in Cross-Border Areas**: Activities aimed at the rehabilitation, expansion, and/or construction of five satellite laboratories within existing hospitals in each country (six in Tanzania) located in cross-border areas to expand access to diagnostic services for vulnerable groups and to serve as sentinel surveillance sites to monitor hot spots for disease transmission. The sub-component would support a "systems approach" to laboratory development leading to accreditation. Main inputs were to include: (i) civil works; (ii) laboratory equipment, materials, waste management equipment, and protective gear to ensure the safety of laboratory personnel; (iii) acquisition of integrated laboratory information systems and videoconferencing capacity; and (iv) provision of additional human resources and operating funds for laboratory functioning.

2. **Reference and Specialized Services and Drug Resistance Monitoring**: The subcomponent aimed at bolstering capacities of existing Central Public Health Laboratories in the participating countries focusing on neglected tuberculosis (TB) laboratory functions and networking them to share information, conduct joint training and research, and collaborate in harmonizing strategies. One of
these labs was to be upgraded to a Supranational Reference Laboratory for TB as part of the World Health Organization (WHO) global reference network. The project was to finance: (i) rehabilitation/construction and laboratory equipment and materials; (ii) acquisition of computers and videoconferencing capacity; (iii) technical assistance to support accreditation and standardization of procedures and protocols; and (iv) provision of operating funds to support external quality assessments and mentorship.

3. **Disease Surveillance and Preparedness**: The subcomponent aimed at complementing ongoing regional and global efforts to improve Integrated Disease Surveillance and Reporting (IDSR) required under the International Health Regulations (IHR 2005) by: (i) strengthening competence of laboratory and facility personnel to collect, analyze, and use surveillance data; (ii) reinforcing laboratory networking and district capacity to report, investigate, and respond to disease outbreaks; and (iii) strengthening communications and data sharing to respond rapidly to outbreaks.

II. Joint Training and Capacity Building (Appraisal: US$9.9 million; Revised: US$17.7 million; Actual: US$15.5 million).

The component was to support training in a range of institutions. Tanzania had the leadership in this area and was to act as a regional training hub. It would provide practical training at its National Health Laboratory Quality Assurance and Training Centre, and in-service training and post-graduate mentorships at the Muhimbili University of Health and Allied Sciences. Other regional training programs were to be supported, such as the International Tuberculosis course on TB control organized by the International Union Against Tuberculosis and Lung Disease, in collaboration with the Tanzanian National Tuberculosis/Leprosy Program, and the African Center for Integrated Laboratory Training in Johannesburg, particularly for training of trainers, and fellowships in field epidemiology through the flagship Field Epidemiology and Laboratory Training Program. The Bank project would finance: (i) attendance at training courses at national and regional institutes; (ii) laboratory attachments, fellowships, and regional exchanges at recognized centers of excellence; (iii) selective graduate training required to support specialized services; (iv) technical assistance for reviewing and developing standards and curricula; and (v) regional workshops to facilitate knowledge sharing.

III. Joint Operational Research, Knowledge Sharing/Regional Coordination, and Program Management (Appraisal US$8.8 million; Revised: US$18.8 million; Actual: US$21.5 million)

Three sub-components consisted of the following:

1. **Joint Operational Research**, led by Kenya, was to focus on three main priorities: (i) evaluate the effectiveness of new TB diagnostic technologies at the programmatic level; (ii) assess drug resistance patterns for endemic diseases; and (iii) ascertain the feasibility of using mobile phone technologies for weekly surveillance reporting of selected diseases. The project would support technical assistance for operational research, operating costs to organize workshops for results sharing, and training to enhance capacities in conducting research.

2. **Knowledge Sharing & Regional Coordination**, in which ECSA-HC would play a coordinating and convening role at the regional level. It would be responsible for the following activities: convening technical experts and policymakers; facilitating capacity building and training; establishing a Forum
for Learning and Knowledge Sharing; and facilitating regional surveillance efforts. The project would fund: (i) operating costs to organize regional workshops to share research and programmatic results, and explore policy implications; (ii) establishment of a small team to coordinate activities at the regional level and support a focal point at EAC; (iii) videoconferencing capacity; (iv) development of a website to serve as a platform for sharing of information and research results; and (v) provision of technical assistance.

3. **Program Management** at the national level, through the provision of funds for the establishment of project coordinating teams, operating costs, and procurement of office equipment, vehicles, and internet access.

**Definition of a joint vision and country-specific leadership roles in topical areas:**

Participating countries agreed to function as a "community of practice" for public health laboratory development, fostering cross-country learning and knowledge sharing. The community of practice would become an integral part of the "Africa Region Health Systems for Outcomes," known as the HSO Initiative. Countries were to develop a common vision towards preventing and controlling the spread of communicable diseases in EAC, where Heads of State signed an agreement to establish a common market that would lead to broader collaboration in other areas, including the health sector. They acknowledged the importance of developing harmonized approaches, promoting specialization, and expanding information sharing about public health issues (PAD, p. 10).

The Heads of State agreed to assign countries to provide regional leadership in key technical areas based on the comparative advantage of a given country. The selected country would serve as a "center of excellence" for selected topics. The distribution was as follows:

- Kenya: Integrated Disease Surveillance and Response & Operational Research;
- Tanzania: Training and Capacity Building;
- Uganda: Laboratory Networking and Accreditation; and
- Rwanda: Information and Communication Technologies (ICT) and Multidrug-Resistant TB.

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

The original cost in 2010 was estimated at US$63.7 million, and was funded by IDA Credits to Kenya, Tanzania, and Uganda and by an IDA Grant to Rwanda. The lending instruments were in line with a Specific Investment Loan modality. The project was approved on May 25, 2010 and became effective on September 7, 2010. A Mid-Term Review was carried out on March 3, 2014.

The cost increased with two additional financing (AF) cycles (US$15 million and US$50 million) to reach a new estimated total cost of US$128.7 million. The actual cost was US$124.9 million. In between, the two AFs consisted of the following:

1. On May 17, 2012, an Additional Grant of US$15 million was approved to include Burundi, which was the only EAC member state not yet participating in the project. Although stakeholders in Burundi expressed interest in joining the project during the FY10 preparation, both IDA envelope limitations and capacity constraints precluded the country’s inclusion at that time. The Grant was meant to
address this gap by broadening coverage and promoting collaboration among EAC member countries (Project Paper for Additional Grant, April 23, 2012, p. 1). However, the project included Burundi at the outset in knowledge-sharing activities to enhance Burundi’s readiness to join the regional operation (PAD, p. 11).

2. On July 7, 2015, a second AF of US$50 million was approved. It included a Credit of US$10 million to Kenya; US$15 million Credits to each of Tanzania and Uganda; and a Grant of US$10 million to Burundi. Rwanda did not seek additional financing, but continued to participate in selective activities. This second AF aimed to address critical gaps in disease preparedness and response capacity as the Ebola outbreak in West Africa and the high vulnerability of neighboring Democratic Republic of Congo (not within EAC) served as reminders of the need to redouble efforts in East Africa, and to enhance compliance with the IHR. The AF also supported further strengthening and expansion of project interventions (ICR, p. 11).

The project was implemented over a period of 10 years. In addition to the originally planned five years until March 30, 2016 (original closing date) and two AFs, the closing date was revised through five project extensions to allow completion of activities. Project support to the majority of activities ceased after March 30, 2020, and the last extension on that date was to allow the completion of the remaining civil works for which funding was still available. The project closed on March 30, 2021.

3. Relevance of Objectives

Rationale

The objectives were responsive to regional needs, as EAC was ill prepared to deal with public health threats (PAD, p. 5). According to the PAD, laboratories were the weakest link within health systems in spite of the critical role of laboratories in the timely diagnosis of communicable diseases, including drug-resistant TB. The PAD stated that weak laboratories hindered the ability of governments to confirm and respond in a coordinated manner to disease outbreaks. The ICR (p. 15) noted that potential public health threats do not stop at national borders and require collective efforts on the part of multiple countries. The PAD (p. 6) noted that a coordinated regional approach would generate benefits that accrue across borders, and that individual countries may not have the incentives and resources to invest in laboratory strengthening and in modern diagnostic technology. The Bank was in a unique position to support a regional project.

Relevance of objectives was and remained consistent with regional and country partnership frameworks that aim at strengthening health systems. The objectives were well aligned with two strategic priorities of the World Bank regional strategy in support of Africa's Transformation: Regional Integration and Cooperation Assistance Strategy FY18-FY23, namely Strategic Priority 3 to “scale up access to quality public services and entrepreneurship through complementary regional solutions”; and Strategic Priority 4 to “promote collective action to address risks of regional economic contagion, fragility, epidemic, and climate hot spots.” The project is also consistent with the Africa Regional Strategy update for FY21-FY23, that was realigned to the World Bank’s response to the COVID-19 pandemic crisis recovery effort. The strategy update recommends supporting African countries to strengthen disease surveillance/pandemic preparedness under Pillar 3 for supporting human capital development (ICR, p. 14).
Rating
High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1
Objective
Establish a network of efficient public health laboratories for the diagnosis and surveillance of tuberculosis and other communicable diseases

Rationale
Theory of change

Project activities were inter-connected, and the theory of change illustrated by the ICR is applicable to the three specific objectives discussed in this section. It was reasonably expected that:

- developing diagnostic and surveillance capacities under a network and the strengthening of specialized diagnostic services and surveillance would result in new or renovated physical infrastructure, well equipped facilities, compliance with WHO standard operating procedures and biomedical waste management, increased GeneXpert tests performed, decreased laboratory stockouts of reagents, and publication of quarterly East Africa integrated disease surveillance bulletins;
- joint training and capacity building for laboratory personnel and the creation of a pool of experts would result in higher skills of personnel; and
- joint operational research and knowledge sharing would result in studies being developed, completed and disseminated.

The above activities and outputs, supported by strengthened regional coordination, facilitation, and oversight, would plausibly result in the establishment of a public health laboratory network for the diagnosis and surveillance of TB and other communicable diseases with improved efficiency, quality, and access to laboratory services.

Outputs and intermediate results

- 33 laboratory facilities were constructed and/or renovated and equipped by March 2020, exceeding the target of 29 facilities. The project also procured computers, servers, video-conference facilities, and ICT equipment for project sites (Borrower, comments, ICR, p. 56). Outputs related to training activities are discussed under Objective 2, below.
- Quarterly publication of a regional surveillance bulletin by the East Africa Integrated Surveillance Network, with country-specific data, was regularly undertaken.
• The number of laboratory tests performed per quarter reached 3.4 million tests in March 2020, exceeding the target of 1.8 million tests.
• The number of GeneXpert tests performed increased from a baseline of 43,000 in 2012 to 58,044 tests in March 2020, exceeding the target of 50,000 (Task Team clarifications, November 16, 2021).
• The percentage of satellite laboratories reporting stock-outs of tracer reagents for stools culture improved, as stock-outs decreased from a baseline of 80% in June 2012 to 35% in March 2020.

Outcomes

The objective to establish a network of efficient public health laboratories was measured by the turnaround time for a critical TB test and by the proportion of jointly investigated outbreaks in cross-border areas. The ICR described added efficiency in overall diagnostic services, including improved accuracy of tests, time saved by service provision in remote areas (see objective 3), increased turnaround time in testing combined with enhanced testing capacity and infrastructure that raised laboratories from sub-optimal conditions for performing tests (often a one-room facility) to state-of-the-art structures with improved functioning and performance.

The following outcome measures were reported by the ICR: (i) the average turnaround time for GeneXpert TB tests improved from a baseline of 48 hours in 2015 to 15 hours in 2020, exceeding the target of 24 hours; and (ii) the proportion of outbreaks in cross-border areas for which joint investigations (both in-country and intercountry) were conducted reached 100% in 2020, exceeding the target of 78%. This result was based on 16 reported outbreaks, including Cholera, Kala Azar, Rabies, Measles, Anthrax, and Rift valley fever (Borrower Comments, ICR, p. 56).

Rating
High

OBJECTIVE 2
Objective
Establish a network of high-quality public health laboratories for the diagnosis and surveillance of tuberculosis and other communicable diseases

Rationale
Theory of change: The same as under Objective 1, above.

Main outputs and intermediate results

• In addition to the outputs noted under Objective 1, 20,825 health personnel received training, mainly for in-service training in various specific technical areas in laboratory operations. 91% of trained laboratory staff were found to be proficient in performing assignments, exceeding the target of 85%.
Long-term training at the Masters and PhD levels was provided to 102 professionals to address a critical gap in professionalizing laboratory services, as most technicians previously had either diploma or certificate-level training. Areas of specialization were adequately illustrated by the ICR on pp. 23-24, e.g., microbiology and parasitology, health sciences, ICT, and strategic management. A Field Epidemiology Laboratory Training Program was provided to 50 staff members to ensure a strong foundation for disease surveillance and response in the region (ICR, p. 23).

- The project completed 30 operational studies by October 2019, exceeding the target of 19 studies (ICR, p. 44).
- The number of satellite laboratories that complied with Regional WHO Standard Operating Procedures was 34 laboratories by March 2020, exceeding the target of 29 laboratories.

Outcomes

The project almost fully achieved its objective to establish a network of high-quality public health laboratories for the diagnosis and surveillance of tuberculosis and other communicable diseases. It exceeded its accreditation targets. It enhanced the quality of microbiological testing, including etiological diagnosis of outbreaks caused by bacteria and fungi. But compliance with biomedical waste management requirements was low. The following outcomes were reported by the ICR:

- The number of satellite laboratories awarded at least 3-Star status under the regional accreditation program based on the WHO/AFRO five-step accreditation approach increased from a baseline of 17 laboratories in 2015 to 34 accredited laboratories in 2020, exceeding the target of 29 laboratories.
- The laboratory client satisfaction rate reached 82.5% in March 2020, exceeding the target of 80% (ICR, p. 43).
- As an institutional strengthening outcome, the ICR (p. 24) also reported that a total of 18 laboratories supported under the project received ISO 15189 international accreditation (based on quality management system requirements particular to medical laboratories). Two other laboratories were ISO 17025 accredited, and the National Microbiology Reference Laboratory Proficiency Testing Scheme on Microbiology in Kenya was ISO 17043 accredited (based on competent operations and valid results), thus contributing to promoting confidence both nationally and internationally (ICR, p. 24) (Explanatory note: ISO is an acronym for the "International Organization for Standardization," headquartered in Geneva, Switzerland. It is an independent, non-governmental, international organization that develops standards to ensure the quality, safety, and efficiency of products, services, and systems. ISO certifies that a management system, manufacturing process, services, or documentation procedure have all the requirements for standardization and quality assurance.)
- The share of reported communicable disease outbreaks having laboratory confirmation of etiological agent reached 100% in 2020, exceeding the target of 95%. The Task Team clarified on November 16, 2021 that, prior to the project, there was no reliable information on this metric, as governments did not systematically report on the occurrence of outbreaks.
- The number of laboratories that complied with biomedical waste management requirements was only four laboratories in March 2020, significantly below the target of 31 laboratories (ICR, p. 39).

The Borrower’s Comments referred to an Evaluation of Impact of New Tuberculosis Diagnostics on Patient Health Outcomes in an East Africa Multi-Country proposal, where it was noted that, although the GeneXpert MTB/RIF assay (a relatively new test that simultaneously detects Mycobacterium tuberculosis complex and
resistance to rifampin in less than two hours) demonstrated incremental detection yield 40 compared to conventional microscopy, it demonstrated suboptimal sensitivity and excellent specificity as compared to culture. The study findings called for careful consideration of the value of new TB diagnostic tools (ICR, p. 59).

Rating
Substantial

OBJECTIVE 3
Objective
Establish a network of accessible public health laboratories for the diagnosis and surveillance of tuberculosis and other communicable diseases

Rationale
Theory of change: The same as under Objective 1, above.

Outputs and intermediate results: The same as under Objectives 1 and 2, above.

Outcomes
The project fully achieved this objective, as its interventions contributed to a significant increase in the number of beneficiaries who had access to laboratory services. The increase can be attributed to a large extent to increased testing availability with enhanced laboratory infrastructure and ability to offer expanded services and more sophisticated molecular diagnostics. The latter also helped in undertaking TB drug susceptibility tests at satellite laboratories near populations residing in remote cross-border areas, rather than sending specimens for liquid culture that took at least 42 days to complete (ICR, p. 17). The following outcomes were reported by the ICR:

- The number of direct project beneficiaries increased from a baseline of 145,887 people in 2010 to 1.8 million in 2020, exceeding the target of 1.1 million persons. Out of these beneficiaries, the number of female beneficiaries increased from a baseline of 76,790 to one million female beneficiaries, exceeding the target of 0.64 million female beneficiaries. Beneficiaries were trackable through facility records and data audits (ICR, p. 11).
- The percentage of people receiving TB drug susceptibility tests among DOTS-treated TB cases not responding to treatment increased from a baseline of 60% in 2012 to 91% in 2020, exceeding the target of 88%. (Explanatory Note: DOTS means Directly Observed Therapy Short Course for TB treatment.)
OVERALL EFFICACY
Rationale
The project fully achieved two of its objectives pertaining to the establishment of a network of efficient and accessible public health laboratories for the diagnosis and surveillance of tuberculosis and other communicable diseases. The project almost fully achieved its third objective to establish a network of high-quality public health laboratories. The aggregation of achievements under the three objectives is consistent with a substantial rating for overall efficacy.

Overall Efficacy Rating
Substantial

5. Efficiency
The PAD provided an economic justification for a regional approach to control communicable diseases. It referred to the 2002 report on Global Public Goods for Health by the Commission on Macroeconomics and Health, noting that countries acting independently may have limited motivation to invest in communicable disease control efforts, as benefits accrue to neighboring countries (PAD, p. 156). The PAD noted the merits of introducing modern diagnostics for treating HIV-associated TB, enhanced accuracy, reduction in diagnostic delay, increased detection, and reduction in mortality and morbidity (PAD, pp. 157-158). The PAD’s analysis projected a benefit of US$769 million over a 20-year period, assuming a 10 percent reduction in the estimated number of transboundary multidrug-resistant TB cases, based on a cost of US$17,000 for treating multidrug-resistant TB. There were issues, however, with the projections and their implicit assumptions. Costs and benefits were not discounted. It was implicitly assumed that identified patients, many of whom are co-infected with HIV/AIDS, would be offered adequate treatment that was beyond the scope of the project, in weak health care settings, and that they would remain compliant through the prolonged therapy period and be cured.

The ICR provided general arguments on economic return, including from the PAD. It also discussed efficiency gains accruing to sector operations, such as in diagnostic services, timeliness of responses and containment measures, and enhanced access to people residing in remote areas. Such improvements pertained to project achievements, as was appropriately reported by the ICR in its efficacy section, and not to project efficiency. The ICR’s Annex 4 on Efficiency Analysis was expected to provide analytical details on the efficiency of the project, but instead it presented a table reflecting efficacy aspects, as it illustrated objectives, baselines, targets, achievements, and level of target achievement (ICR, pp. 52-55).

At the regional level, coordination functions were effectively undertaken and sustained. There was continuity in regional coordination, as the core ECSA-HC team was in place for the entire period of the project (ICR, pp. 27-28).
However, there were significant adverse aspects of implementation that reduced efficiency. Delays impacted most activities, contributing to an extended implementation period of 10 years. The ICR (p. 29) reported that the capacity for ensuring compliance with environmental and social safeguard requirements was severely limited at the country level, creating challenges during both construction and operation of project-supported facilities, including bio-safety risks to laboratory staff. There was very low compliance with biomedical waste management requirements (Results Framework, ICR, p. 39), as noted in Section 4. Also, safeguard assessments required extended time periods due to weak capacities of the client, time taken for hiring consultants, and overstretched Bank safeguard teams (ICR, p. 30).

The ICR highlighted the fact that the creation of complex laboratory infrastructure with limited local expertise and in remote locations near country borders was challenging, and that limited capacities to design and develop appropriate technical specifications resulted in limited response and rebidding, further delaying the works program. The remote locations of construction sites for satellite laboratories in all countries impacted the pace of construction due to constraints in transporting materials and equipment (ICR, p. 30). There were also tendencies to overdesign laboratories at satellite locations, resulting in considerable back and forth dialogue (ICR, p. 28).

For most countries, maintaining inventories of equipment and assets procured with project funds remained a challenge (ICR, p. 33). Both Tanzania and Uganda experienced considerable delays in processing payments to civil works contractors, impacting the construction process and the absorption of funds. Procurement of specialized equipment was delayed and poorly coordinated, resulting in multiple suppliers and complicating protocols for calibration, maintenance, and use. Inadequate capacity to maintain equipment affected equipment utilization because of downtime (ICR, p. 28). The ICR did not offer information about increased operating and maintenance costs for laboratories, equipment, and infrastructure.

High turnover of trained staff at the national and satellite laboratory level was a recurrent constraint (ICR, p. 29), impacting the delivery of laboratory services and implementation of project activities. There were delays in training activities and in nominating candidates for regional trainings by some countries. This also affected Masters training supported by the project resulting in extensions, according to the ICR (p. 29). There were delays in the timely release of funds for specific activities, notably for operational research.

Many instances of country-specific shortcomings were reported by the Borrower’s comments, and these are understandable in a regional project with a large number of actors. For example, in Kenya, there were changes in banking arrangements due to misuse of project funds, resulting in delayed fund flows. Country governance structures were modified, necessitating extensive consultations to revise fund flow arrangements. According to the Borrower’s comments, the HVAC system for an isolation unit had design challenges that delayed its completion, and its contractual amount was significantly undervalued (ICR, p. 57), necessitating additional funds for installation.

External factors, such as political tensions between countries (ICR, p. 30), affected the implementation of cross-border investigations during the second half of the project.

Efficiency is rated modest in view of insufficient analysis of project efficiency and because significant implementation shortcomings reduced efficiency.

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

<table>
<thead>
<tr>
<th>Rate Available?</th>
<th>Point value (%)</th>
<th>*Coverage/Scope (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appraisal</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ICR Estimate</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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

6. Outcome

Relevance of objectives is rated high, as the objectives were fully consistent with EAC and Bank strategies. Efficacy is rated substantial, as development objectives were almost fully achieved. Efficiency is rated modest in view of insufficient analysis of project efficiency and because significant implementation shortcomings reduced efficiency. The overall outcome is rated moderately satisfactory, indicative of essentially moderate shortcomings in the project's overall preparation, implementation, and achievement.

a. Outcome Rating
   Moderately Satisfactory

7. Risk to Development Outcome

The main risks raising the possibility that development outcomes may not be maintained are financial (ICR, p. 34). The ICR (pp. 36-37) reported that project activities ceased or substantially ceased after March 31, 2020, although the Task Team clarified on November 16, 2021 that the correct wording should have been that project support to a majority of activities ceased after March 31, 2020. There are challenges in securing adequate budgetary allocations by participating countries to meet recurring costs for sustaining activities, retaining staff recruited, and maintaining supplies and consumables to sustain assets developed by the project. Sustainability of online reporting and the Laboratory Management Information System will depend on countries paying for internet services and license fees, and on retaining relevant staff.

Political tensions among countries may persist and hinder joint activities. The unforeseen demand for COVID testing also created significant additional pressures on project laboratories. The ICR (p. 34) noted that new COVID operations in participating countries are expected to address this issue to some extent.

8. Assessment of Bank Performance
a. Quality-at-Entry

The project benefited from the experience of other regional operations, feedback from a Quality Enhancement Review, and from early engagement with the United States Centers for Disease Control and Prevention and WHO on technical aspects of laboratory development, networking, and accreditation. Lessons learned and considered in the design were derived from recent reviews of regional projects by the Quality Assurance Group, the 2009 IDA 15 Mid-Term Review of IDA Regional Program, and the 2007 Independent Evaluation Group review of regional programs (PAD, p. 15). Lessons included aspects for promoting partnerships, coordinated approaches, ownership, and leveraging national institutions (PAD, p. 16). The Task Team addressed key recommendations of the Quality Enhancement Review that aimed to alleviate inherent risks of regional projects.

The 14-month preparation period included implementation and training plans that were reviewed and endorsed during appraisal. Implementation arrangements for both national and regional levels (PAD, pp. 17-20) and fiduciary arrangements (PAD, pp. 27-29) were adequately prepared. M&E arrangements were also well prepared. The design allowed room for innovation led by countries and ECSA-HC. For example, the annual peer audit mechanism allowed assessors from one country to participate in audits carried out in other countries, facilitating peer learning and benchmarking performance (ICR, p. 33). However, there were shortcomings, including in risk assessment, as critical risks (PAD, pp. 22-25) did not include severe capacity limitations for ensuring compliance with environmental and social safeguard requirements. These limitations have subsequently created challenges during both construction and operation of project-supported facilities. The issue of laboratory ‘overdesign’ in satellite locations, that resulted in prolonged processing, could have been mitigated during preparation.

Quality-at-Entry Rating
Moderately Satisfactory

b. Quality of supervision

According to the ICR (p. 34), implementation support missions clearly focused on the project’s developmental impact and on implementation support to address arising issues. The continuity of the Task Team Leader through the entire duration of the project was a favorable factor. The TTL was supported by co-TTLs and fiduciary and safeguard specialists located in the field. This arrangement reportedly helped in ensuring timely Bank responses. The supervision team reportedly strived for better integration of this regional operation with broader country-level reform dialogue on health sector development and sustainability of project investments.

Six-monthly implementation support missions were regularly undertaken, aggregating at 20 missions over the 10-year implementation period. The ISRs highlighted implementation challenges, notably the slow progress in civil works, weaknesses in contract management, concerns about fiduciary compliance, and challenges in meeting safeguard requirements. Post procurement reviews were regularly undertaken, and ineligible expenditures were identified through detailed financial management reviews. The Task Team
kept respective Country Management Units regularly informed about implementation bottlenecks as well as noncompliance with fiduciary and safeguard requirements.

The Task Team was opportunistic in optimizing project support to laboratories by including the screening of noncommunicable diseases through the mobilization of grant financing for strengthening cancer registries in the region. The Bank Team commissioned a study on public-private partnerships in EAC, and sought to mobilize private sector financing to help governments in addressing chronic underinvestment in public health laboratories, but without much progress except with faith-based organizations in Uganda and Tanzania. The Task Team was pro-active in restructuring the project and in facilitating extensions that were needed to allow completion of activities and attainment of intended outcomes.

As for implementation shortcomings, it is understood that implementing agencies of client countries bear the primary responsibility for the significant shortcomings described in Section 5, but part of the responsibility was also shared by the Task Team. For example, to ensure compliance with safeguards, a very intensive support would have been expected, including for addressing the overstretched Bank safeguard teams or for addressing failures in completing Environmental and Social Audits. Serious flags should have been raised by the fact that only four laboratories were complying with biomedical waste management over a long implementation period of 10 years.

Quality of Supervision Rating
Moderately Satisfactory

Overall Bank Performance Rating
Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The objectives were clearly stated, and the indicators reflected the stated objectives overall. The theory of change was well illustrated. The countries were committed to using a common framework for monitoring project performance (PAD, p. 21). M&E arrangements were well planned, including for data sources, frequency of collection, and quality assessment. Laboratory Management Information Systems (LMISs) constituted an important data source (PAD, p. 49). Participating countries were responsible for M&E in their own countries and for domestic and regional reporting to ECSA-HC. Each country identified an M&E specialist seconded from its Ministry of Health. A regional M&E officer was assigned to play a key role in coordinating data aggregation and in monitoring data quality. Roles and responsibilities for M&E were clearly identified (PAD, p. 50).

b. M&E Implementation

Implementation was undertaken in a largely satisfactory manner. During the AF of June 22, 2015, four PDO indicators underwent slight modifications for better measurability and accountability: the turnaround time for TB liquid culture, not supported by the project, was replaced by that of GeneXpert test; only
direct beneficiaries were counted, as they were trackable through facility records and data audits; the proportion of cross-border outbreaks that had joint investigation replaced absolute numbers; and for accreditation, the SLIPTA ranking (Stepwise Laboratory Improvement Process Towards Accreditation) was raised from a 2-star status to 3-star status, as the majority of project supported-laboratories had achieved the 2-star status by 2015.

An electronic web-based reporting system was developed for the project and was updated on a regular basis. The project also utilized surveillance data from the IDSR platform. Data quality assessments were also undertaken by ECSA-HC.

The ICR (p. 32) reported that integration of the LMISs, IDSR, and District Health Information Systems used by countries for reporting routine health data did not happen systematically. Installation of the laboratory information system in Rwanda remained unaccomplished (ICR, p. 60), but the Task Team clarified on November 16, 2021 that the country still managed to provide regular data to ECSA-HC without having the benefit of the new system. Hence, these shortcomings did not affect the timely availability of data.

The project developed a web-based reporting system that was regularly updated, building on country data, the LMISs, surveillance data, and occasional quality reviews undertaken by ECSA-HC (ICR, p. 31).

c. M&E Utilization

M&E findings were used for regular project monitoring, and the ECSA-HC team consolidated the findings and shared them at both country and regional levels. Networking through the laboratory information systems, e-learning, and knowledge sharing through video conferencing enabled laboratories to provide a firm foundation for prompt public health responses when needed, as was observed during the COVID-19 pandemic (ICR, p. 14). Laboratory information systems also facilitated data sharing on anti-microbial resistance and on COVID-19 testing results with national reference laboratories to inform national responses and control strategies (ICR, p. 24).

Three regional operational research studies with strong policy relevance on TB diagnostics, combination therapy, and surveillance of enteric pathogens were carried out and published in the *Africa Journal of Health Sciences*. Satellite laboratories carried out 18 operational research studies in Kenya and Tanzania, empowering frontline laboratory workers who were not typically involved in research (ICR, p. 31).

The ECSA-HC team synthesized project data and reported best practices and lessons learned. Numerous news bulletins were issued by participating countries. The World Bank team facilitated the sharing of good practices through the production of several videos/short films on the project (ICR, pp. 31-32). The East Africa Integrated Disease Surveillance Network managed by EAC produced 10 new bulletins to share information on surveillance and disease outbreaks.
Overall, the M&E system as designed and implemented was more than adequate to assess achievement of the objectives. Shortcomings were minor. M&E findings were widely disseminated, shared among countries and with the regional apex level, and used to inform the direction of the project.

**M&E Quality Rating**
High

**10. Other Issues**

**a. Safeguards**

**Environmental Safeguards.** The project triggered Operational Policy (OP) 4.01 on Environmental Assessment and was classified under environmental Category B due to the construction and/or rehabilitation of laboratories and the generation of hazardous biomedical waste at those laboratories. An Environmental and Social Management Framework was prepared. For the constructed/renovated facilities, Environmental and Social Management Plans were also prepared.

The ICR stated that, overall, the project was compliant with environmental safeguard requirements for the duration of implementation (ICR, p. 32). It also stated that performance was adequate in waste segregation and collection, but that waste storage and final disposal continued to be inadequate as these were handled at the hospital level, beyond the scope of laboratories. This conclusion does not appear to be consistent with the information provided elsewhere in the ICR (p. 39), where it was recorded that only four laboratories were compliant with biomedical waste management by March 31, 2020, or with the statement (ICR, p. 29) that the capacity for ensuring compliance with environmental and social safeguard requirements was severely limited.

**Social Safeguards.** In Kenya and Burundi, the project triggered Operational Policy 4.10 on Indigenous Peoples, for which the necessary frameworks were prepared. Project facilities established procedures for handling client feedback. Sites were assessed on client management and customer service during the annual peer review, and remedial measures were taken. In Burundi, beneficiary concerns were regularly documented through community verification surveys and feedback sessions. Records of grievances and responses were documented and kept at relevant sites. Most complaints were handled by facility managers. The Batwa communities were specifically targeted and were involved in the project through a cooperation agreement with their union. Construction issues were discussed and followed up as part of monthly site meetings. Codes of good conduct for workers were established and registers were maintained, recording complaints and solutions. No allegations of gender-based violence were raised. The ICR noted that the rating for a large part of the project was Moderately Satisfactory, but due to failure by both Tanzania and Uganda to conduct Environmental and Social Audits by project closing, the social safeguards rating was dropped to Moderately Unsatisfactory (ICR, p. 32).

**b. Fiduciary Compliance**
Financial management was rated moderately satisfactory for most of the project implementation period (ICR, p. 32). The countries maintained appropriate financial management arrangements, including staffing, and complied with covenants. Interim financial reports and external audit reports were submitted in a timely manner overall with occasional delays, and were found acceptable to the Bank. The ICR did not offer further information on potential audit qualifications. The Borrower's comments in Annex 5 (ICR, p. 60) noted that audits in Rwanda were unqualified, and the Task Team clarified on November 16, 2021 that audits for Uganda and Tanzania were unqualified. No related information was provided on external audits in Kenya and Burundi. For most countries, maintenance of inventories of procured equipment and assets remained a challenge (ICR, p. 33). Procurement performance was rated Moderately Satisfactory during the implementation period. Countries experienced delays in initiating procurement processes, but, according to the ICR (p. 33), Rwanda and Burundi were exceptional and processed procurement, including for civil works, in a timely manner. As noted in Section 5, Tanzania and Uganda experienced considerable delays in processing payments to civil works contractors. The ICR reported that Tanzania procurement performance eventually improved, but that Uganda completed payments to construction contractors only after project closing.

c. Unintended impacts (Positive or Negative)

According to the ICR (pp. 25-26), the project generated four positive unintended impacts:

i. Project efforts in promoting quality diagnosis, laboratory networking, and cross-border surveillance generated interest for similar initiatives in the Africa region, such as the Southern Africa TB and Health Systems Strengthening Project (P155658) and the Africa CDC Regional Investment Financing Project (P167916).

ii. Strengthening disease surveillance and laboratory infrastructure benefited national responses to the COVID-19 pandemic.

iii. The project facilitated standardized reporting on anti-microbial resistance, which is currently evolving into a global challenge.

iv. Laboratory infrastructure was leveraged to screen non-communicable diseases and to develop cancer registry services.

d. Other

---

<table>
<thead>
<tr>
<th>11. Ratings</th>
<th></th>
<th></th>
<th>Reason for Disagreements/Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratings</td>
<td>ICR</td>
<td>IEG</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Satisfactory</td>
<td>Moderately Satisfactory</td>
<td>The ICR rated efficiency as substantial, and this ICR Review</td>
</tr>
</tbody>
</table>
rated efficiency as modest because of insufficient analysis of project efficiency and significant implementation shortcomings that reduced efficiency.

This ICR Review rated both Quality-at-Entry and Quality of Supervision as moderately satisfactory because of moderate shortcomings, including in risk assessment that did not identify and mitigate severe capacity limitations for ensuring compliance with environmental and social safeguards. Related shortcomings persisted and were not sufficiently addressed during implementation.

<table>
<thead>
<tr>
<th>Bank Performance</th>
<th>Satisfactory</th>
<th>Moderately Satisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of M&amp;E</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Quality of ICR</td>
<td>---</td>
<td>Substantial</td>
</tr>
</tbody>
</table>

12. Lessons

The ICR (p. 35) offered several important lessons and recommendations, including the following lessons re-stated by IEG:

In regional projects, the effectiveness of the regional coordination role is enhanced when it is also focused on facilitating country roles. Under the project, this was well demonstrated by the East, Central and Southern Africa Health Community through its attention to supporting countries with weaker capacities, and by creating platforms for knowledge sharing.

Regional projects can leverage country expertise and encourage each country to take a technical lead in specific thematic areas to enhance the skills and motivation of regional teams in advancing transformative changes in the region. Under the project, leadership in key technical areas was reached by consensus and allowed Tanzania, Kenya, Uganda, and Rwanda to serve as "centers of excellence" on selected topics.

Projects with complex technical interventions benefit from the early involvement of partner agencies that have a comparative advantage in those areas. Under the project, the engagement of the Task Team with the U.S. Centers for Disease Control and Prevention, the World Health
Organization, and the African Society for Laboratory Management brought added value to laboratory strengthening and to the stepwise laboratory quality improvement process towards accreditation.

The introduction of new proprietary technologies to development projects can be challenging, as considerable time is required to provide justifications for single source procurement, as was encountered under the project with GeneXpert for TB testing.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR was results-oriented and aligned with development objectives. It adequately illustrated the theory of change with a well-articulated results chain. The ICR aptly analyzed the achievement of intended objectives, and appropriately linked the efficacy narrative, the ratings, and the evidence, which was robust and credible. Specific lessons were directly derived from project experience, and they should be useful for future regional operations. Given that a regional review would require a wider reporting scope, the ICR was considered to be relatively concise, and it followed guidelines.

The ICR had shortcomings. Its analysis of project efficiency was insufficient, and its Efficiency Analysis annex, which was expected to provide close and granular details about project efficiency, discussed project achievements instead. There were lapses in information on fiduciary compliance, and internal inconsistencies on compliance with safeguards and on M&E implementation.

a. Quality of ICR Rating

Substantial