



The World Bank

<IPF_Updated PID_TD Stage Kenya Support to National Irrigation Sector Investment Program - Kenya Resilient Irrigation for a Sustainable Economy> (P517436)

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Updated Project Information Document (PID)

Technical Design Stage | Date Prepared/Updated: 17-Aug-2026 | Report No: PIDIA01799



BASIC INFORMATION

A. Basic Project Data

Project Beneficiary(ies)	Region	Operation ID	Operation Name
Kenya	EASTERN AND SOUTHERN AFRICA	P517436	Kenya Support to National Irrigation Sector Investment Program - Kenya Resilient Irrigation for a Sustainable Economy
Financing Instrument		Estimated Approval Date	Practice Area (Lead)
Investment Project Financing (IPF)		25-Nov-2026	Water
Borrower(s)	Implementing Agency		
The National Treasury	Ministry of Water, Sanitation and Irrigation (MoWSI)		

Is this an Urgent Need / Capacity Constraint situation?

No

Proposed Development Objective(s)

To increase access to climate-resilient irrigation and improve irrigation service performance in Kenya

Sector & Institutional context / Problem Statement

The current underutilization of Kenya's water resources represents a binding constraint as well as a major opportunity for agrifood sector development, rural job creation, food security and diet quality enhancement. Low levels of irrigation access are a key source of exposure to rainfall variability and climate vulnerability, and a binding constraint to agricultural productivity and broader rural development. Expanding access inclusively has the power to enhance agricultural resilience and productivity, enable higher-value crop production, generate employment on and off farm, and reduce pressure on Kenya's ecosystems. There is ample natural resource potential to expand irrigation viably. The National Water Master Plan 2030 (NWMP) estimates that more than 1.3 million ha could be irrigated, drawing on surface water, groundwater, and harvesting and storage resources.

Summary Description

The Project aims to increase access to climate-resilient irrigation and improve irrigation service performance in Kenya, directly contributing to the MPA's overarching objective of catalyzing rural employment growth, with targets of 60,000 hectares under new or improved irrigation, 0.8 million more and better-paid jobs, and 1.5 million people with strengthened food and nutrition security. The tentative project design comprises four components. Component 1



supports rainfed smallholder farmers in transitioning to Farmer-Led Irrigation Development through three subcomponents: awareness and demand generation (outreach campaigns, a farmer advisory tool, and a real-time project monitoring interface); a Results-Based Financing Facility that pays certified suppliers post-verification of installed systems to lower upfront farmer costs and expand supplier reach into underserved areas; and a blended finance window combining a Risk-Sharing Facility to de-risk bank lending to smallholders and irrigation SMEs with a Patient Capital Facility to support supplier expansion into thin markets. Component 2 improves the performance of existing centralized public and community-managed irrigation schemes by applying the iOF framework, piloting performance-based management contracts, building institutional capacity and professional skills, and financing targeted infrastructure upgrades — such as flow measurement and automation — explicitly conditioned on pre-defined performance milestones. Component 3 secures the sustainable water resource base through a National Irrigation Information Center integrating sensor networks and early warning systems, water governance reforms including streamlined permitting and community stewardship agreements, decentralized water access investments such as well advisory and collective storage pilots in ASALs, and transaction advisory to build a bankable pipeline of medium and large storage investments. Component 4 underpins the sector transformation agenda through policy and regulatory reform, institutional and data system strengthening, workforce development, and project coordination and learning activities that link NISIP investments to the broader MPA program.

The project is aligned with key national, sectoral, and regional strategies, including the NISIP 2025, Vision 2030, the National Irrigation Policy (2017), the National Irrigation Sector Strategy (2023), the Agricultural Sector Transformation Strategy, and the Bottom-Up Economic Transformation Agenda (BETA). At the continental level, the project fits within the African Union Commission's Framework for Irrigation Development and Agricultural Water Management (IDAWM). The government's BETA explicitly prioritizes small-scale irrigation as a mechanism for inclusive rural growth, and the NISIP is designed as the primary delivery vehicle for all of Kenya's irrigation development efforts.

The project is closely aligned with NISIP's five pathways: accelerating FLID; targeting performance improvements in large-scale public and community-managed schemes through the iOF framework; revitalizing irrigation in the Arid and Semi-Arid Lands (ASALs); and enabling agribusiness by creating the market conditions, value chain linkages, and regulatory environment needed to attract private investment. Co-location with other MPA operations ensures that irrigation investments are matched by the market access and post-harvest support needed to sustain commercially viable production.

The project directly operationalizes the Water Forward Strategy's focus on scaling FLID (Scalable Solution 4), increasing water and energy efficiency in centralized irrigation (Solution 5), reduction of flood and drought risk (Solution 6), and restoration and protection of rivers and aquifers (Solution 7), and the cross-cutting themes of gender, climate, and scaling finance. It also aligns with broader WBG missions — including AgriConnect and M300 — and supports the Government of Kenya–WBG Water and AgriConnect Compacts, the Kenya Country Partnership Framework (FY23–28) water security pillar, and the Kenya CCDR emphasis on digital technologies and innovative finance. Regionally, the project aligns with regional dialogue and exchange under the Africa Resilient Irrigation for Sustainable Economies (RISE) Program.

The project leverages and builds on recent and ongoing WBG operations, including co-development of RBF mechanisms with the energy access transformation program, alignment with digital and gender-equitable savings initiatives for SACCOs and Farmer Producer Organizations, and a broader portfolio of WBG operations supporting large-scale irrigation, sector reform, performance-based management, water resources institutions, and hydro-informatics. These



complementarities anchor the project's innovative financing mechanisms within established institutional, technical, and policy frameworks across the water, energy, and agriculture sectors.

Components

- Component 1: Farmer-Led Irrigation Development
- Component 2: Performance of Existing Irrigation Schemes
- Component 3: Water Security for Resilient Irrigation
- Component 4: NISIP Implementation and Project Coordination

Environmental And Social Risk Classification

High

Decision

BASIC INFORMATION

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Proposed Development Objective(s)

To increase access to climate-resilient irrigation and improve irrigation service performance in Kenya



Components

Component 1: Farmer-Led Irrigation Development
Component 2: Performance of Existing Irrigation Schemes
Component 3: Water Security for Resilient Irrigation
Component 4: NISIP Implementation and Project Coordination

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PROJECT FINANCING DATA (US\$, Millions)

Maximizing Finance for Development

Is this an MFD-Enabling Project (MFD-EP)? Yes

Is this project Private Capital Enabling (PCE)? Yes

SUMMARY

Total Operation Cost	294.00
Total Financing	294.00
of which IBRD/IDA	250.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	250.00
IDA Credit	250.00

Non-World Bank Group Financing

Trust Funds	2.00
Water Sanitation Program	2.00
Commercial Financing	42.00
Unguaranteed Commercial Financing	42.00

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Environmental And Social Risk Classification

High

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Area OP 7.60	No

Decision

B. Proposed Development Objective(s)

Development Objective(s)

To increase access to climate-resilient irrigation and improve irrigation service performance in Kenya

Key Results

Table 2.1. K-RISE PDO-Level Indicators¹

	Indicator	Baseline	Targets
PCO Outcome 1: Increase access to climate-resilient irrigation			
1	People benefiting from increased resilience of livelihoods, jobs or firms	0	1,500,000
2	Landscapes under enhanced conservation and/or sustainable management (terrestrial and inland water areas) (hectares)	0	150,000
3	Direct beneficiaries reached by project investments and interventions	0	3,200,000
4	People fed as a result of increased agricultural/food production from new/improved irrigation and drainage and/or better rainfed agriculture	0	1,500,000
PDO Outcome 2: Improve irrigation service performance			
5	People using digitally enabled services (new services)	0	3,200,000
6	People benefiting from actions to expand ownership and use of economic assets to advance gender equality	0	180,000
7	Number of more and better-paid job equivalents	0	800,000

C. Project Description

1. **The project comprises four complementary components.** The first two directly support adoption and performance of irrigation on rainfed agricultural land and expansion and performance with a focus on FLID and centralized irrigation schemes, respectively. The next two components support irrigation enablers, with a focus on water security, drought resilience, and on public institution and policy. Together, these will enhance the performance and climate resilience of the water services that underpin the productivity and competitiveness of Kenya’s agrifood systems at large,

¹ All indicators will be disaggregated by gender and age group, when pertinent. The indicators contribute to the Theory of Change and will be shared via the program management information system (MIS), enabling program-wide results monitoring, and cross-project analysis of co-location effects and job multipliers using a common MBJ methodology.



and program-supported value chains, clusters, and connectivity corridors. The project is expected to prevent deforestation arising from cropland expansion through intensification, promote GHG mitigation by limiting the adoption and use of diesel pumps, prevent unsustainable (ground)water abstraction for irrigation purposes, and respond to the drought conditions that are being exacerbated by climate change. Component activities are consistent with the MPA program's intent to facilitate coherent, complementary, and co-located investments. All digital tools and platforms developed with project support will be designed for interoperability and integrated with those developed under other MPA operations.

Component 1: Farmer-Led Irrigation Development (US\$150 million, US\$42 million in private capital mobilized)

2. **This component aims to accelerate a nationwide expansion of FLID by addressing key constraints to the development of distributed irrigation markets.** With a focus on small-scale irrigation technologies and services that are tailored to the needs of smallholders and powered by clean energy, the component will follow a three-pronged approach that involves (i) stimulating FLID awareness and demand; (ii) using RBF to bring down the costs of equipment adoption, product and service innovation, and market expansion; and (iii) increasing access to finance by smallholders and irrigation firms alike. To address affordability and access to finance (ii and iii), the component will establish or lay the groundwork for complementary financing facilities and digital systems further described in Box 2.1. The three financing facilities to be established or structured are: (i) a Results-Based Finance Facility for Irrigation (RBFFi) that conditionally subsidizes eligible irrigation equipment and irrigation firm activities; (ii) risk-sharing facilities (RSFs) that derisk irrigation lending; and (iii) a Patient Capital Facility (PCF) that offers long-tenor, "last resort" financing to irrigation sector firms for scaling operations in underserved markets. The component will concentrate resources on operationalizing the RBFFi, while also financing TA to lay the groundwork for the possible future capitalization and operationalization of the RSFs and PCF—whether at a later stage of the Phase 1 project or thereafter—subject to market demand, institutional readiness, and approvals. Component 1 addresses market failures in sustaining climate-resilient and water secure production systems, and supports all four pillars of the MPA program, Water Forward Scalable Solutions 4 (Farmer-Led Sustainable Irrigation, Decentralized Irrigation Services), and AgriConnect Solutions 2 (AgTech), 4 (Skills, Extension and Research), and 5 (Financial Ecosystem). The WBG private sector ecosystem engagement is detailed with mutual commitments by IDA, IFC, and MIGA in the Joint Implementation Plan (see Supplemental 1).

1.1 FLID Awareness and Demand (US\$7.3 million)

3. **The subcomponent will build FLID awareness among farmers, irrigation suppliers, financiers, and government actors and stimulate market demand for distributed irrigation equipment and services.** Effective public and private extension services and awareness-raising are both central to demand-creation and RBF readiness; and the subcomponent will help reorient the public sector from a direct service delivery to a more facilitative role that supports farmer decision-making. The subcomponent will finance (a) the rollout of national and county-level communications and outreach activities, including manuals, technical demonstration days, agricultural fairs, farmer-to-farmer and on-site demonstrations, outreach logistics, radio and television campaigns, and multistakeholder workshops (explaining the FLID value proposition in context of smallholder agricultural drought resilience, investment requirements, and support instruments)²; (b) the development and dissemination (via existing extension services and farmer organizations) of a farmer-facing application that supports two-way information flows and multiple functions described in Box 2.1, with efforts concentrated in the MPA's priority agrifood clusters³ and underserved markets; and (c) the design and technical

² A Gates Foundation grant supported the design, during project preparation, of national and county-level communications and outreach strategies, including stakeholder mapping, the development of stakeholder-targeted messaging, and the identification of dissemination channels.

³ AgriConnect's priority agrifood clusters refer to geographically defined zones used to coordinate public and private investments along priority value chains. Irrigation investments under this component will be spatially co-located with these clusters and closely coordinated with program interventions under the parallel Agribusiness Development Project, allowing K-RISE to leverage parallel investments in market infrastructure, aggregation, logistics, digital agriculture platforms, and extension systems. This approach will strengthen farmer awareness and market linkages while ensuring that cropping decisions remain market-driven and determined by farmers and value chain actors.



backstopping of a dedicated FLID-related module within the NISIP-cum-project management information system (NISIP MIS) that generates the analytics needed for adaptive program design to optimize inclusive targeting and drought resilience impact, including the calibration of subsidy levels, supplier incentives, guarantee parameters, and geographic rollout.

1.2 Result-Based Finance for FLID Delivery (US\$130.2 million, US\$42 million in private capital mobilized)

4. **Through the establishment and operationalization of the RBFFi, this subcomponent will facilitate the adoption of distributed irrigation equipment as well as the improvement and scaling of equipment and distribution, thereby supporting climate adaptation and resilience.** The RBFFi will be one window within a national results-based financing facility (RBFF) that will be designed to accommodate additional RBF programs, including a clean energy one to be developed and managed by the Ministry of Energy and Petroleum (MoEP).⁴ K-RISE will focus exclusively on the irrigation window, to be established and operated by the State Department of Irrigation (SDI) as the single nation-wide government-administered incentive mechanism for FLID, complementing existing mechanisms with explicit anti-stacking provisions. The RBFFi will support FLID uptake by offering results-based rebates and catalytic grants to irrigation equipment and service providers, including irrigation-as-a-service (IaaS) providers. Rebates will be paid to irrigation equipment dealers against the verified sale, installation, servicing, and/or demonstrated functionality of eligible irrigation systems—ones that are suitable for smallholders. Catalytic grants will be released in tranches against the achievement of milestones relating to recipient firms' expansion into underserved markets and innovation efforts—notably around the development of hire-purchase, leasing, and service-based delivery models. Grant agreements will include explicit conditions on pricing, geographic reach, and product affordability, and will be informed by water availability. Investments will be directed to agrifood clusters with FLID potential across a range of water resource contexts, with the target of reaching 50,000 ha. The subcomponent will finance (a) ministry-level activities within MoWSI that relate to establishing and overseeing the RBFFi, including arranging for the procurement and oversight of an RBF Fund Manager,⁵ and adopting an Operations Manual that defines the Fund Manager's fiduciary responsibilities, RBFFi work flows, structured incentives, standardization, service benchmarks, and verification and disbursement modalities; (b) the RBFFi funding, with a target envelope of US\$123 million, covering both rebates and catalytic grants; (c) the development of the RBFFi Platform, a digital platform that will support end-to-end RBFFi operations including supplier onboarding, equipment pre-qualification, stakeholder data flows and communications, verification and rebate payment processing, and grievance redress; (d) the facilitation of irrigation equipment standard-setting, early testing, and certification with global partners; (e) third-party verification services, including digital (and AI-enabled) verification and field inspections; (f) targeted support for early-stage, youth-led IaaS providers offering affordable irrigation solutions to poorer households; and (g) an assessment of whether carbon markets can be leveraged to advance the adoption of clean energy irrigation technologies. Under Phase 1 of the MPA program, the subcomponent will focus on pumping and irrigation technologies that use accessible water sources, lower GHG emissions, and increase water-use efficiency, while civil works for water source development, including well digging, may be considered in a later phase of the MPA program. This subcomponent is expected to leverage about US\$42 million in PCM in the form of direct farmer co-investment across ~8,000 hectares (see Annex 3). Preliminary GHG accounting analysis shows a further sequestration potential of 1,018,478 tCO₂e over the project's 10-year economic lifetime⁶ arising from halted deforestation, improved farm management practices, land-use changes, and a switch from diesel to solar pumps achieved through rebate-driven FLID and double-cropping on over 50,000 ha of cropland.

1.3 Blended Finance for Market Expansion (US\$12.5 million)

⁴ The umbrella facility will share a governance architecture and digital systems, offering cohesion, economies of scale, and learning opportunities.

⁵ The RBF Fund Manager may be shared across the broader RBFF, but only RBFFi-related services will be financed under this subcomponent. Fund manager procurement arrangements will be agreed jointly by the relevant sector ministries, the National Treasury, and other implementing entities.

⁶ From -2,586,242 tCO₂e in the without-project scenario to -3,604,720 tCO₂e in the with-project scenario.



This subcomponent will support upstream work on two types of blended finance facilities—RSFs and a PCF—that, if operationalized, would address the liquidity and long-term capital constraints faced by smallholder farmers and irrigation firms. While the design of both types of facilities is subject to determination, RSFs could deploy derisking instruments such as first-loss and partial credit guarantees to incentivize irrigation lending to farmers and irrigation firms, leveraging existing guarantee structures and facilities. The PCF would offer a range of financial services to accompany the expansion of irrigation firms’ operations in existing and underserved markets. Together, the two facilities could make use of risk-sharing, wholesale liquidity, co-lending, refinancing, subordinated debt, quasi-equity, equity, and other financing arrangements.⁷ The subcomponent will finance TA to assess and prepare (a) RSF arrangements, including assessments of market interest and FLID value chain actors’ financing needs (“understanding the market demand”), the availability of a credible pipeline of bankable borrowers and transactions (“sizing the market”), and FI readiness (“readiness of FI to serve the market”); the identification of suitable lending products; and the facility’s design; and (b) a potential PCF, including assessments of the patient capital needs and absorption capacity of equipment suppliers and service providers, with consideration for cash-flow profiles, liquidity constraints, investment requirements, and transaction pipelines; the identification of possible patient capital and liquidity instruments; and the facility’s design. In parallel, the subcomponent will finance (c) TA to FIs relating to the optimization and adaptation of existing loan products and the alignment of credit appraisal approaches, pricing, and repayment structures with borrower cash flows (in advance of facility operationalization); and related staff training and pilots. Subject to further assessment, the fulfillment of FIF requirements, and an updated POM, the project may capitalize RSFs and/or a PCF, along with dedicated TA facilities to support participating FIs in designing appropriate lending products and utilizing guarantee schemes effectively, and TA to implementing agencies relating to facility set-up, oversight, monitoring, reporting, and adaptive learning.

Box 2.1. Financing Facility Highlights

To help overcome a range of financing constraints, the component will establish or lay the groundwork for three types of financing facilities and develop an integrated digital ecosystem, which, together, are expected to catalyze a market-led scaling of climate-resilient and water productive irrigation services. Additional details on this architecture are presented in Annex 2.

Results Based Finance Facility for Irrigation (RBFFi)

The RBFFi will conditionally subsidize FLID investments on the basis of results, using the following instruments:

- **Rebates** for eligible equipment and/or system installation and servicing through payments to certified suppliers against the verified sale, installation, servicing, and/or demonstrated functionality of eligible equipment and systems. The rebates will act as a partial subsidy, covering a defined share of equipment costs (“landed and cleared”), and/or installation and service delivery costs, with incentive levels capped to target smallholder farmers (through self-selection) and differentiated for hard-to-reach geographies and priority demographic segments (women, youth, vulnerable groups, underserved markets). Rebate levels will be adjusted over time on the basis of real-time data on supplier cost structures, farmer uptake, and farmer risk and affordability thresholds, allowing the facility to adapt to market realities, incentivize the adoption of renewable energy technologies, target customers inclusively, and right-size their products for optimal water productivity and climate resilience.
- **Catalytic grants** to irrigation equipment suppliers and service providers for innovation or expansion to unserved markets, with tranches released based on milestones reached. Specific grants will be extended to laaS providers offering on-call, leasing, and service contracts. For example, a youth- and women-focused “hustler” initiative will use catalytic grants to promote and expand

⁷ To the extent that these arrangements could involve eligible FIs and other qualified vehicles, no IDA resources shall be committed, capitalized, transferred, or disbursed into any RSF, PCF, or other FI-linked facility until the applicable Financial Intermediary Financing (FIF) review has been completed and the relevant facility structure, participating institutions, eligibility criteria, fund-flow arrangements, fiduciary controls, legal agreements, reporting and audit requirements, consumer protection provisions, Anti-Money Laundering (AML)/Combating the Financing of Terrorism (CFT) controls, grievance redress arrangements, and ESS9/ESMS requirements have been reviewed and found acceptable to the Bank. Until completion of the FIF review and satisfaction of the relevant disbursement conditions, support under Subcomponent 1.3 will be limited to TA, market assessment, pipeline development, facility structuring, and preparation of facility manuals and legal documentation.



existing local equipment hire outlets and introduce mobile digital platform businesses that operate in the on-demand sharing economy.

Results measurement, for equipment rebates, will rely on a three-layer verification system described in Annex 2, alongside an overview of RBFFi readiness.

Risk Sharing Facilities (RSFs)

The RSF will include a dedicated budget allocation to incentivize lenders (commercial banks, MFIs, and SACCOs) to develop and scale FLID-specific loan products through derisking instruments such as first-loss and partial credit guarantees. Final decisions on the RSF facility structure, sizing, and deployment conditions will be grounded in evidence, and the budget ring-fenced in a separate disbursement category and made conditionally deployable. This will be subject to ongoing suitability assessments; confirmation of market need, additionality, relevant bank processes (applicable FIF screening and due diligence; fiduciary processes, acceptable to the Bank), along with adoption of a facility implementation manual or relevant POM. The project will explore leveraging existing guarantee operations in institutions such as the Kenya Development Corporation (KDC) and Agricultural Finance Corporation (AFC), which were designed to expand access to financial services for MSMEs⁸; as well as standard RSF structures used by IFC's FIG. Any capitalized RSFs will be accompanied by TA to support FIs in designing appropriate lending products and risk tools, and accompany them during pilot testing. While the suitability assessment is ongoing, the project will leverage FCI and FIG Upstream/Advisory services and provide TA to potentially participating FIs, covering market risk analysis, irrigation lending product design and rollout, strengthening of credit risk assessment frameworks, staff training, and the financial assessment of investments. Government oversight will ensure that guarantee parameters, loan products, and implementation arrangements are aligned with the needs and risk profiles of smallholder farmers and ISPs.

Patient Capital Facility (PCF)

The project will include a dedicated but conditionally deployable budget allocation for a PCF, subject to the same readiness and disbursement conditions described above, with its final structure and sizing to be informed by the ongoing suitability assessment. The PCF would complement RSFs by addressing longer-tenor capital constraints that continue to limit irrigation market expansion even where credit risk is partially mitigated. While RSFs reduce lender exposure, they do not resolve the underlying structural barriers to scaling lending. These include (i) a mismatch between the short-term loans typically offered by financial institutions and the 5–10 year repayment periods required by irrigation investments; (ii) limited ability to collateralize equipment installed on leased or communal land; (iii) credit assessment frameworks that exclude smallholders with seasonal and informal incomes; (iv) the thin balance sheets of last-mile market intermediaries and equipment suppliers, which constrain their ability to scale operations and lending; and (v) high upfront costs and risks of expanding into underserved or greenfield markets—including market prospecting, customer acquisition, and supply chain establishment—for which conventional debt instruments are often ill-suited. The PCF will mobilize long-tenor risk capital from investors to meet the financing needs of irrigation suppliers looking to operate in underserved markets and last-mile FIs looking to serve FLID farmers. Initially, it will offer TA and engage in market assessment, pipeline development, and facility structuring activities. Eventually, based on ongoing suitability assessments, the PCF may involve financial intermediary financing, risk-sharing, wholesale liquidity, co-lending, refinancing, subordinated debt, quasi-equity, equity, or other portfolio-based financing arrangements through eligible participating FIs or other qualified vehicles, subject to relevant WBG processes (applicable FIF screening and due diligence; fiduciary processes, acceptable to the WBG).

Component 2: Performance of Existing Irrigation Schemes (US\$50 million)

5. This component will improve the operational performance and financial sustainability of public and community-managed irrigation schemes by supporting institutional capacity building and management reform alongside selective infrastructure modernization. In this way it will reverse entrenched build-neglect-repair cycles, and maximize yields, incomes, job creation, resilience, and climate adaptation. It will greatly strengthen climate resilience as better-performing irrigation systems directly translate into improved water productivity, allowing schemes to perform reliably under conditions of increasing climate volatility. Since irrigation schemes function as anchor production areas, complementary agribusiness and connectivity investments under the MPA program will directly translate to increased resilience and value addition. Financing under this component will be partly results-based: Across both large-scale public and community

⁸ To inform the structuring of both the RSFs and PCF, assessments will be conducted on KDC's and AFC's existing mandates, governance arrangements, staffing, financial management systems, internal controls, funds-flow channels, reporting mechanisms, market relationships, and implementation experience to operationalize the relevant irrigation financing windows. Due diligence assessments will reflect fund-flow arrangements, fiduciary controls, eligibility criteria, environmental and social management systems, operating procedures, any related implementation requirements that need to be completed, reviewed, cleared, and reflected in the Project Operations Manual (POM), and relevant legal or implementation agreements as disbursement conditions before any project resources are disbursed to any financial intermediary.



schemes, the component will conditionally finance targeted infrastructure upgrades, on condition that operators make progress implementing their action plans developed through the iOF process. The component supports Pillars 1 and 2 of the MPA program, Water Forward Scalable Solution 5 (Increased Water and Energy Efficiency, Centralized Irrigation Services), and AgriConnect Solutions 1 (Aggregation Models), 2 (AgTech), and 3 (Physical Infrastructure).

2.1 Performance-Based Irrigation Service Delivery (US\$4.8 million)

6. **This subcomponent will drive performance improvements in irrigation service delivery with a focus on service quality, accountability, and financial sustainability.** It will enable ISPs to engage in self-directed performance assessments and strategic planning using the iOF toolkit and process (Box 2.2), and support management-related capacity building for the NIA and irrigation water user associations (IWUAs). For the purposes of iOF deployment, schemes will be selected for participation by the SDI using transparent criteria and assigned to either the Detailed iOF Track (typically public schemes) or the Rapid iOF Track (typically community schemes), based on their operational complexity. One output of the iOF process will be a five-year investment plan, which will serve as the governing vision document for each scheme.

7. **With large-scale public schemes overseen by the NIA,** the subcomponent will typically deploy the full iOF framework and support performance-based service and management contracts, and regulatory and accountability mechanisms involving farmers/IWUAs, scheme-level ISPs, the NIA (headquarters), and MoWSI. To this end, the subcomponent will finance: (a) the tailoring and delivery of iOF Lead Facilitator training for national and regional NIA teams (with Lead Facilitators expected to train Rapid iOF Facilitators to drive iOF rollout at the community scheme level); (b) the design and implementation of a mentoring and accountability mechanism for ISP personnel dedicated to supporting the implementation of action plans adopted through the iOF process; (c) the piloting of performance-based service and/or management contracts with private sector maintenance service providers, based on defined service areas, service standards, and accountability mechanisms; and (d) support to ISPs in developing sustainable investment and financing plans that enable O&M cost-recovery.

8. **With smaller community-managed schemes,** the subcomponent will typically deploy a streamlined version of the iOF toolkit as well as a hub-and-spoke cluster service model that positions County Irrigation Development Unit (CIDUs) as the primary service hubs connecting national technical support (for example, on O&M standards, reporting and oversight, equipment access, the backstopping of major maintenance needs, and advisory services) to community schemes. As part of developing this hub-and-spoke model, the project will pilot performance-based contracts under which clusters of community schemes are serviced by a single private sector provider (or under a single contract), with the spectrum of potential arrangements ranging from a basic dial-a-technician service to the full management of daily scheme operations under the oversight of IWUAs. In support of community schemes, the subcomponent will finance (e) the training by iOF Lead Facilitators of a cadre of Rapid iOF Facilitators, to be drawn from regional NIA and CIDU personnel responsible for supporting community schemes; (f) the design and delivery of a capacity building program for IWUAs, including the review and improvement of MoWSI's IWUA training manuals with an emphasis on practical O&M and administrative best practices; (g) the piloting of blended public-community management models linking IWUAs, CIDUs and larger public schemes under the hub-and-spoke approach; (h) potentially, the resourcing of CIDUs to ensure their operational capacity (staff travel, office space, computers, essential field instruments). In Year 1 of the project, the subcomponent will build a benchmarking system that defines selection, prioritization, and performance improvement criteria and records scheme-specific performance targets. Targets will be informed by the iOF process, and whether schemes use gravity or pump-based irrigation.

Box 2.2. The iOF Toolkit and Framework



The Irrigation Operator of the Future (iOF) toolkit was designed to help irrigation operators assess their performance, prioritize problems, and develop and implement strategic plans to meet the dynamic challenges they face. Unlike earlier performance assessment frameworks that focused narrowly on hydraulic infrastructure, the iOF framework also covers policy, governance, technical, and financial dimensions of the operational system (figure 2.3), enabling operators to improve management practices and service delivery outcomes. It is also applicable across a range of scheme types and institutional contexts. The iOF toolkit comprises six main elements: a guide to the problem-centered facilitation approach; a description of the operator's context, role, and functions; a suite of 18 performance indicators; a data entry portal with graphical outputs; pathways for visioning and strategic planning; and a framework for facilitated action planning.

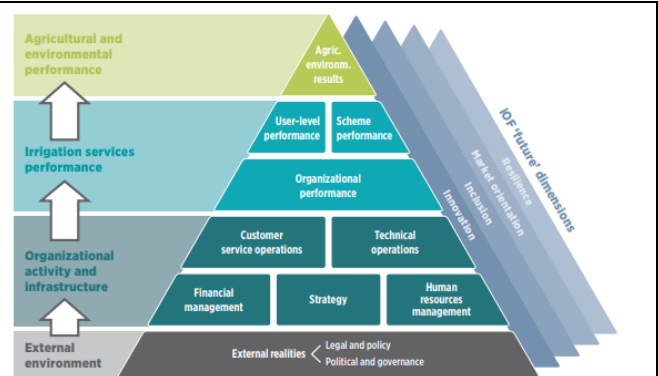


Figure 2.3

The iOF process, using the toolkit, guides operators through a structured, self-directed process.

Operators first conduct a performance assessment using a suite of 18 indicators, selecting those most relevant to their context and entering data through a dedicated portal that generates data visualizations to support decision-making. The results of this assessment then feed into a facilitated strategic planning process, through which operators develop a vision of the future and translate it into concrete action plans. Performance targets are identified using governance, financial, and irrigation service delivery indicators. Key outputs include a rapid performance assessment, a 100-day action plan, and a three to five-year investment plan.

Source: Waalewijn et al. 2022 (updated 2023).⁹

2.2 Targeted Hardware Modernization and Technical Training for Service Delivery Turnaround (US\$45.2 million)

9. When called for, this subcomponent will selectively finance the physical infrastructure upgrades and related technical training needed to raise irrigation schemes' operational efficiency. Eligibility for financing will be conditional on demonstrated year-to-year performance improvement under Subcomponent 2.1. It will also hinge on investments contributing to a clearly defined operational target articulated in schemes' five-year investment plans, ruling out isolated investments. Upgrades will consist of critical hydraulic works and equipment required to achieve a threshold of operational functionality that enables ISPs to implement their iOF action plans and fulfill performance agreements. Investments may include flow measurement infrastructure (flumes, weirs, meters, sensors) for better water use management, flow control and regulation structures (gates, valves, check structures) that help reduce both flood and drought vulnerability, water monitoring and automation systems (automated gates, sensors) that increase water use efficiency, safety structures (spillways, embankment protection) for increased climate resilience, solar pumping and other energy-transition systems that reduce GHG emissions, and selective leveling. These investments will directly improve water productivity, reducing farmers' exposure to drought and waterlogging risk. Limited investments in farm product aggregation (such as drying platforms) or scheme connectivity infrastructure (such as access and maintenance roads) may be undertaken when it is identified, through the iOF process, as being essential to schemes' financial sustainability—in coordination with the agribusiness and transportation operations to ensure the co-location, complementary, or coherence of investments. The subcomponent will specifically finance (a) the technical design and justification of upgrades, including engineering and financing plans and E&S impact assessments; (b) the development and implementation of E&S instruments and acquisition of relevant licenses and permits; (c) infrastructure investments including equipment procurement and civil works within cost ceilings per hectare rehabilitated to be defined in the POM; (d) construction supervision; (e) the development of scheme O&M manuals and technical guidance that helps irrigation schemes identify suitable, "fit-for-purpose" equipment and designs; and (f) the technical training of NIA, CIDU, and IWUA staff on how to get the most out of scheme additions to improve service delivery performance in alignment with iOF action plans. A limited

⁹Waalewijn et al. 2022 (updated 2023). "The Irrigation Operator of the Future: A Toolkit; Information Pack for Irrigation Service Delivery Performance Assessment and Planning." World Bank.



set of early investments may be made at project outset to establish a minimum threshold of governance structure, flow measurement functionality, and monitoring systems, but the bulk of financing will follow verified performance progress. Unfinished works are expected to be completed at the Lower Nzoia irrigation scheme (from recently closed P117635), subject to the same performance-based conditionality applied to all other scheme upgrades. Preliminary GHG accounting analysis shows a potential (additional) sequestration of 1,431,313 tCO₂e over the project's 10-year economic lifetime,¹⁰ on account of halted deforestation, a switch from flooded rice to upland rice with alternate wetting and drying (AWD), land-use changes, as well as improved farm management practices resulting from eligible infrastructural and operational changes and double-cropping on over 50,000 ha of cropland.

Component 3: Water Security for Resilient Irrigation (US\$29.5 million)

10. **This component aims to ensure that the irrigation and agrifood systems development supported by the MPA program are underpinned by a water resource base that is sustainably governed, equitably accessed, and resilient to climate variability.** With a focus on both surface water and groundwater resources—both of which are underutilized in Kenya—the component aims simultaneously to (i) support the acceleration of irrigation development where water is available or can be made accessible; and (ii) strengthen the governance systems, monitoring tools, and institutions needed to responsibly manage productive water-use intensification as it scales. The component will apply a learn-and-scale approach across three types of areas, selected to cover Kenya's diverse water and agricultural conditions and informed by opportunities to co-locate investments across the MPA program (Table 2.2). In its learning stage (Years 1–3 of Phase 1), the project will carry out in-depth work in approximately three targeted areas—one of each kind—developing and testing water governance and development interventions in tandem. In the subsequent scale-up stage, validated approaches will be extended to additional sites, generating evidence and operational models that will later inform scale-up in future phases of the MPA program. Across the three types of areas, interventions will be co-located with the agribusiness and connectivity investments so that water security and market development are mutually reinforcing. This component supports Pillars 1, 2, and 4 of the MPA program, Water Forward Scalable Solutions 6 (Reduction of Flood and Drought Risk) and 7 (Restoration and Protection of Rivers and Aquifers), and AgriConnect Solutions 2 (AgTech), 3 (Physical Infrastructure), and 4 (Skills, Extension, and Research).

Table 2.2: Three Types of Areas Targeted under the Water Security Component

Area Type	Core Challenge/Opportunity	Intervention Focus / Approaches
Problemsheds Watersheds where irrigation is already intensive and resource competition is manifest	Coordinated governance responses to existing water stress and/or over-abstraction	Water governance, resource balance monitoring, conflict resolution, metering, permitting, and strengthened WRUA and IWUA capacity
FLID Clusters Priority agrifood clusters where accessible water resources support an expansion of smallholder-led irrigation (FLID)	Improving awareness and other conditions for intensification and getting ahead of governance challenges	WRUA and IWUA establishment, support for collective action, and early-stage metering and permitting
High-Potential Water-Scarce Areas ASALs and other water-scarce sub-catchments with strong agribusiness and connectivity potential	Water storage development and local stakeholder involvement in water management as a prerequisite for sustainable irrigation expansion	Water storage development with strong, locally-tailored community- and household-level engagement

3.1 Water Governance (US\$3.5 million)

11. **This subcomponent will strengthen water governance across the three types of areas, using a learn-and-scale approach that it calibrates to the distinct challenges each type of area presents.** These challenges will range from irrigation regulation and consolidation and conflict mitigation in Problemsheds, to proactive permitting and institution-

¹⁰ From –1.612,397 tCO₂e in the without-project scenario to –3,043,710 tCO₂e in the with-project scenario.



building in emerging FLID Clusters, and governance-building in High-Potential Water-Scarce Areas (Table 2.2). The learn-and-scale approach will be bottom-up and adaptive, supporting farmer-led management, avoiding institutional overreach, and using the momentum of irrigation expansion. Governance support will run alongside infrastructure investment, where possible. The subcomponent will finance TA relating to (a) the practical operationalization of the 2025 water regulations and licensing mechanisms compatible with informality and smallholder water use, and the strengthening of WRA's irrigator registration and permitting processes, applied with proportionality across areas of different intensity and risk (national regulatory reform is supported under Subcomponent 4.1); (b) the development or review of local water-use rules, abstraction coordination frameworks, water-use monitoring systems, and conflict mitigation processes tailored to the specific dynamics of each type of area; (c) WRA's capacity to fulfill water abstraction monitoring and smallholder registration; and (d) bottom-up water allocation planning by farmer groups (organized in WRUAs, IWUAs or otherwise), including on hydrological data collection and use, engineering and legal matters, and the use of behavioral stewardship tools, farmer-led hydrological and water productivity monitoring instruments (such as Chameleon soil water sensors), and game-based simulations of shared surface water and aquifer dynamics. The latter can help build practical understanding and social bonds, helping to align farmers, agencies, and communities around climate-resilient and productive water use.

3.2 Two-Track Farmer Water Access (US\$18 million)

12. **This subcomponent will expand farmer access to water through a two-track investment approach.** With a focus on irrigation clusters, Track 1 will support low-cost, near-term access through advisory and market development services for hand-dug wells and manual drilling in watersheds where groundwater is accessible at shallow depth, as well as landscape-level advisory for rainwater harvesting and storage. Track 2 will pilot and scale community-led water storage and low-cost recharge solutions in High-Potential Water-Scarce Areas. Both tracks will prioritize participatory processes, equitable access, and co-financing by cooperatives and community organizations; and both are designed to generate scalable models rather than isolated investments.

13. **In support of Track 1,** the subcomponent will finance (a) farm advisory services and tools on sustainable land and water management, specifically the siting and development of wells and rainwater harvesting/farm ponds, including approaches that leverage AI-assisted depth-to-water-table mapping and cost-effective technologies; (b) capacity building of private and public sector actors (local drillers, WRA officers, and extension officers) on the use of these tools to provide these services in the long term; and (c) the development of an accreditation and referral program for local drillers, to strengthen service quality and reach for farmers. The subcomponent will not directly finance works, but it will support farmers' access to finance by helping to derisk groundwater development, complementing Component 1.

14. **In support of Track 2,** the subcomponent will finance (d) participatory resource-based planning and the development of scalable solutions in partnership with farmers and local government; (e) pilot investments in collective water storage, conveyance, and recharge works (such as spate irrigation, flood recession agriculture, sand dams, and water pan rehabilitation), including their design, construction, and supervision; and (f) the development, drawing on experience and lessons learned, of technical, financial, and operational guidance to support larger-scale replication in possible follow-on phases of the program. The design of investments packaged for ASALs will be grounded in the careful assessment of local sociocultural dynamics (aligned with activities under 3.1) and the interplay between green water systems (pastures, biomass, dry forests) and blue water sources (luggas,¹¹ shallow aquifers, ponds, flood flows), and structured to strengthen rather than disrupt community cohesion and integrated water management. Preliminary GHG analyses for the pilots are ongoing and are expected to lead to substantial carbon sequestration.

3.3 Large-Scale Water Storage Investment Preparation (US\$8 million)

¹¹ Luggas, or laggas, are seasonal watercourses that flow only during rains.



15. **This subcomponent will support the government in building a robust, bankable pipeline of larger-scale water storage investments underpinning the country's long-term water security ambitions.** Recognizing that Phase 1 of the program focuses on near-term irrigation expansion, this subcomponent will prepare the ground for the larger infrastructure needed to sustain irrigation and broader rural development in the longer run. To this end, it will advance candidate investments to readiness across technical, ESF, environmental, land tenure, and financial dimensions, positioning them for subsequent phases of the program or for co-financing by development partners and private investors. Drawing on a prioritized list of dam sites, this subcomponent will finance TA relating to (a) the identification and prioritization of candidate investments; (b) engineering and safeguard studies, and dam safety reviews, for up to three prioritized investments, detailed enough to assess their feasibility and inform future detailed design and construction; and (c) financial modeling and investment packaging, including transaction advisory for PPP structuring, viability gap financing assessments, and engagement with commercial financiers to crowd in private capital (TA provided by IFC advisory).

Component 4: NISIP Implementation and Project Coordination (US\$22.5 Million)

This component will develop the enabling environment needed to achieve the market-led sector transformation envisioned by NISIP as well as the project's own implementation. It will do so by aligning policy, institutions, workforce, and data systems in ways that are mutually reinforcing and that compound the impact of the planning, learning, infrastructure, financing and governance investments under Components 1–3. Activities supported under this component will be coordinated with other MPA operations and the wider agricultural and water policy coherence agendas to ensure that policy reforms, workforce development efforts, and digital investments are anchored in the MPA program's shared commitment to climate resilience, poverty targeting, investment co-location, and the generation of MBJs. The component supports all four pillars of the MPA program, especially Pillar 3, as well as Water Forward Scalable Solutions 4 (Farmer-Led Sustainable Irrigation, Decentralized Irrigation Services), 5 (Increased Water and Energy Efficiency, Centralized Irrigation Services), 6 (Flood and Drought Risk Reduction), and 7 (Restoration and Protection of Rivers and Aquifers), and AgriConnect Solutions 4 (Skills, Extension, and Research) and 6 (Policy Reforms).

4.1 Irrigation Policies and Institutions (US\$1.1 million)

16. **This subcomponent will support the policy and institutional reforms needed to attract and sustain sector investments, enhance its performance, and ensure that the regulatory environment keeps pace with rapid market-led development.** It will finance (a) sector-wide reviews of policies, regulations, institutional mandates, tariff mechanisms, and public expenditures that identify how these can better align with the five K-RISE pathways; (b) the formulation and implementation of priority reforms affecting irrigation service delivery, including tariff frameworks linked to service standards and accountability and asset management, operations and management (MOM) norms, and the institutionalization of service provision for public and community irrigation schemes; (c) improvements in water abstraction permitting, in coordination with the governance work under Subcomponent 3.1; (d) the updating and implementation of irrigation equipment market and quality standards; (e) regulatory reforms relating to irrigation investment and finance; and (f) structured intergovernmental dialogue and Multistakeholder Irrigation Acceleration Platforms at the national and county levels that help align financing priorities, implementation approaches, and timelines for irrigation sector development. The national level multistakeholder platform will be chaired by the Principal Secretary (PS) responsible for Irrigation and bring together state actors, FIs, SACCOs, private sector networks, and farmer organizations around the five K-RISE pathways.

4.2 Workforce Development and Irrigation Sector Professionalization (US\$2.3 million)

17. **This subcomponent will prepare a new cadre of irrigation professionals for formal, skills-based employment spanning digital advisory services, equipment installation and maintenance, and performance-based scheme management, and strengthen the technical capacity of public sector staff whose roles are being expanded by the**



investments under Components 1–3. A market-led and performance-driven irrigation service sector requires a professionalized workforce that does not yet fully exist in Kenya. Critically, the component will address the organizational culture and incentives of public agencies whose frontline staff are the ultimate vehicle for delivering K-RISE ambitions. The subcomponent will finance (a) an irrigation workforce needs assessment and development strategy; (b) TA to explore the creation of an association of irrigation professionals; (c) workforce development programs for irrigation agency staff and technical personnel on irrigation operations and scheme management, including curriculum development and delivery; (d) training programs for water monitoring personnel, field technicians, and community facilitators on farmer-led hydrological and water productivity monitoring tools and game-based simulations of shared aquifer dynamics, in support of participatory water governance under Component 3; (e) training programs for national, county, and subnational water management staff on the use of the NIIC’s analytic services and tools; (f) vocational training programs, especially STEM-oriented ones, preparing workers for equipment installation, operation, and maintenance—including for solar pump systems in support of Component 1—with dedicated tracks for women and youth; (g) targeted initiatives that expand employment pathways for women and youth in irrigation services and technical fields, including outreach, mentorship, and placement support; (h) a field-level leadership (FLL) program for the frontline staff of SDI, the NIA, WRA, and CIDUS; (i) MoWSI and NIA staff training on project finance and preparation and the management of irrigation PPPs; and (j) the development and adaptation of training materials for specific audiences, along with access to online and in-person training platforms. Originally from India, FLL is a change management approach that mobilizes champions at all levels of an organization to reorient staff culture toward farmer-responsive service delivery—and which has been successfully been deployed across Asia and Africa.¹² The project will follow the approach’s standard three-stage model, involving (i) the training of internal master trainers; (ii) the facilitation of safe-space reflection workshops involving selected agency staff; and (iii) support for follow-on peer networking and rapid results initiatives. Support for FLL will be timed in such a way as to accompany the rollout of new regulatory frameworks and service delivery norms, and broader policy, institutional, and technical investments supported by the component.

4.3 National Irrigation Information Center (US\$11.3 million)

18. **This subcomponent will establish the National Irrigation Information Center (NIIC), an office within MoWSI—to be hosted by the NIA—that will serve as the institutional home for Kenya’s irrigation data systems, climate analytics, and decision-support functions, as well as the project’s central repository of data and analysis.** It will provide the upstream data and intelligence that informs targeting, risk screening, performance benchmarking and accountability, and program recalibration across all components. It will also be the primary vehicle through which the project contributes to and draws on the MPA’s shared data architecture (see Box 2.3), through interoperability arrangements and data-sharing agreements across implementing agencies. The subcomponent will finance (a) the NIIC’s institutional establishment, including its data service value chain development, its deep integration in irrigation decision-making across K-RISE and the program, and its, operational design, staffing plan, and equipment; (b) the NIIC’s digital infrastructure, including its design, development, and underlying IT systems; (c) data integration and governance activities, including the adoption of open-data principles, the development of data-sharing arrangements, crowd-sourcing citizen data, and interoperability protocols; (d) water monitoring network improvements—including in-field soil moisture sensors, scheme-level water level measurements, and other equipment upgrades—with a focus on informing adaptive management in the face of water stress, and ensuring that data streams are integrated into the NIIC and shared with the WRA and other mandated agencies through the interoperability arrangements described under (c); (e) the mapping of nationwide irrigation schemes for use in performance monitoring, including related data collected; and (f) TA relating to analytic activities and the development and roll-out of regular, just-in-time, and increasingly sophisticated products and services and products to internal and external clients, including state of irrigation reporting.

¹² Pahuja and Weber-Fahr. 2022. "Field Level Leadership: Transforming Service Delivery." World Bank.



Box 2.3. The NIIC and K-RISE's Digital Ecosystem

K-RISE will help foster, develop, and leverage a robust digital ecosystem of interconnected platforms, data systems, and tools that support coordination, analysis, learning, planning, monitoring, and adaptive management across the MPA program and the irrigation and agrifood sectors at large.

The NIIC's digital platform will combine technical infrastructure, human expertise, and governance mechanisms to generate, manage, and translate data into decision-relevant intelligence for Kenya's irrigation sector. It will integrate geospatial, hydrological, agroclimatic, farming systems, protected area, project activity, and user data from national and project-level sources. The NIIC platform will specifically link:

- The Kenya Agricultural Data and Information Centre's (KADIC's) farmer registry (KIAMIS), which includes detailed data on the land holdings, crops, irrigation practices, and water sources of over 7 million farmers—and other relevant registries
- The WRA's water abstraction permit registry, surface water gauging networks, and groundwater monitoring records, including emerging telemetry infrastructure
- Kenya Meteorology Department weather advisory
- Kenya Forestry Services' and Kenya Wildlife Services protected area maps
- Regional weather, climate forecasting, and water resource monitoring networks (such as ICPAC, IGAD's Climate Prediction and Applications Centre).
- Field data captured through the farmer-facing application described under Component 1.
- Multisectoral MPA cluster mapping
- The RBFFi Platform
- The NISIP MIS, which will track both NISIP and project implementation and support MPA M&E
- NIA databases on public and small community schemes

The NIIC's services and analytic outputs will serve distinct functions across components. Under Component 1, it will provide groundwater availability mapping, depth-to-water analysis, farm-level data, and agroclimatic screening to inform FLID targeting, investment prioritization, financial derisking, and carbon market transactions. Under Component 2, it will maintain scheme asset registries and support irrigation performance benchmarking and accountability. Under Component 3, it will inform watershed delineation, basin-level water resources assessment, drought and flood early warning, water stress and expansion thresholds, and water security monitoring. Under Component 4, it will interface with the NISIP MIS to support project management, sector coordination, adaptive learning, and results reporting. Across all components, the NIIC will build and sustain the institutional capacity, analytic tools, and advisory services needed for public agencies, service providers, counties, WRUAs, IWUAs, and farmers to engage in evidence-based, adaptive management.

4.4 Project Management and Learning (US\$7.8 million)

19. **This subcomponent will finance the project management and learning functions needed to manage the project effectively and ensure that its results, learnings, and evidence feed into higher-level MPA goals.** The project will support the program-wide learning agenda with a particular focus on three cross-cutting questions: (i) whether spatially co-located irrigation, agribusiness, and road investments generate employment and income outcomes greater than the sum of their parts; (ii) which market-based derisking instruments—among them, RBF rebates, RSF guarantees, catalytic grants, productive alliances—most cost-effectively crowd in private capital; and (iii) how open data, data-sharing, and joint analysis across the three ministries improves targeting, reduces data duplication, and enables joint adaptive management. The NIIC will be the main conveyor of the primary data needed to address all three questions, and the project's M&E framework has been explicitly designed to generate findings that feed the MPA Program Secretariat's annual convergence reviews and the formal Phase 1 stocktaking evaluation. The subcomponent will finance (a) project implementation functions including fiduciary management, safeguards oversight, communications, monitoring and reporting, and coordination with relevant ministries, county governments, and sector stakeholders; (b) sector-relevant monitoring, evaluation, and learning activities, including analytical studies, impact evaluations, and adaptive management processes that support evidence-based decision-making; (c) participation in regional knowledge-exchange activities; and (d) engagement in MPA-wide and other cross-cutting coordination, planning, co-location, joint policy, implementation support, and learning activities, including the linking of project beneficiaries with SACCOs, aggregators, extension services, and market platforms supported by other MPA operations and related initiatives. These linkages will help foster integrated value chain development and expand market outlets for irrigated production, maximizing employment multipliers.



Through this component, the project will engage in the program-wide and regional learning and policy dialogue agendas, which will be facilitated by the MPA Secretariat and Africa RISE MPA program, respectively.

D. Environmental and Social Risks and Impacts

Summary of Assessment of Environmental and Social Risks and Impacts

K-RISE Program comprises nationwide, multi-component investments in farmer-led irrigation development, rehabilitation and professionalization of public and community irrigation schemes, landscape-scale water security infrastructure, and policy and institutional strengthening. While the Program is expected to generate substantial benefits for food security, rural livelihoods, water security, and climate resilience, it will also give rise to environmental and social risks and impacts. These risks are generally Moderate under Components 1 and 2, and High under Component 3. The preparation of up to five priority dams to detailed design stage represents the highest environmental and social risk under the Program, due to the potential downstream impacts associated with the construction, reservoir filling, and operational phases of the dams. Environmental risks are primarily associated with increased pressure on surface and groundwater resources arising from the expansion of farmer-led irrigation and development of small and medium water storage infrastructure, particularly ASALs. Intensified water abstraction may alter hydrological regimes, reduce downstream flows, and exacerbate competition between irrigation, pastoral, domestic, and ecosystem needs. Construction and rehabilitation of irrigation infrastructure, sand dams, water pans, and conveyance systems may cause temporary or long-term impacts including soil erosion, sedimentation, vegetation clearance, habitat disturbance, and localized biodiversity loss, particularly in sensitive environments such as riverine systems, wetlands, and floodplains. Expanded irrigated agriculture could increase the use of fertilizers and pesticides, creating risks of water and soil pollution, waterlogging and soil salinization. Additional risks include public health concerns related to stagnant water bodies and the management of construction waste and e-waste from irrigation equipment. Social risks are high due to the project's engagement in diverse rural and ASAL contexts characterized by livelihood vulnerability, and, in some areas, resource scarcity, fragility and conflict dynamics. Increased irrigation development and water abstraction may intensify existing disputes between upstream and downstream users, farmers and pastoralists, or across administrative boundaries. Physical works and future water storage investments may require land acquisition or restrictions on land use, with potential for economic and physical displacement if not carefully managed. Unless carefully planned, the project might result risks of exclusion of vulnerable groups and poor farmers from access to finance, digital technologies, and market-driven delivery mechanisms. Labor related risks include OHS hazards and community health and safety risks, and potential SEA/SH risks in connection with civil works and service delivery in remote areas. The use of digital platforms for farmer engagement and financial intermediation introduces data privacy and data governance risks that could affect smallholders. The project is also expected to engage communities that may meet the criteria of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities under ESS7 and may encounter cultural heritage resources during civil works. In addition, the use of blended finance mechanisms implemented through financial intermediaries introduces downstream E&S risks associated with subprojects financed under Results-Based Financing, Risk-Sharing, and Patient Capital facilities. The preparation of feasibility studies and detailed designs for up to five medium and large dam investments under Component 3, although not involving construction during the current project phase, may give rise to downstream social risks. These risks are primarily associated with land acquisition, physical displacement, and economic displacement affecting communities located within potential reservoir inundation areas and related infrastructure corridors. Overall mitigation of these risks will be achieved through a robust Environmental and Social Risk Management framework consistent with the World Bank ESF. Key measures include preparation and implementation of an ESMF, RPF, SEP, LMP, SEA/SH Prevention and Response Plan, IP/SSAHUTLCs Planning Framework, and establishment of FI Environmental and Social Management Systems (ESMS), alongside site-specific instruments as required. These instruments will ensure proportional risk screening, inclusive stakeholder



engagement, sustainable water allocation, biodiversity protection, labor and community health and safety measures, SEA/SH risk mitigation, data protection, and effective grievance redress. Institutional capacity strengthening and clear commitments set out in the ESCP will support effective implementation and oversight throughout the project lifecycle.

Grievance Redress Services:

Grievance Redress. Communities and individuals who believe that they are adversely affected by a project supported by the World Bank may submit complaints to existing project-level grievance mechanisms or the Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project related concerns. Project affected communities and individuals may submit their complaint to the Bank's independent Accountability Mechanism (AM). The AM houses the Inspection Panel, which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures, and the Dispute Resolution Service, which provides communities and borrowers with the opportunity to address complaints through dispute resolution. Complaints may be submitted to the AM at any time after concerns have been brought directly to the attention of Bank Management and after Management has been given an opportunity to respond. For information on how to submit complaints to the Bank's Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the Bank's Accountability Mechanism, please visit <https://accountability.worldbank.org>

E. Implementation

Institutional and Implementation Arrangements

20. **The implementation arrangements for K-RISE are nested within, and aligned with, the MPA program's overarching governance architecture.** At the program level, the NSC chaired by the National Treasury will provide cross-sectoral policy direction and ensure coherence across all program operations, including those relating agribusiness development, irrigation, and rural roads. A dedicated MPA Secretariat will coordinate implementation across agribusiness clusters and ensure that K-RISE investments are deliberately co-located with other CAREs for Jobs operations in priority geographies, so that infrastructure, value chain, and private capital interventions are mutually reinforcing. MoWSI will deploy a dedicated officer to the MPA Secretariat to ensure full integration. Within this structure, K-RISE will operate as a sector-specific project with its own NPCU housed within MoWSI. The K-RISE NPCU will be responsible for the project's day-to-day management and report upward to the NSC through the program coordination mechanism.

21. **Project implementation will be led by SDI, within MoWSI, which will have the overall fiduciary responsibility for the project and NIA as an implementing entity.** The two entities will implement the project in collaboration with the WRA, CIDUs, MoALD, and several other agencies and stakeholders. The project will notably involve FIs including banks, MFIs, and SACCOs, as well as private sector networks (equipment, renewable energy, services agencies), the Kenya National Bureau of Standards, Kenya Agricultural and Livestock Research Organization (KALRO), KADIC, Kenya Meteorological Department, and farm aggregation and digital service providers. Stakeholder coordination will leverage the Multistakeholder Irrigation Acceleration Platforms to be established and hosted under Component 4. The project components are aligned with NISIP and Ministry business areas, and an empowered NPCU will be fully embedded within



MoWSI's organizational structure, and where possible, draw on ministry staff. A project manager, supported by a project coordinator, will oversee project implementation as well as K-RISE coordination within the ministry. Each component will be led by a component lead (director level) and supported by a component technical lead (a dedicated, competitively appointed officer). In addition, under Component 1, a focal point person will be designated to oversee the RBF Fund Manager. The NPCU will further comprise an M&E/adaptive management officer, a liaison officer (for MPA coordination, co-location, and intergovernmental liaison on the project), a communications officer, an environmental officer, a social officer, a procurement officer, a finance officer, and an accountant. Where needed, short-term or part-time backstopping will be sought to enhance management capacities. These implementation arrangements will encourage full ministry ownership of K-RISE as a vehicle for NISIP implementation, as well as a strong alignment and harmonization of all ministry initiatives in support of the national irrigation plan. Detailed implementation procedures, co-financing arrangements, and area selection criteria will be laid out in the POM. K-RISE will benefit from the significant pre-project preparation efforts that were carried out, including the government-led dialogue on NISIP, its adoption, the co-creation of its water and agriculture compacts, and the GWSP (GF)-financed preparatory grant, which has financed demand mapping, market assessments, stakeholder engagement, and RBFFi design. Year 1 activities will focus on rolling out the platform, onboarding institutions, launching farmer outreach, and carrying out pilots in preparation for scaling starting in Year 2.

22. **Component 1 will be led by SDI.** Awareness raising activities will be led by MoWSI, in collaboration with CIDUs, NIA regional offices, and extension services at MoALD and county level. The RBFFi will be implemented by SDI through an RBF Fund Manager, which shall be procured to take on responsibility for the end-to-end management of the results-based grant program. The RBF Fund Manager's team will handle all day-to-day operations in accordance with the RBFFi's Operations Manual. The manual will lay out the eligibility criteria for participating private sector companies, the menu of eligible technical solutions, grant disbursement conditions and schedules including third-party verification processes, the M&E process, and other aspects. Grant disbursements to participating companies will be made subject to (spot) verification by an independently procured verification agency. MoWSI will provide oversight of the RBFFi, including by establishing the rules of engagement through the Operations Manual, with the RBF Fund Manager accountable to the Ministry through the NPCU for RBFFi-related performance and results reporting. A single RBF Fund Manager is expected to be procured to serve both the irrigation and energy RBF facilities (or their shared umbrella facility), and the procurement, accountability, and liability-sharing modalities will be decided jointly by MoWSI and the MoEP. These modalities will also be laid out in the Operations Manual. Early engagement with partners will generate demand and support companies' readiness when the RBFFi opens for business.

23. **Component 2 will be implemented by the NIA as relates to the large-scale public schemes it oversees, and by MoWSI and county governments as relates to other, community-managed schemes.** At the national level, MoWSI and the NIA will provide policy oversight, technical norms, financing, information dashboards, frameworks, learning opportunities, and quality assurance. County governments, through CIDUs, will lead planning, community engagement, and scheme-level accountability. Communities—through IWUAs and FPOs—will be the primary service beneficiaries and local accountability anchors. The project will formalize an escalation ladder through which unresolved issues at the community or county level are elevated to the NPCU or NSC level for resolution. Eligibility for “hardware” financing under Subcomponent 2.2 will be tied to ISPs' commitment to improving schemes' O&M “software,” as demonstrated by reaching pre-defined performance improvement targets. Large-scale public scheme upgrades will be designed, procured, and supervised by the NIA, while community scheme upgrades will be designed, procured, and supervised by SDI. Technical backstopping and harmonization across both tracks will support quality assurance and ensure standardization of equipment and instrumentation to ensure interoperability. Works will be carried out under framework contracts, triggered by verified performance milestones. To reduce transaction costs and enable efficient contractor mobilization, procurement will be batched into a small number of packages around geographic priority clusters, covering the full project



duration. CIDUs are a prerequisite for service delivery at the community scheme level and the project will prioritize counties where CIDUs are already operational or where their establishment is under way.

24. **Component 3 will be implemented under the overall coordination of SDI, with the WRA acting as the lead technical agency for water governance and resource monitoring under Subcomponent 3.1, and the NIA acting as the lead agency for farmer water access investments under Subcomponent 3.2.** County governments, through CIDUs, will support community mobilization and bottom-up planning, particularly in ASALs. WRUAs will serve as the primary institutional anchor for water governance at the catchment level. Large-scale water storage investment preparation under Subcomponent 3.4 will be co-led by SDI and the NIA, with IFC Advisory providing advisory transaction support. Service providers will be recruited for the pilot, learning, and documentation stages.

25. **Component 4 will be implemented under the direct leadership of SDI, which will serve as the institutional anchor for all four subcomponents.** Policy reform under Subcomponent 4.1 will be led by MoWSI's relevant directorates, with the Multistakeholder Irrigation Acceleration Platform hosted and coordinated by MoWSI. Workforce development under Subcomponent 4.2 will be implemented in coordination with NIA and WRA, with FLL facilitation contracted through a qualified facilitating organization and vocational programs delivered through existing technical and vocational education and training (TVET) institutions. The NIIC under Subcomponent 4.3 will be established within MoWSI and co-hosted by the NIA. MoWSI will appoint its director and staff, with the NPCU ensuring that data-sharing agreements with WRA, KALRO, KADIC, and other agencies are operational within the first year. Project management and learning under Subcomponent 4.4 will be the direct responsibility of the NPCU. Detailed staffing plans, interoperability protocols, and operational procedures will be set out in the POM.

26. **Knowledge and M&E functions under Components 3 and 4 will be implemented by the NPCU with support from the NIIC.** This arrangement will ensure that water informatics, WRA advisory services, basin-level monitoring, and adaptive management are institutionally anchored within the sector ministry rather than isolated within a project unit, supporting the sustainability of the knowledge systems K-RISE develops.

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Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Area OP 7.60	No

Summary of Screening of Environmental and Social Risks and Impacts

APPROVAL

Task Team Leader(s):	Pieter Waalewijn
Co- Team Leader(s):	Dominick Revell de Waal (ADM Responsible)

Approved By

Country/Division Director:		
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