

PROGRAM RESULTS ASSESSMENT

A. Program Results Framework

1. **National results frameworks.** The program is an integral part of the results framework of the Government of Indonesia, whose National Long-Term Development Plan, 2005–2025 aims to achieve food security, improve rural livelihoods, and achieve more productive and sustainable irrigation infrastructure.¹ Indonesia's National Medium-Term Development Plan, 2015–2019 breaks these longer-term goals into 5-year measurable targets.² The government's irrigation improvement program (IIP), 2015–2025 is aligned with both the long- and medium-term frameworks and is the essential component for achieving enhanced food security and reducing rural poverty. The IIP proposes to achieve sustainable and more productive irrigated agriculture nationwide through rehabilitating and/or upgrading irrigation infrastructure for 3.2 million hectares (ha), improving asset and systems management, operation and maintenance (O&M), and farmers' participation for all of Indonesia's 7.2 million ha of irrigated agriculture.

2. **Program impact and outcome.** The results-based lending (RBL) program will support the implementation of the government's IIP in 74 districts from 2017 to 2021. Its impact is aligned with Indonesia's national goals and priorities. At outcome level, it aims to achieve sustainable and more productive irrigated agriculture in 74 districts.³ The government selected the target areas carefully, based on the need to improve irrigated agriculture. The International Fund for Agricultural Development (IFAD) will provide parallel financing for the delivery of agricultural services to maximize the benefits brought by irrigation improvements. IFAD's support will address underperforming extension services, poor access to farmer credit, and inefficiencies in the value chain, which contribute to low farm gate prices.

3. **Outcome measurement.** The program defines clear criteria for outcome achievement. Sustained and more productive irrigated agriculture will be measured by the government's irrigation system performance index (IKSI). The IKSI comprises six criteria: (i) infrastructure functioning, (ii) agriculture productivity, (iii) supporting facilities for O&M, (iv) adequacy of human resources for O&M, (v) adequacy of data and information, and (vi) the participation of water users associations (WUAs). Measurement of agricultural productivity is disaggregated into water availability and cropping intensity. The other factors in the IKSI indicate the extent to which the elements promoted by the program have become part of the institutional processes and systems for irrigated agriculture—notably participation, O&M, human resources, and data and information.

¹ Government of Indonesia. 2005. *Long-term Development Plan: RPJPN 2005-2025*. Jakarta.

² Government of Indonesia. 2015. *Medium-term Development Plan: RPJMN 2015-2019*. Jakarta.

³ This includes the following districts: Aceh Besar, Aceh Utara, Aceh Timur, Bireun (Nanggroe Aceh Darussalam province); Tapanuli Tengah, Asahan, Humbang Hasundutan, Simalungun (North Sumatra province); Sinjungjung, Pasaman, Limapuluh Koto, Pasaman Barat, Pesisir Selatan (West Sumatra province); Musi Rawas, Empat Lawang, Ogan Komering Ulu Selatan, Muara Enim, Musi Banyuasin, Banyuasin, Lahat (South Sumatra province); Pesawaran, Tanggamus, Lampung Tengah, Tulangbawang, Mesuji (Lampung province); Serang, Pandeglang (Banten province); Garut, Indramayu, Kuningan, Ciamis, Sukabumi, Majalengka, Sumedang (West Java province); Kebumen, Banjarnegara, Purworejo, Pekalongan, Pati, Banyumas, Cilacap (Central Java province); Bojonegoro, Ngawi, Lamongan, Kediri, Madiun, Lumajang, Jember, Jombang, Tuban (East Java province); Ketapang, Kubu Raya, Sambas, Kayong Utara (West Kalimantan province); Hulu Sungai Tengah, Tapin, Barito Kuala, Tanah Bumbu (South Kalimantan province); Minahasa Selatan, Bolaang Mongondow (North Sulawesi province); Toli Toli, Poso, Banggai (Central Sulawesi province); Wajo, Pinrang, Sidenreng Rappang, Soppeng, Bone (South Sulawesi province); Lombok Tengah, Lombok Timur, Bima, Dompu (West Nusa Tenggara province); Manggarai Barat, Manggarai Timur (East Nusa Tenggara province). The government selected the target areas based on the need to improve irrigated agriculture.

4. **Program strategies** include convergence, institutional strengthening, participation, and innovation. On convergence, the program will conduct the mapping of all stakeholder interventions at district level, fill gaps, and coordinate so that infrastructure, institutional, livelihood, and agriculture interventions converge. The program will emphasize strengthening institutions and systems, in particular (i) institutions and processes for improving performance tracking and measurement; (ii) asset management; and (iii) needs-based budgeting, coordination, and planning, so that the improvements and innovations made by the program will be sustainable. Increased farmer participation will help improve infrastructure design and water delivery. Innovation is discussed under the various outputs. The outcome will be achieved through three outputs: (i) systems and institutional capacity for sustainable irrigated agriculture strengthened, (ii) irrigation O&M and management improved, and (iii) irrigation infrastructure improved. These outputs are closely interrelated: improving systems and capacities (output 1) and enhancing sustainability through improved O&M and water delivery at scheme level (output 2) are both necessary for maximizing and sustaining the benefits that communities derive from infrastructure enhancements (output 3). The three outputs will combine to achieve the outcome.

5. **Program results area 1: Systems and institutional capacity for sustainable irrigated agriculture strengthened.** Output 1 will address institutional and systemic weaknesses by improving integration between irrigation and agriculture development; ensuring sound guidelines and regulations on innovations and modern approaches for the engineering of irrigation infrastructure; strengthening institutional mechanisms for implementation; and incorporating participatory strategies, asset management, and needs-based budgeting into district and provincial policies, plans, and budgets. To this end, the program will support (i) the formulation of irrigation development management plans (RP2I) at district, province, and river basin level, with realistic budgets; and (ii) their subsequent incorporation⁴ into district and province medium-term development plans and budgets to ensure sustainable and predictable funding. Through irrigation commissions, the program will strengthen institutional frameworks for integrating and coordinating agriculture and infrastructure development. Establishing a competency certification system for field facilitators will further strengthen institutional capacity. A capacity development framework will be implemented and monitored to strengthen the capacity of river basin organizations, water resources agencies, and subnational planning agencies to address weaknesses in implementing government safeguards, procurement, financial management, gender mainstreaming, engineering, and irrigation O&M and management processes. Monitoring and evaluation systems will be enhanced to support operations, monitor progress, and provide feedback to policy and planning.

6. **Program results area 2: Irrigation operation, maintenance, and management improved.** Output 2 will address the issue of poor maintenance and O&M of irrigation systems—a recurring problem. An estimated 45% of Indonesia’s irrigation system is not fully functional.⁵ The program will enhance the role and participation of WUAs in O&M and management; and it will support participatory assessments of irrigation schemes in an innovative process that improves the integration between interventions for infrastructure, agriculture, and livelihoods. Subsequently, service and water allocation plans will be worked out for the schemes (which will then feed into the RP2I under output 1). Using technical innovations such as aerial surveys of assets and LIDAR remote sensing technologies, the program will support the upgrading and updating of the government’s irrigation asset management

⁴ In this process, the RP2I is formally approved with appropriate budget allocations by the district or province head. The RP2I then becomes part of the five-year regular development plan, with assured budget for that district or province.

⁵ Ministry of Public Works and Housing. 2014. *Irrigation Systems Rapid Assessment*. Jakarta.

information system (IAMIS). This is essential to improve asset management, needs-based budgets, and planning.

7. **Program results area 3: Irrigation infrastructure improved.** This will address the problems of inefficient irrigation system infrastructure and high water losses. The program will support infrastructure rehabilitation and/or upgrading in a process that fosters community participation. The program will conduct water accounting with tools such as satellite technology. The innovative combination of participatory approaches and modern technology will lead to irrigation systems with improved design and infrastructure that will serve communities better, with greater efficiency, climate resilience, and predictability of irrigation water.

8. **Convergence.** The program will ensure coordination with other partners and detailed mapping of interventions at district level. This will identify the gaps from a menu of required interventions in a given scheme or district. The aim is to ensure that the whole range of interventions, including those financed by others, converges and enables that scheme to achieve the desired outcome. The complementarity with other partners fostered by the RBL approach makes this innovation possible.

9. **Towards achievement of the desired results.** Empirical evidence shows that achieving the three outputs is likely to lead to the desired outcome of sustainable and more productive irrigated agriculture. An ex-post evaluation of a similar earlier project funded by the Japan International Cooperation Agency (JICA) found that rehabilitated and new irrigation facilities were largely associated with improved farming water supply, improved rice yield, and increased rice cultivation.⁶ The evaluation reported other benefits of the project, such as greater income and affordability of health and education services.⁷ In a previous Asian Development Bank (ADB) project, farming households saw their income rise by 2.3 times over a 5-year interval.⁸

10. **Results indicators.** The program results indicators are specific, measurable, achievable, relevant, and time-bound (SMART). These will facilitate regular performance monitoring and corrective action throughout the program. Where indicators are qualitative, criteria are set to make that indicator measurable (e.g., para. 3 on performance index measurement).

B. Disbursement-Linked Indicators

11. The government and ADB have selected eight disbursement-linked indicators (DLIs) from the results framework (Table 1). The DLIs represent a balance between measuring the strategies used to achieve the outcome (DLIs 2 to 8) and the outcome itself (DLI 1).

⁶ J. Fujiwara. 2015. *Ex-Post Evaluation of Japanese ODA Loan "Decentralized Irrigation System Improvement Project in Eastern Region of Indonesia."* Jakarta.

⁷ Over 70% of beneficiary farmers in the JICA project reported improvements in farming water supply, increases in rice yield, and an increase in the number of plantings each year. After the project, 74.5% of beneficiary farmers reported having increased their farming income. Health and hygiene were reported to have improved (62.3% of beneficiaries) and education expenses were more affordable (58.2%) in over half of the households.

⁸ ADB. 2014. *Completion Report: Participatory Irrigation Sector Project in Indonesia.* Manila (Loans 2064/2065-INO).

Table 1. Disbursement-Linked Indicators

Indicator	Disbursement Allocated (\$ million)	Share of Total ADB and AIF Financing (%)
Outcome: Sustainable and more productive irrigated agriculture in 74 districts		
DLI 1: By 2021, performance of irrigation systems in the program area improved by at least 15% from 2017 level	42.0	7.0
Output 1: Systems and institutional capacity for sustainable irrigated agriculture strengthened		
DLI 2: Planning and engineering guidelines for irrigation delivery systems are improved by 2019	36.0	6.0
DLI 3: Irrigation commissions operationalized to enhance institutional capacity for integration and coordination of agriculture and infrastructure development in 74 districts and 14 provinces by 2021	54.0	9.0
DLI 4: At least 74 district irrigation development and management plans endorsed by district heads by 2021	18.0	3.0
Output 2: Irrigation operation, maintenance, and management improved		
DLI 5: Irrigation asset management improved for 2.5 million hectares of irrigation systems by 2021	138.0	23.0
DLI 6: Effective management of tertiary irrigation systems through operationalizing at least 4,500 water users associations by 2021	24.0	4.0
DLI 7: Improved assessments integrating agriculture and infrastructure development conducted for at least 719 priority schemes by 2021	36.0	6.0
Output 3: Irrigation infrastructure improved		
DLI 8: Rehabilitated irrigation infrastructure in program areas increased by 500,000 hectares by 2021	252.0	42.0
Total	600.0	100.0

ADB = Asian Development Bank, AIF = ASEAN Infrastructure Fund, ASEAN = Association of Southeast Asian Nations, DLI = disbursement-linked indicator.

Source: Asian Development Bank.

12. DLI 1 uses a performance index (para. 3) to capture both the outcome (improved performance in terms of six criteria) and, equally important, the strengthening of government institutions and systems required to track the index. In the baseline situation, the system to track performance is weak and does not cover all schemes managed by subnational water resources agencies. DLI 2 focuses on strengthening the processes for the management of irrigated agriculture through appropriate guidelines and regulations. DLI 3 ensures that subnational institutional capacities for integrating and coordinating agriculture and infrastructure are improved through irrigation commissions that meet performance criteria. DLI 4 tracks a key step in the process of integrating RP2I with realistic budgets into the country's subnational and national five-year development plans for the sector. DLI 5 provides the incentives required to ensure a functioning, updated irrigation asset management information system, which is essential to strengthen planning and resource-allocation systems. DLI 6 measures the extent of properly functioning WUAs, which are essential in improving management of irrigation systems. DLI 7 measures the participatory process for preparing investments at scheme level to enable the convergence between irrigation, livelihood, and agriculture interventions. DLI 8 focuses on infrastructure required to improve irrigation system performance. Of the eight DLIs, DLI 1, DLI 3, DLI 4, and DLI 5 reflect strengthening of the following systems and institutional mechanisms: (i) DLI 1: multi-criteria performance tracking systems; (ii) DLI 3: institutional mechanisms for integration, coordination, and oversight of agriculture and infrastructure; (iii) DLI 4: subnational development planning and budgeting systems; and (iv) DLI 5: asset management and information systems.

C. Managing Risks and Improving Capacity

13. The program is the first ADB program to use the RBL approach for the irrigation sector. It has a number of innovations: (i) its flexible yet comprehensive approach; (ii) the convergence of all interventions, which will promote synergy and ensure sustainability; and (iii) the emphasis on strengthening institutions and improving the governance of the irrigation subsector to ensure the sustainability of improvements in infrastructure, management, and O&M.

14. Yet the program is also subject to a number of risks. First, agricultural results are heavily dependent on climate, watershed and water resources management, market demand and access, farm wages, the cost of agricultural inputs, technologies, extension services, and other factors. Second, the agriculture interventions may not be on track, which poses a risk to outcome achievement. Third, institutional capacities may be weaker than envisaged, hindering proper implementation. Fourth, insufficient local capacities, motivation, and commitment could derail the participatory approach for improvements, and thereby undermine sustainability. Finally, political factors also pose risks: province or district parliamentarians may not approve the incorporation of the RP2I into their budgets and plans. Political issues could impede the establishment and functioning of the irrigation commissions and WUAs.

15. The main government counterparts—the Directorate General of Water Resources at the Ministry of Public Works and Housing, and the Ministry of Home Affairs—are well aware of these risks. ADB is supporting the risk management process during program preparation, including the planning of various scenarios. One strength of the program is that it builds on the accumulated knowledge and experience of similar irrigation projects. The program is applying lessons learned from past projects, such as further support needed for subnational water authorities, greater focus on sustainability of asset management, and realistic budget allocations.⁹ Furthermore, the program's flexible menu approach (para. 8) addresses the recommendation by the Independent Evaluation Department to move away from a fixed and narrow scope towards projects that have a broader and more flexible menu of activities.¹⁰ The program also addresses other evaluation recommendations, such as mainstreaming the role of the irrigation commissions, continuing staff training in irrigation and further strengthening the legal basis for irrigation reforms.

16. Convergent and coordinated planning between the government, ADB, and IFAD will reduce the risks associated with agricultural inputs and services. The risks linked to climate change and attendant impacts will be managed by incorporating disaster preparedness and resilience measures in assessments, guidelines, trainings, and planning sessions.

⁹ ADB. 2003. *Report and Recommendation of the President to the Board of Directors: Proposed Loans to the Republic of Indonesia for the Participatory Irrigation Sector Project*. Manila (Loans 2064/2065-INO).

¹⁰ Independent Evaluation Department. 2016. *Performance Evaluation Report: Participatory Irrigation Sector Project in Indonesia*. Manila: ADB.