

**Ex-ante Evaluation**

1. Name of the Project

Country: The Republic of Kenya  
Project: Mwea Irrigation Development Project  
Loan Agreement: August 16, 2010  
Loan Amount: 13,178 million yen  
Borrower: The Government of the Republic of Kenya

2. Background and Necessity of the Project

(1) Current Status and Issues of the Agriculture and Irrigation Sector in Kenya

Agriculture has consistently been a cornerstone of the social economy of the Republic of Kenya (hereinafter referred to as “Kenya”). The agricultural population accounts for more than 50% of the workforce, and serves as an important source for labor absorption in rural areas. Kenya’s real GDP in 2007 was approximately 1.34 trillion KShr (approximately 1.67 trillion yen), and it achieved an average growth rate of roughly 6.1% over the years 2003 to 2007. The agricultural sector accounts for approximately 24% of total GDP, and grew by about 3.9% on average during this same period. Of Kenya’s three major staple food crops of maize, wheat, and rice, the demand for rice in particular, which is easy to cook, has been shooting up mainly in urban areas. During the six year period starting in 2002 the quantity of rice imported increased 1.9-times, while the quantity consumed (total of the quantity produced and the quantity imported) rose 1.7-times.

Land suitable for agriculture that receives mean annual precipitation of 735 mm or more makes up 9.94 million ha, which corresponds to roughly 17% of the territory in Kenya. Of this, the area where irrigation can be developed is only 539,000 ha, or merely 5.4% of the land suitable for agriculture, with most areas forced to rely on rain-fed agriculture. What is more, the situation as of 2006 was one in which there was only 101,000 ha of irrigated area, with 81.3% of the area where irrigation could be developed still left undeveloped. Since 2007, Kenya has been hit by frequent droughts and its agricultural production output has been on a downward trend. The year 2008 in particular saw little rainfall which, when coupled with the soaring costs of oil, fertilizer, and other goods and the chaos following in the wake of the presidential election, resulted in a drop of roughly 23% in the production output of maize. These and other factors plunged the country—mostly those living in poverty in the urban areas and the arid and semiarid zones—into a state of food crisis. As this demonstrates, Kenya’s agricultural production is easily influenced by the weather, and a stable supply of agricultural water is the key to a stable supply of food. As such, the development of irrigation is a pressing challenge from the standpoint of food security.

(2) Development Policies for the Agriculture and Irrigation Sector in Kenya and the Priority of the Project

The Government of Kenya formulated Vision 2030 in June 2008 as a successor national development plan to the Investment Program for the Economic Recovery Strategy for Wealth and Employment Creation 2003-2007 (hereinafter referred to as “IP-ERS”), which was the

Kenyan version of a Poverty Reduction Strategy Paper (PRSP) formulated in April 2004. Vision 2030 sets forth an annual economic growth rate of 10% as one of its objectives, and regards development of the agricultural sector, which is a key industry, to be the most important challenge for attaining this objective. It places particular emphasis on stably supplying agricultural water through efforts like the development of irrigation, and positions Mwea irrigation development as a national flagship project.

### (3) Japan and JICA's Policy and Operations

Japan's Country Assistance Program for Kenya sets the five areas of: (1) human resources development, (2) agriculture development, (3) the improvement of economic infrastructure, (4) health and medical care, and (5) environmental conservation as priority areas for aid. This project has been positioned as a key project in the Rice Promotion Program for the development issue of "agricultural development suited for markets."

What is more, at the Fourth Tokyo International Conference on African Development (TICAD IV) JICA set forth the Coalition for African Rice Development (CARD) Initiative with the objective of doubling rice production in Sub-Saharan Africa over the ten year period beginning in 2008 (from 14 million t to 28 million t). This is to be pursued jointly with the Association for a Green Revolution in Africa (AGRA) in order to respond to the surge of rice imports due to rapid increase of demand from the latter half of the 1990s, as well as to respond to food insecurity by raising the current global cost of grains. Kenya was selected as one of the countries targeted for assistance.

Assistance to the Mwea Irrigation Project District has its origins in the Mwea District Irrigation Development Plan Implementation Study, which was a development study carried out in 1988. Later on, initiatives like the installation of irrigation channels and the repair of weirs were carried out via the Mwea Irrigation Development Plan (2.757 billion yen), a grant aid project that was implemented from 1989 to 1991. Furthermore, from 1991 to 1998 assistance was provided for the development of human resources at the National Irrigation Board (NIB), which is in charge of operation and maintenance for this irrigation project district, as well as providing instructions on rice cultivation to farmers. This was done through the Mwea Irrigation and Agriculture Development Plan, a technical cooperation project, and follow-up projects that came after it. Then a Detailed Design Study (D/D) was carried out from 1993 to 1996 via the Mwea Irrigation Project (E/S), an ODA loan designed to expand the irrigation facilities.

### (4) Other Donor's Activities

The World Bank is implementing the National Resource Management Project for the conservation and effective use of natural resources aimed at the entire country of Kenya. As part of this project, it plans to perform some repairs to facilities in the Mwea Irrigation Project District. At the time of the examination, as a result of consultations between the NIB and the World Bank, it was agreed that JICA and the World Bank would work together, with JICA expanding agricultural land in the Mutithi East District and the World Bank doing this in the Ndrewa North and Marura Districts.

### (5) Necessity of the Project

Through the efforts mentioned above, the Mwea Irrigation Project District will cover more

than 50% of the domestic production output of rice, which is one of the three major staple food crops in Kenya. The development of irrigation poses a pressing challenge to Kenya's food security. What is more, because there is agreement between Japan and JICA's support policies there is high validity and necessity for providing support for this project through an ODA loan.

3. Project Description

(1) Project Objectives

The Project aims to boost productivity of rice and other crops by upgrading irrigation facilities and strengthening operation and maintenance capabilities, thereby contributing to augmenting the livelihoods of farmers in this region and to improving the food security of the country.

(2) Project Site/Target Area

Mwea Irrigation Project District of the Central Province (approximately 100 km northeast of Nairobi)

(3) Project Components

The Project will construct new dams and irrigation channels and repair existing ones, and expand agricultural land in the Mwea Irrigation Project District, while also enhancing the capabilities of the NIB, which is in charge of the operation and maintenance of key facilities. The expansion of agricultural land in certain districts targeted by the Project is slated to be carried out by the World Bank.

- 1) Civil works (repairs to irrigation facilities, construction of agricultural dams, repairs to and new installations of link channels, expansion of agricultural land, improvement of relocation sites, improvement of water wells, etc.)
- 2) Procurement of materials (operation and maintenance materials and materials for environmental monitoring)
- 3) Consulting services (review of the detailed design; tender assistance; construction supervision; instructions on the operation and maintenance of irrigation facilities, etc.)
  - Procurement method: International and domestic competitive bidding
  - Consultant: Short list method
  - Execution method: Contracting method

(4) Total Project Cost

18,631 million yen (ODA Loan amount: 13,178 million yen)

(5) Schedule (Cooperation Period)

The planned implementation schedule is from August 2010 to May 2018 (94 months in total). The Project will be deemed complete when the facilities begin operating in November 2016.

(6) Project Implementation Structure

- 1) Borrower: The Government of the Republic of Kenya
- 2) Executing Agency: The National Irrigation Board (NIB)
- 3) Operation and Maintenance System: Same as 2). However, irrigation associations will carry out operation and maintenance of the irrigation facilities at the terminal level.

(7) Environmental and Social Consideration/Poverty Reduction/Social Development

- 1) Environmental and Social Consideration
  - a. Category: A
  - b. Reason for Categorization: This Project is categorized as A because its sector and area fall under sensitive agricultural sectors and sensitive characteristics set forth in the JBIC Guidelines for Confirmation of Environmental and Social Considerations (established in April 2002).
  - c. Environmental License: The Environmental Impact Assessment (EIA) report regarding the Project was approved by the National Environmental Management Authority (NEMA) of Kenya on November 25, 2009.
  - d. Anti-Pollution Measures: Monitoring of the impact on water quality from the use of agricultural chemicals will be monitored by the executing agency, with the expectation that guidance related to the proper use of agricultural chemicals will be provided to farmers. Wells will also be maintained in order to ensure safe drinking water.
  - e. Natural Environment: The project's target area does not fall under sensitive regions such as national parks or their surrounding areas.
  - f. Social Environment: It is expected that 627 households (as of November 30, 2009) will have to be relocated for this Project. The land acquisition and resettlement plan procedures will be promoted based on the Resettlement Action Plan (RAP) formulated by the NIB.
  - g. Other/Monitoring: The maintenance of relocation areas shall be included in this Project.
- 2) Promotion of Poverty Reduction: The livelihoods of farmers will be improved by enhancing their productivity.
- 3) Promotion of Social Development (e.g. Gender Perspective, Measures for Infectious Diseases including HIV/AIDS, Participatory Development, Considerations for Persons with Disabilities, etc.): The participation of women in irrigation associations will be promoted by the NIB for the sake of achieving greater Project results. Measures such as awareness raising and the distribution of contraceptives will be taken in order to prevent infection of the workers and local residents by HIV/AIDS and malaria during the construction work.

(8) Collaboration with Other Donors:

The World Bank is slated to conduct improvements on agricultural land in the Nderewa North and Marura Districts in the Mwea Irrigation Project District.

#### 4. Targeted Outcomes

##### (1) Quantitative Results

###### 1) Operation and Effect Indicators

Indicator	Baseline (2009)	Target (2020) [Four years after program completion]
1) Recipient area (ha)	7,860	8,910
2) Annual total planted area (ha)	7,860	16,920
3) Rice production output (tons/year)	33,900	68,300
4) Rice yield per unit (tons/year/ha)	3.6	5.5
5) Farmer's earnings (Ksh/year/ha)	94,615	242,311

###### 2) Internal Rate of Return: Based on the conditions listed below, the Economic Internal Rate of Return (EIRR) of the Project will be 10.8%.

- (1) Cost: Project cost (excluding tax and duty), operation & maintenance cost
- (2) Benefit: Increased profits from agricultural produce
- (3) Project Life: 50 years

#### 5. External Factors and Risk Control

##### (1) Environmental and Social Considerations

It is essential to carry out thorough monitoring through quarterly progress reports and the like so as to ensure that the relocation of residents is implemented properly.

##### (2) Dam Operation and Maintenance

Bear in mind that the proper operation and maintenance of facilities should be carried out, such as monitoring of sedimentation in dams and sand removal, by means of having the consulting service provide instruction for dam operation and maintenance.

#### 6. Lessons Learned from Past Projects

The lesson that it is necessary to perform project formation and supervision while bearing in mind the establishment of an operation and maintenance structure—since the operation and maintenance after completion have a significant influence on the achievement of project results—has been acquired from past experiences with irrigation projects. Based on this, consideration will be given to implementing technical cooperation through a project that is ancillary to the ODA loan in the aim of achieving synergistic effects between schemes. This would be done in collaboration with the irrigation development advisors and rice promotion advisors who have already been dispatched in order to further raise the Project's results. The details of the envisioned cooperation are as follows.

- 1) A reassessment of the planting configuration and the introduction of New Rice for Africa (NERICA) in order to increase the production output for rice
- 2) Capacity building for the irrigation associations in charge of the operation and maintenance of the irrigation facilities at the terminal level
- 3) Proper use of agricultural chemicals through the dissemination of proper farming techniques

7. Plan for Future Evaluation
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(1) Indicators to be used

- 1) Recipient area (ha)
- 2) Annual total planted area (ha)
- 3) Rice production output (tons/year)
- 4) Rice yield per unit (tons/year/ha)
- 5) Farmer's earnings (Ksh/year/ha)
- 6) Economic Internal Rate of Return (EIRR) (%)

(2) Timing

Four years after project completion

(End)