

Ex-Ante Evaluation

1. Name of the Project

Country: Sub-Saharan African region (to be sequentially developed from the Republic of Tanzania)

Project : Off-Grid Solar Power Project

Signing Date : October 19, 2016

Investee : Digital Grid Inc.

2. Background and Necessity of the Project

(1) The status quo and challenges of rural development in Tanzania

In Sub-Saharan Africa, the economic growth rate is decreasing from 5.0% in 2014 to 3.8% in 2015, and 4.3% in 2016 due to declines in primary commodity prices and the global economic downturn (World Economic and Financial Surveys). 7% of economic growth aimed by Millennium Development Goals in 2015 has not been achieved, and there is still significantly high poverty rate comparing to the world average (in 2012 Sub-Saharan countries: 42.7%, world average: 12.7%, South Asian region: 18.8%). In addition, the current population without access to electricity is about 600 million (about 50% of the world population without electricity), and improvement of access to electricity is a major issue of the entire Africa region. The electrification rate of Sub-Saharan Africa has not improved (2010: 32% (rural area 13%), 2011: 32% (18%), 2012: 32% (16%), 2013: (32% (17%), and population without electricity has been increasing (2010: 589 million, 2011: 599 million, 2012: 622 million, 2013: 635 million people). According to the International Energy Agency forecast, population growth without access to electricity continues until 2025.

In Tanzania, with the steady economic growth in recent years (average about 7% over the past 10 years), the poverty rate is decreasing every year. The trend of poverty rate since the 1990s shows a decrease as 38.6% in 1991, 35.7% in 2000, 33.6% in 2007 and 28.2% in 2011, however, the poverty rate in rural areas still remains high as 33.3%. Access to electricity is also a significant problem. The electrification rate in Tanzania is 24% (Electricity Access in Africa 2013), quite low with comparison to the average of Sub-Saharan Africa (32%). The situation in rural areas is even worse; electrification is less than 4% (17% in Sub-Saharan Africa). Electrification rate is as 2010: 15% (4% in rural area), 2011: 15% (4%), 2012: 24% (7%), and 2013: 24% (4%), this shows that electrification in rural areas has not progressed. Many households without access to electricity rely on traditional primary energy sources such as charcoal for cooking, firewood and kerosene lamps for lighting, health damage due to smoke and greenhouse gas emissions are significant (World Health Organization).

(2) Rural development policies and position of the project in Tanzania

In the Development Goals of the "2030 Agenda for Sustainable Development" adopted by UN Member States (SDGs), "Goal 7.1 by 2030, ensure universal access to affordable, reliable and modern energy services" is listed. The Government of Tanzania aims to raise GNI per capita to 3,000 dollars by 2025 (Tanzania Development Vision 2025) (930 dollars in 2014). In the second national strategies formulated in 2010 (MKUKUTA II), it is stated to address stable electricity supply in order to achieve economic development and reduction of economic poverty. This project aims to improve livelihoods in areas without electricity by off-grid solar power generation in Sub-Saharan Africa, therefore the project is in line with development challenges and policies in this region.

(3) Japan and JICA's rural development policies

Japan adopted the "Yokohama Action Plan (2013-2017)" in the 5th Tokyo International Conference on African Development (TICAD V) and is promoting to improve infrastructure, which ensures universal access to energy. "Country's Assistance Policy for the Republic of Tanzania (June 2012)" emphasizes the "development of infrastructure to support economic growth and poverty reduction" as one of the Priority Area and manifests that Japan provides assistance on the improvement of infrastructure related to the electric and energy sectors, paying much attention to formulate projects with use of Japanese technological advantages. Based on the above, "JICA's Country Analysis Paper for the Republic of Tanzania" (March 2015) identifies economic and social infrastructure for sustainable development as one of the priority areas, and rural electrification is positioned as middle-to-long-term development challenge.

(4) Importance of the Project

As discussed above, not only Tanzania but also the entire Africa's development challenges and policies are in line with JICA's assistance policies, therefore, it is highly necessary for JICA to implement this project. The project model will be disseminated to the other African countries in near future, as rural electrification is a major development issue for the entire Africa region.

3. Project Description

(1) Project Objective

The objective of this project is to provide LED lamp rental and mobile charging services, which are respectively used for lighting and money remittances, at the retail shops for the Base of the Pyramid (BOP) customers by installing solar panels at retail shops in villages without electricity, thereby contributing to improvement of the standard of living in Sub-Saharan Africa.

(2) Project Site/Target Area

Sub-Saharan Africa region (to be sequentially developed from the Republic of Tanzania)

(3) Project components

① Project outline

Installing solar panels at retail shops in villages without electricity, and provides LED lamp rental services and mobile phone charging services at the retail shops for BOP customers

② Project cost: 400 million yen

(¥M)

Use		Procured as	
Additional capital investment	300	Capital	400
Administrative expenses	100		
Total	400	Total	400

③ Investment amount:

Investment from JICA to Digital Grid Inc. (class share)

Amount: 300 million yen (ownership ratio after investment is 16.3%)

(4) Schedule

The project has been already started in January 2015 (this investment is for project expansion).

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

① Environmental and Social Consideration

a) Category: C

b) Reason for Categorization: under the JICA Guidelines for Environmental and Social Considerations (April, 2010), potential adverse impacts on the environment caused by the project are not likely to be significant.

② Promotion of Poverty Reduction: the project is expected to contribute to improvement of BOP's standard of living

③ Promotion of Social Development: None

(6) Collaboration with Other Donors: None

(7) Other Important Issues: None

4. Targeted Outcomes

(1) Quantitative Effects

Operation and Effect Indicators

Indicator	Baseline	Target (March, 2017)
Number of newly introduced kiosk (shops)	0	2,000
Number of rented LED lamps per day in newly introduced kiosk (lamps)	0	36,000

*After introduction of 2,000 stores with JICA's investment, it aims to introduce 11,000 stores in Tanzania and 36,000 stores in the entire region through reinvesting profits from the project, and expanding with increase in capital and partner capital

(2) Qualitative Effects

Improvement of livelihoods in area without electricity (including education during nights), mitigation of climate change, as well as prevention of health damage are expected.

5. External Factors and Risk Control

(1) Competitors

With emergence of other donor's off-grid projects, or business such as solar home system, charging station or LED lamp sales, there are risks that may affect the project. However, fee for charging mobile phones and renting lamps in the project is cheaper than other companies and other alternative source of light, thus the project has competitive-price services. In addition, the project manages a system to support kiosk owners including regular and continuous visits. Based on a strong relationship with owners created through supportive follow-up system, the project has achieved stable earnings. In this sense, it is difficult that newcomer imitates the business in a short-term.

(2) Implementation Structure

In order to develop the project, it is essential to increase the number of kiosk stores, therefore expansion and improvement of personnel structure is quite important. As this business model will be expanded throughout Tanzania in the project, establishment of branch offices in the major cities, and collaboration between headquarter staffs in Dar es Salaam with branch staffs are planned. In preparation for increase in the number of staffs, in addition of Japanese directors, Tanzanian branch managers will be appointed as well as department heads will be promoted among local staffs, by so doing development of leadership as well as stratification of organization will be promoted.

6. Lessons Learned from Past Projects

(1) Lessons Learned from Past Projects

Reports including "survey on challenges and possibilities of rural electrification through photovoltaic power projects" (2005) indicate that replacement and disposal of battery is a

challenge for operation and maintenance.

(2) Application on Lessons Learned to the Project

In this project, the system and cost for exchanging the battery in the future are included in the business plan, and the discarded batteries will be appropriately processed according to the regulations of the Tanzania Renewable Energy Association (TAREA).

7. Plan for Future Evaluation

(1) Indicators to be used

- ① Number of newly introduced kiosk (shops)
- ② Number of rented LED lamps per day in newly introduced kiosk (lamps)

(2) Timing : 5 years after project completion

END