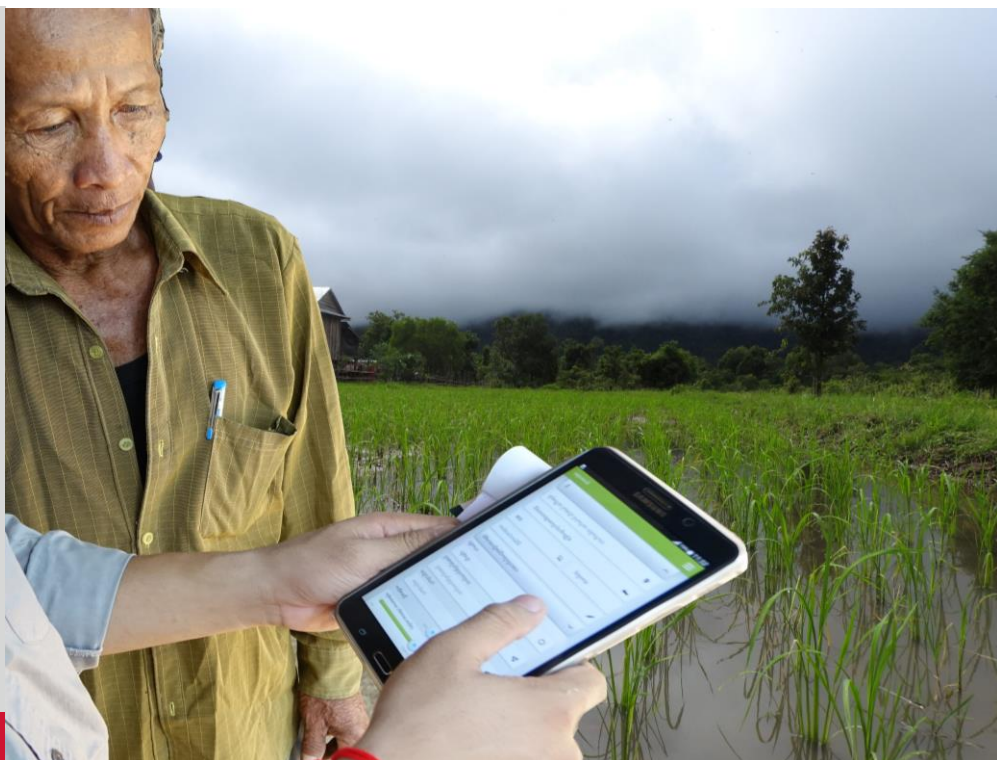


## E-Project for Agricultural Development and Economic Empowerment (E-PADEE)

### GRANT RESULTS SHEET



### Grant funded by the Republic of Korea

The project aimed to  
enhance rural  
livelihoods and rice  
productivity through  
the ICT Agriculture  
Expert System  
technology

### Introduction

The E-Project for Agricultural Development and Economic Empowerment (E-PADEE) is a US\$380,000 programme implemented in Cambodia with funding from the Republic of Korea in partnership with IFAD. It was implemented in 2013-2016 under the broader framework of IFAD's Project for Agricultural Development and Economic Empowerment (PADEE), which ran overall from 2012 to 2018, located in Kampot, Kandal, Prey Veng, Svay Rieng and Takeo provinces. The Korean supplementary funds were used to enhance and improve the livelihoods of target beneficiaries and overall productivity of rice farming through the use of an Information and Communication Technology (ICT) application known as the Agriculture Expert System technology (AES).

Project implementation was led by the Ministry of Agriculture, Forestry and Fisheries (MAFF) in partnership with Grameen Intel Social Business (GISB), the Netherlands Development Organization (SNV) and the International Development Enterprises (iDE).

### Goals and objectives

The overall goal was to accelerate access to agricultural technical information and advice by farmers benefiting from the PADEE-supported Improved Group Revolving Fund Scheme (IGRFS). The main objectives were to enhance farmers' ability to control pests and diseases as well as nutrient deficiencies, reduce production losses and increase farm productivity, while minimizing the need for technical assistance from specialists and extension staff. The project also served as an innovative pilot to be implemented in target provinces of PADEE and to be replicated with any required adjustments, if successful. At completion, the

## Facts at a glance

Grant implementing agency  
Ministry of Agriculture, Forestry  
and Fisheries (MAFF),  
Government of Cambodia

### Theme

ICT for development

### Benefiting country

Cambodia

### Programme cost

Republic of Korea: US\$380,000

### Cofinancing (other donors):

PADEE

### Partners

General Directorate of  
Agriculture (GDA)

Grameen Intel Social Business  
(GISB)

SNV Netherlands Development  
Organization (SNV)

International Development  
Enterprises (iDE)

### Effectiveness and duration

2013-2016

### Linkages to IFAD investment project

Project for Agricultural  
Development and Economic  
Empowerment (PADEE)

programme demonstrated potential for ICT-based services for smallholder farmers and identified challenges and constraints. Scaling up would require adjustments to realize the commercial potential of ICT-based services, as well as to foster public-private partnerships responding to the needs of both subsistence and more advanced farmers. A follow-up phase of the programme will deal with this issue, in association with the IFAD-supported Agriculture Services Programme for Innovation, Resilience and Extension (ASPIRE) being implemented in Cambodia.

## Beneficiaries

The target group consisted of poor households that were members of the revolving fund groups under the project's IGRFS scheme operating in 14 target districts. The grant reached 1,649 households during the wet season of 2015. Additionally, 165 community members were mobilized and trained to become at a later stage "rural entrepreneurs" and provide smallholder farmers with improved extension services, such as information and training on production practices, market access, etc.

## Main activities

Activities were implemented by a range of specialized service providers, many of which were implementing partners of PADEE. SNV provided technical assistance on the technical feasibility of the application developed by GISB application and on the process of localizing the content. It was also responsible for project reporting, evaluation, documentation and learning, as well as the external audit. iDE provided training and mentoring for the farm business advisors (FBAs) to implement the AES. GISB contributed ICT for development investments to run the specialized AES software modules.

More specifically, the main activities involved:

- **Technology feasibility analysis** was conducted to assess options for the design of the electronic expert system, based on a review of existing options in Cambodia and other countries. The content feasibility analysis was instrumental to identifying the way women and men farmers approach technical problems; the type of questions they ask advice for; and the way they access as well as process knowledge, as a basis to develop the expert system in a way that could respond to the needs and demands of farmers.
- **Formation of expert groups.** Four expert groups on the topics of rice, vegetables, poultry and fish were formed. Members came from MAFF, universities, NGOs and national or international research institutions. Their role entailed developing the content to be delivered by the expert system in response to farmers' requests for technical advice. They also developed part of the training modules provided through the Farmer Field School approach.

ICT Agriculture Expert System technology contributed to enhancing access to extension information by project beneficiaries and increasing the productivity of their rice farms

- **E-platform development and training.** Based on the outcomes of feasibility studies and expert groups, the e-platform operating hardware and software were developed. FBAs and the Mobile Support Team (MSTs) were provided with the devices and were trained on their use and the use of applications. This enabled them to learn how to collect local geo-referenced information and deliver messages through video or other media to the farmers.
- **A central database on agricultural production and harvest** was created to store, manage and share information, including to potential traders willing to source from the PADEE areas. Tablet applications were also customised to store weather, soil, crop data by location and beneficiary ID.

### Main results

The development of the AES contributed to enhance access to extension information and strengthen the effectiveness of rural advisory services to project beneficiaries. Main specific achievements include:

- **Improved rice seed variety selection.** By the completion of the programme there were 97 MST members and 68 FBAs in 148 communes in the 14 districts, piloting the system to become “rural entrepreneurs” and provide smallholder farmers with improved extension services through tablet devices. Up to 72 per cent of farmers receiving advice from the AES adopted the varieties recommended by the AES, which were improved varieties recommended by the Government and the Cambodian Agriculture Research and Development Institute (CARDI), compared to only 48 per cent of farmers who did not receive technical information through the AES.
- **Increased rice productivity.** Farmers receiving advice from AES were also better able to manage fertilizer use and seeds, which contributed to higher rice yields compared to other farmers. Average yields were 92 kg, or 32 per cent more per 1,000 square metres. Even though the total input costs were also higher (\$13.10, or 45 per cent more) from increased fertilizer use, they were offset by higher yields and higher crop prices per kilo of rice (US\$ 0.26 as opposed to US\$ 0.23 for farmers not receiving advice), under both rainfed and irrigated conditions.
- **Higher incomes.** Farmers receiving advice also increased their income by nearly US\$ 184 per hectare, or approximately 49 per cent more than those not receiving advice. However, most farmers keep their rice for consumption and 60 per cent of them as seed for replanting, with only 24 per cent selling their entire produce and 17 per cent a portion of it.

## Ministry of Agriculture, Food and Rural Affairs Republic of Korea



## Ministry of Agriculture, Forestry, and Fisheries Royal Government of Cambodia

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## Lessons learned

The E-PADEE expert system model has shown potential for continued use and further development and to become sustainable. Its use by the target farmers contributed to increase yields and profit margins while reducing the dependency on purchased rice by net buyers. The main issue arises in connection with the commercial potential of the AES application, which is higher among farmers selling their produce entirely or partially. In fact, as yields increase, those farmers totally or partially selling rice are expected to enhance their sales and derive monetary income that could be used to pay for the use of the application. For the remaining farmers, while the application helps reducing the dependence on purchased rice, commercialization prospects appear somewhat more limited. This would require identifying opportunities for public-private partnerships whereby the MSTs and FBAs provide advice following directions by the General Directorate of Agriculture (GDA), while being linked with the input supply and rice milling sectors. FBAs and MSTs need to find opportunities for income generation through service provision using the E-PADEE software, but most likely among farmers engaged in some form of rice commercialization. A follow-up phase, in association with the ASPIRE project, aims to follow this approach and realize the commercial viability of ICT-based services, for scaling up through public-private partnerships.

## Conclusion

This project pilot-tested an innovative model that showed promising results, but further validation, investment and adjustments are needed to make it commercially viable and scale it up among subsistence and semi-commercial farmers. PADEE beneficiaries who participated in the pilot adopted technical advice received through the E-PADEE expert system and increased their rice productivity and household income. This included selection of recommended seed varieties, optimization of fertilizer use, and better seed management practices provided through the e-platform.