

PROJECT SUMMARY
“E-KAKASHI”: THE AGRICULTURE AI BRAIN
(CO-T1488/CO-Q0017)

The Latin America and the Caribbean (LAC) region has the potential to become a worldwide powerhouse in the production of food and other agricultural products if its available resources are leveraged wisely. To fully realize this potential, actions must be taken in raising productivity in an environmentally conscious manner. Increasing yields and doing so in the existing productive area through sustainable agricultural practices will have to be accompanied by new technologies and innovations which allow producers and other actors to maximize the efficient use of resources along the value chain.

Small-scale farmers in rural communities in Colombia, in particular, where armed conflict occurred, experience significant production losses due to a lack of competitiveness. One example is rice, one of the most important crops in Colombia with 16,000 rice farmers of which 70% are small-scale farmers (<10 hectare). Many rice farmers living in vulnerable conditions do not achieve high productivity, quality and sustainability standards as they lack access to technologies, services such as financing and markets. Moreover, recent cycles of abnormal weather patterns associated with phenomena like La Niña and El Niño have forced them to adapt small-scale farming practices to new climatic conditions, within a short timeframe.

The project's main objective is to improve the productivity and sustainability of rice farming in Colombia by implementing a new technological solution, called “**e-kakashi**” developed by **PS Solutions** (a member of **Softbank Group**), which combines **internet of things (IoT)**, **big data**, **artificial intelligence (AI)** and **cyber physical system (CPS)**¹. e-kakashi is a service that turns agriculture into real-time, data-driven science by collecting a large amount of cultivation and environmental data in the field, and processing and analyzing the collected data combined with agronomical knowledge, evidence and practices to derive the optimal level of farming parameters.

The e-kakashi solution also contributes to solving environmental problems such as unstable water supplies and greenhouse gas (GHG) emission. Flooded rice paddies emit as much as 500 million tons of methane worldwide, which is around 20% of total man-made emissions of this gas. The warm, waterlogged soil of rice paddies provides ideal conditions for producing methane. PS Solutions has been developing the e-kakashi solution to track and calculate optimal water levels at each phase of plant growth not only to enhance agriculture productivity but also to reduce methane emissions.

In Colombia, e-kakashi has been tested by the International Center for Tropical Agriculture (CIAT) in pilot rice paddies located inside the CIAT facility in Cali. This research pilot has been conducted within the framework of a Japanese government program called SATREPS-Science and Technology Research Partnership for Sustainable Development. The MIF project will be the first trial of e-kakashi aiming for a commercial level implementation and expansion, outside Japan.

The project will have two phases: (i) to prove the effectiveness of the proposed solution in actual rice fields in Colombia in collaboration with CIAT, PS Solutions, local rice farmers, and Blanquita – a local rice milling company which is part of the value chain; and (ii) to scale up the solution among smallholder farmers (of rice and other products) in the other geographical locations in Colombia and beyond, including setting-up a company or a vehicle with initial funding from PS Solutions, through which the solution package will be marketed in LAC countries.

¹ CPS (Cyber Physical System) is a mechanism that analyzes open data and data collected by sensors and feeds back the algorithm-processed results to the physical actuators and controls them.

Correspondingly, the project will be a combination of a non-reimbursable technical cooperation (up to US\$500,000) and an equity investment (up to US\$1,500,000).

By showcasing the productivity increase with this solution, the project eventually aims to introduce and expand IoT/data-driven practices in agricultural activities in general (beyond rice and beyond Colombia).