How can we meet market demand without knowing the exact production capacity of the local farms? This was the question that Samoa-based NGO, Women in Business Development Incorporated (WIBDI), wanted to answer. Their solution, involving collecting and sharing data, came in part from a collaboration with the Samoan technical services company, Skyeye. Using drones, the NGO's certified organic farms were mapped in 2016, their boundaries marked out and their coconut trees counted. In total, 37,933 ha were surveyed and 428,188 coconut trees counted. Out of the 796 certified organic farms in the WIBDI network, the 420 largest were covered by Skyeye.

Now, the NGO, which is one of Samoa's main exporters of coconut oil, has an accurate database of its members, their farms and their production capacities. “The WIBDI database is central to the organisation’s operations as it holds all the detailed baseline information on farmers and their locations, as well as information on the produce grown at each farm, the amount of cultivated land and other important details for quality control and organic certification purposes,” explains Alberta Vitale, WIBDI’s associate director. “The records on cultivated land and crops grown are critical for marketing to provide WIBDI with an accurate count of the availability of goods to respond to market demand. For instance, niche markets may require tonnes of coconut oil from WIBDI, and in order to respond positively to the markets, the organisation will need to have a detailed count on how much produce is available on farm and how much can be supplied to the markets, taking into consideration
climate change factors that could potentially affect the supply of raw materials,” Vitale continues.

**A visual count of coconut trees**

To establish the WIBDI database, Skyeye was able to use GPS to locate the farms. The drones then made it possible to produce maps using a Geographic Information System (GIS). After determining field boundaries of the farms in collaboration with local farmers, and using the drone information to determine the number of coconut trees, these details were added to the GIS map. “With the high-resolution drone imagery, we are able to see individual coconut trees clearly, allowing us to conduct a visual count of total tree numbers,” explains Ephraim Reynolds, a GIS technician for Skyeye.

The company used a GIS tool known as Web Feature Services, which allows users to access and update information. In this way, the digital map of coconut trees can be updated according to the maturity of the trees, which, among other benefits, makes it possible to better predict yields and organise work in the fields.

“The available data has provided me with knowledge on how I can map out the different crops to grow on my family land, taking into account the huge amount of uncultivated land that’s available for development and the market demand locally for fresh produce and value-added goods,” says Onone Suaesi, a 21-year-old farmer and graduate of WIBDI’s Organic Warriors Academy (OWA), a training programme in organic farming practices launched in 2016, with the aim of teaching young people how to turn their farms into businesses.

**Integrating ICTs into operations**

WIBDI, which is currently active in 201 Samoan villages and is helping to promote organic farming businesses with an annual income of over WSS 600,000 (€193,000), has also received support from CTA to integrate ICTs into the day-to-day management of its operations. Thanks to an online tool developed with CTA, the NGO was better able to track the progress of young people involved in the WIBDI programme. Engaging Youth in Samoa in Organic Farming and Menus: A Farm-to-Table Value Chain Approach, which trains young people, among others, in the use of ICTs in the agri-food sector. In addition, CTA has also supported WIBDI in developing a data system to manage its organic certification scheme, which has certified 796 farms in Samoa. With the use of smartphones and tablets, WIBDI has also been able to support the rollout of a system enabling farmers to find commercial outlets in hotels and restaurants. More specifically, ‘From the Organic Farm to the Table’ is an app that enables users to identify restaurants supplied with organic produce and view the profile of their producers. “The farm to table app provides a great pathway for marketing agri-tourism sites, restaurants and farmers’ locations in Samoa and connecting local people and tourists to WIBDI,” Vitale says. “The app has enabled me to get in touch with WIBDI and to facilitate the sales of my produce to the local markets,” confirms Solomona Afulo, a 26-year-old graduate of OWA.

In the field, WIBDI representatives are equipped with tablets on which the applications are installed, and which make their work of collecting and updating information more efficient and less time consuming. By having access to the farm-level and field-based data of their members, WIBDI is in a better position to support them and to link them with external service providers wanting to collaborate with their members.

**Challenges remain**

Despite significant progress in WIBDI’s ability to positively respond to market demand, and the undeniable impacts that the NGO’s work has had on Samoan agriculture, a number of challenges remain. The first of these is smallholder farmers’ access to smartphones, which are essential to enable them to use the WIBDI applications. Then there is the need to provide training to farmers in how to use their smartphones. “Farmers will be encouraged through savings and financial literacy training to save enough money to upgrade to smartphones, which will give them easy access to the use of data,” says Vitale.