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USE OF ICT IN AGRICULTURE AND ENHANCING EXTENSION SERVICES TO PROMOTE CONSERVATION AGRICULTURE

May 2020

SDGs:



Countries:

Zambia

Project Codes:

TCP/ZAM/3702

FAO Contribution

USD 419 000

Duration:

17 August 2018 – 31 January 2020

Contact Info:

FAO Representation in Zambia

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Implementing Partners

Ministry of Agriculture (MoA), Ministry of Fisheries and Livestock (MoFL) and Smart Zambia Institute (SZI).

Beneficiaries

Government staff from the MoA, the MoFL and staff from the SZI; smallholder farmers in Zambia.

Country Programming Framework (CPF) Outputs

Output 1.1: Poor rural producers and households supported for improved access to inputs (for livestock, agriculture, fisheries, wildlife and forestry).

Output 1.3: Innovative practices for sustainable crops, livestock, fisheries, wildlife and forestry production are identified, assessed and disseminated and their adoption by stakeholders is facilitated.

Output 2.4: Improved capacities of government and stakeholders to plan for and conduct data collection, analyses, application and dissemination in the agriculture and forestry sectors.

Output 3.2: Strengthened human resource and organizational capacities in the food security and nutrition domain.



BACKGROUND

The Farmer Input Support Programme (FISP) implemented by the Government of the Republic of Zambia (GRZ) aims to improve the supply and delivery of affordable agricultural inputs to small-scale farmers. Its overarching objective is to increase household food security and incomes.

To support the implementation of the FISP, an EU-funded project entitled Conservation Agriculture Scaling Up (CASU) in Zambia was formulated. This project focused on the development of the Farmer Input Voucher Management System (FIVMS), which registered over 250 000 farmers, over 150 small-scale suppliers, 450 mechanization service providers, 15 large-scale input suppliers, 48 district-level partners and nine provincial partners in a three-year period. The FIVMS facilitated the distribution of more than USD 4.5 million to beneficiaries in Zambia in that time.

Owing to the success of the CASU project and the FIVMS, the GRZ sought to adopt the system as the backbone for the development of the Zambia Integrated Agriculture Management Information System (ZIAMIS), which would include access to e-vouchers and other forms of support, such as e-extension, insurance, crop forecasting, marketing and financial services. Through the Ministry of Agriculture (MoA), a request was formulated for FAO assistance in customizing and mainstreaming the FIVMS, and in the enhancement of the ZIAMIS.

The project was designed to support the development of the enhanced e-voucher system and to provide technical support for its implementation, to build the capacities of staff from the MoA, the Ministry of Fisheries and Livestock (MoFL) and the Smart Zambia Institute (SZI) on the effective management of the ZIAMIS and to facilitate the development of user guides and manuals for dissemination among stakeholders.

IMPACT

Through the customization and mainstreaming of the FIVMS and the development of the ZIAMIS, this project supported the FISP by implementing these agriculture information management systems. The use of these new systems is expected to lead to an increase in both household food security and incomes for rural smallholders in Zambia.

ACHIEVEMENT OF RESULTS

The project contributed to the achievement of SDG 2 (Zero hunger) by working towards improvements in household food security, nutrition and incomes among beneficiary smallholder farmers. The information systems that were developed under this project were designed to enable access to quality inputs and output markets, banking and non-banking (insurance) financial institutions and extension service providers (i.e. government extension structures and agrodealers).

The project Outcome was to enhance food security information and operational data management under the FISP. This was partially achieved through the harmonization of the universal farmer register established through the ZIAMIS; however, the food security monitoring that was meant to occur was not carried out, owing to a lack of funding. It is expected that the monitoring will be carried out when funding becomes available.

One of the main achievements of the project was the enhancement of the ZIAMIS, which improved and positively changed the efficiency, transparency, accountability and cost-effectiveness of the development of Zambia's agricultural sector in general, and of the FISP in particular. This enhancement resulted in (i) a functional, national-level integrated database that provided the back-end system to the entire e-voucher system, which is accessible to all stakeholders in the agriculture sector (i.e. the Government, agrodealers, suppliers, financial institutions) at national, provincial and district levels; (ii) an appropriate, cost-effective and simple interface for validation of beneficiaries and e-voucher redeeming processes; (iii) appropriate access portals for all participating stakeholders, such as financial institutions, agrodealers and suppliers; (iv) a range of online and offline applications for beneficiary registration, routine monitoring and information collection on agricultural activities, which were made available on various devices, including laptops, tablets and mobile phones; and (v) an efficient, secure and cost-effective supplier and agrodealer payment mechanism integrated with banks and telecom service providers.

In addition to the above-mentioned results, the enhanced ZIAMIS significantly improved the implementation, efficiency and accountability of the FISP's 2018 – 2019 agricultural season. The ZIAMIS enabled the Government to implement the FISP programme in two modalities. The first included e-vouchers for inputs from the GRZ in 40 percent of the country. Under this modality, the Government procured inputs directly from suppliers and positioned them in Government warehouses, but still used the enhanced ZIAMIS to manage the selection of beneficiaries, farmer deposits and the distribution of inputs to the beneficiaries. The second modality included e-vouchers for redemption in the private sector in 60 percent of the country. The e-voucher model relied wholly on major suppliers to supply and distribute inputs to agrodealers, and beneficiaries redeemed their e-vouchers to collect inputs of their choice.



Despite a few impediments, all of the project Outputs were fully delivered. Output 1 focused on the development of the e-voucher system and the provision of technical support for the ZIAMIS during the 2018 – 2019 agricultural season. Under this Output, servers were set up, and the database was developed and made functional. A series of progress review meetings were held with GRZ staff. Eight meetings were originally meant to be held, but in the end, fewer meetings were required. The system developed under this Output was adopted by the Government and has the ability to upload 10 000 records of beneficiary data and/or 5 000 e-vouchers at once, which will allow the GRZ to maintain the farmer registry and to enhance the distribution of inputs. One activity under this Output was not fully achieved, owing to the fact that a few of the modules of the ZIAMIS were not fully developed, e.g. the module on e-extension.

The aim of Output 2 was to build the capacities of staff from the SZI, the MoA, and the MoFL, as well as that of agrodealers. The training sessions conducted for these stakeholders covered the management and application of the ZIAMIS. A training of trainers (ToT) session was held for GRZ staff, who then echoed the training to other users of the ZIAMIS, including agrodealers. More than 3 000 participants benefitted from these sessions.

Training was also the focus of Output 3, which saw the development of a user manual and guide. Electronic versions of each were created and turned over to the GRZ for dissemination. Another ToT was also held under this Output. The 30 trainers that attended are expected to train new ZIAMIS users, and to provide refresher training sessions as needed.

IMPLEMENTATION OF WORK PLAN

The project activities were implemented within the allotted budget. Two no-cost extensions were requested and approved, and the project activities were implemented within the extended timeframe.

As mentioned above, one activity, which included the development of modules for the ZIAMIS, was not fully completed. This was due to a lack of funding and time.

The risks identified for this project were managed as planned. One of these risks was that the GRZ may not have allocated adequate resources to activities such as farmer registration, vendor registration, etc. This risk was mitigated by resource mobilization and lobbying with the GRZ and resource partners by FAO and the FISP secretariat.

The other possible risk was that the political environment could have led to GRZ policy on e-voucher modalities under FISP to remain the same, rather than adapting to the new system brought in under this project. This risk was mitigated by the undertaking of a cost-benefit analysis for the e-voucher modality and utilizing it to lobby the Government.

As mentioned above, some of the monitoring activities that were planned were not carried out due to a lack of funding. Food security monitoring exercises were meant to be conducted, and the farmer registry was meant to be monitored and updated every three months. Routine monitoring using the ZIAMIS tools is expected to occur when funding becomes available.

FOLLOW-UP FOR GOVERNMENT ATTENTION

As mentioned above, it is recommended that the food security and registry monitoring activities that were planned under this project be carried out as soon as there is adequate funding to do so. In addition, new training sessions, as well as refresher training sessions, should be organized, in order to maintain and develop capacities to utilize the ZIAMIS. It is also recommended that the user guide and manual be updated regularly, and that training for new and existing users is provided.

Continuous registration and updating of the ZIAMIS farmer register is recommended. It is also recommended that the ZIAMIS be transformed into a universal farmer register and that its use be expanded to include all relevant stakeholders, including financial institutions, agro-input and output marketers and service providers (extension and marketing, mechanization, credit, insurance, etc.). Furthermore, the value of the register should be increased by the addition of geodata on the registered farms, i.e. maps and information on their location.

It is recommended that the e-tools found in the ZIAMIS regarding food security monitoring, market information, extension services and mechanization services be fully applied. The application of these tools would enable the Government and other stakeholders to provide farmers with services more efficiently, and it would also enable the monitoring of progress made by the farmers.

The institutionalization of the ZIAMIS should be strengthened by ensuring capacity development on its use and supporting all of the recommended working groups, including the ICT technical working group, the farmer registration technical working group, the vendor registration working group, and the communication and stakeholder sensitization working group. Continued awareness raising for all relevant users of the ZIAMIS, which may include farmers, agrodealers, NGOs and members of civil society, is also recommended.

SUSTAINABILITY

1. Capacity development

The sustainability of the project Outcome was well supported by the relevant policies and legal frameworks put into place by the Government through the MoA. During the 2015 – 2016 and 2017 – 2018 agricultural seasons, the MoA implemented policy reform measures aimed at improving the efficiency and effectiveness of the FISP.

The expansion of the number of commodities provided through the FISP and more significantly, the piloting of the e-voucher system in 13 districts during the 2015 – 2016 agricultural season and 39 districts during the 2016 – 2017 season, were among the policy reforms instituted by the GRZ. The Government sanctioned the piloting of the e-voucher as the mode of providing subsidized farm inputs to targeted smallholder farmers, because it was considered to be an effective and efficient mechanism for doing so.

Given the experiences accumulated during the first two consecutive seasons of piloting the FISP e-voucher system, the MoA, together with all relevant stakeholders, agreed to scale up the implementation of the ZIAMIS with an enhanced FISP e-voucher system to the national level.

The sustainability of the ZIAMIS beyond the end of the project is expected to be guaranteed by the decision of the GRZ to permanently adopt it as the management tool for the FISP. In addition, the various training sessions for GRZ staff involved in the use of the system will ensure that, after its official handover, their capacities are adequate to maintain the system, and to keep it operational and functioning over time.

Personnel from the SZI and the Ministry of Finance (MoF) were provided with technical and administrative training in order to ensure sustainable and effective management of the ZIAMIS, as well as troubleshooting and assistance for users.

Owing to some significant changes in the input catalogue and the management of agrodealers, national training and consultative meetings were held with both suppliers and agrodealers. These meetings included an orientation session of 13 staff from the SZI and the MoA on the setup of the ZIAMIS, and a training session for agrodealers and suppliers on the use of ZIAMIS, which also included representatives of the four companies that supplied inputs under the direct supply modality of the FISP.

In order to sustainably hand over the project to local stakeholders, the project team engaged with relevant Government bodies and the community after completion. The enhanced ZIAMIS demonstrated its utility in improving information collection and management in the agriculture sector in general, and in the FISP e-voucher system in particular.

2. Gender equality

The project met the needs and priorities of women beneficiaries by ensuring that the farmer registry in the enhanced ZIAMIS provided a platform for the deliberate selection of women and other vulnerable groups, such as youth and the disabled. Women and vulnerable groups were also deliberately targeted as beneficiaries of the FISP programme.

The project results benefited both women and men equitably and contributed to Priority Area 3 (Enhance food security and nutrition status) of Zambia's CPF (2017-2021), which includes capacity development in the food security and nutrition domain.

3. Environmental sustainability

The beneficiary farmers of the FISP obtain inputs that ensure sustainability and are not harmful to the environment, owing to the fact that the inputs in the catalogue of the enhanced ZIAMIS have to meet national and international standards. They also must be registered and certified by designated institutions, such as the Zambia Environmental Management Agency (ZEMA), the Zambia Bureau of Standards (ZABS), the Seed Control and Certification Institute (SCCI) and the Zambia Agriculture Research Institute (ZARI).

4. Human Rights-based Approach (HRBA) – in particular Right to Food and Decent Work

By improving transparency and accountability in the acquisition, access and distribution of inputs, the enhanced ZIAMIS ensures that beneficiaries are informed of their entitlements. Beneficiaries also have a choice of inputs to collect, which can partly determine their yields and outputs.

The project contributed to the implementation of the Right to Food Guidelines adopted by FAO through the provision of extra support for vulnerable populations, including food distribution for those who do not have access to adequate food for reasons beyond their control.

5. Technological sustainability

The integrated web-based ZIAMIS that was introduced by the project was both appropriate and flexible in its use. A total of 700 000 out of the 1 million farmers registered in the enhanced ZIAMIS accessed agricultural inputs through the improved FISP e-voucher system. Beneficiary farmers were also linked to essential services, such as e-extension and a weather insurance index.

More than 300 GRZ staff (from the MoA, MoFL and the SZI) were trained in sustainable management, troubleshooting and user support of the ZIAMIS system. Furthermore, an integrated web-based ZIAMIS database was improved and made fully functional to support and facilitate the FISP e-voucher system, in line with the change in Government policy and recommendations of the FISP audit findings, as well as lessons learned from the implementation of the FISP in the 2017 – 2018 agricultural season. The enhancements were made to many of the user-friendly modules and submodules of the system.

The ZIAMIS was fully completed. As mentioned above, ownership was taken by the government, and the system was adopted. It can upload 10 000 records of beneficiary data and/or 5 000 e-vouchers at the same time. This system is an important tool for the Zambian Government to maintain farmer registration and enhance input distribution.

The implementation of the integrated web-based ZIAMIS contributed to the development of local knowledge, capacity, resources and good practices at different levels. In addition to the capacity development mentioned above, 2 000 agrodealers, suppliers and representatives from banks and other related financial institutions were also trained on the use and application of the enhanced ZIAMIS. All key stakeholders also benefited from the user manuals and guides (the FISP manual, registration guides and redeeming guides) that were developed under the project.

In order to ensure cost-effective training of stakeholders on the FISP programme, a ToT session on the use of the ZIAMIS was conducted. The two-day training session was held in Lusaka, and about 30 staff members from the SZI and the MoA were trained to go into all districts to train local officers on how the enhanced ZIAMIS system worked.

As mentioned above, national training and consultative meetings were held with suppliers and agrodealers. The project facilitated the training of more than 3 000 agrodealers, suppliers and GRZ personnel on the use of the ZIAMIS. Representatives of the four companies that supplied inputs under the FISP direct input supply modality also participated in one of the training sessions. The stakeholders are expected to be able to continue project activities without further technical assistance due to the capacity building that the project provided.

6. Economic sustainability

FAO worked with the SZI to ensure that the handover of the FIVMS system to the Government of the Republic of Zambia went smoothly. FAO drew upon its comparative advantage in food security, agriculture and normative nutrition activities to link the ZIAMIS to other services, such as e-extension, commodity marketing and financing of smallholder farmers. The combination of the new integrated information management system and the existing modules in the database enabled farmers to be able to access services that they needed, such as marketing support and payments through the national Food Reserve Agency (FRA), weather index insurance, e-extension services and crop forecasting surveys. At the time of this report, a total of 700 000 out of the 1 000 000 farmers registered through the enhanced ZIAMIS had accessed agricultural inputs through the improved FISP e-voucher system.



DOCUMENTS AND OUTREACH PRODUCTS

- Farmer Input Support Programme manual, version one, with Zambia Integrated Agriculture Management Information System (ZIAMIS) guides as annexes (Manual). 2017.
- FISP Farmer deposit and redeeming process (Infographic poster).
- FISP Farmer registration process (Brochure).
- FISP Input redeeming process. (Infographic guide).
- Proposed Zambia integrated agriculture information management system (ZIAMIS) for management of the enhanced e-voucher modality under farmer input support program (FISP) (Infographic).
- Zambia Integrated Agricultural Management Information System (ZIAMIS) Farmer Registration Guide. 12 pp. 2017.
- ZIAMIS redeeming process (Infographic guide).



ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

Expected Impact	Increased household food security and incomes among smallholder farmers in Zambia		
Outcome	Food security information and FISP operational data management enhanced		
	Indicator	<ul style="list-style-type: none"> - Harmonized universal farmer register established through ZIAMIS. - Number of farmers registered in ZIAMIS. - Number of food security monitoring exercises carried out. - Number of ZIAMIS registered farmers routinely monitored (every three months). 	
	Baseline	<ul style="list-style-type: none"> - 0 - 0 - 0 - 0 	
	End Target	<ul style="list-style-type: none"> - 1 - 1 million - 3 - 36 000 	
	Comments and follow-up action to be taken	<ul style="list-style-type: none"> - Farmer register established and system is functional. - Farmer registration is an on-going process. - Not achieved due to a lack of funding. - Not achieved due to a lack of funding. <p>As a follow-up action, the Government is expected to provide support for the monitoring exercises and for the updating of the farmer register.</p>	
Output 1	An enhanced electronic voucher management system developed and technical support to the new integrated agriculture information management system for MoA during 2018 – 2019 agricultural season provided		
	Indicators	Target	Achieved
	<ul style="list-style-type: none"> - Number of ZIAMIS servers set up in GRZ. - An integrated web-based ZIAMIS database developed and functional. - Number of ZIAMIS review meetings held with relevant GRZ staff to review progress on uptake of ZIAMIS and address system challenges, if any. 	<ul style="list-style-type: none"> - 5 - 1 - 8 	Yes
Baseline	<ul style="list-style-type: none"> - 0 - 0 - 0 		
Comments	<ul style="list-style-type: none"> - ZIAMIS servers set up at government national data centre. - Database completed and functional. - All systems challenges were addressed; however, fewer than eight review meetings were held. The lower number of meetings were found to be adequate. 		
Activity 1.1	Set up of ZIAMIS server in GRZ		
	Achieved	Yes	
	Comments	<ul style="list-style-type: none"> - Fully completed, ownership taken and adopted by government. - The system is able to simultaneously upload 10 000 records of beneficiary data, and/or 5 000 e-vouchers at once. This capability of the system is a useful tool for the Zambian Government to maintain farmer registration and enhance input distribution. 	
Activity 1.2	Development and institutionalisation of ZIAMIS in GRZ		
	Achieved	Partially	
	Comments	Some modules, e.g. e-extension, were not completed due to funding and time limitations.	

Output 2	Capacity and training of SZI, MoA and MoFL personnel in sustainable management, troubleshooting, user help and support in application of the ZIAMIS system developed		
	Indicators	Target	Achieved
	<ul style="list-style-type: none"> - Number of GRZ staff trained in the management of ZIAMIS. - Number of users (agrodealers, suppliers) trained in the application of ZIAMIS. 	<ul style="list-style-type: none"> - 300 - 2 000 	Yes
Baseline	<ul style="list-style-type: none"> - 0 - 0 		
Comments	<ul style="list-style-type: none"> - More than 300 government staff were trained. Refresher trainings may be required for field staff. - More than 3 000 agrodealers and suppliers were trained. The agrodealers require refresher training and mentoring by field staff. 		
Activity 2.1	IT training for system administrators in GRZ		
	Achieved	Yes	
Activity 2.2	Orientation of the GRZ IT in setup of the ZIAMIS		
	Achieved	Yes	
Activity 2.3	Training of agrodealers and suppliers in the use of ZIAMIS		
	Achieved	Yes	
Output 3	Trainings and development of user guides for key stakeholders and end users (MoA, MoFL, farmers, vendors, and financial institutions) facilitated		
	Indicators	Target	Achieved
	<ul style="list-style-type: none"> - FISP user manual based on use of ZIAMIS developed. - ZIAMIS user guides developed. 	<ul style="list-style-type: none"> - 1 - 1 	Yes
Baseline	<ul style="list-style-type: none"> - 0 - 0 		
Comments	The manual and user guides were developed, and the electronic versions were handed over to the Government.		
Activity 3.1	Training of trainers for the use of the ZIAMIS		
	Achieved	Yes	
Activity 3.2	Development of user guides and manuals on ZIAMIS		
	Achieved	Yes	
	Comments	Electronic versions of the developed guides and manuals were given to the Government for reproduction and distribution to users. The Government is expected to update the guides and manual when necessary and to distribute the materials widely to users.	

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