In the context of the upcoming FAO Science and Innovation Forum 2023, the FAO Chief Scientist Office invites you to share illustrative country level case studies of agrifood system technologies and innovations for climate action.

Please use this submission template to share your experience. You can upload the completed submission form online, or, alternatively, send it to fsn-moderator@fao.org.

Proponent (name/institution)

Clive Nyapokoto (Shift Organic Technologies)

Title for the case study presented

Participant based case study on the implementation of Hydroponics and Aquaponics Projects under the urban resilience building project.

Country location

Zimbabwe

Context and background

Clive Nyapokoto is the founder of Shift Organic Technologies a startup company that focuses on the development of climate smart integrated organic farming systems.

In 2021 WFP and its funding partners released funds to promote climate smart agriculture in urban communities in Zimbabwe. Hydroponics was the intervention that was to be implemented as most urban settlements in Zimbabwe have water challenges. More than 10 NGOs working in urban communities got funding to implement the hydroponics project. The
interventions where meant to ensure that urban communities are resilient to modern socio-economic shocks. The project aimed at strengthening the resilience of more than 5000 vulnerable urban households.

Key problem(s) addressed

Food Security and Nutrition  
Poverty and Unemployment

Technological or innovative solutions employed

Hydroponics and Aquaponics farming technologies where employed.  
Hydroponics is the growing of plants in a soilless environment using water soluble nutrients. Aquaponics combines hydroponics and aquaculture. The fish water becomes the source of nutrients for the plants. Both are climate smart modern farming technologies.

Key outcomes and measurable impacts achieved

As implementing partners in the course of the project duration we managed to get contracts to install:

1. 4 Vertical A-Frame Hydroponics systems in Bulawayo
2. 6 Manual Dutch buckets System in Harare
3. 10 Dutch bucket systems in Marondera
4. 1 Aquaponics System in Gweru
5. 1 Recirculatory Aquaculture system in Gweru
6. 2 Deep water culture Aquaponics Units in Chegutu
7. 20 wicking beds in Chegutu
8. 80 households with Olla irrigation systems in Chegutu

Key actors and stakeholders involved in the development and implementation (please also describe to what extent a multi-stakeholder and participatory approach has been adopted)

The project was inclusive in terms of stakeholder participation with all relevant government departments and private sector organisations who have direct influence and impact involved in the implementation. Apart from the private sector organisations who were contracted to install the systems the government ministry and departments with direct influence on the project also took part to see the successful completion of the projects, these included the
ministry of local government and public works, local councils in respective towns, Agritex, Department of Mechanisation, Department of irrigation, lead farmers and media.

Challenges encountered (any types of trade-offs, and how these were managed) and/or efficiencies gained (e.g. win-win situations)

1. Nutrient fertilisers and nutrients test meters where not available locally.
   - Formulation of hydroponics nutrients using locally available fertilisers.
   - Adoption of Aquaponics as an option to avert hydroponics
   - Use DIY Liquid organic fertilisers either by fermentation or vermicomposting

2. Lack of experienced and skilled personnel in the field of hydroponics within the NGOs.
   - This led to the installation of substandard systems leading to failure of most units

3. Grid powered vs Solar powered
   - There is load shedding lasting up to 12 hours in urban areas and hence powering by grid is not a wise option.
   - Solar powered systems were a better option
   - Some units were opted to be operated manually.

Factors for success

1. Beneficiaries with working systems are selling produce in their communities

2. The concepts proved to be viable within urban communities.

Lessons learned (both positive and negative) and whether these could be applicable in other contexts with similar characteristics

1. Hydroponics and aquaponics technologies can be adopted as income generating projects for urban communities.

2. Hydroponics and aquaponics can help solve issues of hunger and nutrition.

3. Technical partners should be chosen with due diligence taking into consideration experience, past projects completed, experience and achievements.

4. The two are capital intensive projects and size matters when it comes to income generating.

5. These are technical projects and the selection of beneficiaries should consider ability to understand technological jargon.
Contact information for further inquiries

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Links and additional materials

https://www.facebook.com/shiftorganicttechnologies/

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