South Africa



Organization: INMED South Africa NPC
Location: Johannesburg, Gauteng Province and Gqeberha, Eastern Cape Province
Solution: Design, testing and roll-out of a 'plug-and-play' aquaponics system for schools in South Africa
Factsheet Period: One round of UNDP AFCIA funding (16 months)



Awareness-raising activities on aquaponic systems in South African schools @YNMED

3.7 million households in South Africa have inadequate access to food, of which two-thirds are located in urban areas, and half a million households in the major cities (Department of Statistics South Africa, 2021). INMED's aquaponics system offers a sustainable approach to urban food production, enhancing food security while reducing reliance on traditional resources. This innovative, climate-adaptive technology combines soilless crop cultivation with fish farming in a recirculating system, providing a resource-efficient solution for urban households. Since 2022, INMED has integrated aquaponics as a technical subject in public schools, creating a valuable educational tool that empowers South African youth with hands-on experience in climate resilience, food security and sustainable livelihoods. Through this initiative, urban schools play an active role in fostering climate resilience and equipping the next generation to address environmental challenges.

Key achievements

- Trained 188 school teachers and educators (75% women) in climate-adaptive aquaponics, including the use of the new technology design
- Installed aquaponics kits in 10 schools, benefiting 7,300 students, including out-of-school youth with disabilities
- Completed and installed the first plug-and-play aquaponics prototype, now being tested in two schools, including one serving learners with disabilities
- Secured match funding from the Technology Innovation Agency (TIA), aiming to double number of schools to 20, targeting 16,300 students
- Established an 11-member project management team, including technical support from Nelson Mandela University, Stellenbosch University and Sappi to strengthen science-based product development
- Engaged 20 sites to test and benefit from the plug-and-play aquaponics systems
- Reached over 5,000 youth with access to new technology and improved school meals, supported by produce from aquaponics systems and supplementary gardens
- Supported 2,228 women beneficiaries through training and school-based food production initiatives
- Harvested 5,342 kg of food each quarter, contributing to improved nutrition and food security



Adaptation benefits

- Reduces dependence on land, water and energy resources by combining soilless crop production with fish farming
- Boosts food security through detailed food production plans and meticulous tracking of all harvested produce, providing a resilient solution to urban food challenges

Social impact

- Provides schools with practical tools to teach aquaponics
- Enhances food security through systematic tracking of aquaponics produces
- Promotes gender empowerment by reducing the time and effort women and girls spend on agriculture, providing more opportunities for education, income and leadership roles.

Innovation

- Simplified ‘plug-and-play’ aquaponics system is cost-effective, easy to use and environmentally friendly
- Improved designs use recyclable plastic from the ocean for fish tanks and grow beds





Replication potential

- The initiative has already received requests from individual schools and a commitment of collaboration from the Eastern Cape Provincial Department of Education
- Approximately 20% of South Africa's 25,000 schools will be looking to purchase this system, given the inclusion of aquaponics as a technical subject in public schools
- Prototype testing in two schools validated the model's effectiveness, benefiting students through improved nutrition and hands-on exposure to climate-smart agriculture

Funding snapshot

- UNDP-AFCIA grant: US$125,000 (initial grant)
- Additional funding from TIA: $112,493

Investability	
Sustaining criteria	Strong demand from schools and institutions, with 20 sites already engaged and two prototypes installed Produce from systems is already supplementing school meals, confirming long-term appetite Funding from UNDP-AFCIA used to secure match funding from TIA and Mondelēz South Africa to increase number of testing sites and youth beneficiaries, as well as product development
Financial innovation	Exploring retail sales through national chain of hardware stores and establishment of INMED Aquaponics® social enterprise Adhering to commercial standards for product development and aquaculture regulations Pursuing patents for the 'plug-and-play' system, as INMED Aquaponics® has already been trademarked
Expected return	Estimated annual revenue from sales of 'plug-and-play' aquaponics system: US$132,000 to $264,000 (average 10-20 units sold per month in year one)

To read their story, visit UNDP-AFCIA

To watch their video, click here

To contact the initiative, visit INMED South Africa