

**TERMS OF REFERENCE FOR A SOLICITED PROJECT**

**KEY STRATEGIC AREA 4 :** Water Utilisation in Agriculture

**THRUST 3 :** Water Utilisation for Poverty Reduction and Wealth Creation in

Agriculture

**PROGRAMME 1 :** Sustainable water-based agricultural activities in rural communities

**TITLE: Demonstrating climate resilience in four (4) rural schools with limited water availability by enhancing food and nutrition security through innovation and science transfer.**

**Overall aim:** To build resilience amongst rural youth and enhance nutrition and food security using collaboration, co-learning, science and innovation.

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The overall objective of the project is to address food and water security and malnutrition in school going children through reintroduction of underutilised nutrient dense indigenous crops and active the participation of communities that reside around the schools in order to improve vegetable accessibility to the school feeding programme.

**Specific aims**

* To establish baselines at four (4) schools on nutrition, water availability and food insecurity at school and household level through surveys and focus groups
* To design and establish context specific food gardens in four selected rural primary schools in collaboration with the principal, school children and parents and school governing bodies.
* To establish the school gardens using smart and climate resilient agricultural practices and simple and innovative tools and technologies that enhances nutrition and food and water security such as use of indigenous crops, simple irrigation and establishment of nurseries for sustainability.
* To establish and maintain the school gardens through co-creation and co-learning, school engagement and on-site training to transfer skills to the children and communities.
* To assess and provide guidance on how the knowledge can be integrated into curriculum-based activities.
* To determinate the impact of established food gardens on the nutritional status of the beneficiaries.
* To raise awareness about the importance of school-based gardens to complement / supplement government feeding school to strategic stakeholders that can scale the models and approaches developed from the 4 test sites.
* To promote entrepreneurship among the school going youth.
* To assess the level of uptake of the lessons and practices amongst the schools and their communities to improve their household food and water security and willingness to consider entrepreneurship opportunities.
* To assess school policy and provide recommendations to strategic stakeholders.

**Rationale**

Insufficient vegetable and fruit consumption causes 2.7 million deaths annually worldwide and belongs to the top ten risk factors contributing to mortality (Ruel et al., 2005). The International Food Policy Research Institute (IFPRI) predicts an 18% rise in the number of malnourished children in sub-Saharan Africa from 2001 to 2020 (IFPRI, 2001). According to the World Health Organization (WHO, 2020), vitamin A and micronutrient deficiency remain a widespread problem. In the rural parts of South Africa, vitamin A deficiency is a severe health problem, particularly in women and children. A recent survey indicated that 63.8% of pre-school children were vitamin A deficient, one in three children under six years of age is afflicted with vitamin A deficiency, and one out of two children (1-9 years old) had less than 50% of the required intake of energy, vitamins A and C, as well as iron (Fe) and zinc (Zn) (Mchiza et al. 2020; Bain et al., 2013; Smuts et al., 2005). Nutritional deficiencies are similarly a significant health problem in South Africa.

Malnutrition is a significant problem in South Africa, especially among school-aged children. This often leads to poor school attendance and high rates of dropout, disadvantaging many school going children. Previous WRC funded research indicated a correlation between measures of food security and household food security indicators. Participatory models for vegetable gardens establishment in disadvantaged schools were found to be an effective long-term strategy that complements supplementation and food fortification programs to address hidden hunger and food insecurity. The success of school gardens is dependent on policies that support and provide an enabling environment for the development and implementation of garden activities in schools. Addressing constraints such as supplies, technical support, infrastructure, tools and the involvement of institutions, parents and other community members is critical for the success of school gardens.

Rainwater harvesting strategies show potential in mitigating the effects of climate change for increased crop water productivity. The adoption of a climate-smart production practices will be a critical component to ensure maximum crop water productivity and reduced risk of crop failure. The deliverables should address all the stated objectives and also include the introduction of underutilised indigenous crops, green technology, on-site climate-smart research, household gardens, support the schools with infrastructure such as the provision of boreholes and water storage tanks. It is also important to explore the impact of vegetable gardens towards meeting dietary requirements of school children and pre-processing at the school level to introduce nutritious products such as soup and veggie drinks while including high-value crops in the gardens for income generation.

As it is most unlikely that a single organization will have all the expertise required, it is strongly recommended that a consortium of experts and organizations with full appreciation of the food security challenges, nutritional deficiencies in children and climate-smart agricultural innovations is formed in order to provide the highly specialised knowledge required.

**Themes:**

**Water availability**

**Water efficiency**

The estimated budget over a 12 - month long study period is available from the OMF and the WRC.

**Time Frame : 12 Months**

**Total Funds Available : R 2 500 000.00**

**Budget breakdown**:

**Itemised budget breakdown**

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| **Deliverable number** | **Description** | **Amount (R)** |
| 1 | Conduct scoping study on the impact of building resilience through the establishment of food gardens in 4 rural Primary Schools | R 200 000.00 |
| 2 | Stakeholder consultation (including communities, School Governing Bodies, strategic partners and institutions) | R 100 000.00 |
| 3 | Infrastructure and inputs (including water tanks, irrigation equipment, protective clothing, small implements, seeds and fertilisers) | R 400 000.00 |
| 4 | Land preparations and labour costs | R 200 000.00 |
| 5 | Project implementation – research consumables | R 200 000.00 |
| 6 | Trial management for 1 year, (all year production - planting different crops suited to the different seasons). On-going monitoring and evaluation | R 500 000.00 |
| 7 | Social development, surveys, community acceptance capacity building and empowerment at school and community levels – exit strategy | R 200 000.00 |
| 8 | Development of guidelines on implementing climate resilience in water limited areas and enhancing food and nutrition security through innovation and science transfer. | R 100 000.00 |
| 9 | Final report – print and multimedia/ series of short how-to videos | R 600 000.00 |
|  | **Total** | **R 2 500 000.00** |