



RESILIENT ROOTS: ENHANCING AGRICULTURE WITH SOIL MOISTURE CONSERVATION AND MONITORING IN ST. KITTS AND NEVIS

TECHNOLOGY DESCRIPTION

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Soil moisture conservation and monitoring techniques are essential for maintaining soil health and optimizing water use in agriculture. These techniques help retain soil moisture and improve water efficiency, reducing the need for irrigation and enhancing crop resilience during dry periods. Key practices include mulching, cover cropping, terracing, and the use of soil moisture sensors to track water availability in the soil. Monitoring technologies, such as tensiometers and soil moisture probes, provide real-time data to farmers, enabling them to make informed decisions about irrigation scheduling and crop management, ensuring optimal water use while preventing over-irrigation or drought stress.

CLIMATE RATIONALE OF THE TECHNOLOGY

Climate change is intensifying the challenges faced by farmers in St. Kitts and Nevis, with extended droughts, irregular rainfall patterns, and rising temperatures negatively impacting water availability. Effective soil moisture conservation is critical for adapting to these changes, as it enhances the soil's ability to retain water during dry periods and reduces the need for excessive irrigation. Monitoring soil moisture levels ensures that water resources are used efficiently, helping to avoid both water wastage and crop stress. Implementing these practices will enhance the resilience of the agriculture sector to climate change, ensuring long-term food security and sustainable land management.

AMBITION OF THE TECHNOLOGY

SCALE FOR IMPLEMENTATION AND TIMELINE

The ambition is to achieve a **diffusion of soil moisture conservation and monitoring on half of the active farms in St. Kitts and Nevis** over a 3-year period at a cost of **USD 1.55 million**.

Actions	Target	Timeline (Years)	Costs (USD)
<p>Action 1: Comprehensive study of soil moisture conservation practices in St. Kitts and Nevis and development of best practice guidelines.</p> <p>Action 2: Develop and implement training programs for extension officers and setting up demonstration plots on both islands.</p> <p>Action 3: Develop and implement farmer field school to ensure in-depth knowledge of soil moisture conservation among farmers.</p> <p>Action 4: Develop partnerships with local suppliers and develop incentive regime to stimulate bulk imports of soil moisture monitoring equipment.</p>	Diffusion of soil moisture conservation and monitoring on half of the active farms in St. Kitts and Nevis by 2028.	3	1,550,000



EXPECTED IMPACTS OF THE TECHNOLOGY

- **Water conservation:** By improving soil moisture retention, these techniques reduce water use in agriculture, conserving valuable water resources, particularly during drought periods.
- **Increased agricultural productivity:** Improved soil moisture management leads to healthier crops and higher yields, contributing to food security and economic growth in the agriculture sector.
- **Enhanced climate resilience:** These techniques help protect crops from drought stress, making the agriculture sector more resilient to the impacts of climate change.
- **Sustainable land management:** Soil moisture conservation practices improve soil health, reduce erosion, and promote long-term sustainability of agricultural lands.
- **Economic benefits:** Farmers can reduce their operational costs by using water more efficiently, and improved yields contribute to increased profitability.

POLICY ACTIONS FOR TECHNOLOGY IMPLEMENTATION

EXISTING POLICIES IN RELATION TO THE TECHNOLOGY

The **National Climate Change Policy (2017)** and **Adaptation Strategy (2018)** both acknowledge the importance of sustainable agricultural practices in addressing the challenges of climate change. More recently, adaptation actions in the agriculture sector are in alignment with the **St. Kitts and Nevis Agricultural Transformation and Growth Strategy (2022-2031)** and the **25 by 2025 Agenda** (Reduction of the food import bill by 25% by 2025). However, specific policies supporting the widespread implementation of soil moisture conservation and monitoring are limited. There is no integrated water resources management policy in the Federation.

PROPOSED POLICIES TO ENHANCE TECHNOLOGY IMPLEMENTATION

To enable the successful implementation of soil moisture conservation and monitoring, the following policy actions are proposed in the **SKN Agricultural Transformation and Growth Strategy (2022-2031)** as it relates to innovation and introduction of best practices for climate resilience:

- **Implement policies aimed at reducing risks in agriculture, value chains and livelihoods (Activity 1.1.2)**
- **Develop forward-looking legislation to support integrated water management for agriculture, ensuring sustainable water supply and irrigation practices (Activity 1.2.2)**

COSTS RELATED TO THE IMPLEMENTATION OF POLICIES

The estimated cost for full implementation upgrading and modernizing the legal enabling framework and policies for the agriculture sector was estimated at **USD 1.3 million** over 5 years in the **St. Kitts and Nevis Agricultural Transformation and Growth Strategy (2022-2031)**.



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USEFUL INFORMATION

CONTACT DETAILS

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LINKS TO TNA REPORTS

More information on the Technology Needs Assessment for St. Kitts and Nevis can be found at <https://tech-action.unepccc.org/country/st-kitts-and-nevis/>.