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MAPPING AFFORDABLE AND TRANSFERRABLE CLIMATE-SMART TECHNOLOGIES FOR SMALLHOLDER FARMERS

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CLIMATE-SMART TECHNOLOGIES
FOR SMALLHOLDER FARMERS

EXECUTIVE SUMMARY

In response to the pressing need for innovative solutions to address food security challenges, a tripartite cooperation agreement between the **Islamic Development Bank (IsDB)**, **FAO's Regional Office for the Near East North Africa** and the **International Fund for Agricultural Development (IFAD)** initiated a comprehensive "Mapping exercise of affordable and transferrable food security-related technologies." This project targets ten countries where smallholder farmers face different challenges, including Bangladesh, Brazil, Egypt, Jordan, Morocco, Nigeria, Palestine, Tajikistan, Tunisia and Türkiye.

The mapping effort focuses on **six technology thematic areas** critical to improving food security: 1) postharvest, reducing food loss and waste; 2) water management and saving technologies; 3) sustainable pest control and crop management; 4) e-commerce and market access, 5) fintech; and 6) green energy for farmers. By identifying, analysing and cataloguing affordable, reliable and environmentally friendly technologies, the project aims to build a **knowledge base**, a **technology assessment framework** and a **decision support tool** to guide evidence-based investment in promising agricultural technologies within unique contexts. This collaborative effort seeks to accelerate the development and transfer of environmentally friendly technologies, ultimately promoting low-carbon development, environmental sustainability and increased productivity, while mitigating risks to food security and public health.

A screening criteria and a three-level technology assessment methodology were developed. The screening criteria narrowed down the thousands of technologies available across different technology databases to a total of **349 technologies** across the **six thematic areas** in the **ten target countries**. **Ten technology directories** were created, which include detailed information for the 349 technologies. A total of **228 technologies** were screened and evaluated through the multilevel assessment, which included **3 276 criteria** and resulted in the identification of a total of **120 highly viable technologies**.

The assessment methodology was transformed into the **Green and Climate Smart Technology Assessment Tool (GC-STAT)**, an Excel-based tool allowing adaptable evaluation scores and criteria weights. GC-STAT streamlines technology assessment, providing a consistent and effective method for technology evaluation. It consists of seven sheets including a country profile, a methodology overview, a technology directory and assessment sheets. Its user-friendly design enables easy navigation through embedded links, facilitating thorough assessments without requiring advanced Excel expertise.

The iterative nature of the assessment methodology, coupled with highlighting the need for further stakeholder engagements and consultations, underscores a commitment to adaptability and responsiveness to context-specific needs and priorities.

This report not only serves as a benchmark in agricultural technology assessment, but also catalyses a broader discourse on context-specific sustainable farming practices that benefit smallholder farmers. Its findings and methodologies pave the way for future initiatives and collaborations, emphasizing the importance of stakeholder engagement, adaptability and innovation in addressing the multifaceted challenges confronting smallholder farmers worldwide.

