Irrigation systems' mitigation measures of weaknesses and threats

1. Weaknesses and Mitigation Measures

Weakness	**Automated Irrigation System Mitigation**	**Traditional Irrigation System Mitigation**
High initial cost	Seek agricultural subsidies, use locally available equipment to lower costs, and amortize over several seasons	Use cost-effective improvements like drip irrigation or water-efficient manual techniques
Need for technical skills	Provide training programs for farmers and design a user-friendly system interface	Develop simple training on best manual irrigation practices
Dependence on stable electricity supply	Integrate solar panels or backup batteries to ensure continuous operation	Use gravity-based irrigation or low-tech water storage systems
Maintenance complexity	Develop local technician support and preventive maintenance programs	Promote durable manual tools that require minimal repairs

2. Threats and Mitigation Measures

Threats	**Automated Irrigation System Mitigation**	**Traditional Irrigation System Mitigation**
Technical failures	Implement a preventive maintenance program and ensure spare parts are readily available	Use robust, manually operated tools that require little maintenance
Resistance from farmers to adopting the system	Organize training and practical demonstrations to showcase the benefits	Improve awareness of the inefficiencies of traditional irrigation and suggest simple upgrades
Climate change (prolonged droughts)	Combine irrigation with sustainable farming techniques, such as mulching, to retain soil moisture	Encourage rainwater harvesting and efficient scheduling of manual irrigation
Water scarcity and overuse	Use smart sensors to optimize water distribution and reduce waste	Encourage timely irrigation and limit excessive water use through scheduling