COMBASSERE Charles

Mechanical Engineering

Sustainable Farm – Demonstrators : Students Projects

Below is a detailed analysis of each project, its contributions to the sustainable farm, and its alignment with the Sustainable Development Goals (SDGs) :

Project name	**Purpose**	**Contribution to sustainable farm**	**SDG goals addressed**	**Implementation phase**
Study and Design of a Ball Mill	Incorporate a ball mill to enhance material processing, improve resource efficiency, and reduce waste	Self-manufacture of organic fertilizers or packaged feeds, eliminating outsourcing costs and minimizing waste	SDG 3 : Good Health and Well-being ; SDG 8 : Decent Work and Economic Growth	Medium-term
Manual Cowpea Thresher	To separate cowpea seeds from pods of the farm	Facilitates efficient post-harvest processing of cowpeas, reducing manual labor and increasing productivity	SDG 2 : Zero Hunger ; SDG 8 : Decent Work and Economic Growth	Short-term
Food Smart Dryer	To minimize post-harvest losses and add value to crops through efficient drying	Preserves food quality post-harvest, reduces food waste, and increases storage efficiency.	SDG 12 : Responsible consumption and production	Medium-term

Facial Recognition System for Plants	Identify beneficial plants and detect unwanted plants	Promotes precision farming, reducing pesticide use and protecting ecosystems	SDG 15 : Life on Land ; SDG 2 : Zero Hunger	Medium-term
Energy Manager	Integrate renewable energy sources for the farm activities and ensure the optimisation of this system	Optimizes energy use across the farm, integrating renewable energy solutions	SDG 7 : Affordable and Clean Energy ; SDG 13 : Climate Action	Long-term
Solar Tracking System	Detail how solar plants will be used in the farm	Maximizes solar energy capture, reducing dependency on non-renewable energy sources	SDG 7 : Affordable and Clean Energy ; SDG 13 : Climate Action	Medium-term
No-Reesa's App	Provide visitors access to information about plants in the farm	Improves visitor engagement and education, promoting awareness of sustainable agriculture	SDG 4 : Quality Education ; SDG 15 : Life on Land	Short-term
Automatic Irrigation System	Optimize water usage in the farm, monitor consumption, and raise awareness	Reduces water waste, increases crop yield, and supports sustainable water management.	SDG 6 : Clean Water and Sanitation ; SDG 12 : Responsible Consumption and Production.	Medium-term

	among farmers.			
FasoMusic App	The mobile application is used for advertising cards	Promote sustainable agricultural practices by disseminating educational content and raising awareness in the local community of the importance of ecology, resource management and biodiversity	4 : Quality Education	Short-term

Integration into the Sustainable Farm : How Projects Work Together

1. **Data Sharing :**

- The Automatic Irrigation System ensures that crops receive the optimal amount of water, which improves their quality and readiness for post-harvest processing. This, in turn, enhances the efficiency of the Food Smart Dryer by ensuring that crops enter the drying phase in better condition, reducing drying time and energy consumption
- The Sustainable Farm Energy Manager integrates with the Solar Tracking System to maximize renewable energy use.

2. **Resource Efficiency :**

- The Ball Mill and Manual Cowpea Thresher reduce waste and improve processing efficiency.
- The Facial Recognition System ensures targeted crop management, reducing unnecessary resource use.

3. **Visitor Engagement :**

- No-Reesa's and FasoMusic App provide educational resources and insights into the farm's sustainable practices.

Overall Impact

These projects collectively enhance productivity, sustainability, and educational outreach on the farm.

They align with multiple SDG goals, creating a comprehensive and scalable model for sustainable farming.