



## Sustainability Report

January 2025

## **1. Introduction**

As the world faces increasing challenges in food security, water scarcity, and climate change, Farm21 is committed to pioneering sustainable, technology-driven agriculture. By integrating IoT, AI, and automation, we are transforming farming into a highly efficient, resource-conscious, and scalable practice. Our smart farming solutions reduce waste, optimize water usage, and promote local food production while ensuring long-term environmental benefits.

## **2. Key Sustainability Objectives**

*Farm21's mission is to create a farming ecosystem that is:*

- Water-efficient – Reducing water consumption through AI-optimized irrigation.
- Low-carbon – Lowering emissions by promoting urban and local farming solutions.
- Waste-conscious – Minimizing fertilizer, pesticide, and resource wastage.
- Climate-resilient – Enabling sustainable farming in diverse weather conditions.

## **3. Environmental Impact**

### *3.1 Water Conservation*

- Farm21's smart irrigation systems cut water usage by up to 50% compared to traditional farming methods.
- IoT-enabled soil sensors ensure precise water delivery, preventing over-irrigation and water wastage.

- Hydroponic & vertical farming solutions use up to 90% less water than conventional soil farming.

### *3.2 Carbon Footprint Reduction*

- Local food production through 1m<sup>2</sup> farms and container farms reduces transportation emissions.
- AI-powered resource management optimizes energy and reduces operational waste.
- The use of climate-controlled farming systems ensures stable yields without reliance on fossil fuel-powered equipment.

### *3.3 Sustainable Land Use*

- Farm21 enables urban and small-scale farming, reducing the need for deforestation and land conversion.
- Modular smart farms allow high-yield crop production on minimal land.
- Data-driven precision farming reduces excessive land use by increasing productivity per square meter.

## **4. Social & Economic Impact**

### *4.1 Empowering Farmers & Communities*

- Smart farming technology makes agriculture more profitable and accessible.
- IoT-driven solutions lower labor dependency, reducing costs for farmers.
- Small-scale hydroponic and urban farms encourage self-sufficiency and food security.

#### *4.2 Affordable & Inclusive Agriculture*

- Low-cost, plug-and-play farming kits make tech-driven agriculture accessible to small farmers.
- Government & NGO partnerships allow subsidized adoption for rural farmers.
- The subscription-based revenue model reduces upfront costs, making smart farming scalable.

#### *4.3 Climate Resilience & Future-Proofing*

- AI-driven predictions help farmers adapt to changing climate conditions.
- Smart monitoring reduces crop failures due to droughts, floods, and unpredictable weather.
- Closed-loop farming systems reduce external dependencies and ensure stable food supply.

### **5. Case Studies & Pilot Projects**

#### *5.1 Smart Irrigation in Kerala*

- A pilot project with 50 farmers in Kerala reduced water usage by 48% while increasing crop yields by 30%.
- Real-time monitoring ensured precise irrigation, eliminating unnecessary water waste.

#### *5.2 Urban Smart Farms*

- 1m<sup>2</sup> farms implemented in apartment complexes allowed residents to grow fresh produce year-round.
- A community-led hydroponic project in Bangalore increased local vegetable production by 4x.

### 5.3 Container Farms for Food Security

- Farm21's climate-controlled container farms provided a stable food supply for rural communities in drought-prone areas.
- A pilot project reduced dependency on external food supply chains by 60%.

## 6. Future Sustainability Goals (2025-2030)

- Expand smart farm adoption to 10,000+ farmers across India.
- Reduce agricultural water consumption by 500 million liters annually.
- Introduce fully solar-powered smart farms to further lower energy consumption.
- Develop AI-based carbon tracking to measure and optimize sustainability performance.

## 7. Conclusion

Farm21 is more than a technology company; it is a movement toward a greener, more sustainable agricultural future. By combining AI, IoT, and automation, we are making farming smarter, more productive, and environmentally responsible. Through continued innovation, partnerships, and real-world impact, we are committed to ensuring food security, climate resilience, and sustainability for future generations.

*Join us in shaping the future of sustainable agriculture.*