

# Vertical Farms

Prepared by

**ECOGreen**

Members:

- Anna LYTVYNETS
- Hagop POULATIAN
- Md Rakibul ALAM SIKDAR
- Nelly AL AKKARI
- Sayed Qasem MOSTAFAVI
- Urgin LAMA

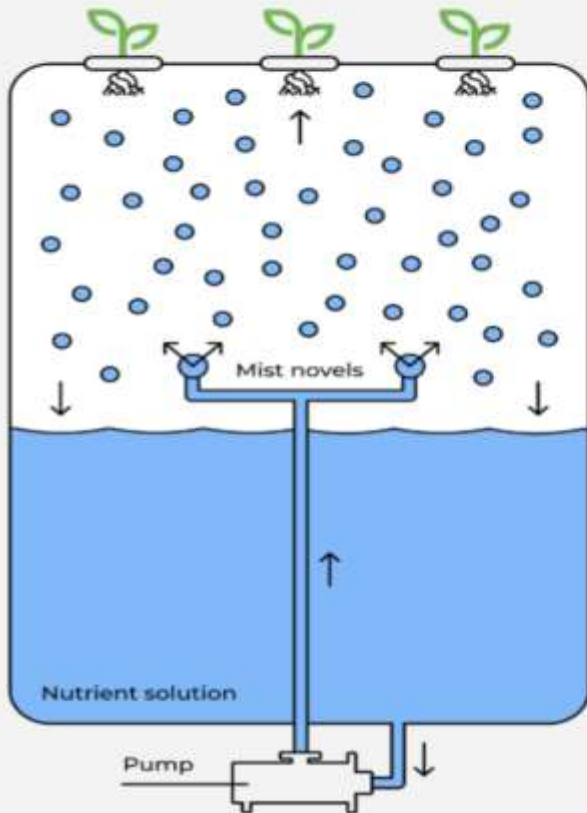


# Agenda

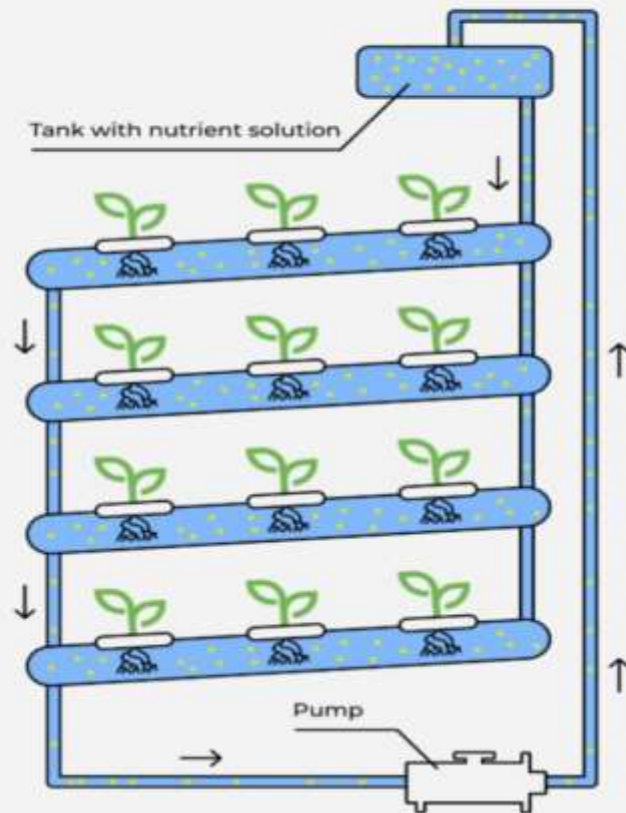
- ▶ Vertical Farming: Evolution and Mechanisms
- ▶ Problems which could be solved
- ▶ SWOT
- ▶ PESTEL
- ▶ Already exist products
- ▶ Trends and competitors
- ▶ Conclusion

# Evolution of Farming Methods H-V

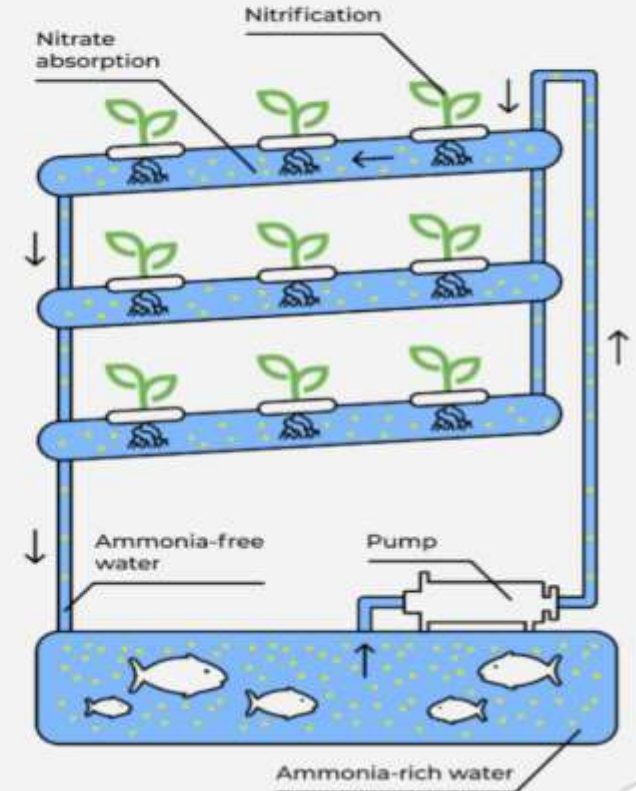
## Aeroponics



## Hydroponics



## Aquaponics



# Problems

## Solving Global Challenges

<b>Water Scarcity</b>	<b>Closed-Loop System</b>	<b>↓95% Water Use</b>
<b>Land Use &amp; Soil Degradation</b>	<b>Vertical, Indoor Stacking</b>	<b>Zero Soil; 4x-6x Higher Yield</b>
<b>Food Miles &amp; CO2 Emissions</b>	<b>Urban Farming Location</b>	<b>↓Transport Costs/CO2; Maximum Freshness</b>
<b>Chemical Contamination</b>	<b>Natural Fish-Waste Fertilizer</b>	<b>Zero Pesticides; Clean Water</b>

## Economic and Operational Challenges

<b>Crop Unpredictability &amp; Seasonality</b>	<b>Controlled Environment (CEA)</b>	<b>Stable Yield 365 Days (Weatherproof)</b>
<b>Resource Inefficiency</b>	<b>Aquaponics Synergy</b>	<b>Dual Harvest (Fish + Greens); Lower Operating Costs</b>

# SWOT Analysis

## ❖ STRENGTHS

- ▶ Water Conservation, and Peste/ disease control
- ▶ Year-Round Production
- ▶ Space Efficiency

## ❖ WEAKNESSES

- ▶ High initial costs
- ▶ Energy Intensity
- ▶ Dependency on Technology

## ❖ OPPORTUNITIES

- ▶ Urban Expansion
- ▶ Technological Advancements
- ▶ Global Demand for Sustainability

## ❖ THREATS

- ▶ Energy price Volatility
- ▶ Competition from Alternatives
- ▶ Regulatory Hurdles

# PESTEL

## ❖ Political

- ▶ Government incentives
- ▶ Public-private partnerships

## 💰 Economic

- ▶ Cost savings driver
- ▶ Growing demand

## 👥 Social

- ▶ Awareness of scarcity
- ▶ Urbanization

## ⚙️ Technological

- ▶ AI-driven irrigation
- ▶ Advanced recycling

## 🌱 Environmental

- ▶ Climate change impact
- ▶ Sustainability pressure
- ▶ Ecosystem protection

## ⚖️ Legal

- ▶ Efficiency standards
- ▶ Water rights laws

# Products

- ❖ AeroFarms
- ▶ Patented aeroponics
- ❖ Bowery
- ▶ software-driven hydroponic
- ❖ IFarm
- ▶ Nutrient Film Technique (NFT)



# Trends

## ▶ Trends in Vertical Farming

- ▶ 1. AI & Automation - Optimizing light, water, and nutrients with sensors and data.
- ▶ 2. Water-efficient systems - Technologies like Hydroponics and Aeroponics save water.
- ▶ 3. Urban / Modular Farms - Growing demand for small-scale, modular farms in cities.
- ▶ 4. Crop Diversification - Expanding beyond lettuce to strawberries, herbs, microgreens, etc.
- ▶ 5. Local Supply Chain Focus - Farms inside cities → fresher produce → less transport → lower carbon footprint.

# Competitors

- ▶ The global vertical farming market size was estimated at **USD 8.15 billion** in 2024 and is projected to reach **USD 49.25 billion by 2033**.
- ▶ 1. Land-based (traditional) agriculture → the largest competitor, because the goal of vertical farming is to replace or supplement traditional farming.
- ▶ 2. Other vertical farms (same city/region) → secondary competitors, regarding market share, pricing, and supply chain.
- ▶ 3. Indoor or greenhouse farms → alternative controlled-environment solutions with a similar value proposition.

# Conclusion

- ▶ Vertical Farm would help us to protect our planet saving 95% of water and using zero chemicals.
- ▶ The Aquaponic Vertical Farm is an investment in both sustainability and profitability.
- ▶ while guaranteeing stable, dual revenue streams year-round. This is the ready, scalable model for food security in 2026.



**Thank You  
For your  
attention!**

