



جامعة عجمان
AJMAN UNIVERSITY



EEG
مجموعة عمل الإمارات للبيئة
EMIRATES ENVIRONMENTAL GROUP

Rethinking Green: Oasis Green – AI-Powered Sustainable Agriculture for Extreme Climates

25th Cycle of the Inter-College Environmental Public Speaking Competition 2025

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Introduction

Global population expected to exceed 9.7 billion by 2050 → massive demand for food and resources. Traditional agriculture strains water and land ecosystems. In the UAE and similar arid regions, sustainability requires smart innovation.

“How can AI make agriculture thrive where nature struggles?”

AI's Role in Environmental Transformation

Promise:

- Efficient climate modeling
- Renewable energy optimization
- Smart biodiversity tracking

Problem:

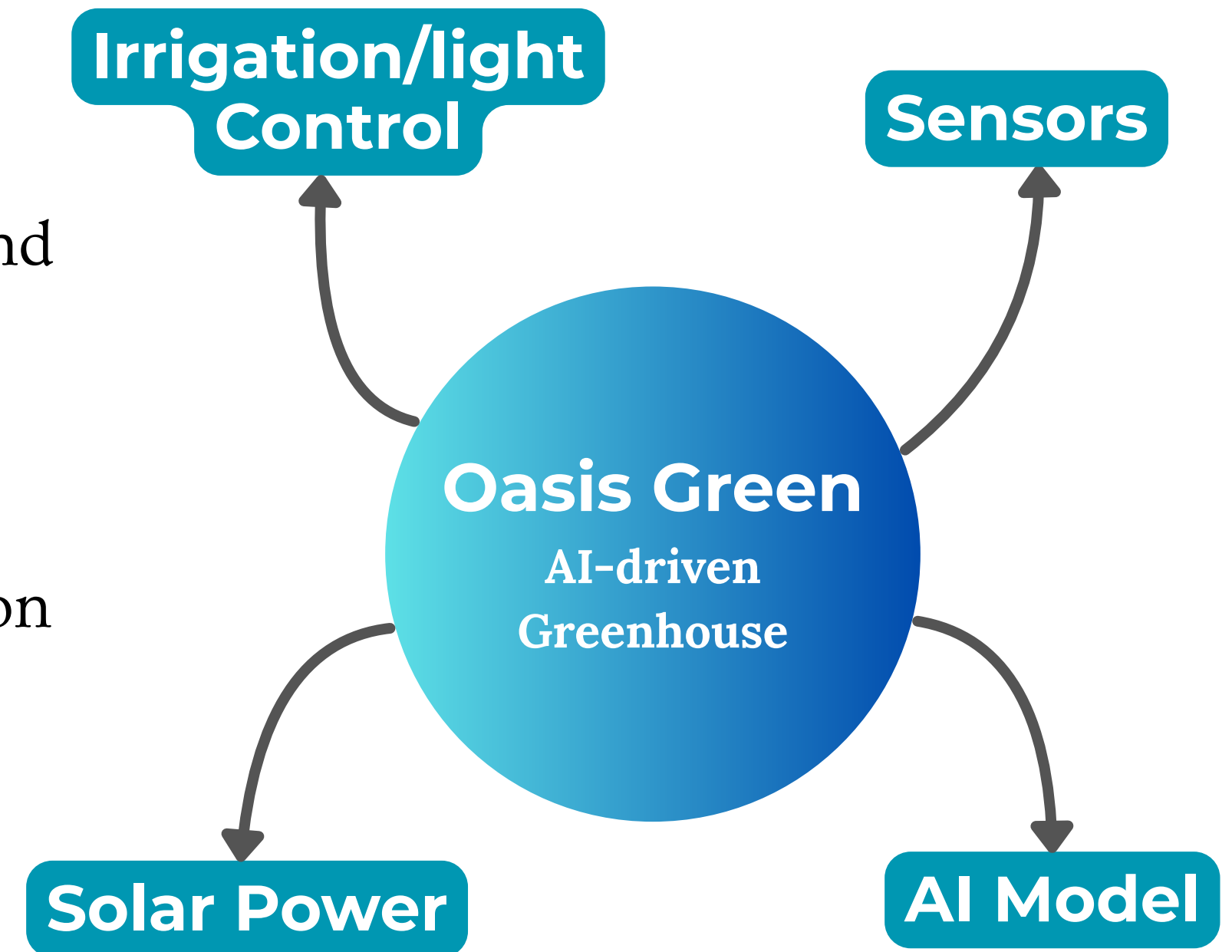
- AI consumes ~1% of global electricity (IEA, 2023)
- Massive cooling water footprint
- Hardware e-waste challenge

SDGs: 7, 9, 12, 13, 15, 17

Introducing OasisGreen

Concept: A climate-resilient AI-driven greenhouse model designed for extreme climates.

- Combines AI forecasting, precision irrigation, and energy optimization.
- Reduces water use by 30% and energy waste by 20%.
- Supports food security and biodiversity protection in desert regions.



OasisGreen System Architecture

- AI Vision: Detects plant health and nutrient deficiencies.
 - IoT Sensors: Monitor soil moisture, temperature, and humidity.
 - Machine Learning: Optimizes irrigation, ventilation, and light cycles.
 - Renewable Power: Solar panels sustain continuous operation.
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SDGs Mentioned: 2, 7, 9, 12, 13, 15, 17

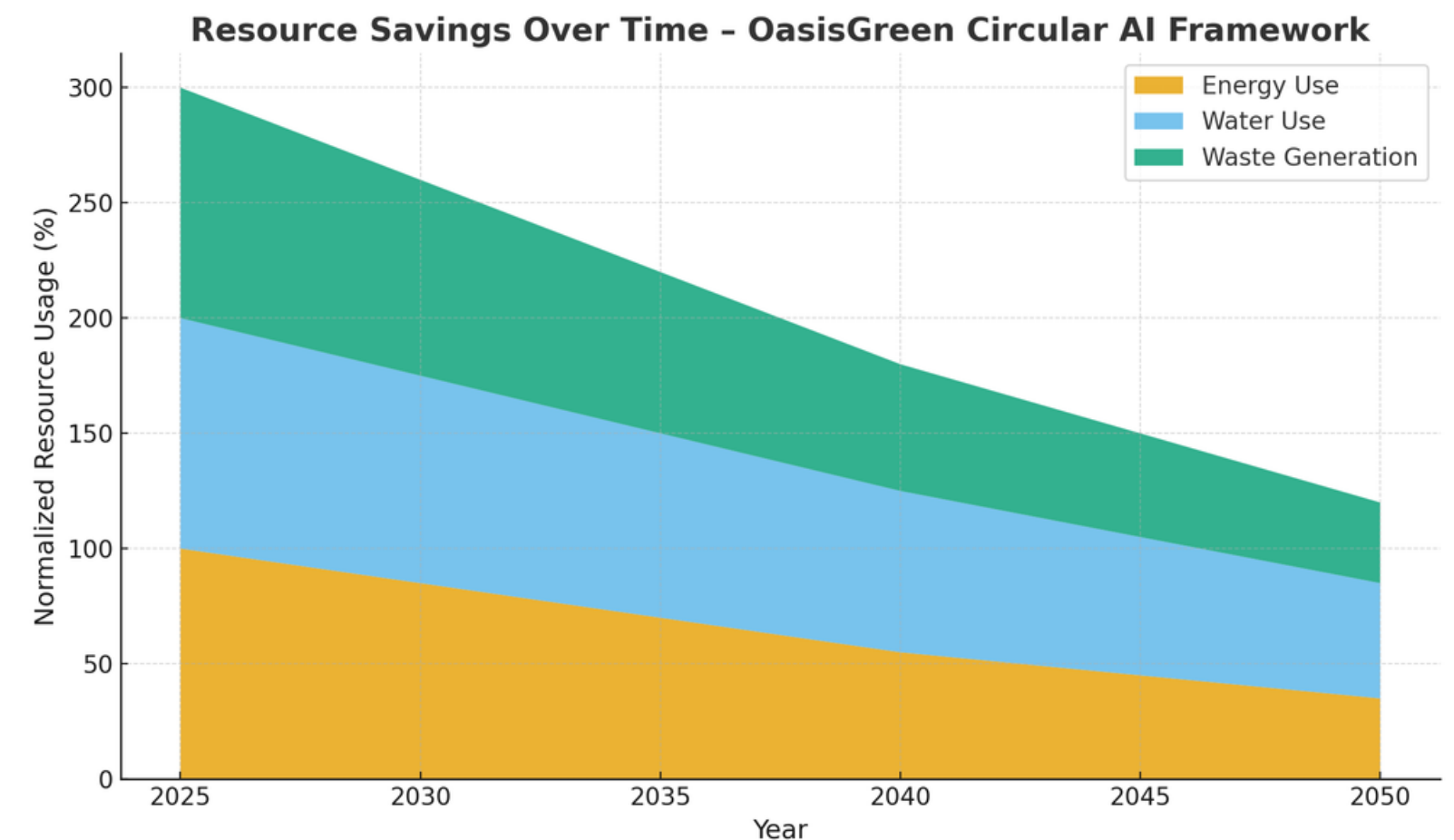
Environmental Impact: Cultivating a Greener Future

- 25–30% reduction in water consumption.
 - Renewable-powered energy supply.
 - Reduction in carbon emissions from transportation and refrigeration.
 - Supports urban agriculture and local food sovereignty.
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The Circular AI Framework

Integrate the “Circular AI” model to power OasisGreen sustainably:

1. Green Energy Integration – solar and wind-based computing.
2. Model Efficiency – train compact AI algorithms locally.
3. Hardware Reuse – recycling components and sensors.
4. Lifecycle Accountability – track energy, water, and waste.



UAE Case Study

Pilot Concept: Al Ain Smart Agriculture Hub

- AI-monitored greenhouses for desert farming.
- 15–20% improved crop yield.
- Early adoption potential across the GCC.

A blueprint for merging innovation and sustainability.

Policy and Community Integration

- Governments: Implement Green AI certification.
 - Universities: Lead interdisciplinary AI sustainability research.
 - Industries: Adopt circular production for agri-tech hardware.
 - Communities: Encourage smart farming literacy.
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Future Outlook

- Green AI could reduce total tech emissions by 4% by 2035.
 - AI-powered farming could feed 2 billion people sustainably.
 - Merging AI + ecology = resilient, equitable, and renewable agriculture systems.
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Conclusion

“OasisGreen proves that technology and sustainability are not opposing forces but partners.” AI-driven agriculture can help us feed the future while protecting the planet. Together, we can redefine intelligence — as the art of sustainability.

References

1. International Renewable Energy Agency (IRENA), 2023
 2. International Energy Agency (IEA), 2023
 3. World Wildlife Fund (WWF), 2022
 4. Global Forest Watch, 2023
 5. EEG Concept Note, 2025
 6. Ajman University – OasisGreen Project Documentation
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