Commercialization of AgriSolar Shelter as a Non-Profit Social Enterprise in Calgary

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Question: Whether the AgriSolar Shelter is commercially feasible on a non-profit social enterprise basis in Calgary, Canada?

Background and Rationale

- Integration of solar energy generation with food production
- Potential to contribute to tackle climate change issues
- Non-profit social enterprise model:
  - Target - schools & communities
  - Access to green electricity, fresh produce, sustainable food production alternatives, and clean water.
- Pilot project:
  - Simon's Farm
  - Campus Community Garden
- STAR Energy's goal:
  - Establish a non-profit entity in AB for local deployment to schools & communities on non-profit basis
  - subsequently deploy globally to countries - inadequate electricity, food security, & climate resistance.

Introduction

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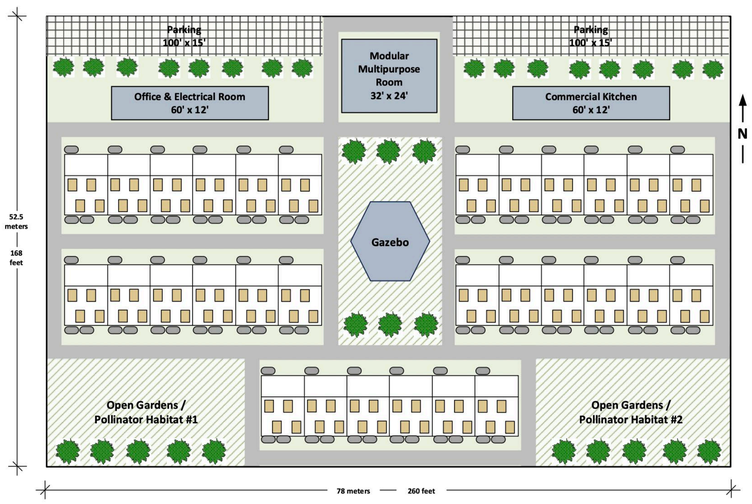
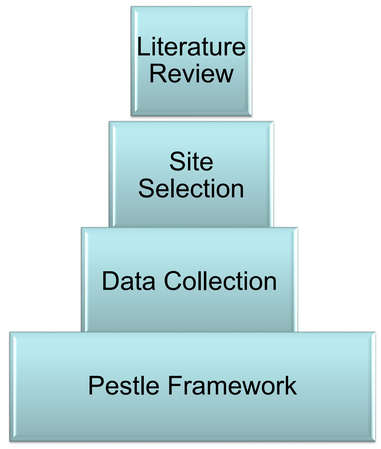
- STAR Energy's goal:
  - establish a non-profit entity in AB for local deployment to schools & communities on a non-profit basis
  - subsequently deploy globally to countries – with inadequate electricity, food security, & climate resistance.

Community AgriSolar Hub

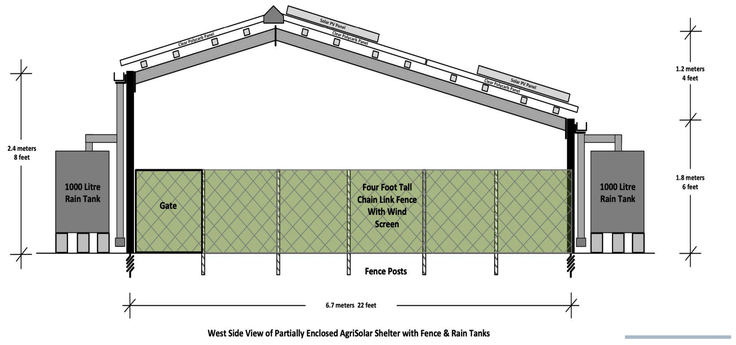


Source: O'Gorman (2023)

Methodology



Analysis



West Side View of Partially Enclosed AgriSolar Shelter with Fence & Rain Tanks

Technical

- Technical standards to guarantee efficiency & use
- Structural stability: 10 feet appropriate, though contingent on design & materials
- Sloping or peaked roof: adequate water drainage, stop pooling of water & water seepage
- Foundation & footing: critical - firm & sturdy
- Ventilation & insulation: sheltered - partially or fully enclosed
- Water: rainwater harvesting system integrated

Energy

- Clean energy: operations – no emission of GHG
- Life-cycle emissions: more than 20 times less than coal's; 10 times less natural gas; offsets within 1-3 years
- Offset credits - 31.39 (5 systems of 48.6kW Community AgriSolar Hub); 1 system of 9.72kW = 6.28 credits

Environmental

- Sheltered space for extended farming seasons
- Reduced stress from weather and pests to plants
- Rainwater harvesting for use; conservation of water

Result

Market Overview

- Alberta's commitment to diversify economy and increase reliance on renewable energy sources
- Alberta's target of 30% of electricity from renewable sources - 2030.
- Significant growth trend
- Substantial market opportunity for AgriSolar Shelters

Feasibility of AgriSolar Shelters

- Technology: integrated
- Environmental: climate change issues, availability of clean energy, sustainable farming, access to clean water
- Social: food security, education
- Economics: good returns from green energy sales, carbon credits and rentals; initial capital cost

Interdisciplinary Aspects

Conclusion and Recommendation

Conclusions

- Combination of agriculture & energy sectors presents substantial market opportunity
- Potential to achieve sustainable agricultural practices, contribute to renewable energy production & tackle climate change concerns.

Key recommendations

- Obtain necessary technical certifications
- Rework economics on project cost
- Emphasis on grants and donations to cover reasonable project's capital cost

Limitation and Future Research

- Time Limitation
- Future research on deployment of the AgriSolar Shelter to other countries on a for-profit private enterprise basis.