Agrivoltaics
Solar Greenhouse

InSolare Introduction

Climate Change impact on food supply

Solar Green House

Technology in Agriculture

Solar Greenhouse Design Approach

Project Financials

Potential Projects
Established Market Leader for high Quality since 2009
Proven team led by technology experts: 50+ Patents, PhD in Solar Cells
Proprietary technologies for optimization, tracking and forecast
Installed and Operating 125+ MW in 15+ states across India
Greater than 35 MW under execution, >150 MW pipeline in works

InSolare Confidential
Our Values, Clients & Reach

Innovation - Quality
Results - Integrity
Technology - Discipline

InSolare Confidential
15/06/20
Example Projects

Tracker & Rooftop  PV Covering 4 km of Canal  Carports

High Quality Rooftop and Ground Mounted Solar Photovoltaic Projects
Delivering best ROI through Technology
Climate change will stress Indian agriculture

1°C degree rise in temperature can reduce rice yields by 10%

Monsoons are critical, but extensive crop damage due to storms

Early, late & untimely rains hurt the harvest

Pests: Locusts (ongoing), Fungal disease (Blight)
Solar Greenhouse Advantages

Solar PV atop greenhouses

Energy intensive infrastructure provides year round optimal micro-climate controlling light, temperature and humidity

95% Reduced use of water

Better yields of higher value vegetables, fruits and grains

Pest free so pesticide free

Excess energy sold to grid
Vertical farming* for > 100x higher yield per sq.m per year
(4 kg on land, 40 kg in Greenhouse & 400 - 800 kg in vertical farming)

LED controlled light spectrum matched to growth needs of types of vegetables or fruits.

Rainwater harvesting & efficient water use with hydroponics to reduce consumption by 99%
(250 L on land, 20 L in Greenhouse & 1 L in hydroponics)

Consumes < 150 kWh/sq.m/year

Dickson Despommier: Vertical Farm: Feed the World in 21st Century
Photos: Philips Lighting, IEEE Spectrum
Photovoltaic modules installed flush on top of greenhouse structure. Panels tilted East-West or South to maximize capacity ~ 200 W/sq-m & generation of 1 kWh/(sq.m-day)

Roughly 50% of PV energy is used locally & excess sold to local grid and adjacent tube-wells.

24/7 electricity battery back up

Loads: Lighting LED, Water: Pumps + tubes + spigots HVAC for climate control

AC Grid connection or DC mini grid
Cap Ex: Structure used for enclosure, pumps, HVAC
~ $1.1 Million for ~ 6000 sq. m
Opex: Only Labor & consumables, with zero energy cost required to run the facility

Two sources of revenue
Excess energy ~ $32,000/year
800,000 kWhr sold at $0.04/kWhr
Wholesale vegetable ~ $200,000 p.a
Harvesting ~ 600,000 kg per year
Sold at $0.33/kg
(assuming 100 kg per sq.m per year)

Project IRR ~ 18%
Excellent EBITDA due to low opex!!
5 MW Solar Greenhouse
Three greenhouse projects being readied across India

Uttar Pradesh (North) 6000 sq. m
Gujarat (West) 6000 sq. m
Karanataka (South) 40,000 sq. m

Process for approvals started (stalled due to COVID)
Land acquired and partial project equity arranged
Raising debt financing to initiate projects

THANK YOU!!!