

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

InSolare

Established Market Leader for high Quality since 2009

Proven team led by technology experts: 50+ Patents, PhD in Solar Cells

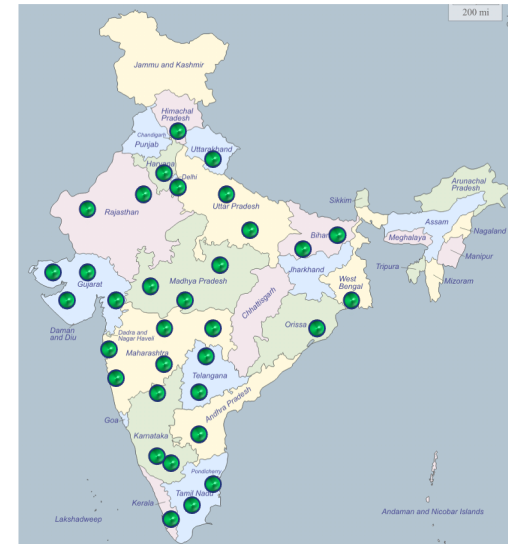
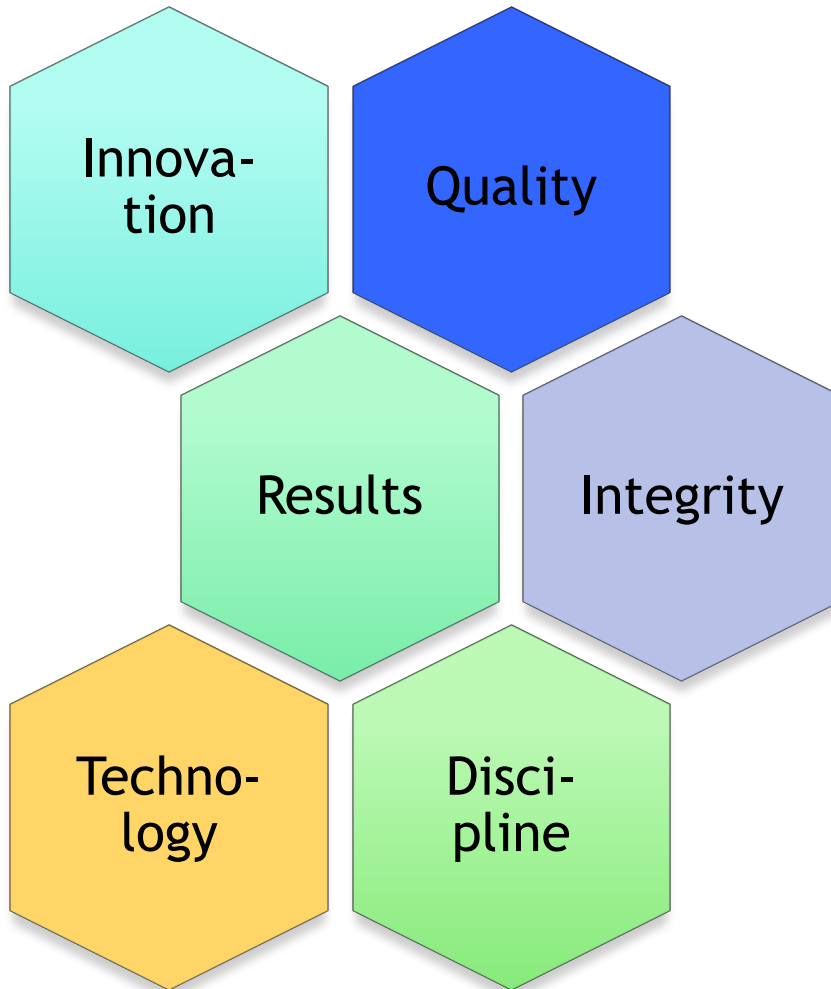
Proprietary technologies for optimization, tracking and forecast

Installed and Operating 125+ MW in 15+ states across India

Greater than 35 MW under execution, >150 MW pipeline in works



Our Values, Clients & Reach



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

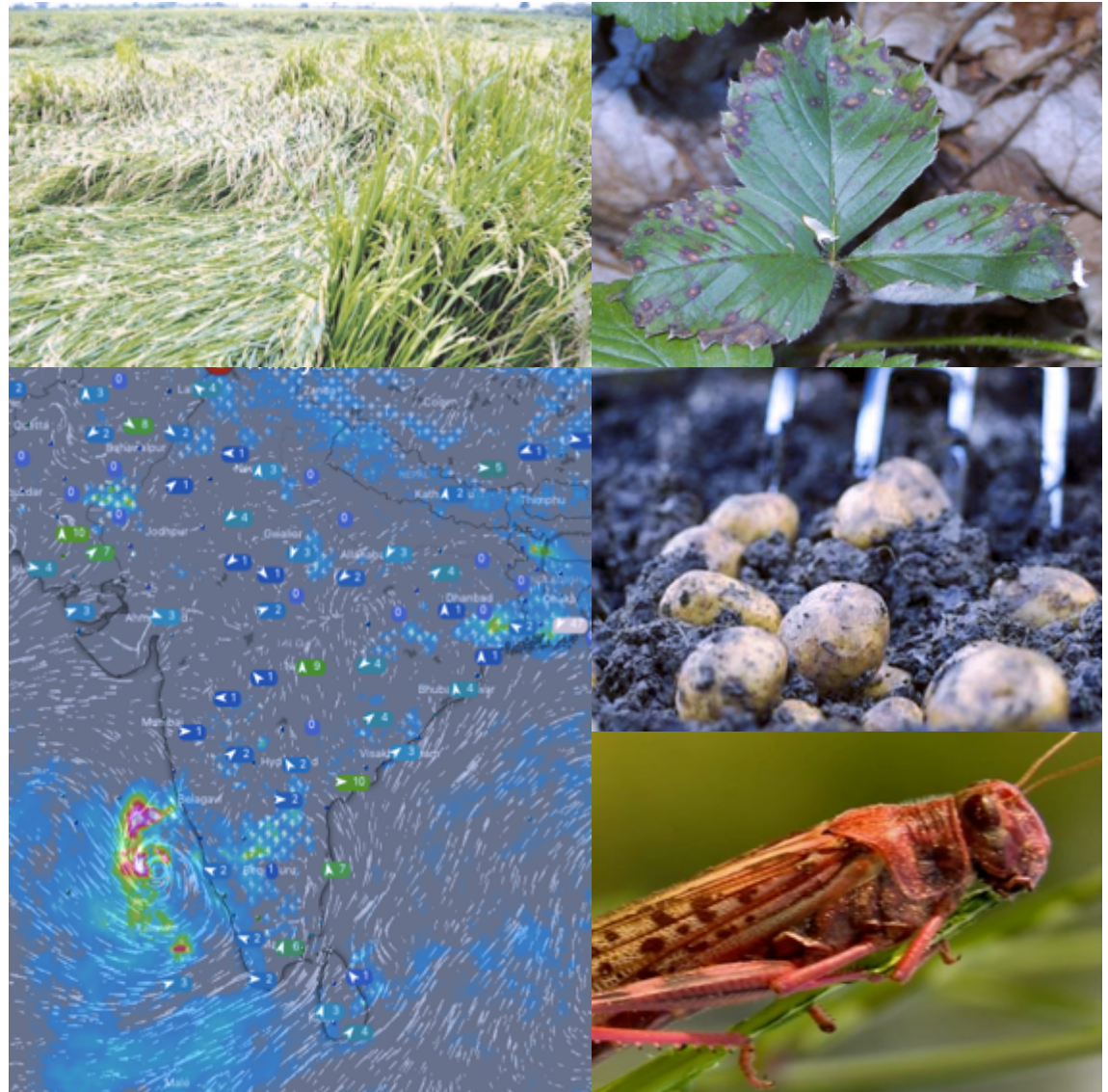
Climate change will stress Indian agriculture

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

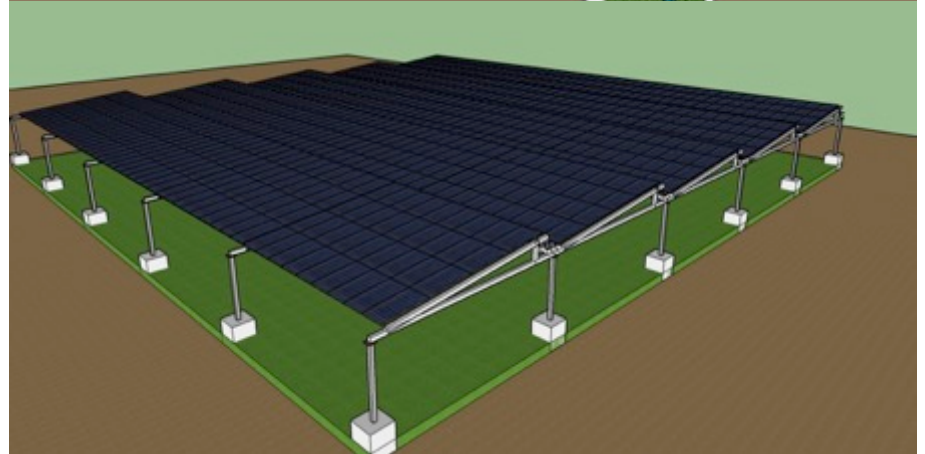
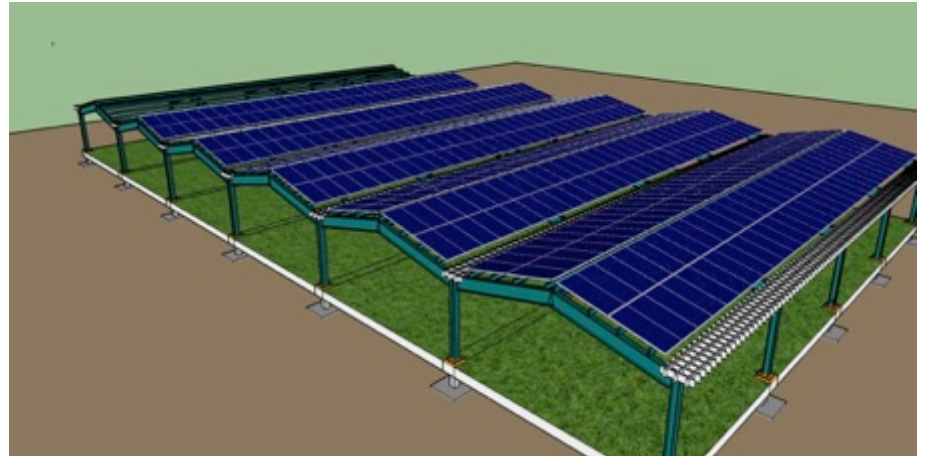
Energy intensive infrastructure provides year round optimal micro-climate controlling light, temperature and humidity

95% Reduced use of water

Better yields of higher value vegetables, fruits and grains

Pest free so pesticide free

Excess energy sold to grid



Technology in Farming

Agrivoltaics + Vertical Farming + Hydroponics

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

Solar Greenhouse Design Approach

Photovoltaic modules installed flush on top of greenhouse structure

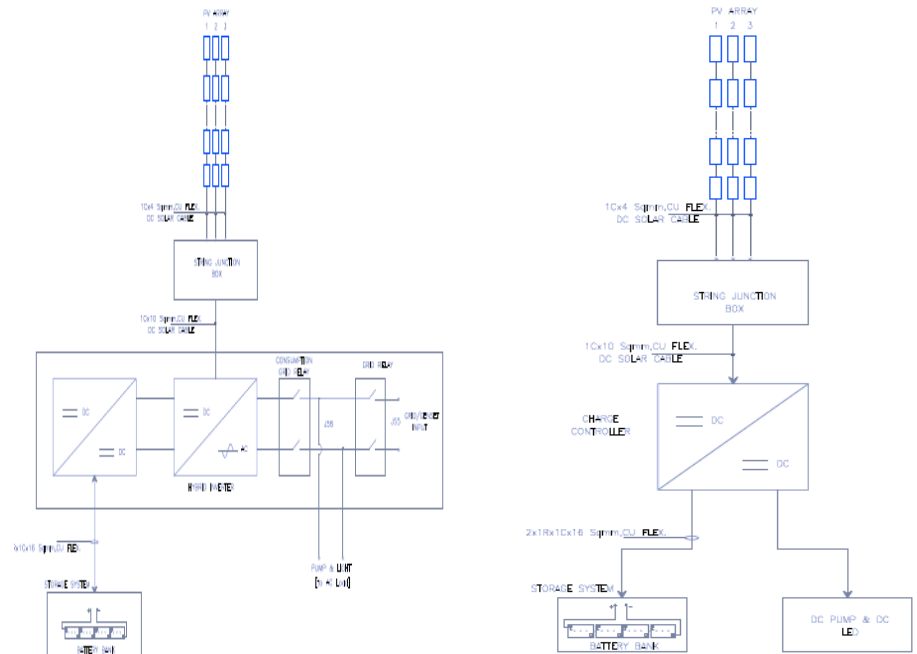
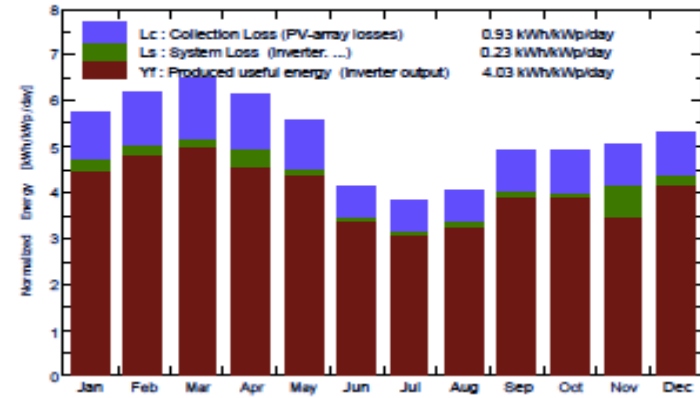
Panels tilted East-West or South to maximize capacity ~ 200 W/sq-m & generation of 1 kWh/(sq.m-day)

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

Normalized productions (per installed kWp): Nominal power 130 kWp



Solar Greenhouse Financials

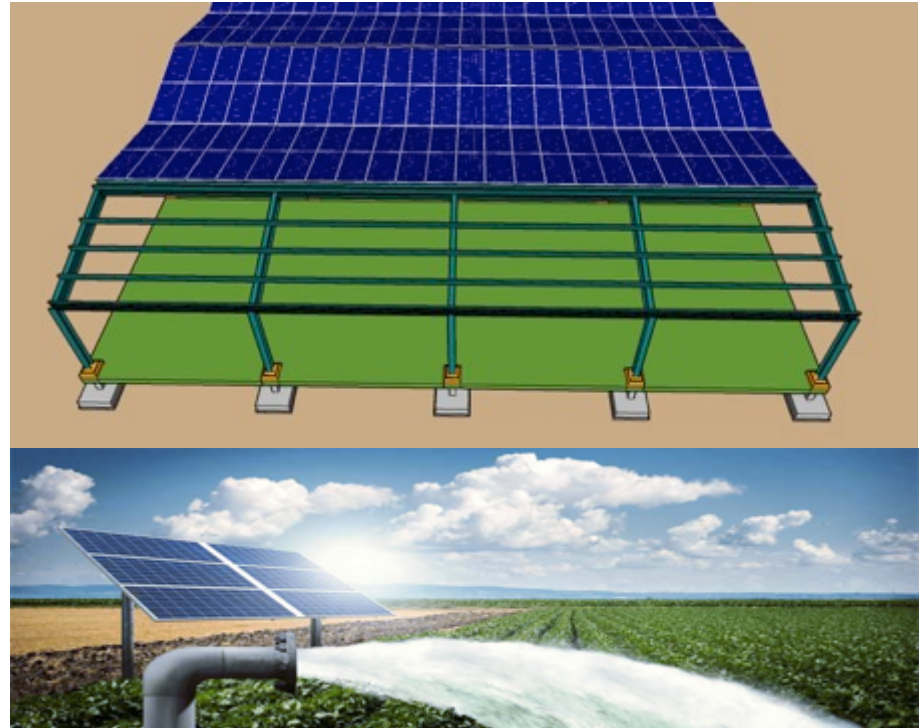
Cap Ex: Structure used for enclosure, pumps, HVAC
~ \$1.1 Million for ~ 6000 sq. m
Opex: Only Labor & consumables,
with zero energy cost required to
run the facility

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!!



Lettuce Romaine Green - Exotic

1 kg | 250 g | 500 g

MRP ₹499



LIMITED AVAILABILITY

Pak Choi - Exotic

1 kg | 200 g | 500 g

MRP ₹199

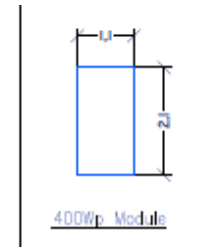
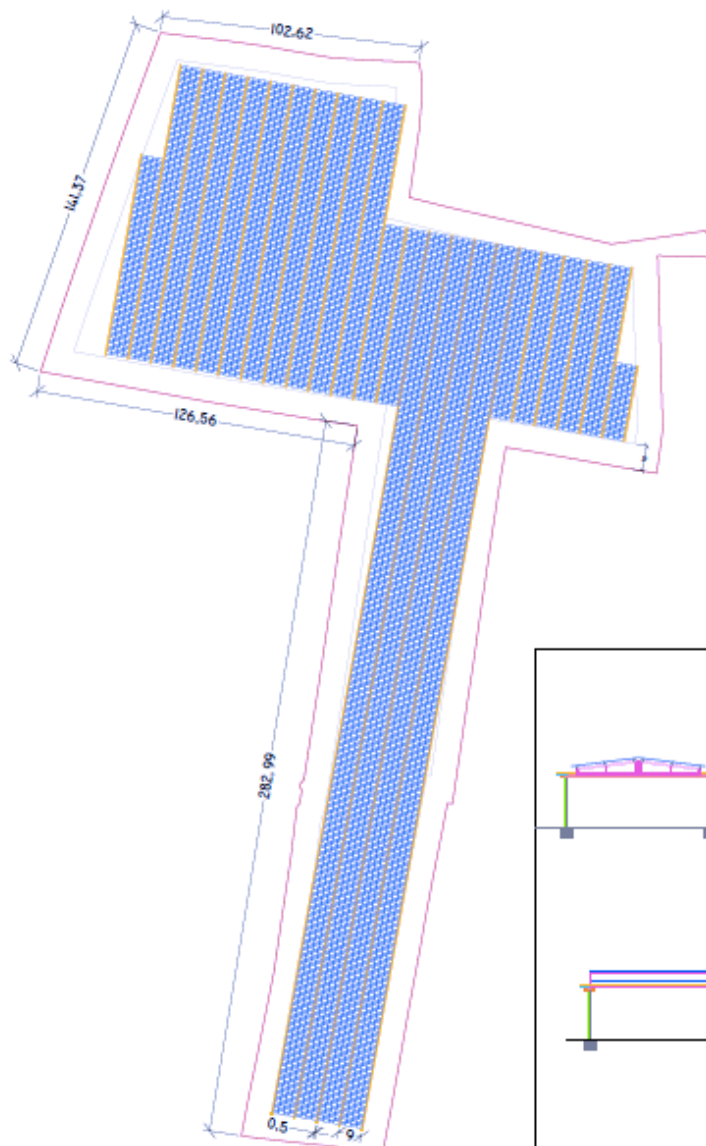


Chinese Cabbage - Exotic

1 kg | 2 kg | 500 g

MRP ₹109

5 MW Solar Greenhouse



KEY PLAN



PROJECT DETAILS			
DESCRIPTION	NOS	DESCRIPTION	NOS
DC CAPACITY-KW	4585.80	TILT ANGLE	5°
MODULE RATING-Wp	400	AZIMUTH	10°
NOS OF MODULE	11464	PITCH (M)	-
LEGEND		SIGN	
PLANT BOUNDARY	—	MODULE	■
OFFSET BOUNDARY	—	WALKWAY	■

* ARRAY LAYOUT MADE FROM REFERENCE DRAWING.

* EAST WEST ELEVATED STRUCTURE 5 MTR HEIGHT.

* LAT-LONG : 12°N/59°E, 76°N/81°E

* ALL DIMENSIONS ARE IN METER.

DRAWING ISSUED STATUS :

A : PRELIMINARY	<input type="checkbox"/>	C : FOR CONSTRUCTION	<input type="checkbox"/>
B : FOR APPROVAL	<input type="checkbox"/>	D : AS BUILT	<input type="checkbox"/>

REV	DATE	DESCRIPTION	DRAWN	CHECK	APPD
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SPC **INSOLARE** 5TH FLOOR, ASH TOWERS,
ENERGY PVT LTD KUNDANAHALLI, BANGALURU, INDIA

PROJECT : GREEN HOUSE SOLAR POWER PLANT

SITE ADD : BADDIGE, MYSORE, KARNATAKA

DESIGNED BY : DP2 APPROVED BY : DP

DRAWN BY : DP2 DATE : 30/05/20

CHECKED BY : KA SCALE : NTS

DWG NO : 04-DWG_ELE_001 REV : 00

TITLE : ARRAY LAYOUT SHEET : 10F1

Potential Projects



Uttar Pradesh (North)

6000 sq. m

Gujarat (West)

6000 sq. m

Karnataka (South)

40,000 sq. m

Three greenhouse projects being readied across India

Process for approvals started (stalled due to COVID)

Land acquired and partial project equity arranged

Raising debt financing to initiate projects

THANK YOU!!!