



CENTRE OF SCIENCE
AND ENVIRONMENT

Building India's Future Agri-Energy Ecosystem

NATIONAL ROUNDTABLE

04th June 2026 | AAETI, Nimli, Rajasthan

Beyond Pilots: Scaling Distributed Clean Energy in India Agrivoltaics

Mr. Sachin Singh, Fellow and Associate Director
The Energy & Resources Institute (TERI), New Delhi



Agrivoltaics Offers a Potential in the TW Range

| | | | | | |
|------------------|----------------------|-----------------------|---------------------------------|-------------------|------------------|
| Fruits Potential | Vegetables Potential | Plantations Potential | Aromatics & Medicinal Potential | Flowers Potential | Spices Potential |
|------------------|----------------------|-----------------------|---------------------------------|-------------------|------------------|

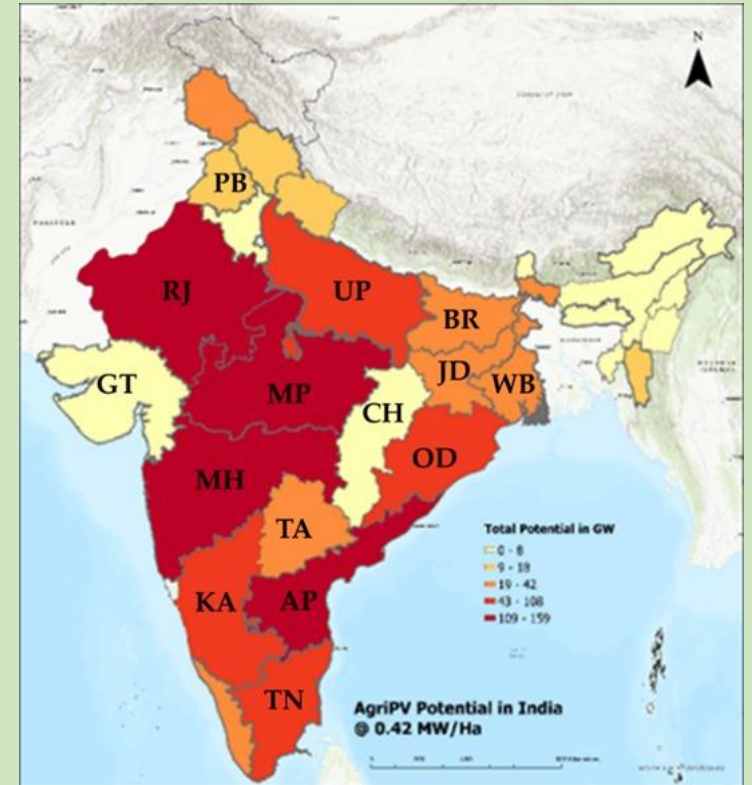
Rapidly Increasing Electricity Demand

1. Current demand: **1,532 TWh²⁰²⁴**
2. Projected demand:
 - **6544-8070 TWh²⁰⁵⁰** (NITI Aayog)
 - **9718-12997 TWh²⁰⁷⁰** (NITI Aayog)
3. RE capacity:
 - 1892-3200 GW²⁰⁵⁰
 - 4150-6700 GW²⁰⁷⁰

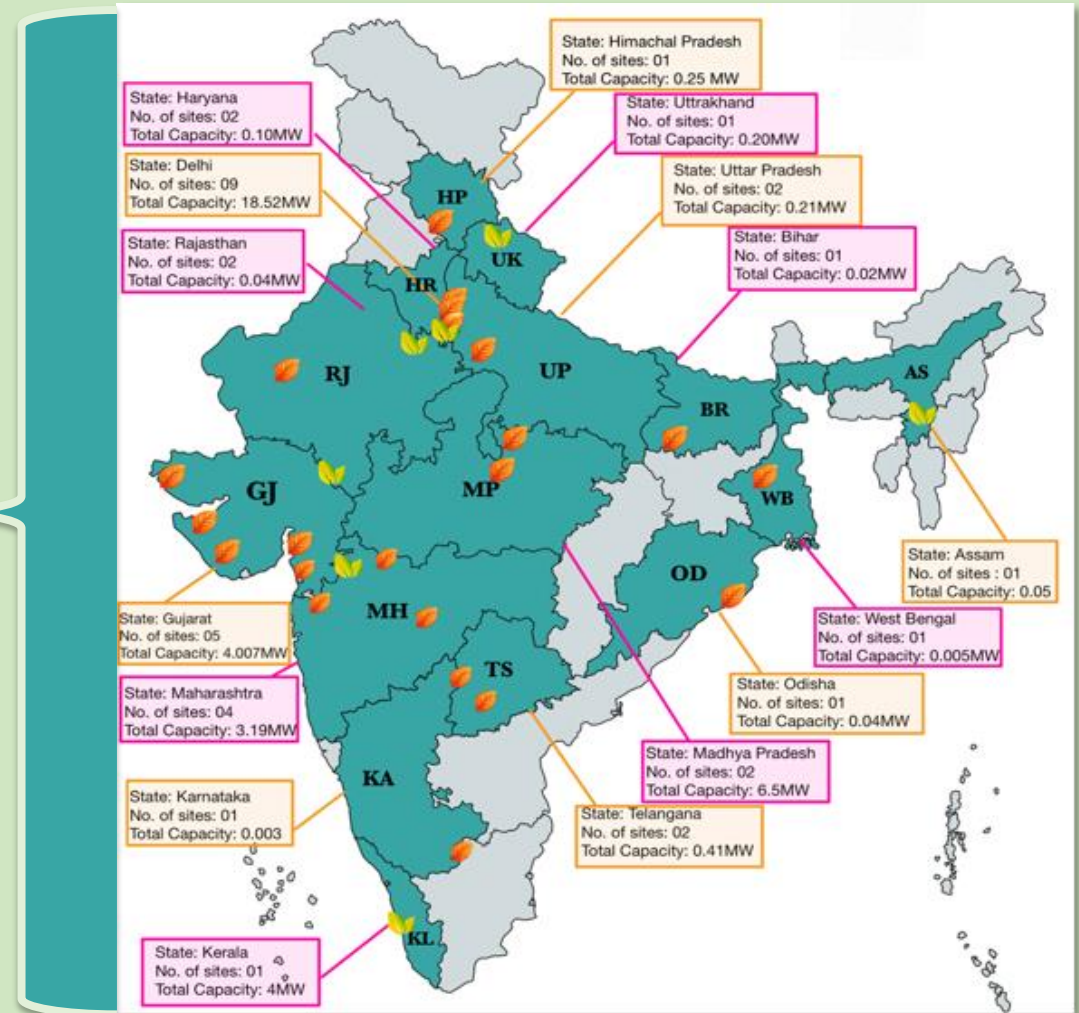
India's Solar PV Potential

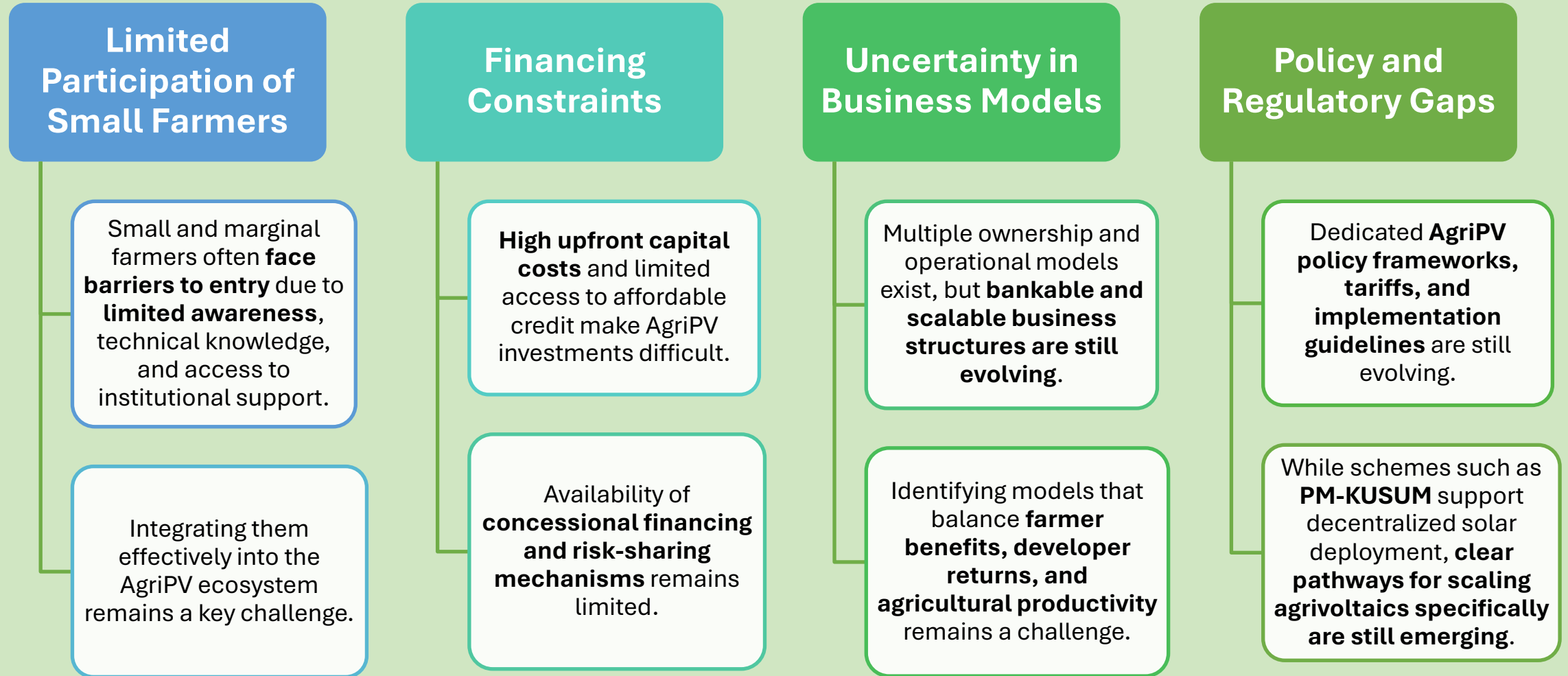
1. Macro Solar
2. Solar Potential Reassessment ~**10,830 GW** (TERI)
3. Ground-mounted Solar: ~**4,900 GW**
4. AgrPV ~**1192-2129 GW** (TERI,2026)

Limiting the crops to horticulture and plantations, TERI estimates a total potential of **1.1914 – 2.1283 TW**



- ❑ **36 operational projects (37.54 MW);**
10+ pilots underway (Aug,2025)
- ❑ **Early leaders:** Delhi, Maharashtra, MP, Gujarat, Kerala
- ❑ **Many states still in nascent stage :** HP, UK, Telangana, UP
- ❑ **Multiple system designs in use**
(elevated, trackers, bifacial, interspace)





TERI's Work to Support AgriPV

Assessment of AgriPV Potential in India

AgriPV Pilot Site Evaluation (15+)

Techno-economic feasibility study for AgriPV + BESS

Preparation of Feasibility Reports & DPRs

Recommendations for AgriPV Scale-up

Partners: SED Fund | AFEF-ICC | ADB | GIZ/BMUKN | GEAPP | Bloomberg | KPMG | BRPL | ETC | India Agrivoltaics Alliance | PAU



Renkubet Plant, Telangana



KVK Plant, Delhi



GroSolar Plant, Dhule



Khare Energy Plant, Sagar

According to the Economic Survey 2025-26: -

- ❑ Agriculture contributes **~20% of India's GDP** and supports **~46% of the workforce**.
- ❑ **Irrigated area has increased to ~55.8%**, with government push for **micro-irrigation and solar-powered water systems**, enabling **dual land-use models like AgriPV**.
- ❑ Government initiatives aim to **improve productivity in agriculture and allied sectors** through policy measures such as the **Digital Agriculture Mission**.
- ❑ Strengthening **extension services and institutional networks** (FPOs, PACS, SHGs) can improve implementation and farmer outreach.

Agrivoltaics as an integrated agri-energy ecosystem enabling the co-production of food and clean energy.

1

Policy and regulatory frameworks needed to accelerate agrivoltaics deployment.

2

Optimising system performance through smart planning tools, digital technologies, and AI-based approaches.

3

Enhancing farmer income, climate resilience, and sustainability through agrivoltaic systems.


4

Strengthening cross-sector partnerships among policymakers, developers, researchers, and farmers for mainstream adoption.


5

TERI's Work on AgriPV

RESPONSIBLE AGRI PV BASELINE ASSESSMENT REPORT
 Khare Energy Plant, Madhya Pradesh
 Detailed Case Study On Multi-Land Use For Energy And Food Security
 2026



Authors
 Mr. Hemakshi Malik, Mr. Ishita Bhat,
 Mr. Prakash Chaudhary, and Mr. Prashant Vaidya



India Climate Collaborative | TERI The Energy and Resources Institute | IAA



FRAMEWORK FOR AGRI PV DPR DEVELOPMENT
 PHASE 2 OF INDIA AGRIVOLTAICS ALLIANCE (IAA)

About TERI

TERI was established in 1974 as the Tata Energy Research Institute, with Dr. JRD Tata serving as its first Chairman. Later, Shri Ratan Tata joined the Governing Council as a notable member. Dr. R. K. Pachauri, TERI's first Energy Research Institute leader from 1983 to 2010, and later as Executive Vice-Chairman until 2017, has extensive leadership and global experience. TERI has a leading role in energy and climate policy. TERI continues to engage with the global climate agenda on the basis of multidisciplinary, innovative energy technologies, environmental solutions and the wider and healthy living design and development of solutions to meet climate resilience and resource use efficiency, and energy and food security for citizens and government agencies on issues such as climate change and other aspects of the local, national and international level. In a bid to prepare for India's energy and environmental transition, TERI engages with youth in its ongoing student-based knowledge and skill development to combat climate change.

TERI, TERI's 400+ employees and 1200+ consultants, who are working together to achieve sustainable development and environmental protection. Our dedicated teams of scientists, economists, sociologists and engineers deliver targeted, high-quality action-oriented research and implementation solutions supported by state-of-the-art infrastructure.

Headquartered in New Delhi, with regional centres in Gurgaon, Bangalore, Coimbatore, Chennai, Pune, and Mumbai, TERI is powered by a 3,000+ strong multidisciplinary team of scientists, engineers, economists, and sociologists engaged in action-oriented research and implementation. As we gear up for the next 50 years, TERI is determined to carry forward the legacy of its multidisciplinary approach of providing holistic solutions, and playing a pivotal role in crafting our energy and sustainable solutions for India and neighbouring countries.

The Energy and Resources Institute (TERI)
 TERI, G-13, Sector-16
 Institutional Area, Gurgaon
 Haryana - 122 002, India
 Tel: +91 1249 31000 or 7132 2330
 Fax: +91 1249 31001 or 7132 2331
 Email: info@teri.res.in or teri@teri.res.in
 Website: www.teri.res.in

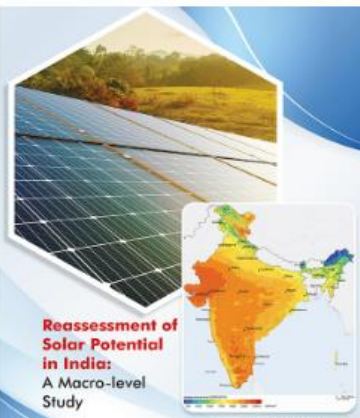


RESPONSIBLE AGRI PV: BASELINE ASSESSMENT REPORT
 Renkubet Plant, Telangana
 MULTI-LAND USE FOR ENERGY AND FOOD SECURITY
 Prepared for the Responsible Energy Initiative
 2026

Authors
 Mr. Hemakshi Malik, Mr. Ishita Bhat,
 Mr. Prakash Chaudhary, and Mr. Prashant Vaidya





Reassessment of Solar Potential in India: A Macro-level Study



TERI The Energy and Resources Institute


Global Energy Alliance for People and Planet (GEAPP) | TERI The Energy and Resources Institute | Energy Transitions Commission

UNLOCKING SOLAR AT SCALE: HOW AGRIVOLTAICS OVERCOME LAND CONSTRAINTS IN INDIA'S ENERGY TRANSITION




Agri-Photovoltaics Potential in India: Pathways for Sustainable Energy-Food Solutions

Global Energy Alliance for People and Planet (GEAPP) | TERI The Energy and Resources Institute | Energy Transitions Commission



AgriPV Business Model Selection Tool

India Climate Collaborative | TERI The Energy and Resources Institute | IAA




Scan for Reports

Website: <https://www.teriin.org/>



TERI's Energy Programme



TERI's work in Electricity and Renewables

Thank You!



Agro-climatic zone-wise distribution of AgriPV-compatible crops in India categorized as cash crops, vegetables, and others



| Agro-Climatic Zone (ICAR-NARP) | Representative States / UTs | Cash Crops | Vegetables | Others (Cereals / Pulses / Fruits / Fodder / Medicinal) |
|---|------------------------------------|--|---|---|
| 1. Trans-Gangetic Plains Region | Delhi, Haryana, Punjab, Western UP | Wheat, Mustard, Onion, Ginger, Turmeric | Tomato, Brinjal, Cauliflower, Okra, Spinach, Lettuce, Bottle Gourd, Fenugreek, Radish, Carrot | Rice, Gram, Millets, Pomegranate, Mango, Fodder (Napier), Medicinal herbs (Aloe Vera, Tulsi) |
| 2. Upper Gangetic Plains Region | Uttar Pradesh (Central & Eastern) | Mustard, Wheat, Gram | Brinjal, Tomato, Potato, Spinach, Cauliflower, Carrot, Gourds, Fenugreek | Maize, Pulses (Lentil, Green Gram, Red Gram), Fruits (Papaya, Guava), Fodder crops |
| 3. Middle & Lower Gangetic Plains Region | Bihar, West Bengal | Ginger, Turmeric, Sugarcane, Spices, Maize | Bitter Gourd, Bottle Gourd, Leafy Vegetables, Potato | Banana, Flowers (Marigold, Chrysanthemum), Medicinal Plants, Dragon Fruit |
| 4. Western Dry (Arid) Region | Rajasthan, Gujarat | Cumin, Coriander, Isabgol, Groundnut, Cotton, Chilli, Sesame | Cluster Beans, Bottle Gourd, Brinjal, Tomato, Cucumber, Zucchini, Ladyfinger | Aloe Vera, Sonamukhi, Sankhpuspi, Mungbean, Moong Dal, Chickpea, Watermelon |
| 5. Central Plateau & Hills Region | Madhya Pradesh, Chhattisgarh | Wheat, Mustard, Garlic, Maize, Groundnut, Barley | Capsicum, Tomato, Spinach, Lettuce, Broccoli, Baby Corn, Potato, Brinjal | Strawberry, Lentil, Green Gram, Red Gram, Sorghum, Fodder (Napier) |
| 6. Western Plateau & Hills Region | Maharashtra | Turmeric, Ginger, Cotton, Lemongrass, Betel Leaf, Mint | Cherry Tomato, Capsicum, Cucumber, Spinach, Methi, Coriander, Basil, Okra | Flowers (Rose, Chrysanthemum, Tuberose, Hibiscus, Marigold), Banana, Rice, Grapes, Citrus, Melons, Watermelon |
| 7. Southern Plateau & Hills Region | Telangana, Karnataka | Lemongrass, Chilli, Onion, Groundnut, Cotton | Cabbage, Broccoli, Carrot, Amaranthus, Tomato, Brinjal, Chilli, Okra, Lettuce, Spinach, Coriander, Beans | Annatto, Maize, Medicinal & Aromatic herbs (Rosemary, Basil, Papaya) |
| 8. Eastern Coastal Plains & Hills Region | Odisha, Andhra Pradesh | - | Leafy Vegetables, Gourds, Tomato | Pineapple, Dragon Fruit, Medicinal & Aromatic Plants |
| 9. Western Coastal Plains & Ghat Region | Kerala, Goa | Turmeric, Ginger | Yam, Long Yard Bean, Cabbage, Cauliflower, Snake Gourd, Bitter Gourd, Bottle Gourd, Tomato, Okra, Pumpkin | Buddha Bamboo, Mango (saplings), Spices, Banana |
| 10. Northern Hill Region | Himachal Pradesh, Uttarakhand | Onion, Turmeric | Eggplant, Cabbage, Okra, Chilli, Brinjal | Ladyfinger (seed), Medicinal & Aromatic Crops (Rosemary, Geranium), Apple |
| 11. North-Eastern Hills Region | Assam, Meghalaya, Manipur | - | - | Medicinal & Aromatic Crops (Ashwagandha, Roselle, Tulsi), Pulses, Horticultural Crops |
| 12. Islands Region | Andaman & Nicobar, Lakshadweep | Coconut | Vegetables (tropical) | Banana, Papaya, Shade-tolerant crops (potential APV sites, not yet demonstrated) |