

KUSUM Assistance Project: Decision Meeting with the Ministry of New and Renewable Energy



Presenters: Siddharth Goel and Anas Rahman

Date: March 14, 2022

Project consortium



Project aims and activities

Key Objectives

- Create a best-practice guidebook with recommendations to support state agencies in sustainably implementing decentralized solar power plants for irrigation (PM-KUSUM component A and C [feeder-level solarization])
- Provide technical assistance to states in overcoming bottlenecks associated with PM-KUSUM component A and component C (feeder-level solarization)
- Develop case studies to capture learnings from schemes and projects relevant to the PM-KUSUM scheme

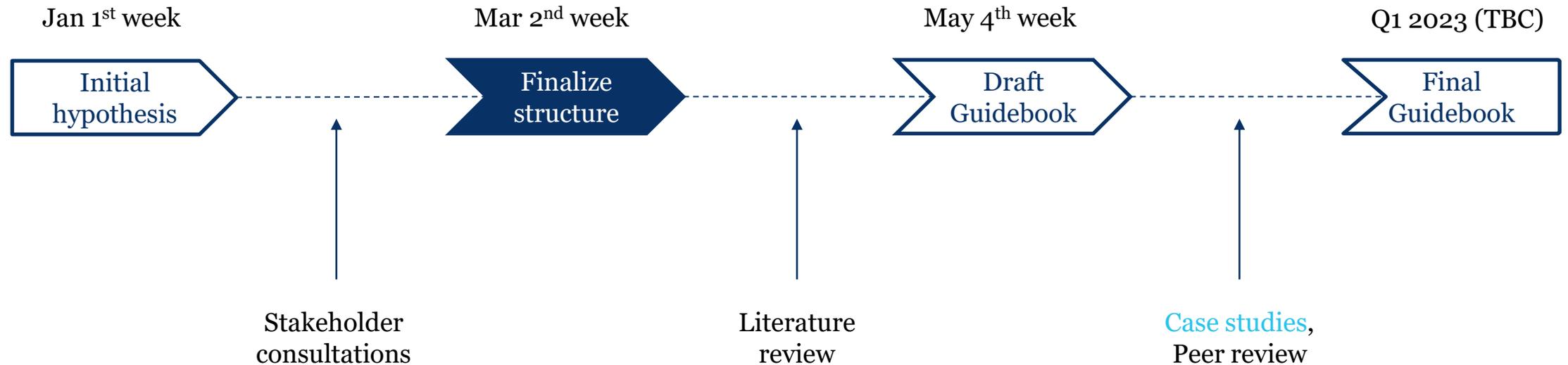
Activities

- Stakeholder consultations with state, central government officials and policy experts
- Review of existing literature and data
- Case studies on existing schemes and projects
- Background paper on Agrivoltaics

Immediate focus

- Identify the key focus priorities for the guidebook
- Finalize the guidebook structure
- Discuss the choice of case studies

Guidebook development stages



Guidebook outline



Context

What is the scheme all about?



Coordination and scheme design

How can states design and implement a scalable and sustainable model?



Financing

How can states ensure the sustainable financing of the scheme?



Innovative approaches: Learning by doing

How can states maximise learnings from their initial projects?



Context

Key needs assessment findings

- Participation of multiple state agencies including agriculture dept., groundwater agencies, and financial institutions will augment scheme impacts. **But they are not familiar with the scheme.**
- SIAs acknowledge the potential economic benefits from the scheme, **but there are concerns over its applicability in certain contexts.**
- We found a variety of perspectives on WEF linkages to the model . But there are some early indications that **the improvement in energy access could lead to increased groundwater extraction in specific contexts.**

Chapter structure

- Model design and schematic
- Differences between Components A and C
- Potential impacts of the scheme
 - Economic impact on the utility/state – [guidance tool](#)
 - Impact on key water-energy-food linkages
 - Key contextual factors that will determine above impacts

Coordination and scheme design

Key needs assessment findings

- States can prioritize multiple objectives in feeder selection. **But there is a need for joined-up thinking to balance financial savings with energy access and water concerns.**
- Interdepartmental coordination mechanisms are weak. **There is a need to develop dedicated coordination mechanisms for the scheme.**
- There is a potential for convergence with schemes and efforts in water/energy use efficiency and farmer capacity building. **But their outcomes are not widely tested and requires a learning-by-doing approach.**

Chapter structure

- Importance of coordination and scheme design
- Coordination – who and how?
- Design
 - Balancing objectives through geographic targeting – [CEEW solar pump tool](#)
 - Integrating groundwater sustainability
 - Framework for maximizing learnings from water incentives and Agrivoltaics

Financing

Key needs assessment findings

- Distributed solar plants for irrigation is still in its nascency. **Financing is the principal bottleneck in scaling-up the scheme.**
- The key to sustainable financing is reduction of risks. **A holistic approach in reducing risks – infrastructure, administrative and regulatory – can catalyze the flow of finance and generate developer interest.**
- Central financial agencies like SECI and EESL can play important intermediary roles.
- There is a need to provide guidance to state regulators on tariff determination

Chapter structure

- Why financing is critical?
- What sources of financing are available?
- Addressing financing challenges
 - Reducing infrastructure risks
 - Reducing administrative risks
 - Reducing regulatory risks
- Financial partnerships
 - Partnerships with central financial institutions
- Model guidance for regulators to assess trade-offs in tariff levels

Innovative Approaches: Learning by Doing

Key needs assessment findings

- Sustainability aspects of agricultural feeder solarization aren't fully understood. **States should creatively design and monitor initial projects before refining strategy.**
- Direct incentives for water conservation has wide acceptability among stakeholders. **But its application in certain contexts may be counter-productive. States should create a framework for deciding the right incentives**
- Land is a major constraint in many states, indicating the potential for agrivoltaics. **But scaling up agrivoltaics requires innovations and regulatory changes to overcome challenges.**

Chapter structure

- Importance of learning by doing in the scheme
- Monitoring and evaluation tools
 - SEDM
 - Complementary tools for social and environmental impacts
- Evaluation framework for initial projects
 - Direct incentives for groundwater
 - Agrivoltaics
 - Strategies for testing such innovations



Case studies

Case studies will look at some existing schemes and projects with relevance to PM-KUSUM component A and component C.

Case studies will cover two aspects.:

- Capture stakeholders' experiences
- Synthesize existing literature and data

Case studies will be annexured with the guidebook. The insights from case studies will be integrated into the guidebook with proper contextualization.

Case studies

MSKVY (Maharashtra)

- Impact of solar agriculture feeders on different stakeholders
 - Implementation challenges for small-scale solar plants
 - Policy solutions and best practices
-

States' partnerships with SECI and/or EESL

- Different partnership models and their comparative analysis
 - States' experience and responsibilities in the collaboration
 - Coordination in different contexts
-

SKY (Gujarat), Pani Bachao Paisa Kamao (Punjab)

- Lessons on the impact of improved energy access on groundwater
 - Principles in designing incentives for water conservation
 - Administrative and institutional challenges in implementation
-

Agrivoltaics

- There are ongoing pilots and studies on the techno-commercial feasibility and legal aspects of Agrivoltaics.
- The agrivoltaics paper will focus on:
 - Synthesizing insights from these pilots
 - Capturing experiences from diverse stakeholders
 - Identifying policy challenges that impede its scale-up

Key initial findings



One resource, two interests

Interests of farmers and developers can conflict. For scaling-up the model, a single entity (Farmer-turned-developer or a developer-turned-farmer) should manage the project



Cost competitiveness

Agrivoltaics on stilts is capital-intensive. States will have to rethink their tariff structures for agrivoltaics. Open access regime could spur private investment



Water sustainability

Cleaning of modules requires provision of soft water. Buying water or purifying has implications on sustainability. Initial consultations suggest that rainwater harvesting could be a cost-effective solution.



Maintenance and repair

Raised structure poses challenges for regular cleaning and maintenance. Safety of farmers is also a critical concern.



We would like your inputs on

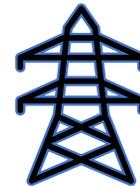
Based on the needs assessment findings, there are a few activities that can bolster the study output



Outreach to central financial agencies (SECI, IREDA and SBI) for the case study and financing chapter



Data sharing with EESL on the change in power supply and impacts of MSKVY scheme in Maharashtra



Working closely with a discom (RJ or MH) to do a comparative analysis of data from a solarised vs a non-solarised feeder



Working closely with CERC or Forum of Regulators to prepare guidance on tariff determination for small power plants



Thank You!