



SOUTH ASIA SUBREGIONAL WORKSHOP

Bhutan: Renewable Energy for Climate Resilience

22-23 May 2025 ,Paro, Bhutan



Background

- Bhutan's first utility-scale solar PV Plant (Phase-I-17.38 MWp, Phase-II- 5 MWp)
- Support Bhutan's energy diversification and energy security goals.
- Located in Sephu Gewog, Wangdue Phodrang.

Partners & Funding

- Funded by: Asian Development Bank (ADB)
- Grant: USD 10 million
- Loan: USD 8.26 million



Figure- 17.38 MWp Sephu Solar PV plant.

Why Sephu Solar Project?

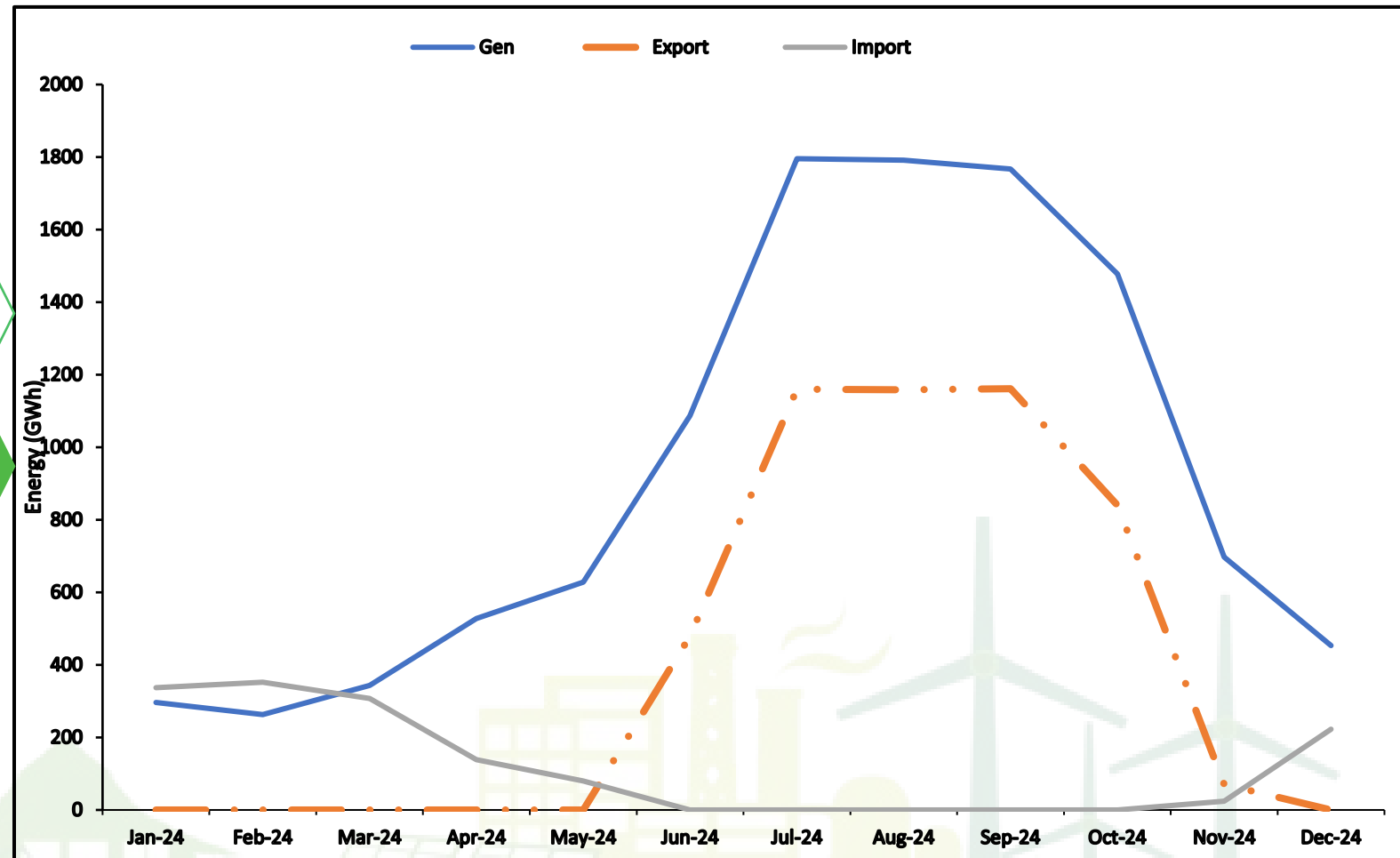
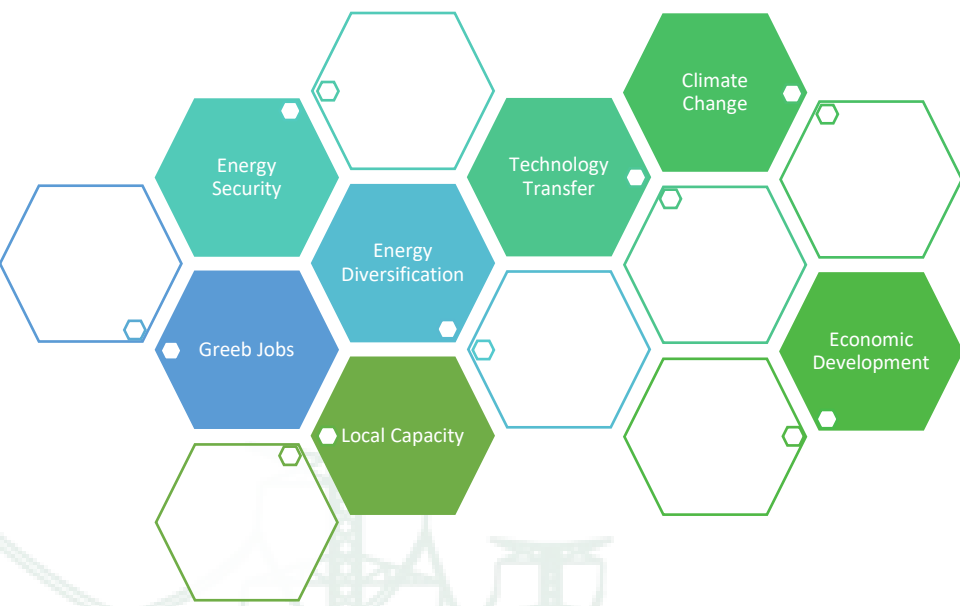


Figure: Energy generation, export and import in 2024 (DoE, 2024).

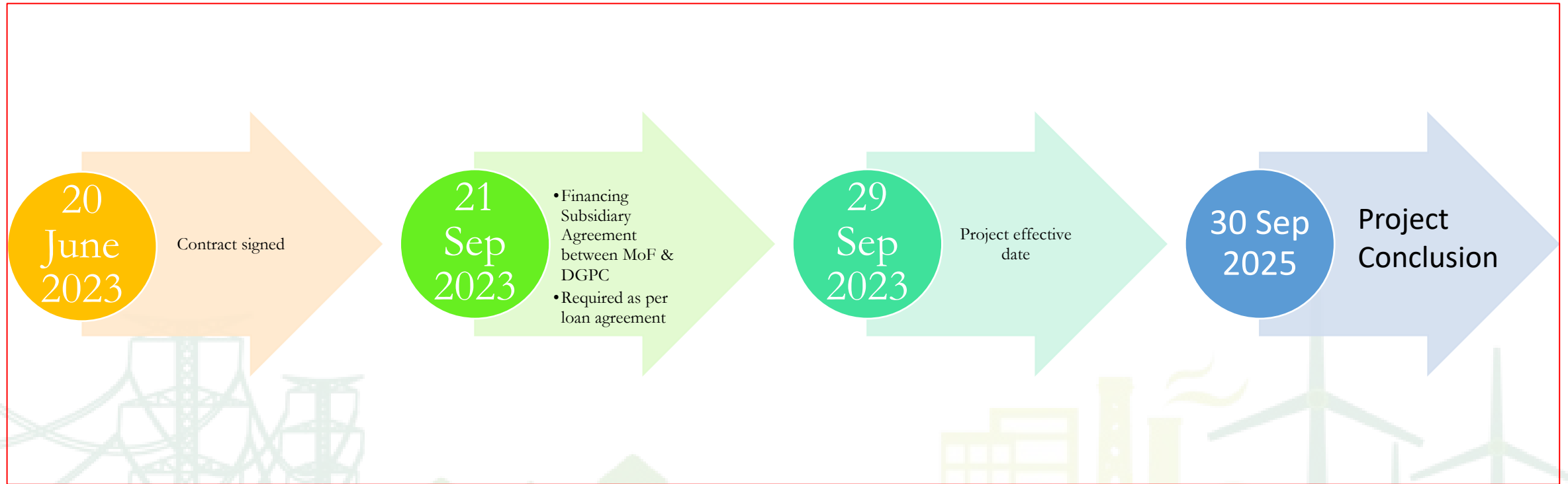
Project Outputs

Output 1.
Utility-scale
non-hydro
renewable
energy
generation
assets
established.

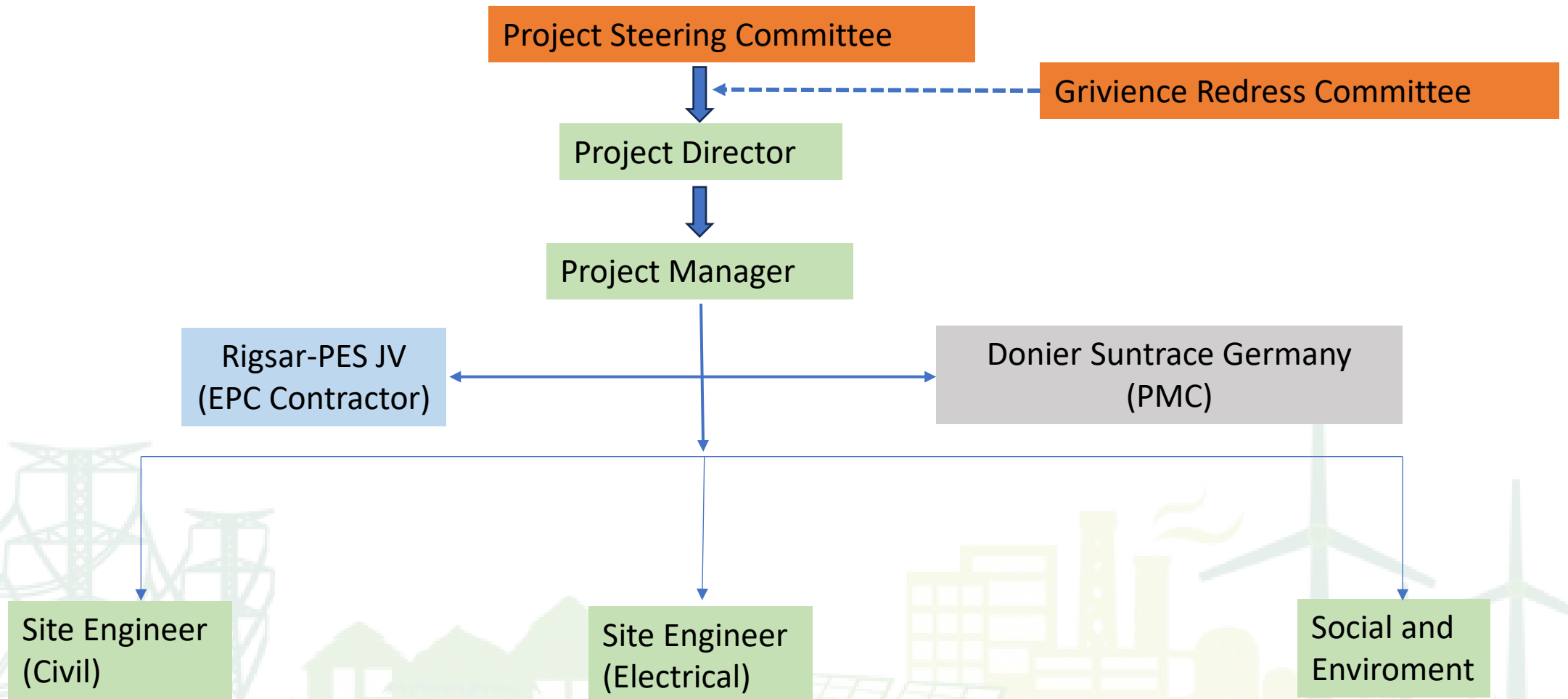
Output 2:
Knowledge of
climate-
resilient
renewable
energy
systems
improved.

Output 3:
Department of
Energy
capacity for
gender
equality and
social
inclusion
enhanced

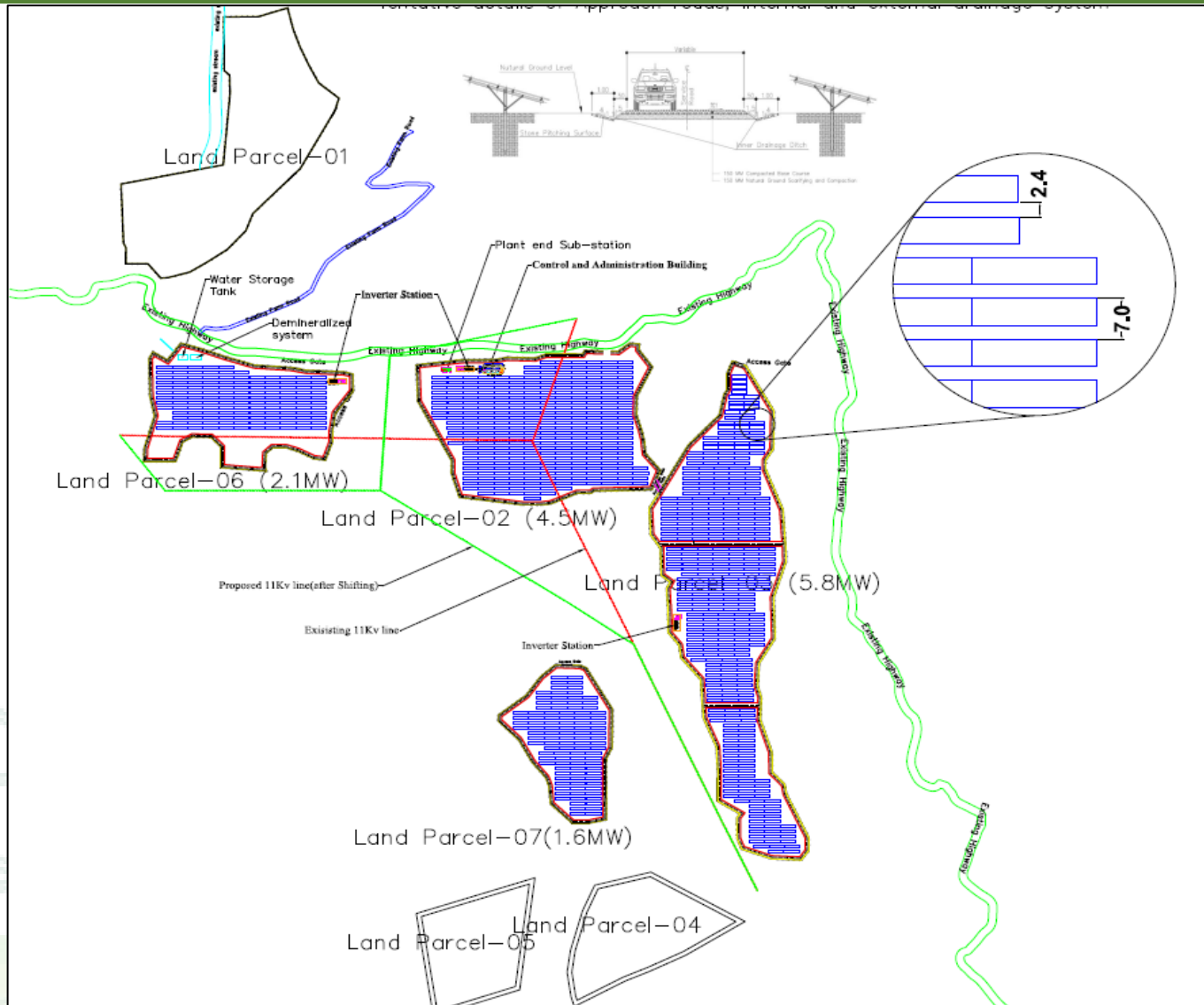
Important Dates



Project Organogram



Phase – I : Project Design of 17.38 MWp



Salient Features

PV Table Distribution

Land Parcel 2: 257

Land Parcel 3 : 390

Land Parcel 6: 133

Land Parcel 7: 105

Central Inverter

Inverter 1: 2.5 MW

Inverter 2: 5 MW

Inverter 3: 7.5 MW

Transformer

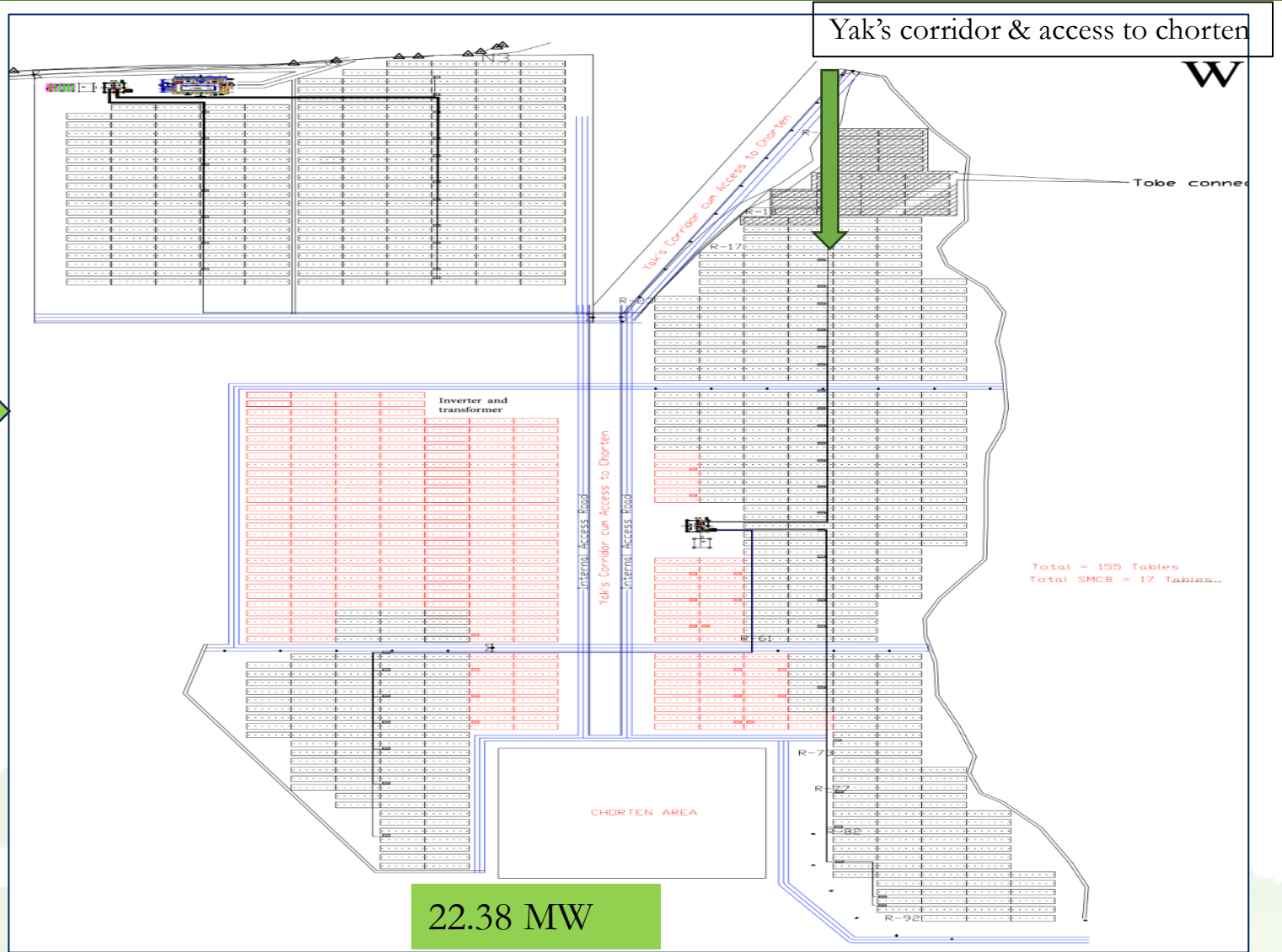
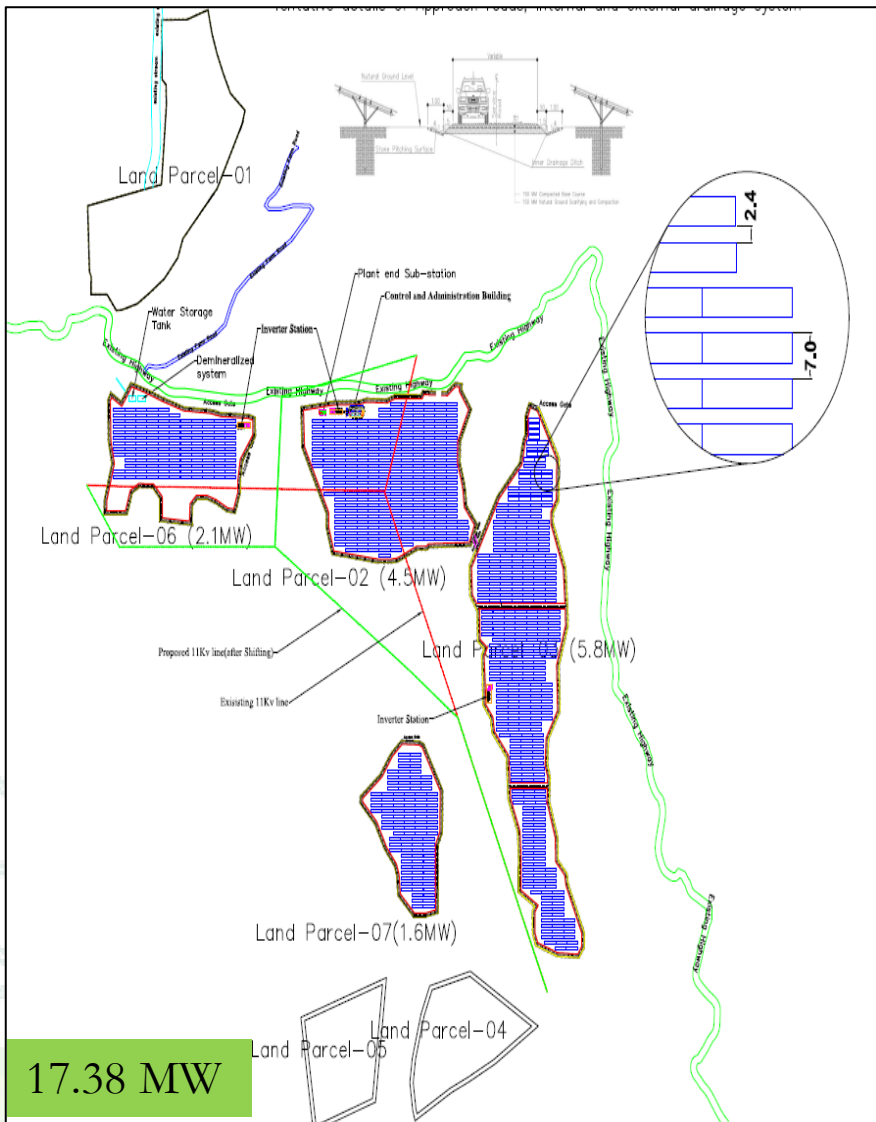
Transformer 1: 2.5 MVA

Transformer 2: 5 MVA

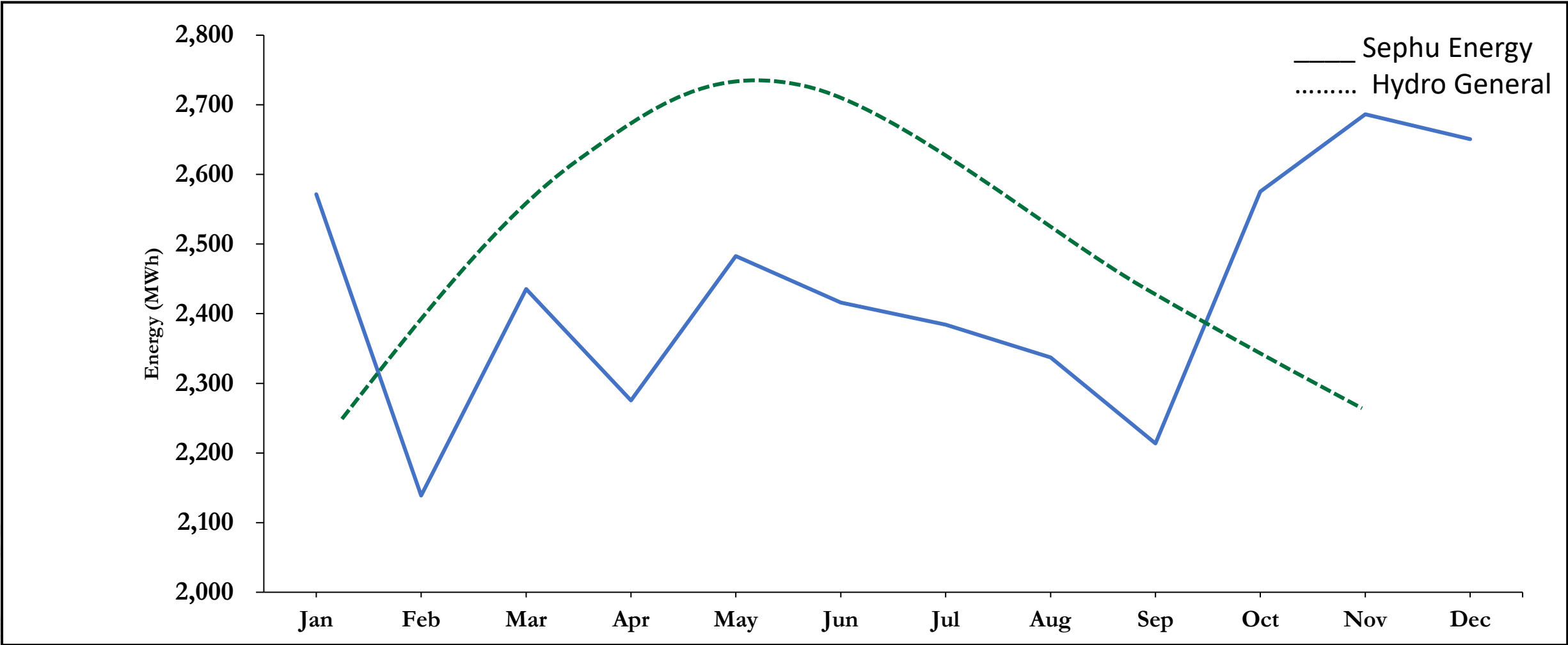
Transformer 3: 8 MVA

Annual Energy Generation
: 26 MU

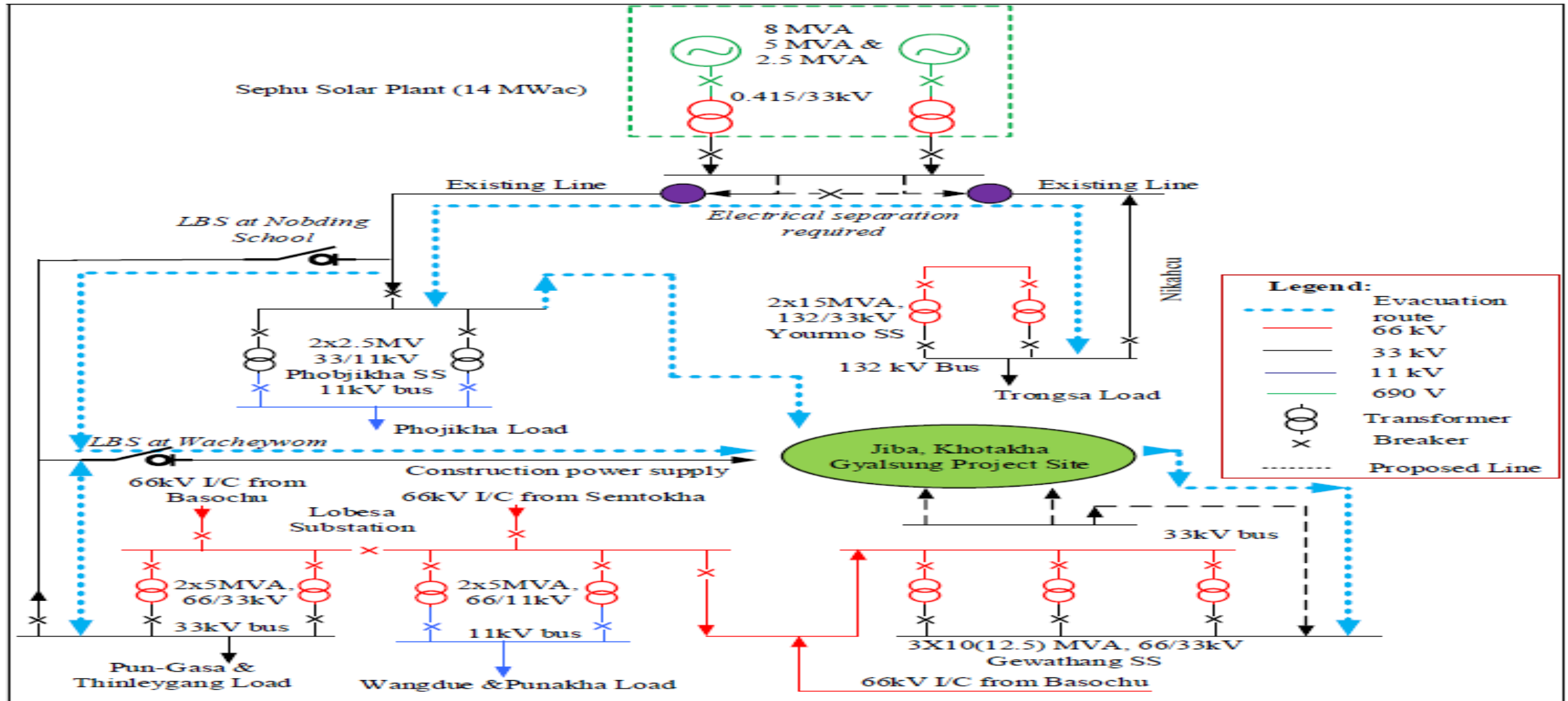
Phase – II : Project Design of (17.38 +5) MWp



Energy Generation Graph

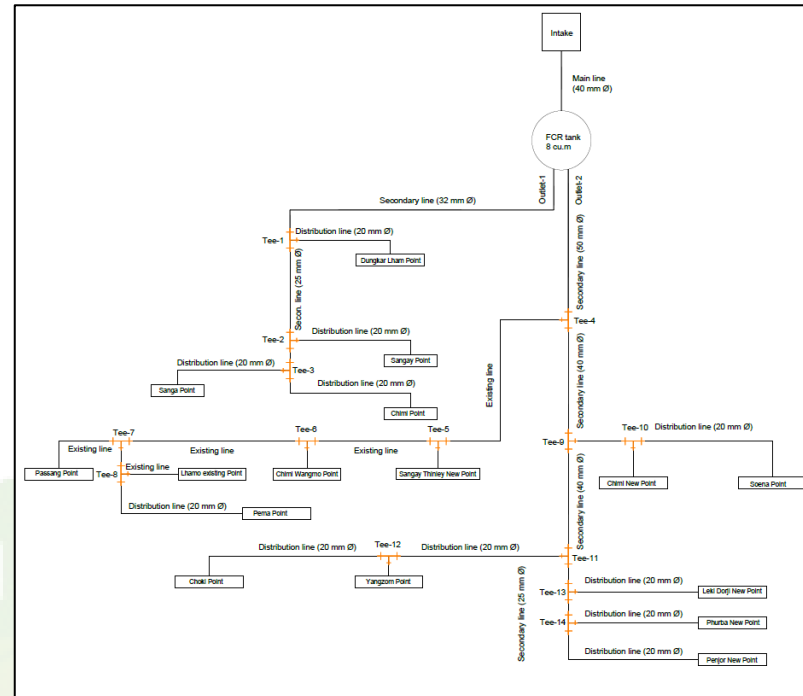
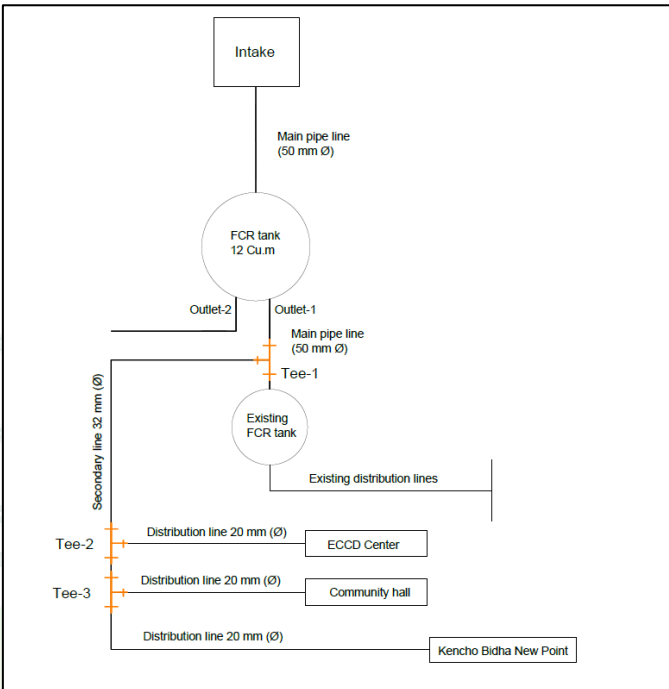


Power Evacuation Plan

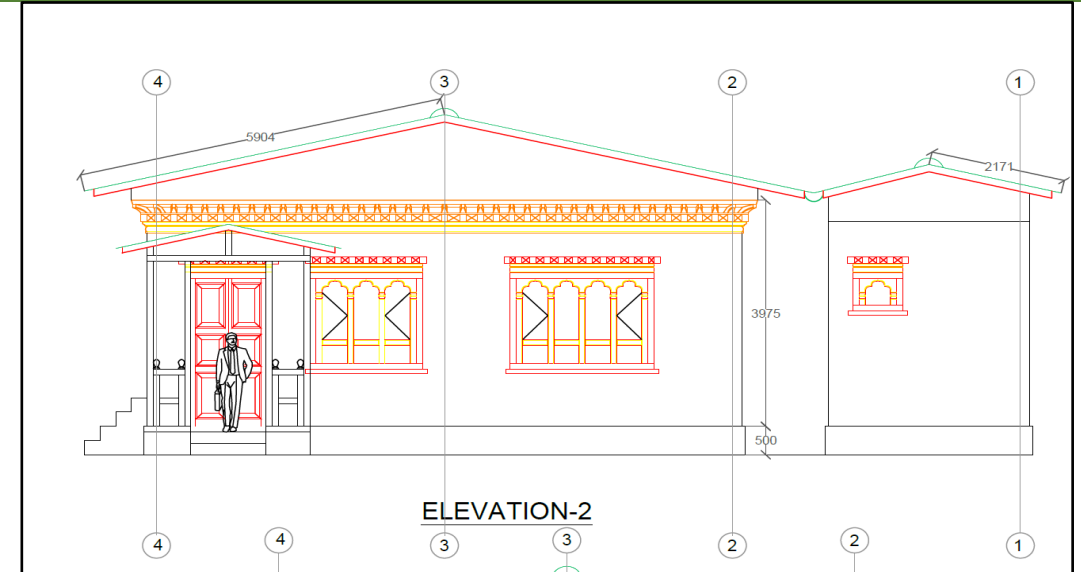


Community Development

- Blacktopping farm roads at Long-toed and Long-maed villages
- Water Supply project for Long-toed and Long-maed villages (34 households)



- Construction of Community Hall at Long-toed village (150-200 people)
- Construction of an additional farm road at Long-toed village.
- Garbage truck for the project and community



Community Engagement and Vitality



Inspection of water source at Long-maed village



Local community engaged for ground leveling works



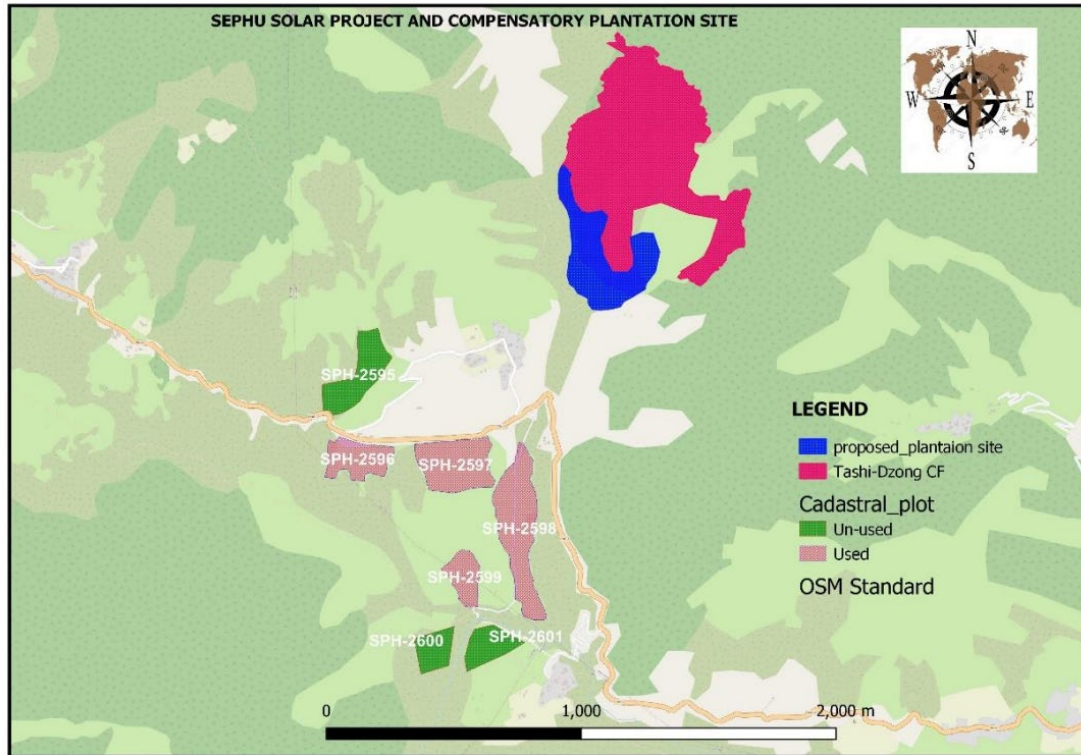
Local community engaged for ground leveling works



Project Steering Committee members and Gewog officials assessing the feasibility of the farm road

Compensatory Plantation

- Plantation Area: 7.53 Hectare
- Location: Tashi-Dzong Community Forest, Sephu Gewog, Wangdue
- Species: Fir, Blue Pine, Hemlock



Challenges

- Availability of suitable land (South or South – west facing)
- Conflict of interest over the land ownership
- Lack of technical expertise and knowhow at local level
- Logistic challenges for the equipment supply chain
- High upfront cost
- High community expectations from the project for local development
- Policies, regulations and standards still evolving

Opportunities

National Level	Local Level
Energy Diversification	Green Jobs
Augment hydropower	Local business
Enhance Grid reliability	Eco-tourism
Enhance Energy Security	Community Vitality
Clean Energy and Climate Change	Local Capacity

THANK YOU



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