
Kyi Phyo(MEE Net-Myanmar) and Aung Myint Htun(GRO)
A peaceful land of Danu ethnic people
A peaceful land of Danu ethnic people
Introduction and background

Rich in resources;
mining,
forests,
unique ethnic diversity,
Myanmar Small Hydro potential

- Micro and mini hydro < 1 MW
  Identified 5000+ projects mostly in Shan State
- Many more exist, as yet unidentified...
Energy needs
Who need what energy?
Managing energy, water and forest as an integrated resource planning for long-term sustainable solution
Empowering Participatory Governance in Ywangan, Danu of self-administrative area: A Community-centered Strategic Research
Resources (Land, Water, and Energy) by community owned management
Community-owned resource mapping
Integrated resource planning and management
Survey of village micro-hydro in Tat Kone in Ywar Ngan area
When the grid arrives at Community-owned energy system
Myanmar’s power sector reality

A) **National grid**: about 38% of the country area, have been developed under the centralization National grid.

B) **Off grid**: thousands of decentralized isolated mini-grids operated by local entrepreneurs, but most people remain without electricity, Shan state is a leading for off-grid energy development in Myanmar.

C) **IPP for export**: about 46,000 MW of hydro power projects have been targeted for export.
What kind of development framework is appropriate for each area?

A. **National Grid**: infrastructure development for the country’s economic and social welfare.

B. **Off Grid**: cannot wait for grid expansion. Electricity is a basic right for people.

C. **IPP for export**: investment to exploit local resources to produce the electricity as export commodity.
   - Must seriously consider high costs of tradeoffs: electricity vs. fish, destruction of local livelihoods, etc.
Why Green Energy Vision in Shan State???
Pressure of centralization and many mega dam projects...
Proposed dams on Salween River in Myanmar

The total install capacity is 15,970 MW which most of electricity will be sold to Thailand and China.

- Tasang / Mine Ton Dam, 7,110 MW (EGAT Inter. – China Three Gorges Corporation - IGOEC/IGE)
- YWATHIT Dam, 4,000 MW (China Datang Overseas Investment Company)
- Nong Pha Dam, 1,000 MW (Hanergy Holding Group Company, Gold Water Resources Company)
- Kung Long Dam, 1,400 MW (Hanergy Holding Group Company, Gold Water Resources Company)
- Hutgyi Dam, 1,360 MW (EGAT Inter. – Shinohydro Corporation Co. - IGOEC/IGE)
- Dagwin Dam, 500 MW (EGAT)
- Weigyi Dam, 4,000 MW (EGAT)

The map illustrates the proposed dams along the Salween River, with details on each dam's capacity and responsible companies.
Off-grid development and decentralized green energy solutions already practiced for many years in Shan State
A case of Naung Pein Project, Northern Shan State
Many mini & micro hydro projects running
nearly 20 years ago by local developers
Local made workshop by small hydro system
Why Green Energy Vision for Shan State??

• The problem with National Energy Master Plan (NEMP) and National Electrification Plan (NEP) is not just about fuel mix that is not sustainable (prioritizing coal, big dams over RE and EE). The more fundamental problem is the centralized nature of the decision making process, the exclusion of decentralized options, and the lack of participation.
Green Energy Law for Shan State
Workshop on Discussion on drafting green energy law
Assumptions of the draft law

• State-level law based on **the federal system of government**
  – Shan State has sovereignty to manage and control activities that take place within its territory
  – Activities whose primary purpose is to deliver electricity across the state and country boundaries are subject to regulation by the Union government (MOEE) but still need Shan State’s permission
3 Levels & 3 systems of governance

**Small-scale**
- 1 MW or smaller
- Generation & Distribution
- Self-regulation by Communities
- Subject to “Grid-interconnection Permit” if wants to connect to the grid

**State-level**
- > 1 MW
- All Distribution Generation for consumption in Shan State
- Licensing by State Ministry
- Subject to “Grid-interconnection Permit”

**Union-level**
- All Transmission
- Generation mainly to deliver electricity across state/country boundaries
- Licensing by Union MOEE
- Subject to “State Administrative Permit”

State “Ministry” = Shan State Ministry of Electricity and Energy
## Myanmar Off-grid generation capacity

<table>
<thead>
<tr>
<th>Type of Energy</th>
<th>Number of Plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minihydro (0-1 MW)</td>
<td>5840</td>
</tr>
<tr>
<td>Minihydro (1-10 MW)</td>
<td>17</td>
</tr>
<tr>
<td>Diesel</td>
<td>11740</td>
</tr>
<tr>
<td>Biomass</td>
<td>574</td>
</tr>
<tr>
<td>Bio Gas</td>
<td>153</td>
</tr>
<tr>
<td>Wind Turbines</td>
<td>25</td>
</tr>
<tr>
<td>Solar</td>
<td>94</td>
</tr>
<tr>
<td>Steam Turbines</td>
<td>1</td>
</tr>
<tr>
<td>Cogeneration plants</td>
<td>4</td>
</tr>
<tr>
<td>Natural gas</td>
<td>9</td>
</tr>
<tr>
<td>Hydropower</td>
<td>18</td>
</tr>
</tbody>
</table>
Is there a better and sustainable Way???

Yes...
Myanmar already has a high percentage of decentralized generation and distribution. These systems, done by local communities or entrepreneurs, need to be supported, not paved over or forced to be bankrupt or abandoned. Mini-grids and decentralized RE should be an integral part of the evolving solution toward electrification of the country.
Potential of renewable energy sources; the best in SE Asia

- Solar PV resources are concentrated in the central “dry zone” of Myanmar
- Attractive wind resources are located in coastal areas of Rakhine, Ayeryawaddy, Mon and Tanintyari, the western portion of Central Region and scattered areas of eastern Shan
- Renewable projects to model include:
  - “Scheduled” new entry: several advanced solar PV projects that already have PPAs, as well as promising solar PV and wind projects
  - “Candidate” new entry: hypothetical wind and solar projects entering on plausible parts of the grid, given underlying resource locations and other factors
  - Wind projects were deemed to be a year or two behind solar PV, given need to collect and analyze meteorological tower data; therefore, not much wind enters by the target year of analysis (2020)