

# Study and Demonstration of Biomass Gasification for Electricity Project

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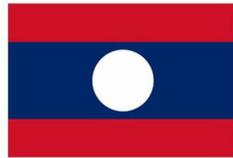
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สถาบันวิจัยและพัฒนาพลังงาน (สวพ.) มหาวิทยาลัยเชียงใหม่



**Cambodia**



**Lao**



**Myanmar**



**Thailand**

- Under cooperation in Energy Related Projects between Thailand-Myanmar in accordance with Ayeyarwaddy-Chaophaya-Mekong Economic Cooperation Strategy (ACMECS)
- MOU on energy between the Government of Thailand and the Government of Myanmar was signed
- In 2007, financial support was granted by the Ministry of Energy through the Department of Alternative Energy Development and Efficiency (DEDE)



*Works done so far*



- ❖ Installation of electricity distribution grid
- ❖ Testing, data collection, and performance evaluation
- ❖ Establishing community committee



N



Yangon  
(Rangoon)

Twan-Tay

Twante





Twan-Tay

Nyaung Da Gar

Sann Ywar

Kha-Lok



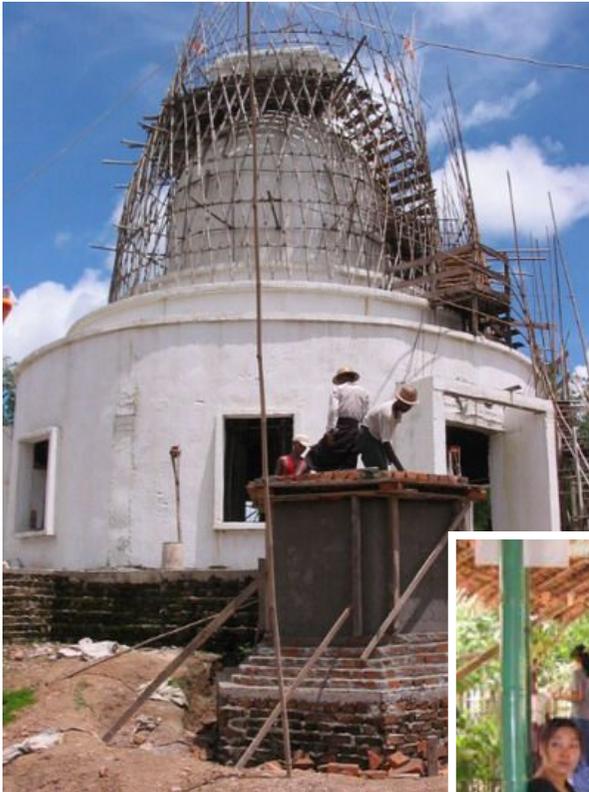
Da Goon Daing

Payagyi





# 1. Da Goon Daing





# Factors accounted

- 1. Distance from Yangon**
- 2. Other facilities or industries in the community**
- 3. Biomass available**
  - 3.1 Rice husk
  - 3.2 Bamboo
  - 3.3 Rice straw
  - 3.4 Wood
- 4. Road condition surrounding the area for biomass transportation**
- 5. Estimated electricity consumption**
  - 5.1 Current
  - 5.2 Future
  - 5.3 No. of household
- 6. Energy data of each site**
  - 6.1 Price of diesel
  - 6.2 Availability of diesel
  - 6.3 Experience with electricity
- 7. Attitude and eagerness of the community to support the project**
  - 7.1 Leader
  - 7.2 Villagers
  - 7.3 Basic knowledge in management and technical support





# Da Goon Daing Village





## Village background

- ❖ About 50 km from Yangon (2-3 hours drive)
- ❖ More than 300 houses with about 1500 people living in the village (average 5 people per house)
- ❖ Total income 23 million Kyat (17,692 USD) per month or about 76,000 Kyat (58 USD) per house per month
- ❖ Simple electric appliances such as FL light bulb, TV (mostly Black & White) and VCD/DVD players
- ❖ **Huge support from the community**
- ❖ A large amount of rice husk available with no cost (3 rice mills)



# Village power plant



**Front view**



**Rear view**



**Right side view**

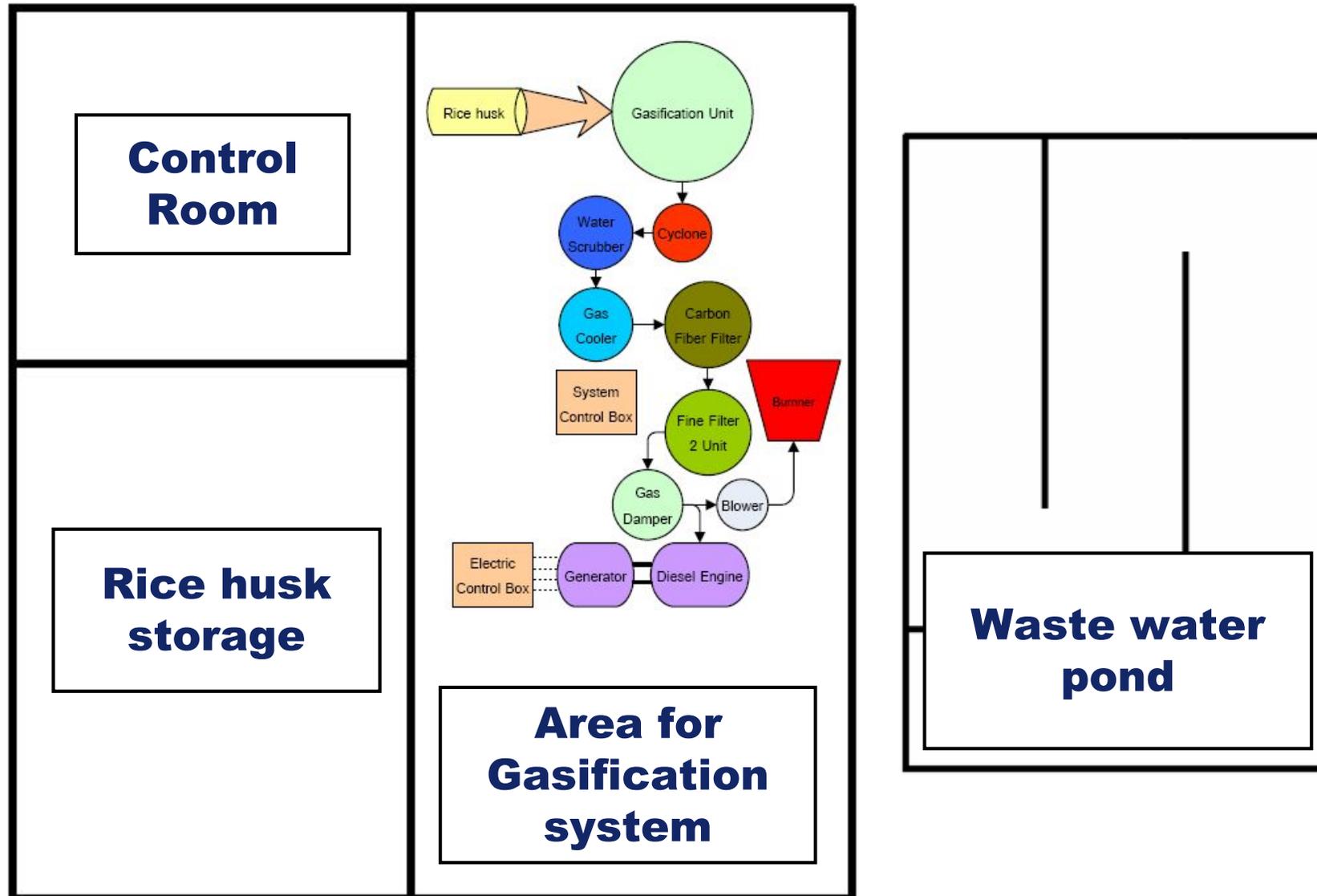


**Left side view**





# Plant Layout



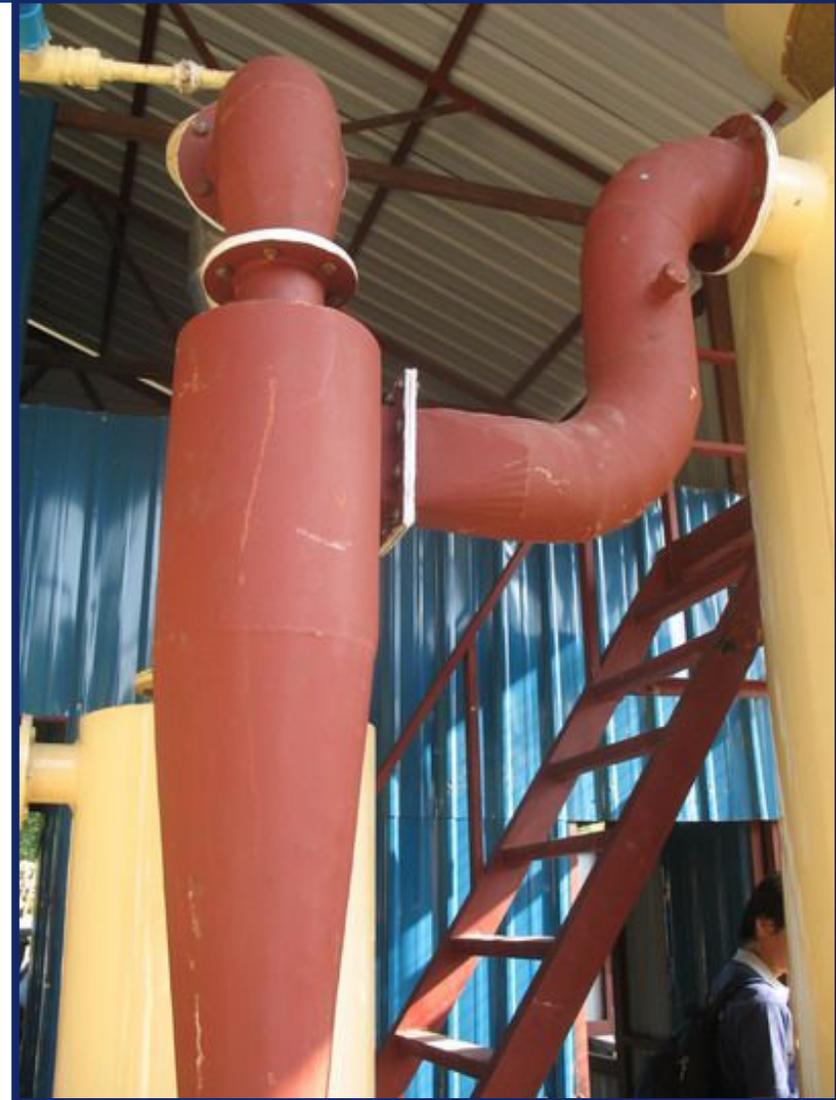


- ❖ 150 kW (thermal)  
Fixed bed, Downdraft  
Gasifier
- ❖ Open core, throatless
- ❖ central core, made of  
firebrick
- ❖ Automatic ash  
removal



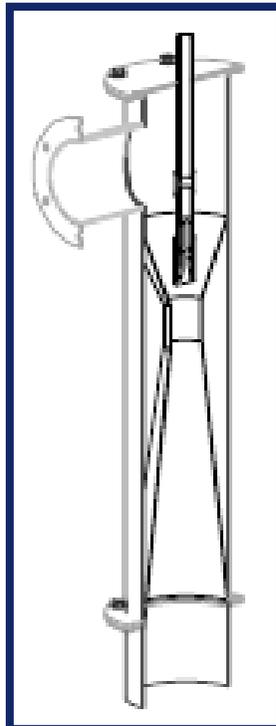
# Cyclone

- ❖ Gas cleaning.
- ❖ Cut size diameter 5 micron.





❖ Venturi scrubber





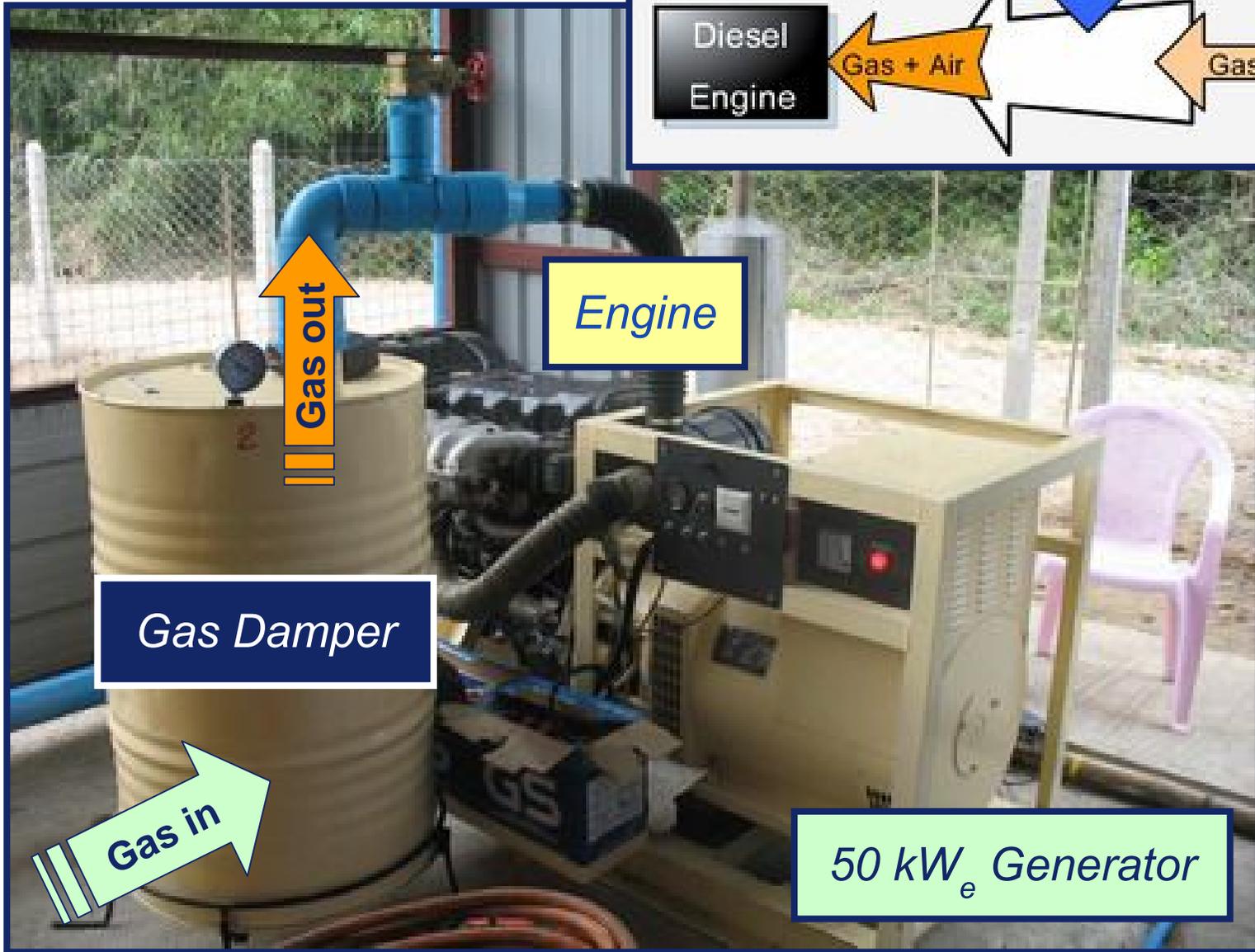
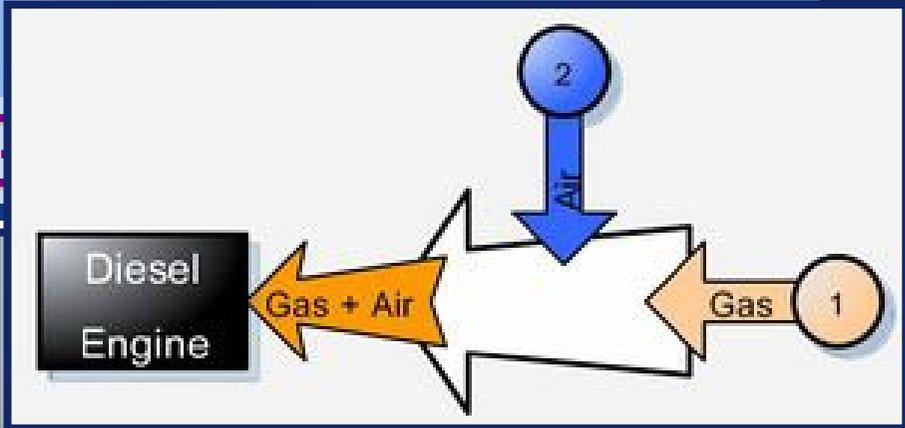
# Gas cooler, Filter





# Fine Filter





Engine

Gas Damper

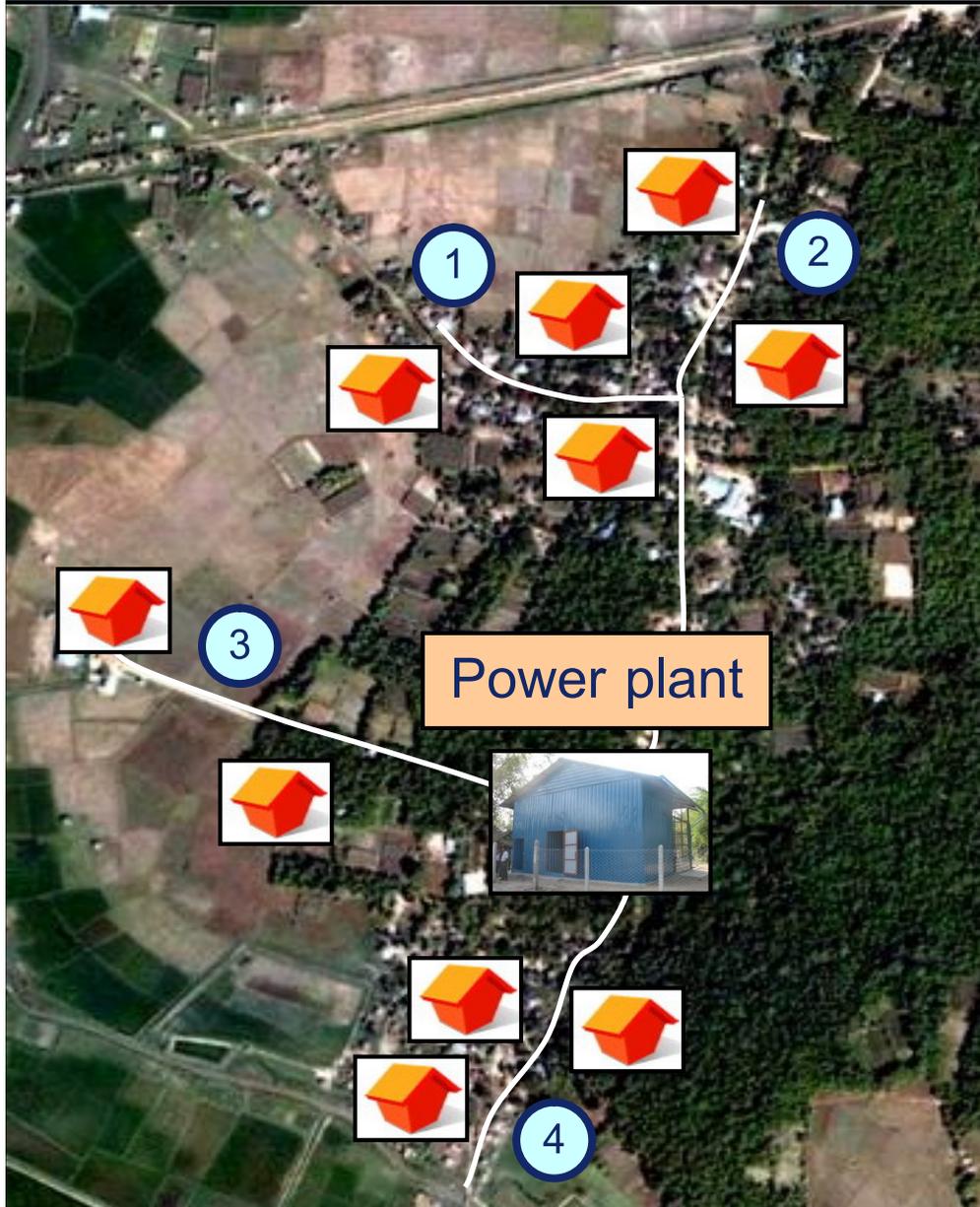
Gas in

Gas out

50 kW<sub>e</sub> Generator



# Da-Goon-Daing



- ❖ Line 1. Electric phase 1
  - 100 houses
- ❖ Line 2. Electric phase 2
  - 100 houses
- ❖ Line 3. Electric phase 3
  - 4 houses
- ❖ Line 4. Electric phase 3
  - 100 houses



# Economic Impact

- ❖ **At current situation, it is expected that the community can earn about 850,000 Kyat (654 USD) per month.**
- ❖ **Their operating costs, including diesel, labor and maintenance costs, are about 700,000 Kyat (538 USD) per month.**
- ❖ **The calculated cost of electricity is about 250 - 300 Kyat (0.2 USD) per kWh.**



## Other little things

### ❖ Villagers working together





## Other the activity

### ❖ Gift presentation to Da-Goon-Daing school.





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