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Why Laos Needs to Control and Manage Its Energy Systems

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Photo source: https://namngiep1.com/

Photo source: https://www.powergenadvancement.com/

ABSTRACT

Laos, with its abundant water resources, aims to become the "Battery of Southeast Asia" by exporting hydropower. While this holds immense potential, it also presents significant challenges. This poster explores the key problems, limitations, and potential solutions for this ambitious endeavor.

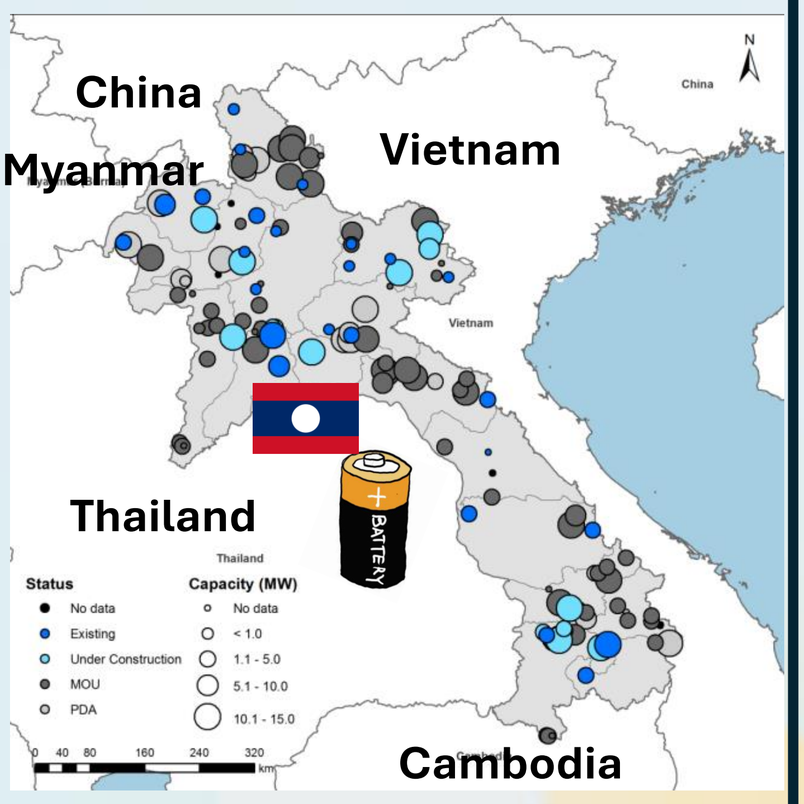

Figure 1: *Hydropower plants collected data*

Note. This model was produced by the World Bank (2017) to demonstrate the location data of hydropower plants in Laos.

FINDINGS

- RFA Lao (2024) claims that "Laos has nearly 80 dams in operation… and has signed memorandums of understanding for nearly 250 other hydroelectric projects, according to the Ministry of Energy and Mines data", then "the ministry currently employs around 1,800 people throughout the country".
- Most of the projects are invested, constructed and operated by private and foreign organizations.

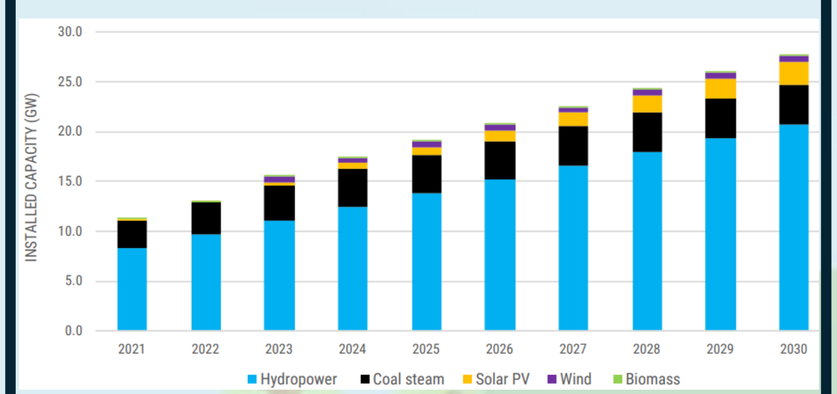

Figure 2: *Power capacities, 2021-2030, SDG scenario. (ESCAP, 2022).*

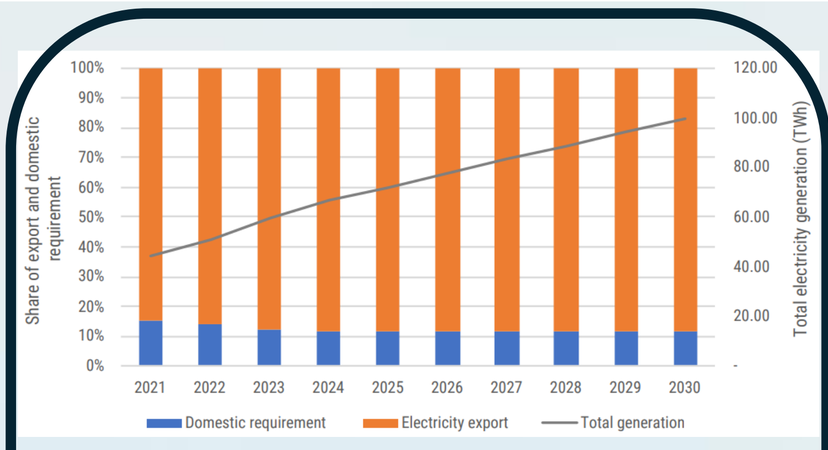

Figure 3: *Electricity production, domestic requirement and export, 2021-2030, SDG scenario. (ESCAP, 2022).*

CHALLENGES

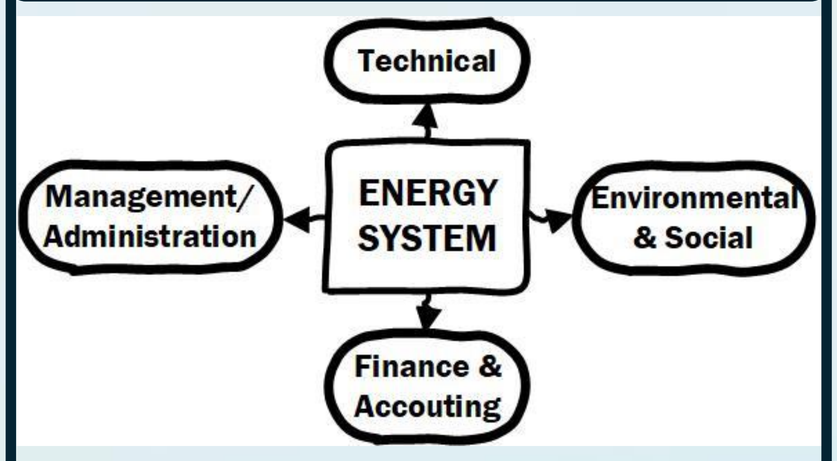

Figure 4: *Component of Energy System*

1. Technical Challenges:

- Lack of experts and technicians. Need at least 2,500 employees by 2025. (RFA Lao, 2024).

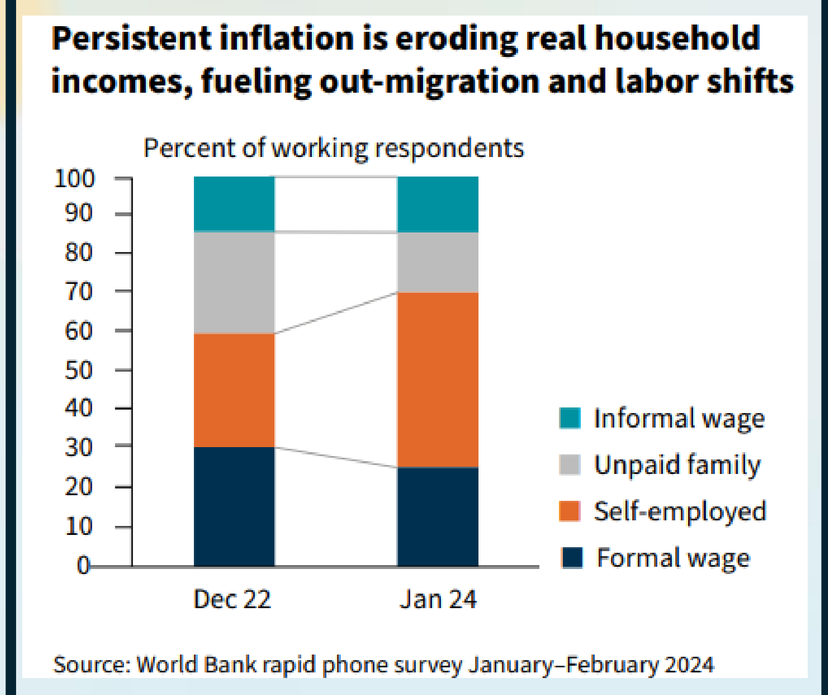

Figure 5: *Labor shifts.*

Note. This model was produced by the World Bank (April 2024) to demonstrate the formal wage reduction trend that would impact the workforce in future.

- Taking-over projects after end of concession period.
- Many powerplants leading to many stand-by plants
- Climate change.

2. Management:

- Electricity selling rate is less than buying rate from neighbor countries.

3. Finance & Accounting:

- Funding & Budget control.

4. Environmental, Social and Economic

- Deforestation, disruption of aquatic ecosystems, biodiversity and community.

SOLUTIONS

1. Technical Challenges:

- Skill development programs such as USAID, Fulbright, etc.
- Investment in grid modernization and expansion (national/regional grid).
- Smart grid technologies.

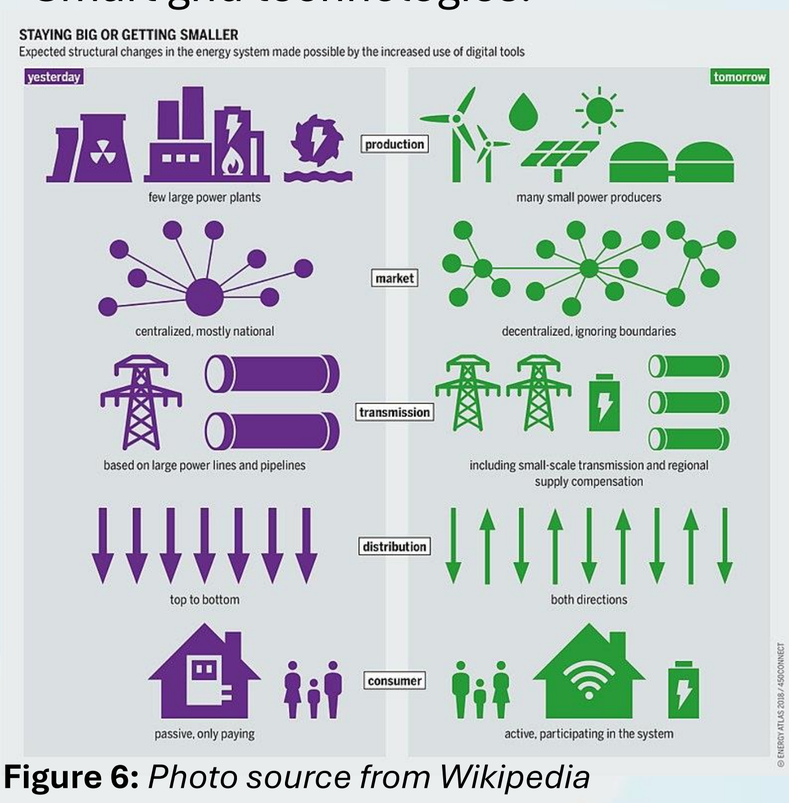

Figure 6: *Photo source from Wikipedia*

2. Management:

- Data collecting and analysis.
- Strategies of negotiation with investors and load takers.

3. Finance & Accounting:

- Financial incentives for renewable energy projects and attracting investors.

4. Environmental, Social and Economic

- Review and improve policies.

LIMITATIONS

- Budget shortage.
- High investment costs for construction and grid infrastructure.
- Debt sustainability and repayment risks.
- Difficult to revise the signed power purchase agreements.

CONCLUSION

Becoming the "Battery of Southeast Asia" is a complex challenge for Laos. By addressing the challenges and limitations, Laos **can** control and manage its energy systems and ensuring long-term benefits for its people and the region.

REFERENCES

BIOGRAPHY