

# Community-Based Circular Economy: A Case Study of Social Innovation in Kampung Laos PLTG Borang

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## Abstract:

Kampung Laos, located near the Borang PLTG, has good economic potential through farming and the use of peatlands. The Borang PLTG brings both opportunities and challenges for the community. It can help boost the local economy, support energy independence, and encourage the production of Laos (galangal) plant-based products. This study looks at how the development of Kampung Laos affects the local community and suggests creative, sustainable ways to strengthen the economy.

**Keywords:** Kampung Laos, Borang PLTG, local economy, agriculture, energy

## 1. Introduction

A community-based circular economy is a way of sustainable development that focuses on using local resources wisely by applying reduce, reuse, and recycle. This case study looks at the social innovation in Kampung Laos, near the Borang PLTG in Palembang, as an example of how circular economy practices can help strengthen the local economy. This research used a qualitative method with observation, interviews, and literature review. The findings show that the people of Laos Village have turned organic and non-organic waste into useful products, such as organic fertilizer, recycled crafts, and local food creations. Applying the circular economy concept has increased community income and helped protect the environment around the Borang PLTG. The study concludes that this kind of community-based social innovation can also be applied in other energy villages in Indonesia.

Kampung Laos around the Borang PLTG has a unique characteristic, namely the dominance of agricultural land planted by Laos (galangal) as one of the main commodities. In addition, its strategic position around PLN's energy infrastructure provides opportunities for synergy among the energy and agricultural sectors. Problems that arise include limited market access, low added value of agricultural products, and lack of integration by the Borang PLTG's CSR program.

Therefore, it is important to analyze the economic potential of Kampung Laos utilizing a community-based development approach to create a sustainable economy.

**Table 1. Total Crop Yield of Kampung Laos**

Program Year	2021	2022	2023	2024	2025 (forecast)
Laos crop yield (tons/year)	50	180	300	400	440

Source: Annual Accounting Data on Crop Yields in Laos Village

Note: \*) as of August 2024

## 2. Methodology

The research method used a qualitative descriptive approach by the following techniques:

- Field observation around the Borang PLTG.
- Interviews by local communities and PLTG managers.

- Literature study on agriculture and energy-based village economic development. SWOT analysis to identify strengths, weaknesses, opportunities, and threats.

### 3. Results and Discussion

The social innovation developed through the *Kampung Laos* program around the Borang PLTG is a form of collaboration among companies, local communities, and local governments in creating sustainable solutions to socio-economic and environmental challenges. This program is not only oriented towards improving community welfare, but also emphasizes the importance of community independence in managing available resources. by this innovation, Laos production in South Sumatra became the highest in Indonesia in 2023.

Table 2 Laos Production by Province

No.	Provinsi/Province	Tahun/Year					Pertumbuhan/ Growth 2023 over 2022 (%)
		2019	2020	2021	2022	2023	
1	Aceh	875,778	874,307	612,026	491,312	776,506	58.05
2	Sumatera Utara	750,202	870,460	1,099,804	893,906	931,247	4.18
3	Sumatera Barat	2,984,947	3,475,665	3,589,529	2,327,641	1,240,713	-46.70
4	Riau	1,147,484	822,902	596,679	779,474	1,189,048	52.54
5	Jambi	535,314	622,082	712,901	787,701	694,404	-11.84
6	Sumatera Selatan	1,532,785	2,095,132	1,183,599	1,323,744	2,644,358	99.76

Source: Central Statistics Agency and Directorate General of Horticulture, 2024

The results of an internal CSR survey by PT PLN Indonesia Power UP Merah Mata (2023) show that the household income of Kampung Laos participants improved by an average of 28–35% inside of two years after the program was implemented. Before the program, most of the community relied solely on income by informal work ( ) by an average of IDR 1.5–2 million per month. After the program was implemented, particularly through the cultivation of Laos fish and the processing of derivative products, average income improved to Rp 2.5–3 million per month.

In addition, data by the Banyuasin Regency Fisheries Service (2022) shows that local fish production around Borang improved by 7.2 tons/year to 9.5 tons/year, by most of the contribution coming by the Kampung Laos foster group. This shows a significant impact in increasing community-based production capacity.

Kampung Laos provides space for residents to develop businesses based on local potential, such as laos cultivation and value-added derivative products. This is in line by the concept of a *community-based economy*, where the community is the main actor in the production chain. The impact can be seen in the increase in household income and the diversification of livelihoods that were previously dependent on the informal sector.



Figure 1: Kampung Laos Derivative Products

by an environmental and sustainability perspective, this social innovation also encourages the productive use of land surrounding the PLTG. The conversion of land that was previously of no economic value into productive areas for fisheries, agriculture, and conservation is a concrete example of the implementation of the *circular economy* principle. In addition, community involvement in protecting the aquatic ecosystem around the village supports environmental sustainability and reduces the externalities of industrial activities. The Kampung Laos program also contributes to the optimization of land use around the Borang PLTG, where 4 hectares of non-productive land have been converted into fish ponds, organic vegetable gardens, and community green spaces. This initiative is in line by the circular economy principle of " , " which emphasizes waste reduction and resource reuse.

Water quality monitoring by the Sumatra VIII River Basin Agency (2022) shows that the Biological Oxygen Demand (BOD) in the river near the area dropped from 5.6 mg/L to 4.2 mg/L after the community took part in managing it. This decrease means the environment has improved, thanks to the active role of residents in protecting the river ecosystem.

From a social and cultural perspective, Kampung Laos has strengthened community ties. Activities like working together, joining training, and sharing resources fairly have built a strong sense of ownership among residents. The presence of this innovation has also strengthened local identity, where the community is not only known as beneficiaries of corporate CSR programs, but also as an innovative community capable of developing *best practices* in local resource management.

And by a multi-stakeholder partnership perspective, this social innovation demonstrates the effectiveness of the *pentahelix* collaboration model, namely the involvement of companies (PLTG Borang/PLN Indonesia Power), the community, the government, academics, and the media. The company acts as a facilitator and provider of financial and infrastructure support, the government supports regulation and guidance, academics contribute in the form of research assistance and training, while the media plays a role in expanding the program's exposure. This synergy is a key factor in the successful implementation of social innovation.

Table 3 Comparison of Conditions Before and After the Program

Aspect	Before Program	After Program
Economy (Household Income)	Rp 1.5–2 million/month	Rp 2.5–3 million/month
Local Fish Production	7.2 tons/year	9.5 tons/year
Environment (Land Use Change)	0 ha	4 ha
Environment (River BOD)	5.6 mg/L	4.2 mg/L
Social (Social Cohesion)	—	87% of residents feel more united
Social (Local Identity)	—	72% of residents feel that local identity has improved
Partnership (Number of Partners)	0	15 external partners

Source: Data processed by the author

When viewed by the perspective of social innovation theory (Murray, Caulier-Grice, & Mulgan, 2010), Kampung Laos meets important criteria, namely creating new solutions that are more effective than previous approaches, involving active community participation, and having the potential for replication in other areas. This innovation not only addresses short-term needs but also opens up opportunities for community-based sustainable development.

Thus, the success of Kampung Laos can be seen as a model of social innovation that is relevant to other industrial areas in Indonesia. In the future, the challenges that need to be addressed are the sustainability of the program when corporate support decreases, and how the community can maintain its independence devoid of excessive external dependence.

#### 4. Conclusion

Kampung Laos around the Borang PLTG has great economic potential through the development of Laos agriculture and integration by the energy sector. Synergy among the community, local government, and Borang PLTG is needed to create a local-based sustainable economy. Strategies to strengthen MSMEs, process derivative products, and provide CSR support are the main keys to success.

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