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Energy policies in partner countries – Challenges to provide energy access

A case study of Bangladesh and Cambodia

HyunAh Yi
EnGov Department

IDOS | German Institute of Development and Sustainability

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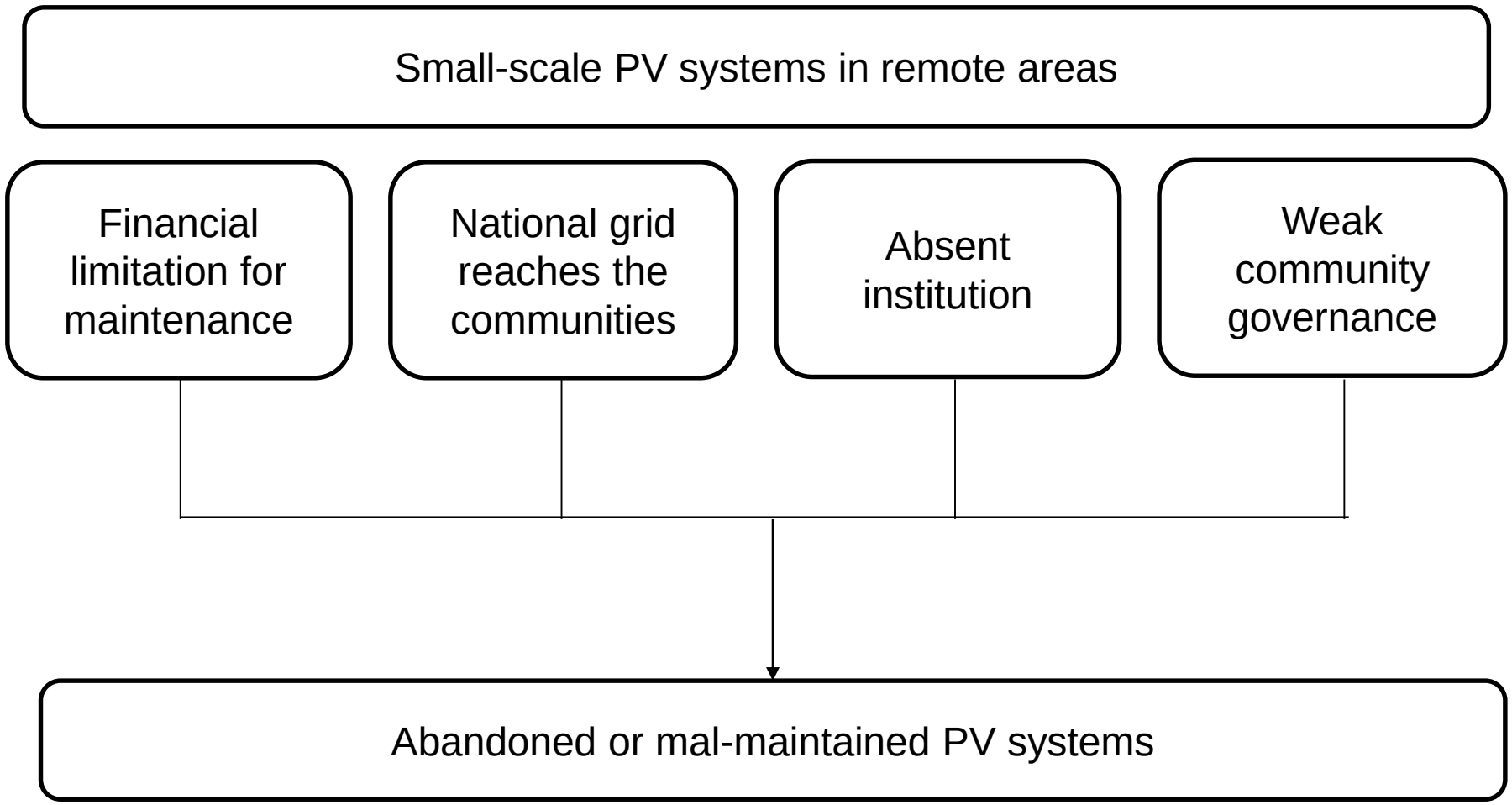
Background



Methods

Bangladesh	Cambodia
• Data collection from a community solar project in Bangladesh. • Simulation using the System Advisor Model (SAM).	• Data collection from a communities hybrid renewable project in Cambodia. • Contribution analysis

Policy pop-up!

- Net metering (individual & business model)

	Generation	100kW
-	Consumption	50kW
	You can sell	50kW

- Feed-in-tariff (mostly for business model)

	Generation	100kW
	You sell all	100kW

- Policies by countries

Policy	Bangladesh	Cambodia
net-metering	O	X
Feed-in-tariff	X	X
Rural grid expansion	O	O
Diversifying energy mix	O	O

Result - Bangladesh

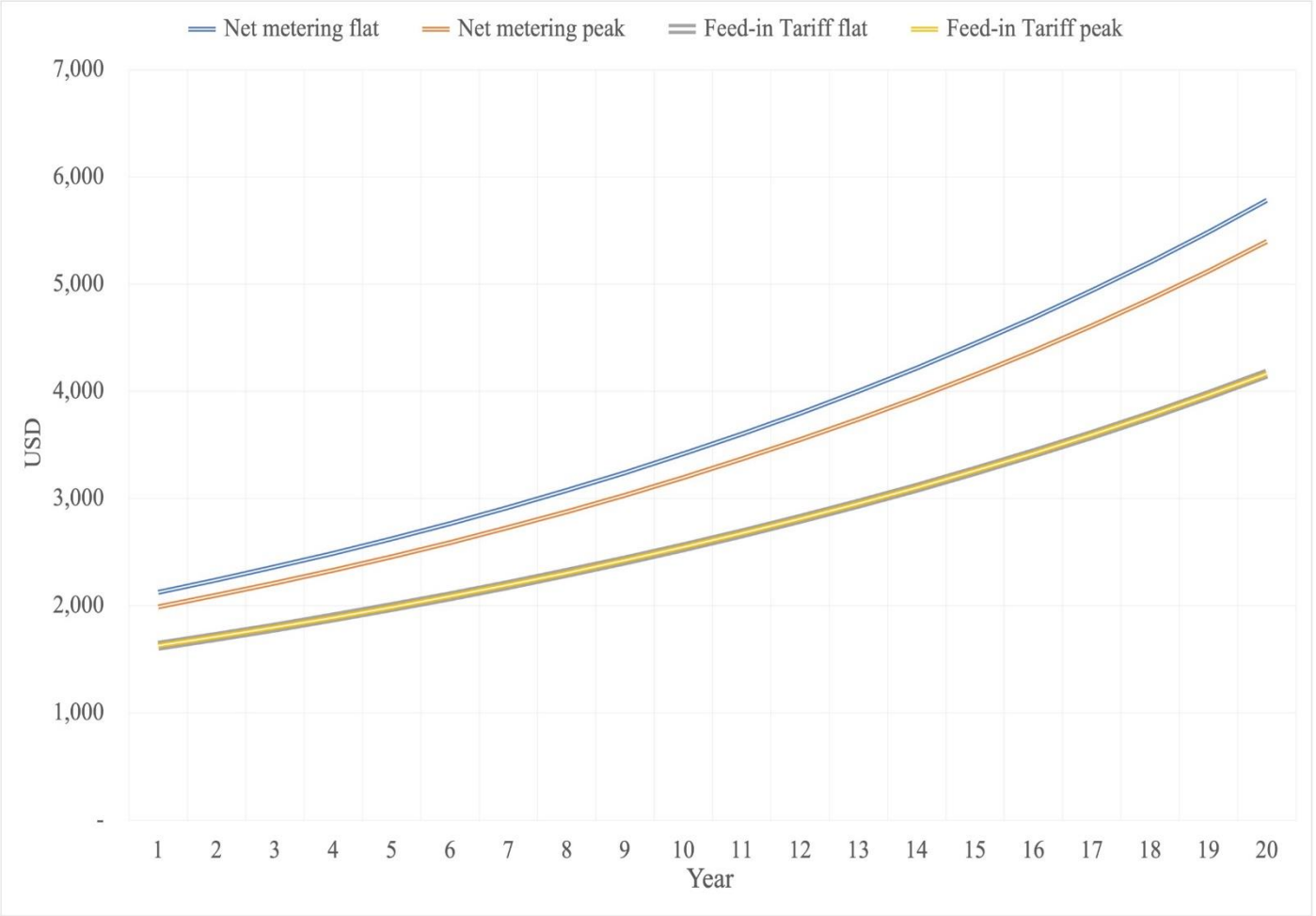
- Profitability: The profit surpasses operation and management costs at the current compensation rate. (Current compensation rate of net metering is 0.05 USD/kWh, operation cost is 250USD yearly)
- Net Metering vs. Feed-in Tariff: At the same compensation rates, the net metering scheme can generate higher profits than the feed-in tariff model.

Annual AC Energy	37,562 kWh								
Scheme	Net metering				Feed-in tariff				
Tariff (rate/unit: USD)	Flat (0.015)	Off/Peak (0.015)	Flat (0.03)	Off/Peak (0.03)	Flat (0.03)	Off/Peak (0.03)	Flat (0.05)	Off/Peak (0.05)	
Yearly net saving	1,651	1,517	2,375	2,241	1,126	1,126	1,877	1,878	
Yearly profit	272	272	634	634	– 616	– 481	136	270	
Break-even point	0.0141USD/kWh				0.0495 USD/kWh				

Yi, H., & Kim, K. N. (2025). Transforming aid-funded renewable energy systems: A case study of policy-driven financial sustainability in rural Bangladesh. Renewable Energy, 246, 122752.

Result - Bangladesh

- Cash flow by schemes



Result - Cambodia

- Rural electrification and Diversifying renewable energy policies

- While the technical infrastructure of the project was delivered successfully

- Sustainability was significantly undermined.

- Socio-history barriers for sustainability

  - Power dynamics

  - Historic trauma

  - Collapsed community

- Technical limitation

Conclusion

<Bangladesh>

- Integrating existing renewable energy facilities into the national power grid is crucial as grid expansion reaches off-grid areas.
- Promoting the **renewable energy incentive policies** such as net metering is important not only for the private investor but for the aid funded renewable energy system
- Government can vary the incentive options for profit and non-profit solar system
- Economic analysis should be conducted before implementing the project
- Limitation: Technical barriers to connect grid to nation grid and bureaucracy

<Cambodia>

- They underscore that sustainable energy transitions cannot rely solely on technological delivery models, especially in low-trust and post-conflict settings.
- Socio-historic/cultural context is often overlooked in policy discourse.

Thank you!

HyunAh Yi

Hyunah.yi@idos-research.de