



Inclusive Innovation in Delivering Clean Energy Villages: Lessons from Sanur, Bali



Image: mycarbonfootprint.id



Image: ilmessengero



Image: Tom Booth/CNN

Bali remains vulnerable due to its dependence on fossil fuels and external electricity supply

76.5% of Bali's installed power capacity still comes from fossil fuels

Gas, coal, and diesel power plants account for approximately 1.12 GW out of Bali's 1.46 GW installed generation capacity

23.27% of Bali's electricity supply depends on interconnection from Java

A single disruption in the Java–Bali interconnection could affect millions of residents, tourism operations, and local economic activities across the island

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Blackout in Bali as Indonesian tourist haven hit by power outage

UPDATED MAY 2, 2025

Story by Reuters

Blackout plunges tourism hotspot Bali into darkness, as authorities blame disruption in subsea cables

Tourism and Leisure Industry

Sat 3 May 2025

IESR

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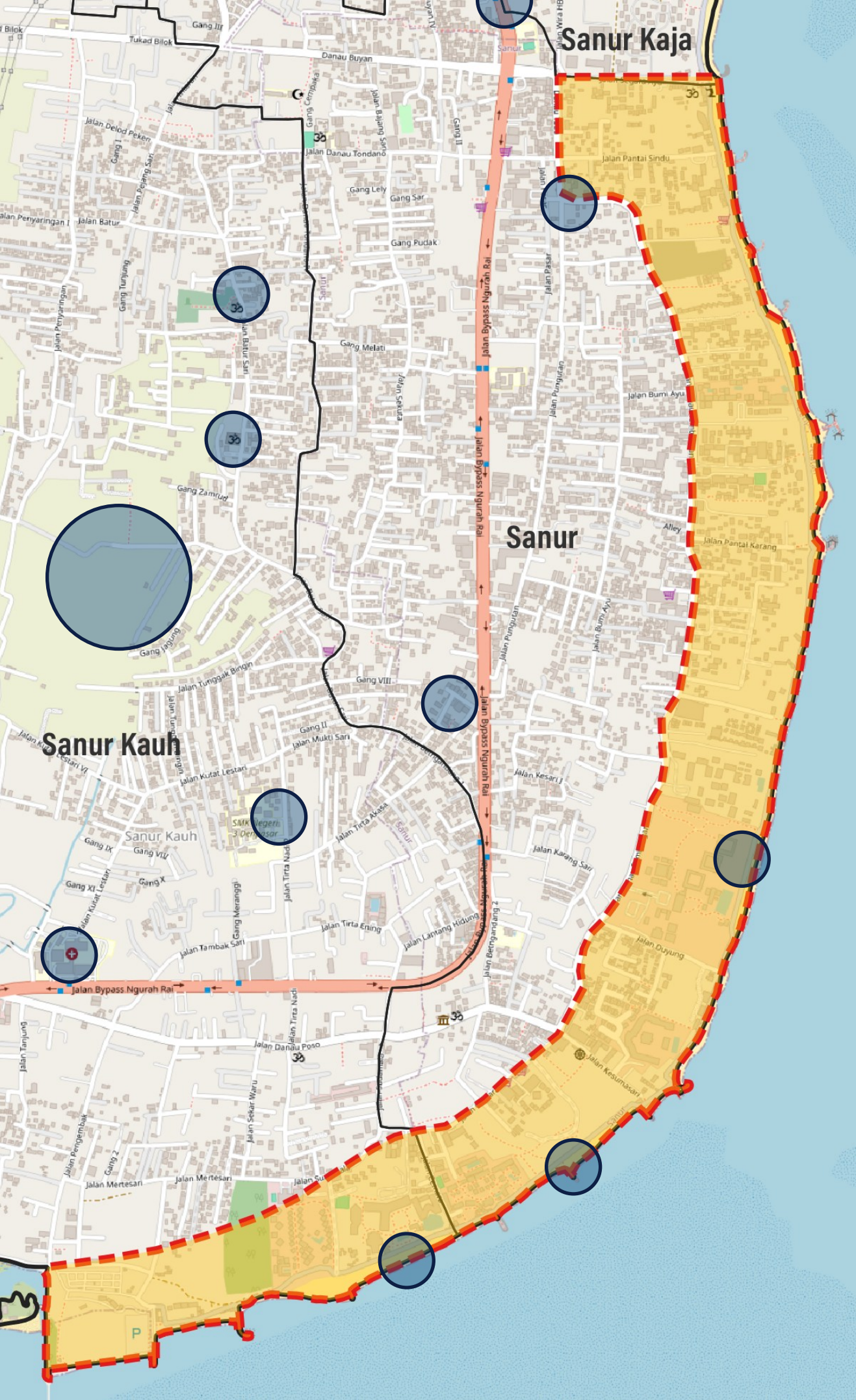
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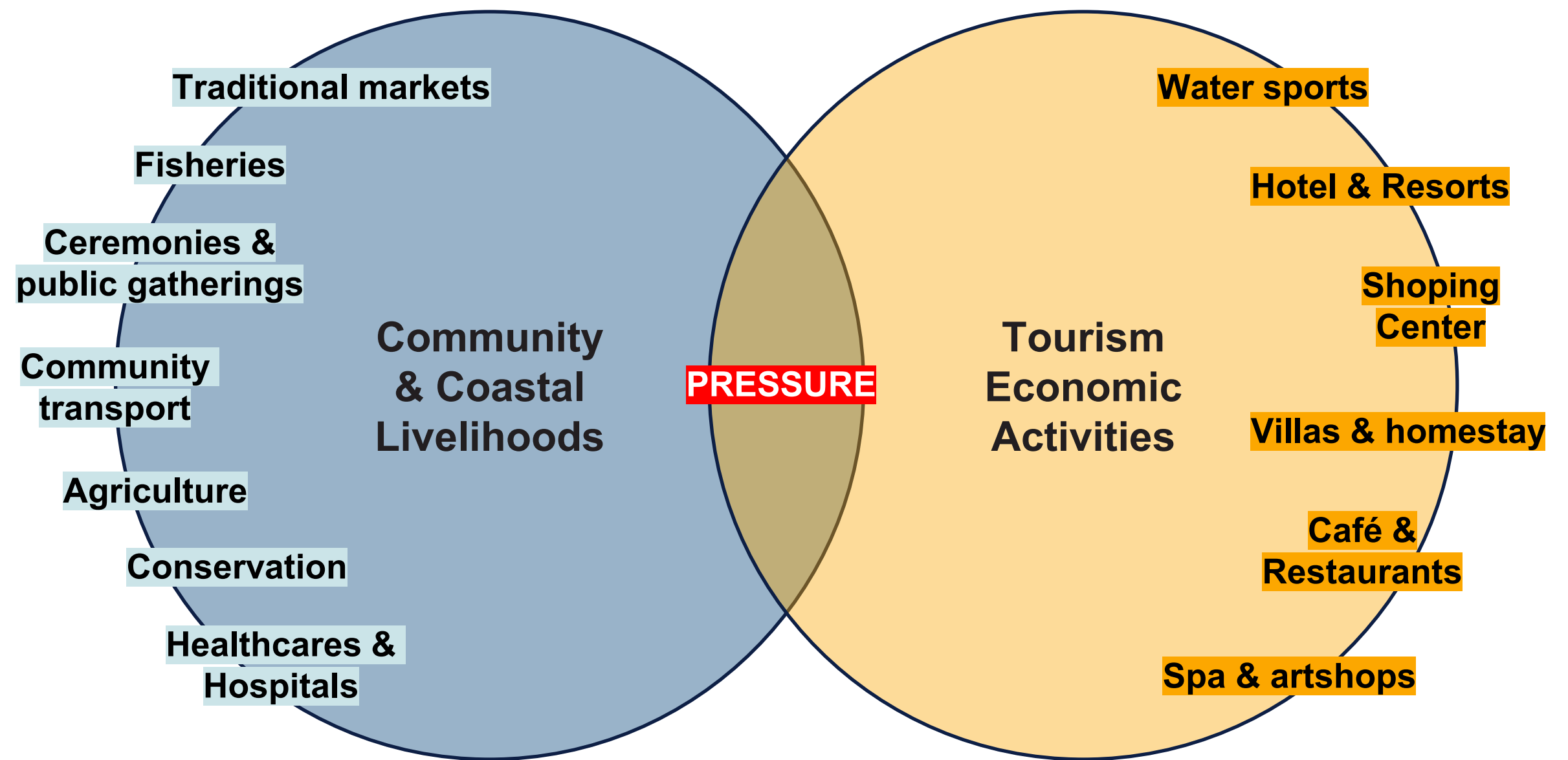
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Language

Conduct Investigation and Strengthen Electrical Infrastructure After Bali Power Outage



Sanur's tourism identity is closely intertwined with local community & coastal livelihoods...



... while simultaneously increasing coastal and energy pressures

Why is Bali uniquely positioned for inclusive technology deployment and climate actions?

Tri Hita Karana is the fundamental Balinese Hindu philosophy that is upheld in the community's daily life through the **Awig-awig** and **Perarem** (customary law)

Desa Adat/Desa Pakraman (Customary Village)

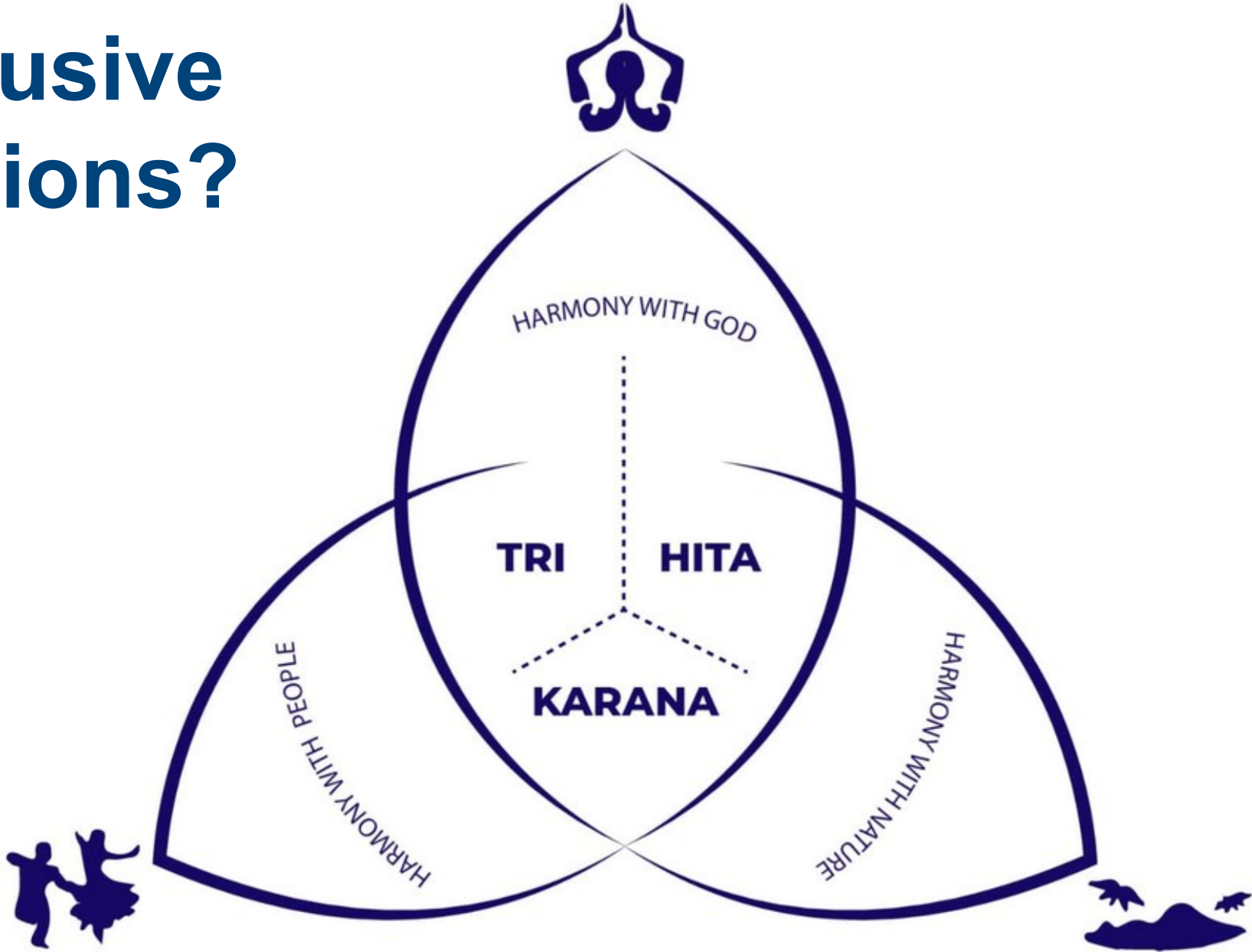


Image: Liestiandre et al., 2024

Desa Adat Intaran has initiated community-led environmental preservation efforts



Image: BUPDA Intaran



Image: Setda Denpasar



Image: I Wayan Sui Suadnyana/Detik Bali



Image: Ni Putu Putri Muliartari/Antara

Desa Adat Intaran's local champions catalyze social legitimacy & collective action across diverse social groups

Intaran Customary Village



The community-owned enterprise of Desa Adat Intaran that transforms social legitimacy into an operational and business platform

BUPDA's roles in Sanur:

- Operate and manage community-owned strategic assets,
- Develop & run economic activities and public services,
- Aggregate diverse local stakeholders,
- Reinvest economic benefits into community welfare and cultural preservation.

Influence & Coordination

Social Group

Tourist Attraction Site Authority

Subak/Rice Farmers Group

Fisheries Community

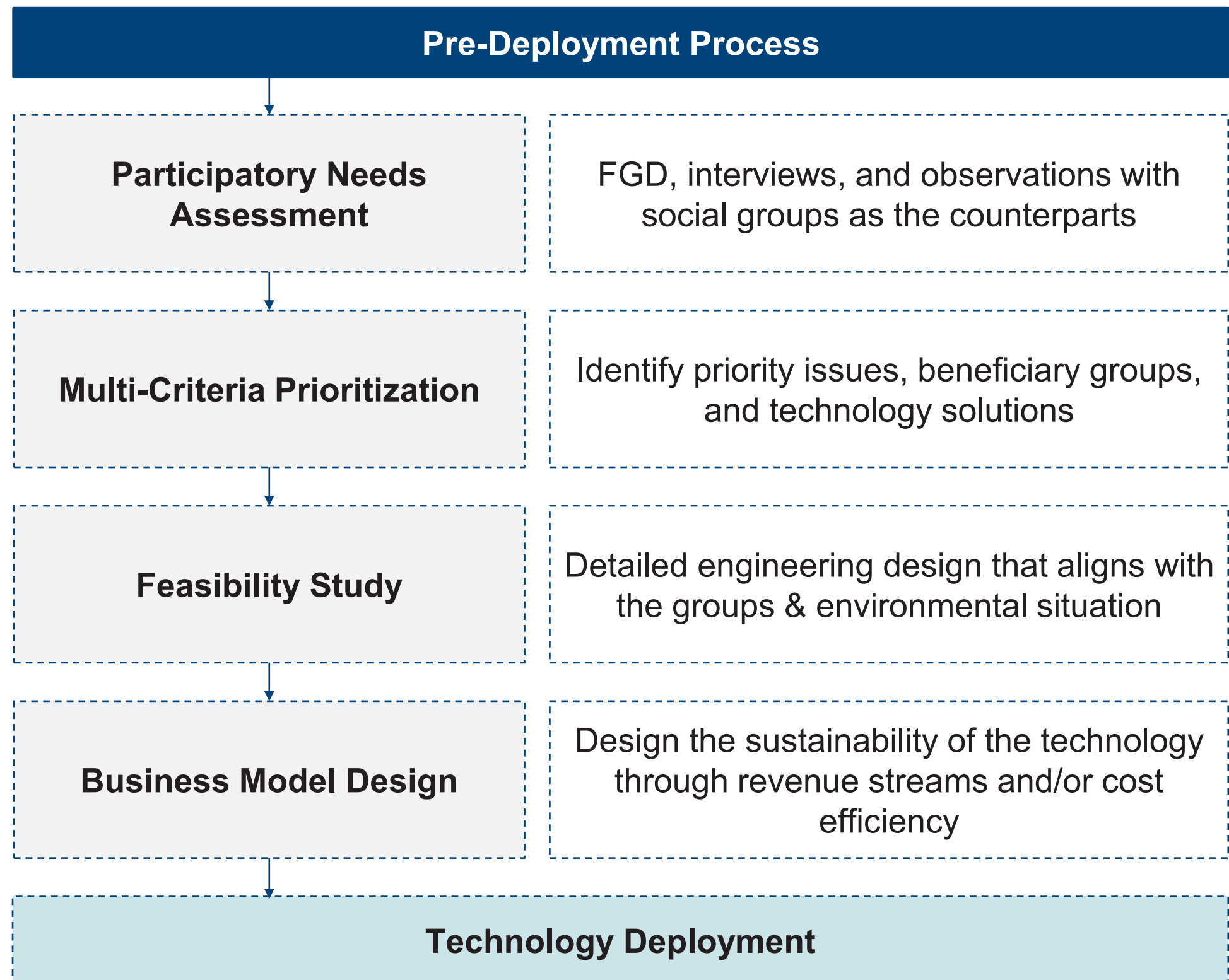
Traditional Market Management

3R waste collection point

Group of Transport Service Providers

Residential Neighborhood

Multi-stakeholder collaboration is essential to address the capacity gaps faced by Desa Adat and project implementation partners





Various social engagement approaches were conducted to ensure the project remained relevant to local needs and conditions

Tourist Attraction Site Authority	Subak/Rice Farmers Group	Fisheries Community	Traditional Market Management	3R waste collection point	Group of Transport Service Providers	Residentials Neighborhood
High electricity costs for kiosks and food courts; limited visitor amenities	Unreliable irrigation; high pumping costs; inadequate lighting	High fuel expenses; dependence on fossil fuels	High electricity and water costs; inefficient utility use in daily operations	High electricity consumption from waste processing machines	Limited public transport options; dependence on ICE; polluting energy sources for EVs	Recurring electricity expenses for community facilities

While some identified challenges require broader structural interventions, community-scale technology deployment was used as an entry point to demonstrate practical and locally relevant solutions while generating lessons for future scale-up

A Portfolio of community-scale clean energy solutions

+30 kWp total solar PV deployed across markets, waste facilities, public halls, tourism sites, and charging infrastructure

1 solar-powered EV charging station integrated with tourism and community transport services

12 electric shuttle vehicles for low-carbon mobility in Sanur

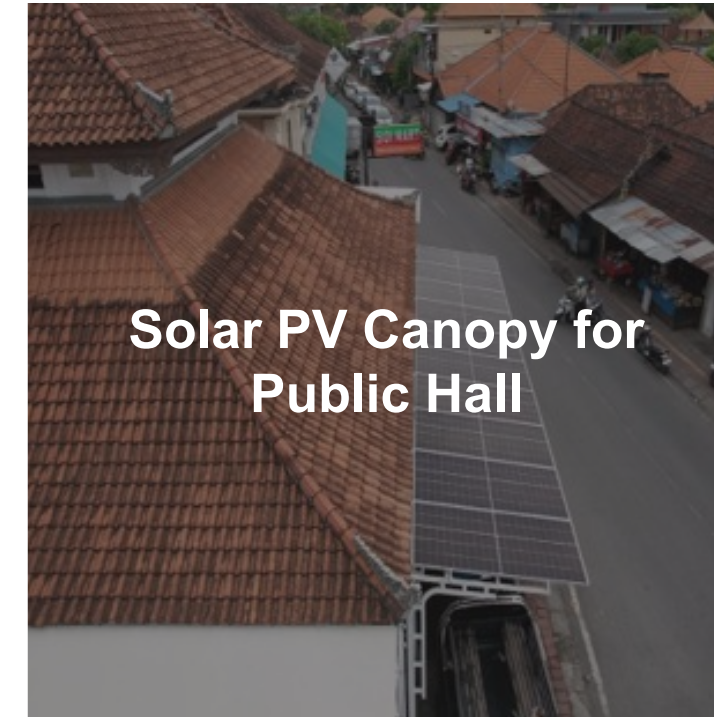
1 converted electric minibus for operational and event management

2 different types of electric boats with solar canopies and battery systems

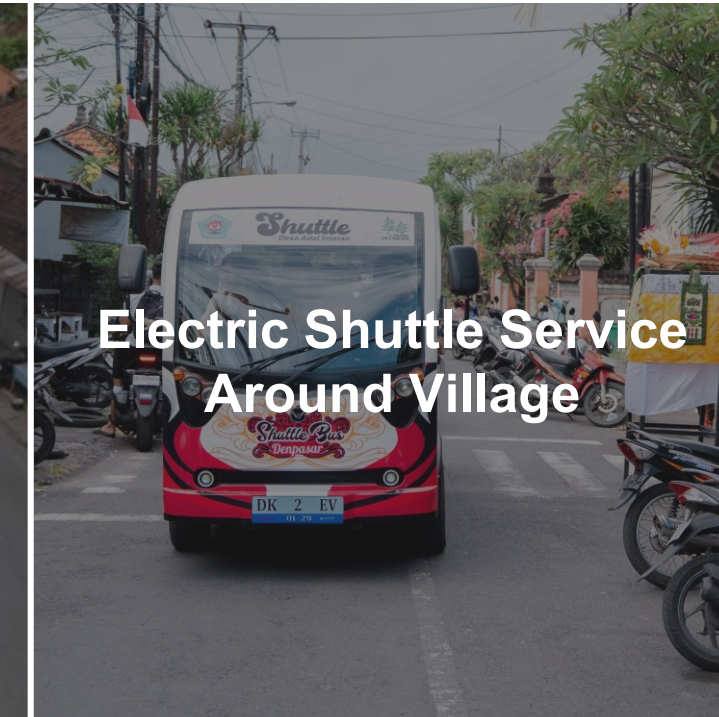
2 solar-powered water pump systems supporting markets and agricultural irrigation

1 solar-powered shredder machine for waste management

13 solar-powered street-lights installed in agricultural areas



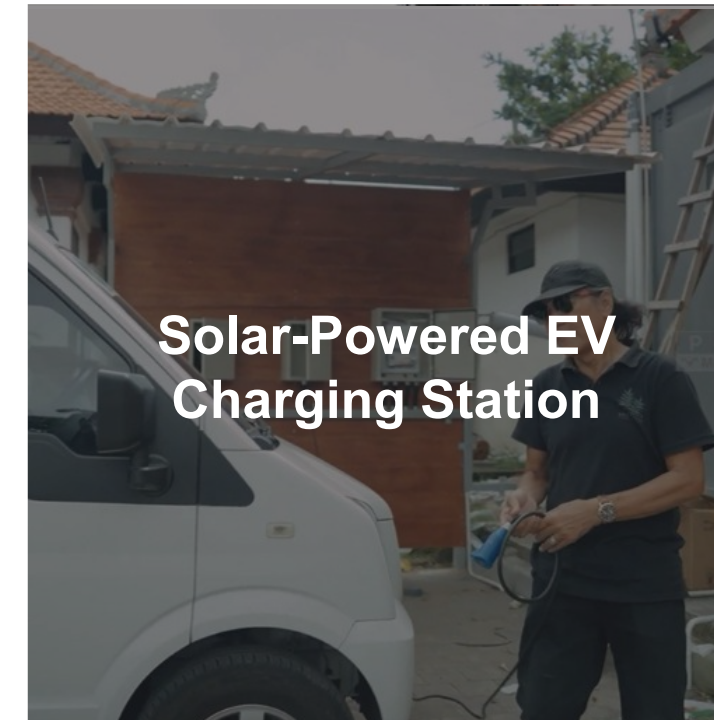
Solar PV Canopy for Public Hall



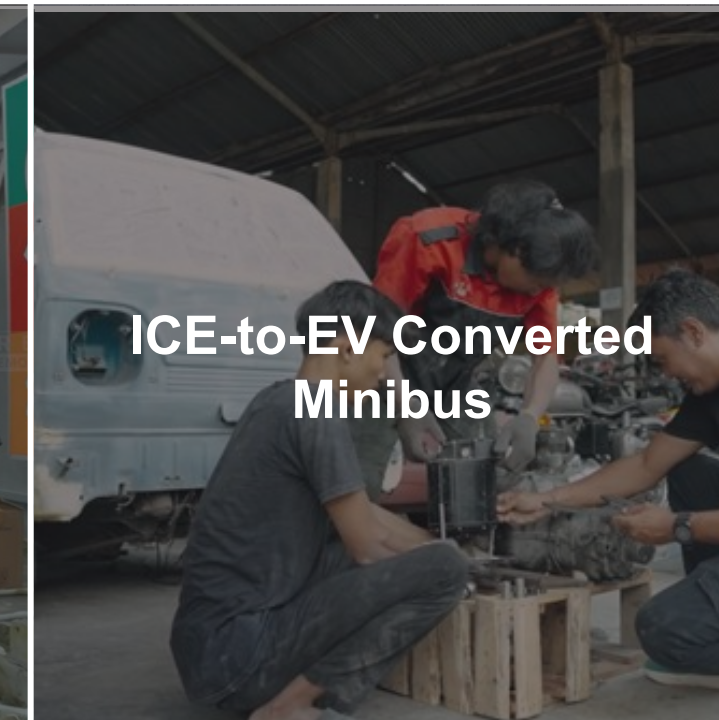
Electric Shuttle Service Around Village



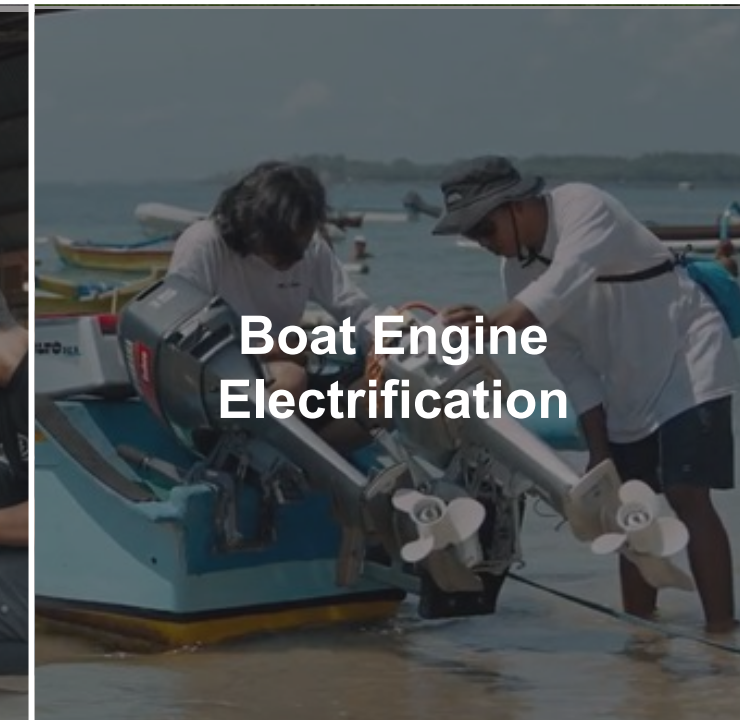
Solar-Powered Water Pump & Street Light



Solar-Powered EV Charging Station



ICE-to-EV Converted Minibus



Boat Engine Electrification



Solar PV Canopy & Solar-Powered Waste Management Machine



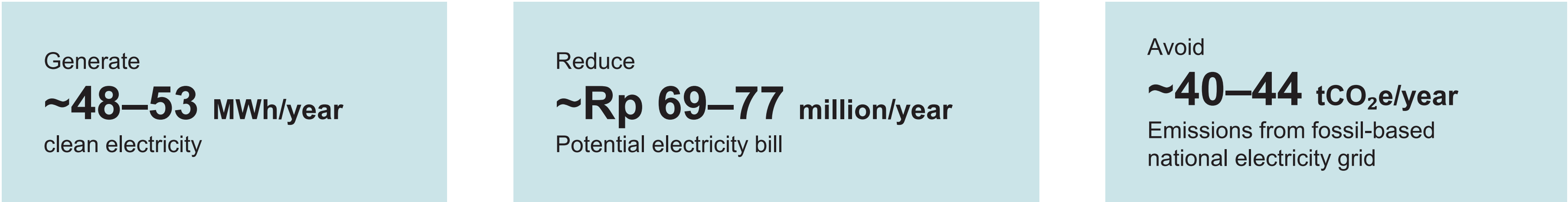
Fishing Boat Solar PV Canopy



Solar PV Canopy & Solar-Powered Water Pump for Traditional Market

The deployment creates shared value for communities, local institutions, and technology providers

By deploying 30,22 kWp total Solar PV across Sanur, it is expected to:



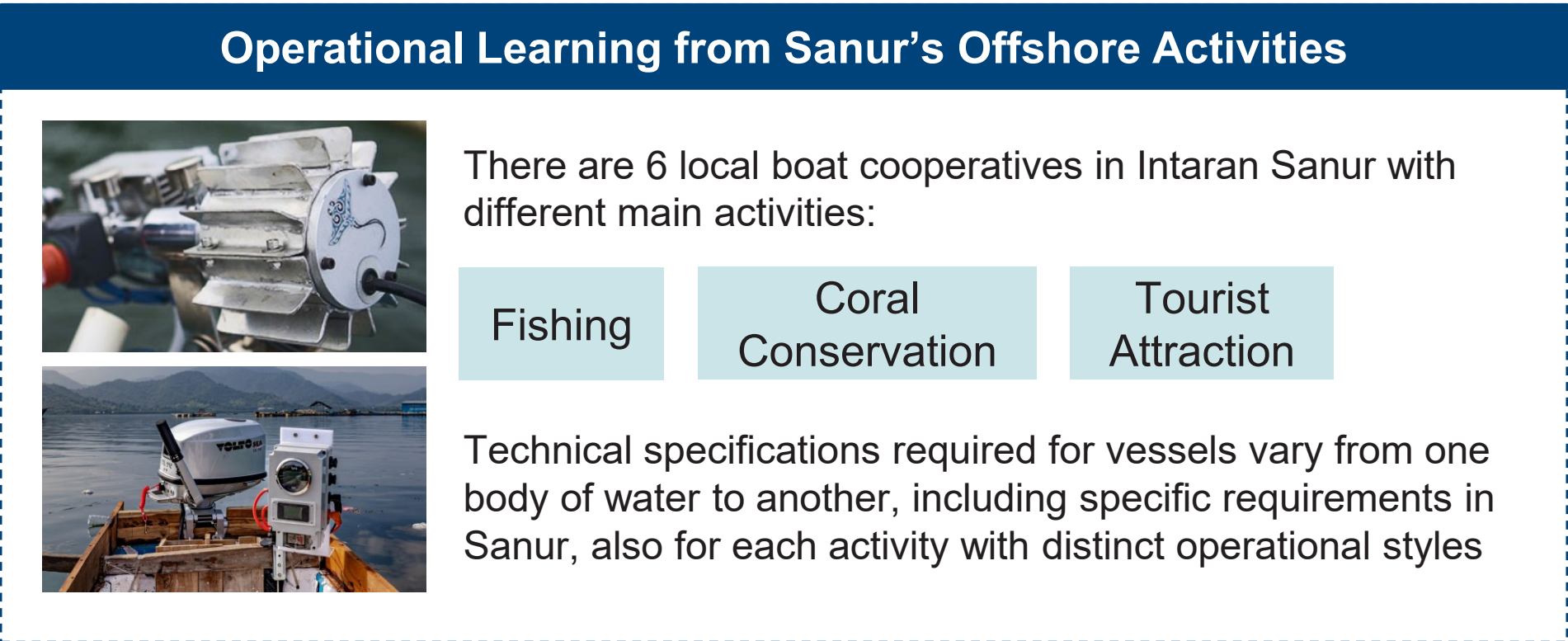
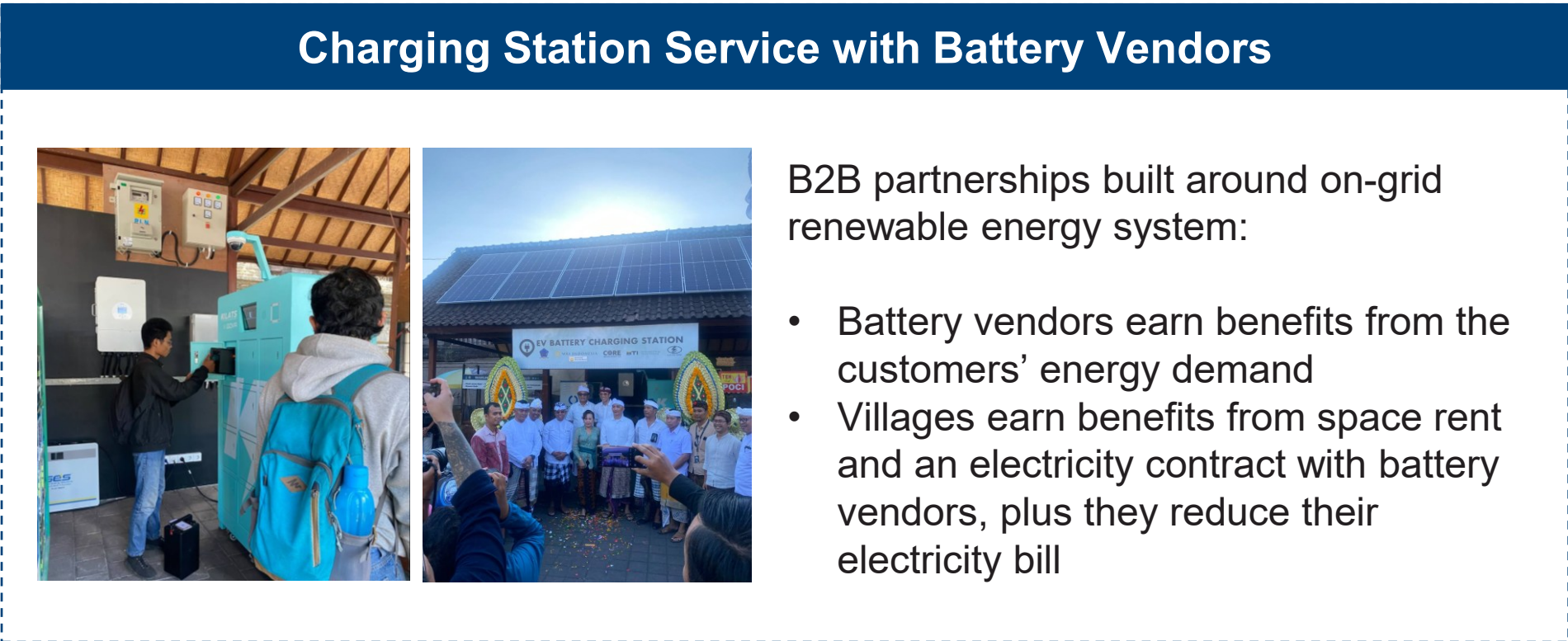
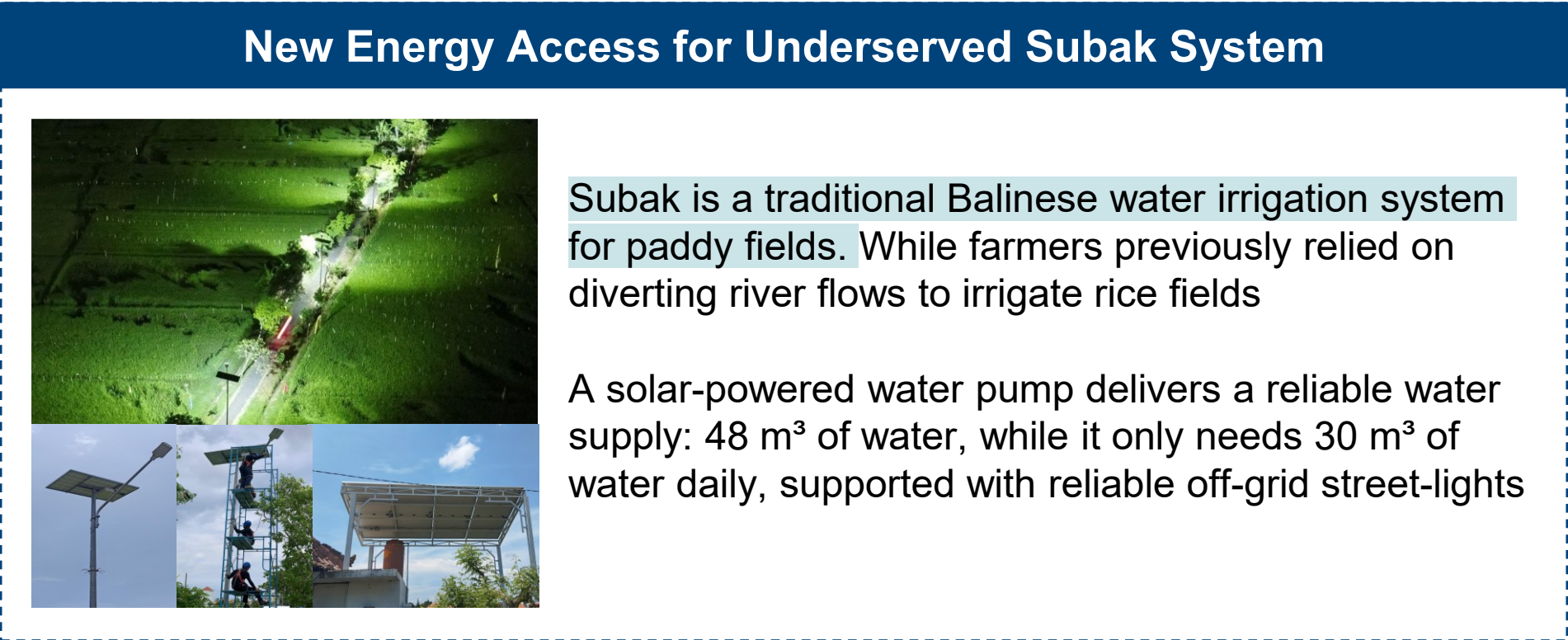
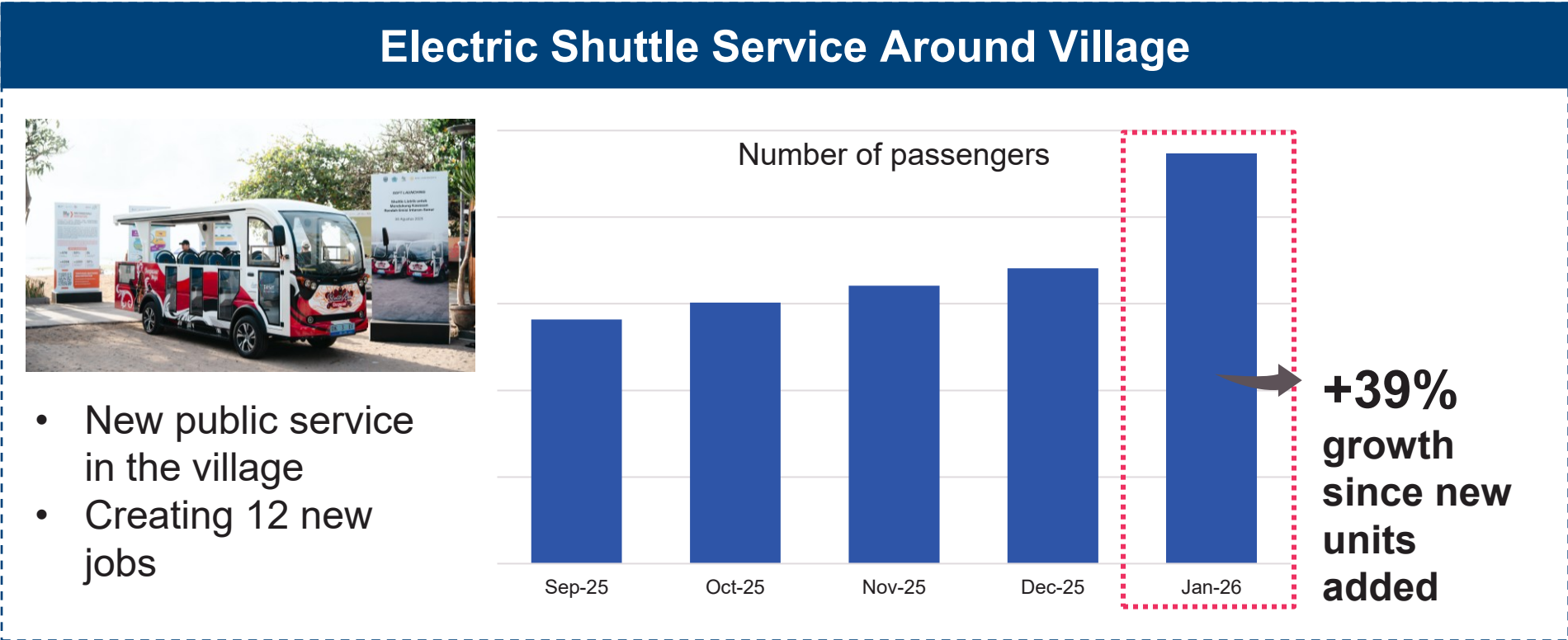
As proof-of-concept deployments, the technologies were exposed to:



Intaran and local start-ups, as the technology providers, can now plan scale-up strategies and seek funding through the project’s exposure channels:



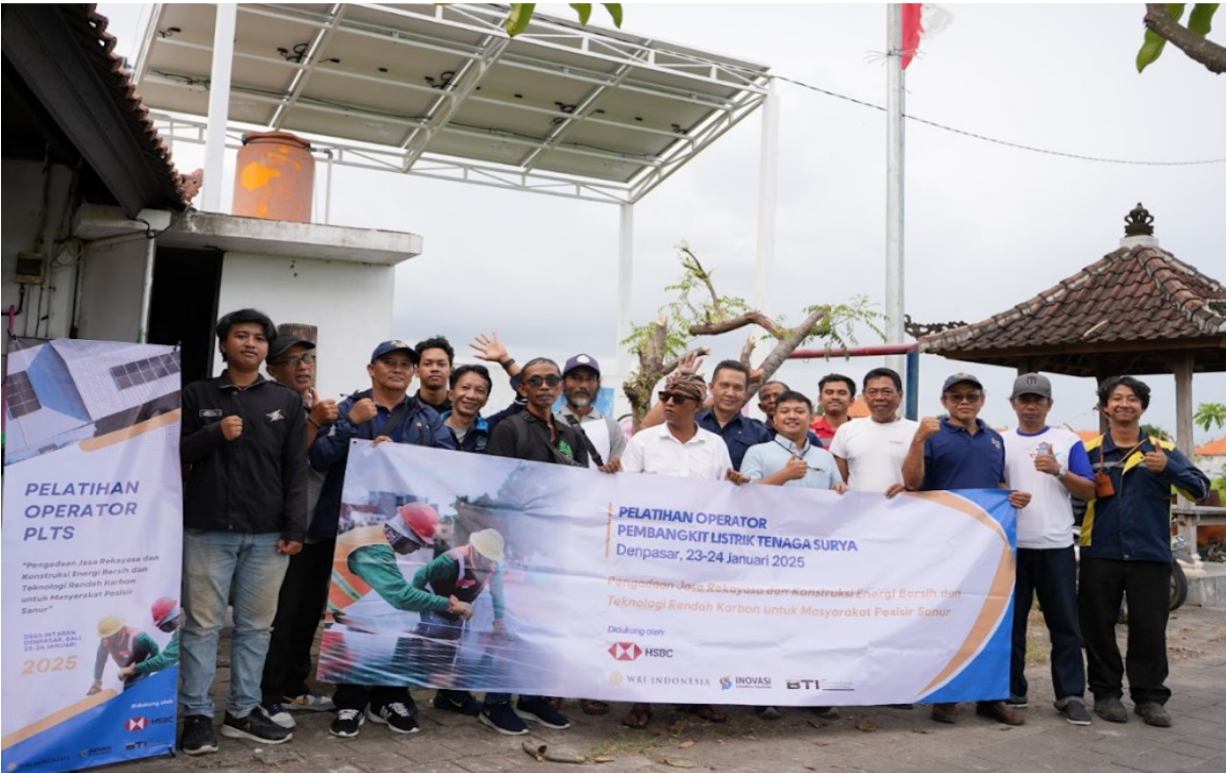
Some technologies demonstrate immediate business potential, while others serve as operational learning for future development



Developing a local talent pipeline reduces operational risk and strengthens long-term scalability

Training series hosted by BUPDA Intaran

Dedicated for targeted operators to ensure technology's sustainability



HSBC'S Bali Youth for Clean Energy



Socialization about the opportunity for solar PV operations and maintenance:

747 students from **8** vocational schools across **5** regencies

intensive capacity building for **13** students and **7** teachers from **6** vocational schools

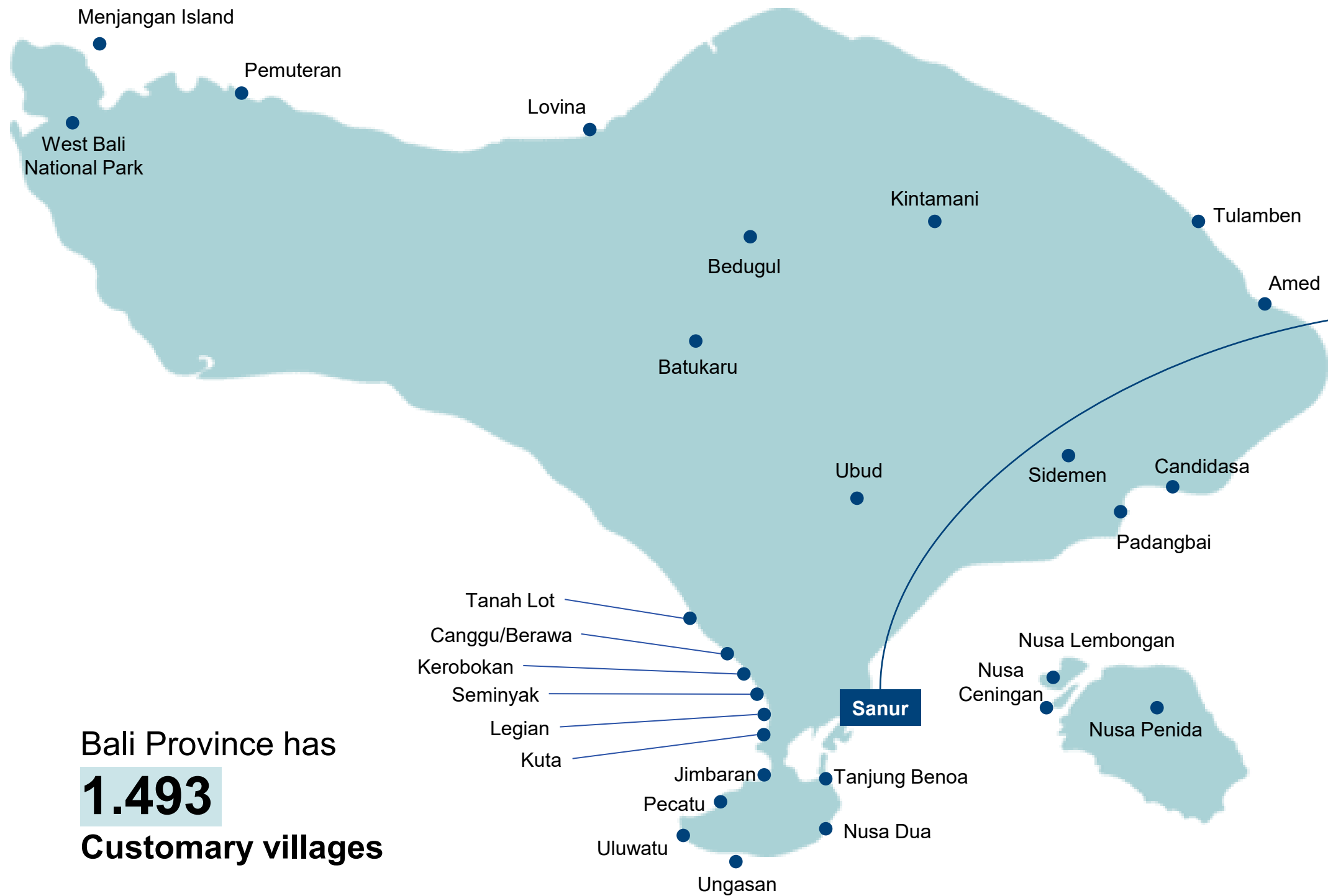
3 selected students are involved in the real PV Solar installation project



Dissemination & awarding to finalize the capacity building module

Involving **Bali's Energy and Mineral Resources Agency** and **Bali's Education and Youth Agency**

The initiatives are replicable in many destinations in Bali that are managed by customary villages



Bali Province has
1.493
Customary villages

Sanur Clean Energy Village is scalable into a more impactful initiative: Sanur Low Emission Zone



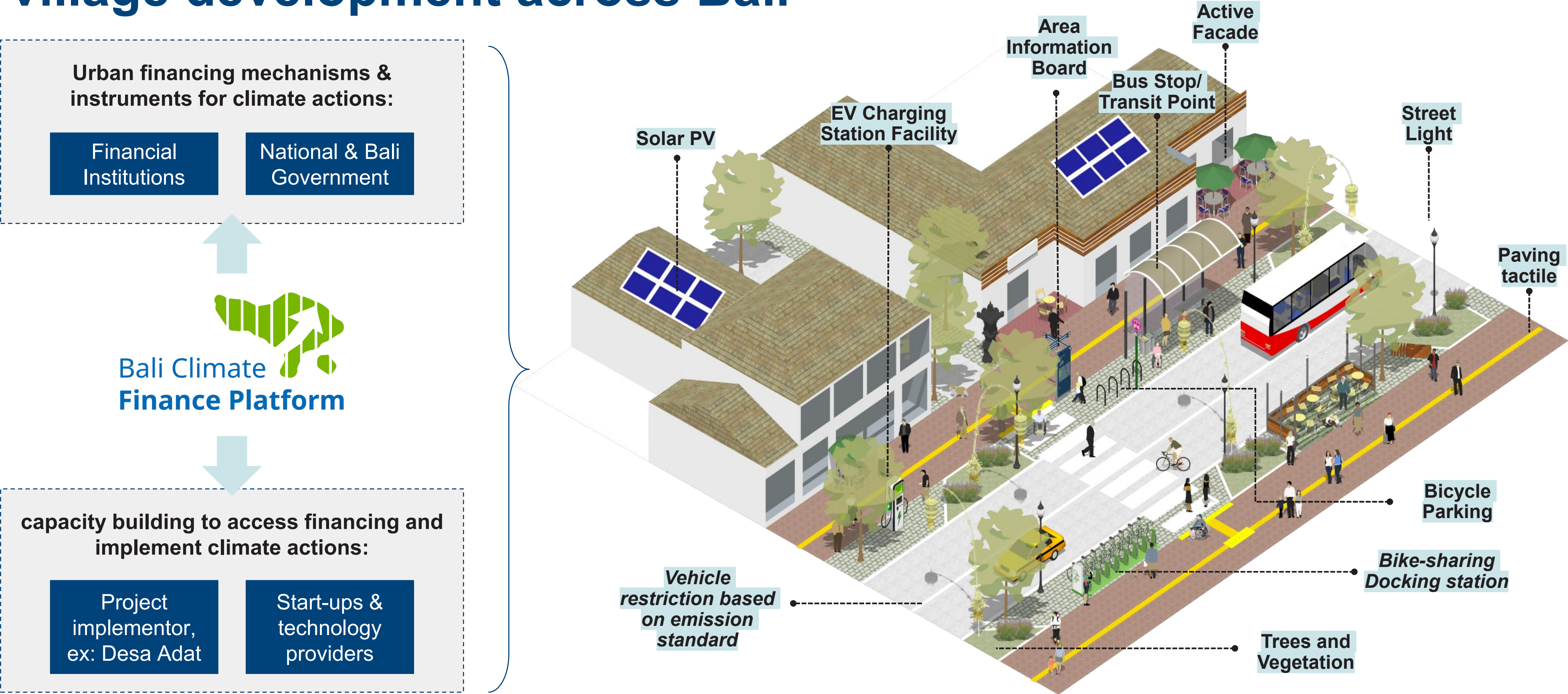
The Mayor of Denpasar has issued a regulation to make Sanur a low-emission zone (LEZ), starting with decarbonizing the energy & transport sectors, along with the zone's spatial planning & development

Aligned with
The Bali Provincial
Government's commitment
to achieve
net zero emission by 2045,
15 years earlier than the
national target



 **Koalisi Bali
Emisi Nol Bersih**

Systemic transformation is underway to scale up sustainable village development across Bali





Thank You

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