

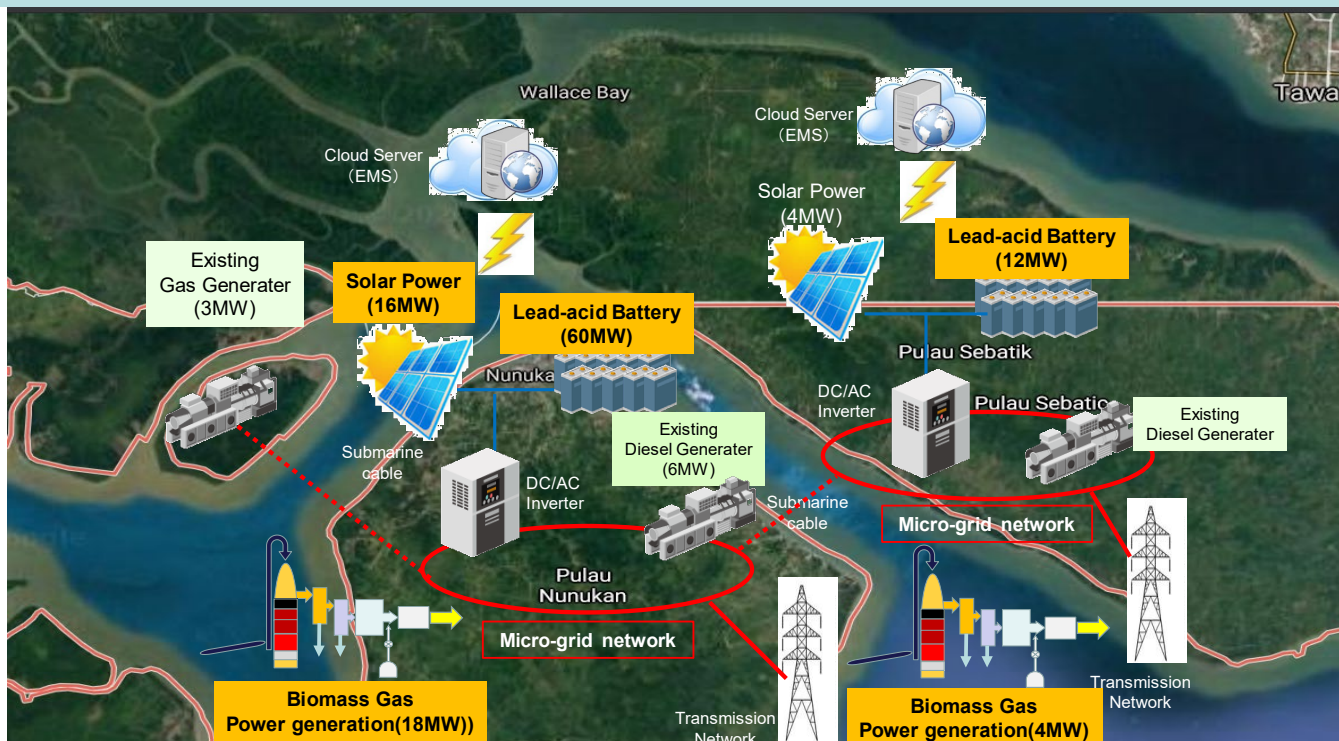


# Scaling Distributed Energy in ASEAN

*From Demonstration to Deployment*

Insights from the Nunukan  
Hybrid Microgrid (Indonesia)

# NUNUKAN ISLAND - Demonstration: Key Points



## Challenges:

- Heavy reliance on diesel generation
- Unstable power supply and frequent outages

## Solution:

- Integration of PV, biomass, and BESS
- Coordinated by KRAFTIA's Energy Management System (EMS)

## Key capabilities:

- Autonomous operation during outages
- Optimal multi-source dispatch in real time

# Our Approach



**We are not demonstrating a project.  
We are demonstrating a scalable energy model for ASEAN.**



**Based on ongoing microgrid project  
In Nunukan Island, Indonesia,  
we present how distributed energy systems  
can be deployed across the region.**

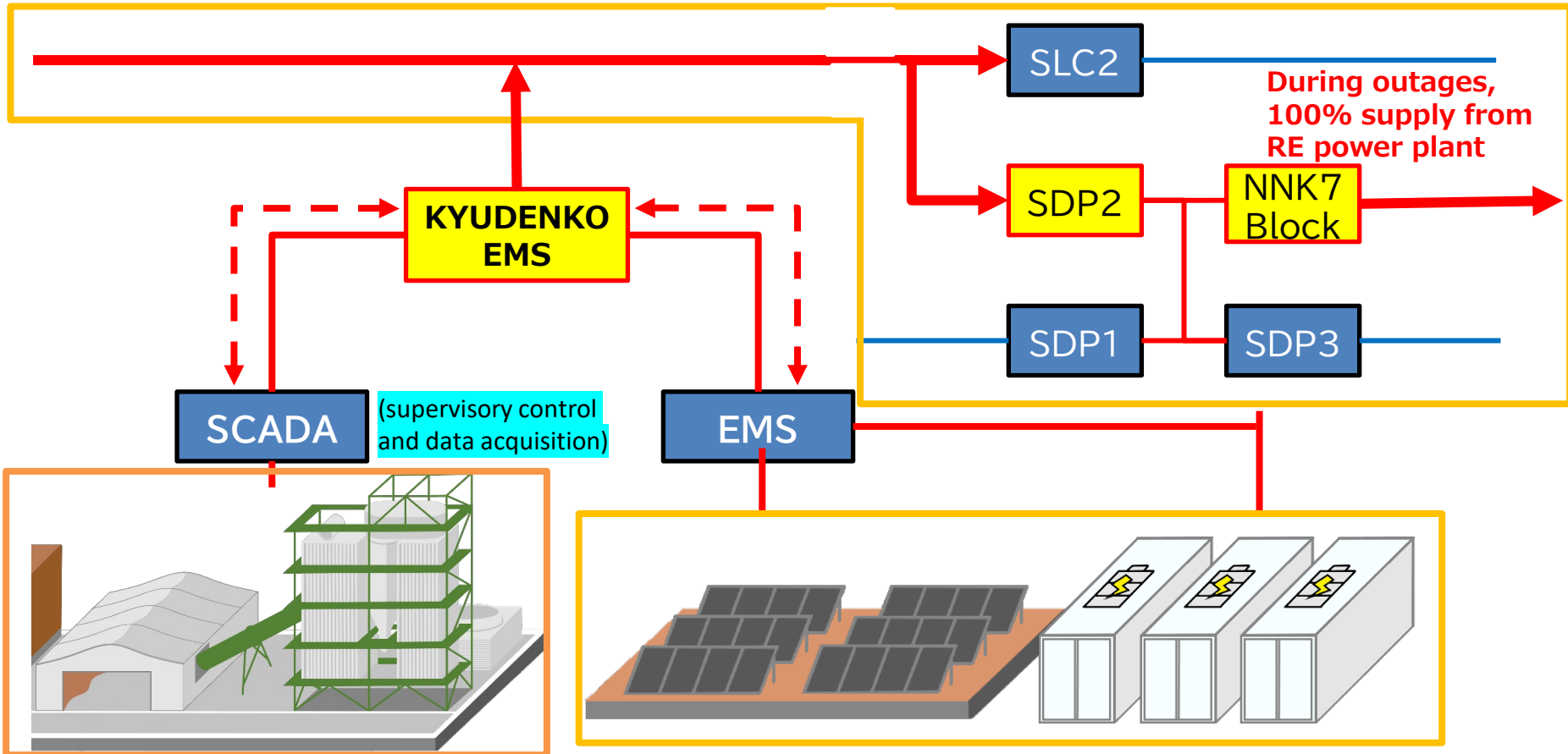


**Our focus is not a one-off pilot,  
but a replicable and scalable solution.**

# What Makes It Work

PLN Express Feeder(22,000V)

SLC: Sei-Lanchan S/W station  
SDP: Sedadap S/W station



## Overview of Demonstration Technology

Normal: Biomass, PV, and batteries supply power to the grid.

**In case of Outage: EMS controls outputs to supply critical loads with renewable energy only into NNK7 Block.**

# Core Insight

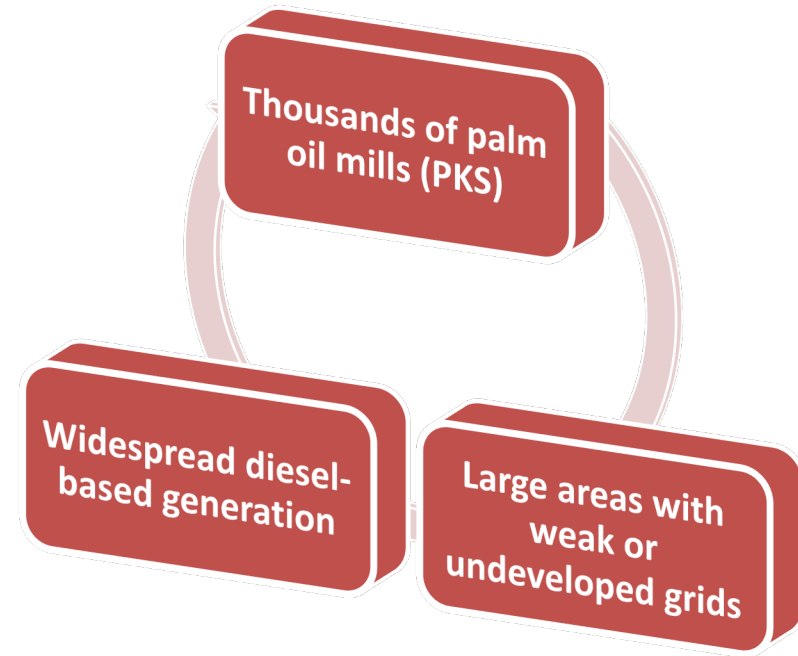
This is **not unique** to Nunukan  
Across Indonesia and ASEAN



Market



The same problem already exists at scale



**KRAFTIA's EMS is a key enabler, enabling stable integration of renewable energy into the grid.**

Real-time coordination of multiple energy sources

Stable operation in weak and isolated grids

Seamless transition during grid outages

Reliable, flexible, hybrid systems  
Beyond single-source power

## Three pathways for deployment (Case of Indonesia)

### 1) Public sector (PLN / IPP model)

→ Replacement of diesel and conventional power

### 2) Private sector (industrial zones, mining)

→ Reduction of high energy costs and improved reliability

### 3) Localized power systems (e.g. WILUS)

→ Enabling distributed generation at regional level

Distributed energy is not one model

→ It is a **portfolio of deployment options**

**Appropriate tariff design for hybrid systems is a key enabler for scaling distributed energy.**

# Key Message

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**We are ready to scale distributed energy across ASEAN.**

# Thank you / Terima kasih



In October 2025, Kyudenko changed its name to

# **KRAFTIA**

## K + CRAFT + I + A

  
Kyushu /  
Kyudenko

  
Craft  
Technology, skill, craftsmanship

  
Innovation

  
Action

keeping the same identity represented by

**Human Red** / **Technical Blue** / **Environmental Green**