

Pilot Project on Hybrid Solar PV with Green Hydrogen in Sumba Island

Background

Sumba Island has a huge economy potential from agriculture and tourism sectors which are yet to be optimised partly due to the inadequacy of reliable power supply. To tap on the potential, Indonesian government

launched the "Sumba Iconic Island" initiative that aims to improve access to reliable power supply by 100% utilising renewable energy sources by 2025.

Current electrification ratio in Sumba:

85.84%

Only 60%
of Sumba's
villages
have access
to PLN grid

Diesel
power plant



is the
favourite choice

Location



East Sumba Regency,
East Nusa Tenggara



Capacity

10 MW day-time
& 1.5 MW night-time

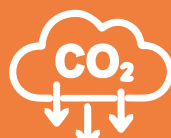


**Annual energy
generation**
49.46 GWh/year

Capacity factor
Up to
92.50%



Water requirement
18.9 m³/day



**CO₂ reduction
potential**
39,518 tCO_{2e} pa

Why Hybrid Solar PV with Green Hydrogen?

1



Solar energy is widely
available and not
site-specific

2



Zero carbon emission

3



On-site production,
no transportation
required

4



Ensure firm & stable
power supply day
and night

5



Long-term and rapid
release energy
storage technology

6



Provide grid services,
minimizing the
necessary resources
and investment from
utility side for solar PV
penetration

7

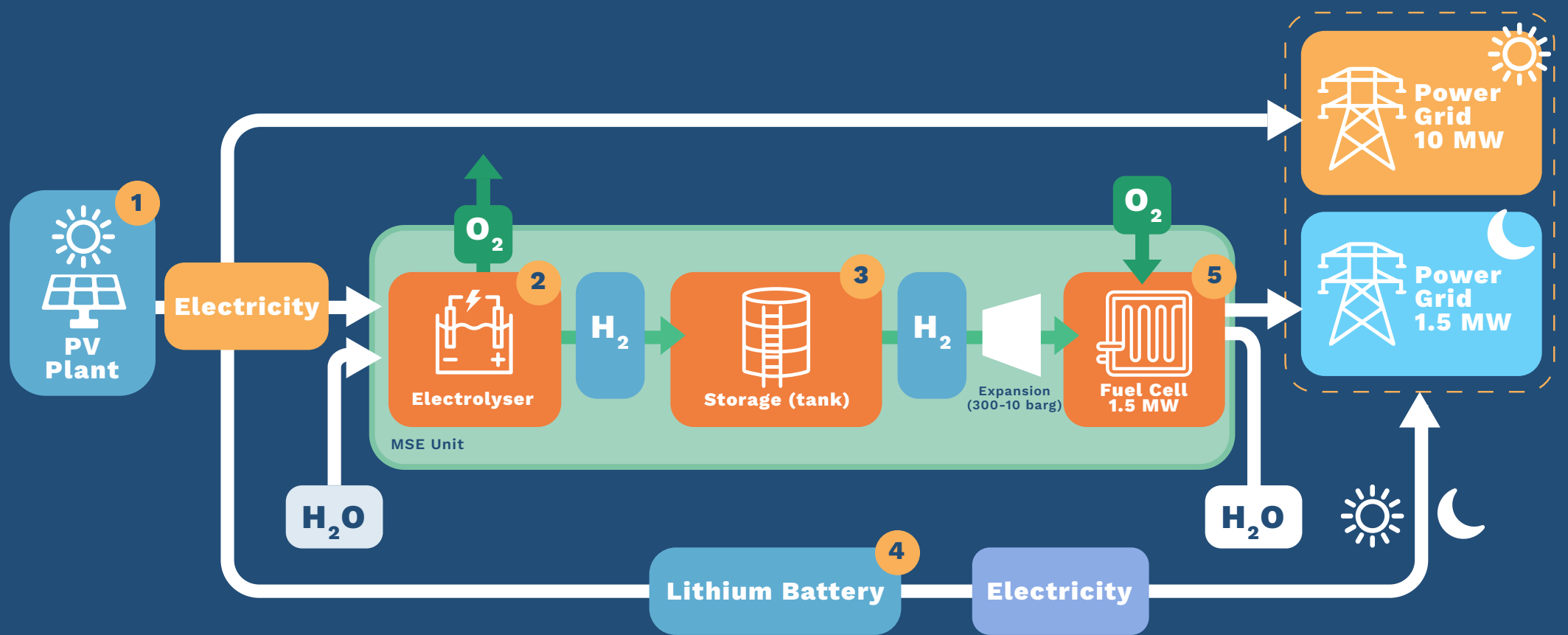


Competitive
electricity price
compared to diesel
power plant

8



Can be operated
under capacity
contract scheme



Scope of support

ExploRE supports HDF Energy through pre-feasibility study of hybrid PV & green hydrogen project in Sumba, East Nusa Tenggara, to assess renewable energy penetration from its technical, environmental, and financial aspects and to propose the most suitable design system and investment plan for the project.



Financing period:
Q1 2023 - Q3 2023

Construction period:
Q1 2024 - Q2 2025

Development phase:
Q3 2021 - Q3 2023

Commercial Operation
Date: Q2 2025

Lessons learned

a

This technology is in line with PLN's diesel substitution program to provide stable and reliable RE power plant

b

Managing the intermittent power from grid operator to IPP could minimize the use of PLN's resource and investment for renewable power penetration

c

The project is planned to be fully operated by 2025 to strengthen power supply for growing electricity needs in Sumba

d

Access to water is known to be challenging in Sumba, particularly on dry season; further hydrological study is required to ensure sustainable water supply

e

Due to the ability to provide baseload power and grid services, new PPA and pricing model is required to regulate the system

f

A consideration to exempt this technology from the maximum selling tariff of 85% BPP based on MEMR Regulation No. 4/2020 should be made, taking into account that the regulation is applied to offset the intermittency occurs in stand-alone solar PV and wind



Contact

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