Solar-Powered ICT Labs

Building a Sustainable ICT Solution

Fátima da Silva Caldas

About Me

Self Introduction

- **Name**: Fatima da Silva Caldas
- **Role**: ICT Officer, UNDP – Pacific Green Transformation Project
- **From**: Timor-Leste
- **Background**: IT + Master's In Finance & Accounting
- **Passion:** ICT for education, sustainable energy, and empowering women in ICT

Experience:

- **Timor Telecom, 2010 – 2020**
- **TIC TIMOR I.P, 2020 – 2023**
- **VANOV Tech, 2023 – 2024**
- **UNDP, 2024 – present**

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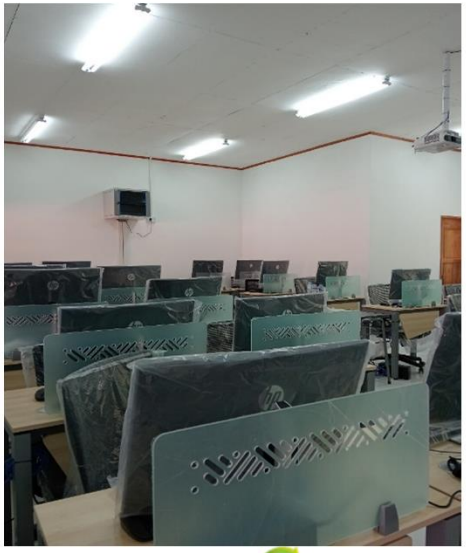
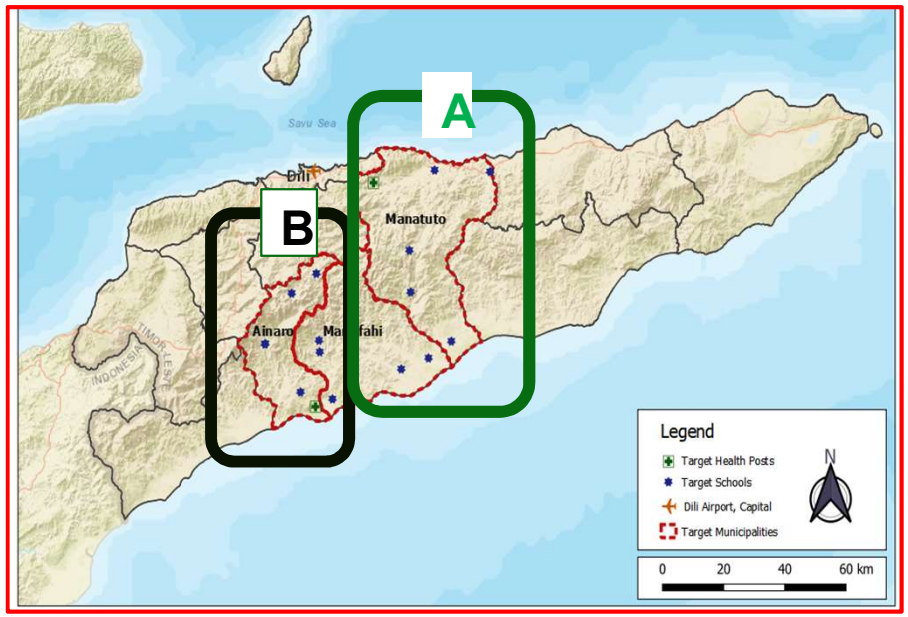


Objective:

To solarize schools, ensuring ICT Labs have a reliable power source for uninterrupted ICT classes and access to **Digital Learning Platforms.**



Target Municipalities: Manatuto, Manufahi, and Ainaro

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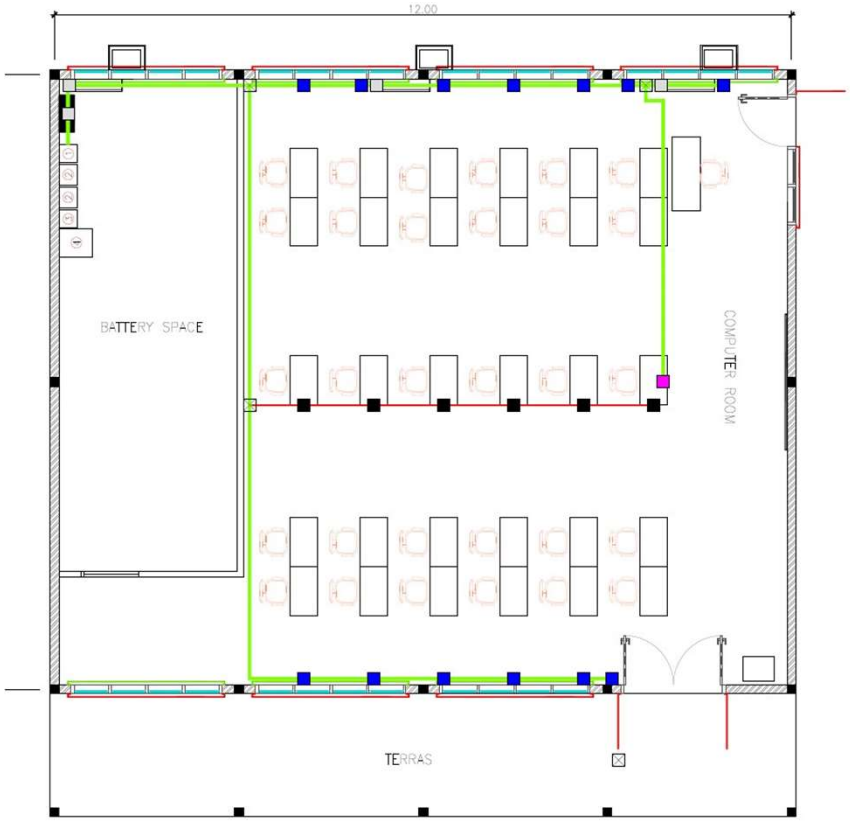
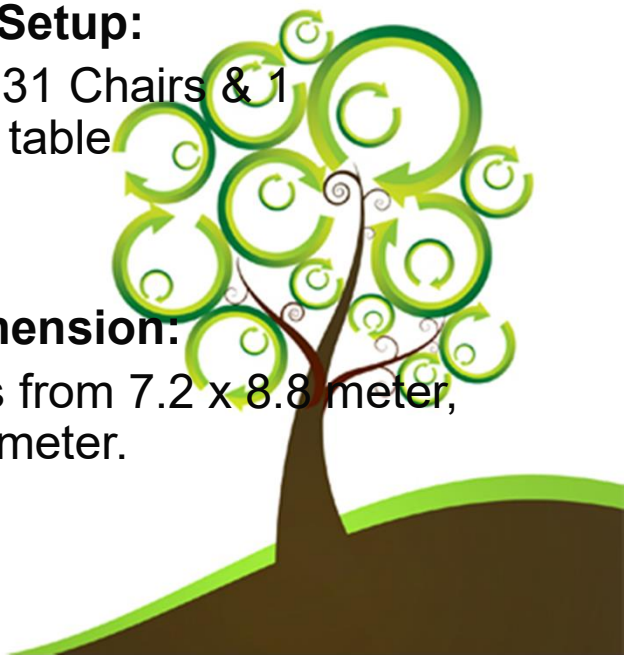
ICT Lab Setup – Wiring & Layout



- **Electrical Setup:**
- ~ 19 socket for electrical & LAN
- ~36 electrical nodes.
- Power capacity: ~16KW

- **Furniture Setup:**
- 30 Tables, 31 Chairs & 1 Adjustable table
- Curtain

- **Room Dimension:**
- Size varies from 7.2 x 8.8 meter, to 10 x 12 meter.



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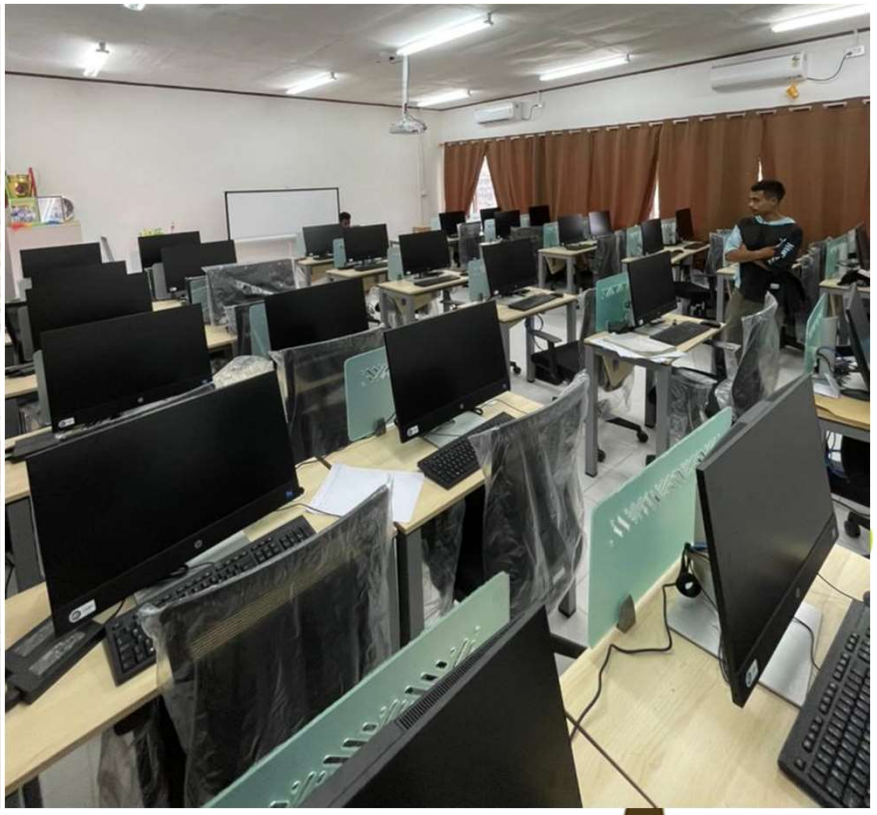
Before & During Installation of ICT Furniture and ICT Equipment

Before



Installation

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ICT Equipment Readiness:

S/N	Items	Qty
1	AIO Computers	465
2	UPS	465
3	Wireless Router/Access Point	15
4	Printer	15
5	Projector	30
6	Projector Tripod Screen	15
7	Rack Mountable UPS 500 VA	15
8	48 Ports Access Switch	15
9	ICT Labs Furniture	450
10	MS Office Home and Student 2021; MS Office Pro Professional 2021	450
11	Internet Services	15

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The project system consists by Solar Panels, Hybrid Inverter, and Rack Batteries.

1. Solar Panels - PV module is an essential semiconductor component to convert solar energy to electricity, where the main function is to generate power during the daytime.

System Specifications

- Capacity of Solar Panels: 27.3 kWp.
- Utilizing 39 solar panels, each with a capacity of 700.5 Wp

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2. **Hybrid Inverter** - Converts DC power from solar panels and batteries into AC power for household or industrial use. Provides uninterrupted power supply during grid outages by automatically switching to battery storage.

System Specifications

- Capacity of Inverter 24 Kw.ac.
- Utilizing 3 Inverter, each with a capacity of 8 Kw.ac.

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3. Rack Batteries - Store energy generated from solar panels and provide a stable energy supply during low production (at the night) or grid outages.

System Specifications

- Capacity of Battery 26.6 Kwh.
- Utilizing 5 Battery, each with a capacity of 5.32 Kwh

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Main Distribution Box (MDB)

- Cable Chamber
- MCB Outgoing
- AC Combiner
- Incomer Indication
- Common Incomer

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Type Installation of Solar Panel - Rooftop Solarization Installation

Before

After

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Type Installation of Solar Panel -Ground Installation

Before

After

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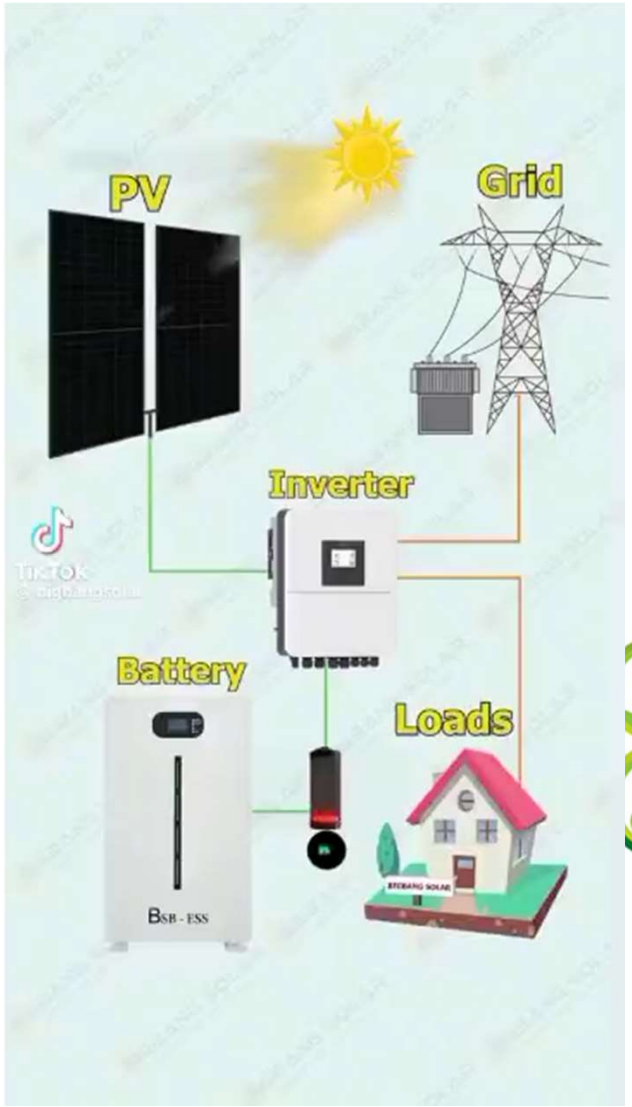
- **Solar Powered Works**



Source: TikTok

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Battery Room Complete Installation

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ICT Lab Powered by Clean Energy

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Delivered ICT Training for ICT and Non-ICT Teachers – ICT Consultant

Pacific Green Transformation Project in Timor-Leste

Delivered ICT Training for ICT and Non-ICT Teachers – ICT Consultant

Non-ICT Teachers

ICT Teachers

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Conducted Training on ICT Equipment Operation and Maintenance for ICT Teachers – Telkomcel

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Conducted ICT Equipment Maintenance Mechanism Training for IT Staff of the Ministry of Education – Elzalira Company

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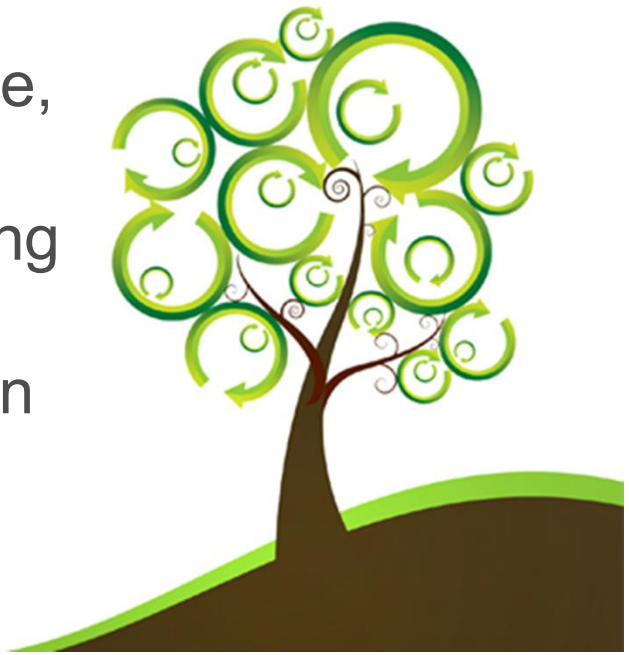
ICT Lab Powered by Clean Energy
ESG Dom Boa Ventura 1912, Manufahi

My Reflection

- Solar-powered ICT labs = reliable energy for digital learning.
- 15 schools across 3 municipalities -> improved access to ICT
- My learning: ICT + Solarization knowledge, project experience.
- Inspired to become a trainer & empowering women in ICT
- Committed to contributing to ICT growth in Timor-Leste



Q&A
Thank You!
Obrigada!