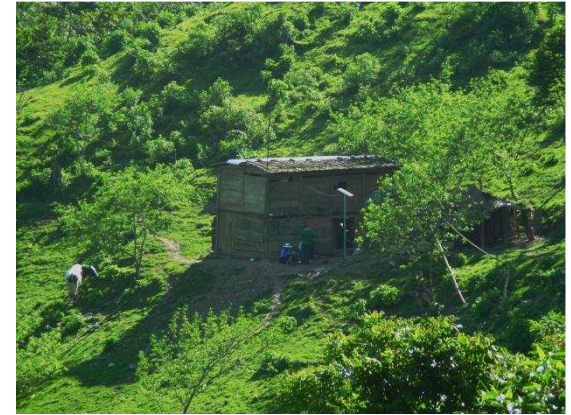




# Productive Uses of Photovoltaic Power - PVPU

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# 1. PV-PU Limitations

## PU Limits:

- Can add net welfare gain - but difficult to find evidence (PRODUSE results)
- PUE uptake often limited; promising business ideas do not wait for electrification

## PV Limits:

- Sunlight volatile
- Storage expensive (today)
- \$/kWh high → use for motive power very limited
- AC adds cost (inverter) + efficiency issue



## PV-PU favourable conditions:

- Dispered, small loads are good (PV = Least Cost)
- No need for el. storage (water pumping!)
- low Ah need is good (ICT!)

**=> Limited – but important PV-PU in rural livelihoods context, and viable in rural service sector**

## 2. A simple PVPU Typology

### X = USER TYPE

**Y = ENERGY SERVICE**

		agro	Service / Retail	household
lighting		Poultry rearing, fishing [GATE, Lighting Africa]	night sales, tourist lodge	extended work hours
ict		sales prices [IDTR], transaction costs, maritime info	mobile phones charging, hotel/barber/etc. with TV/DVD	reduced transaction costs, remittances
cooling/heating		Small fridges for dairy etc.	small fridges in bars, lodges	
machines		water pumping, fences [InWent, ESMAP], shearing	chlorine production [GTZ]	

# User Type A: PVPU for agro MSE

- **Water Pumping:** drip irrigation and cattle (no electricity storage) [GTZ, WB, FAO]
- **Electric Fences** [InWent, WB]
- **Portable lamps for fishing** [GTZ, WB]
- **ICT** → Price information and Transaction Costs! [IDTR]



→ Many promising examples!

# User Type B: PVPU for **service & retail**

- PicoPV for **night sales**: zero sum game?
- **Light + TV in eco-lodges**: can they charge more?
- **Mobile phone charging**, paid cell phone usage, battery charging



→ **Need to look closely!**

# User Type C: PVPU for households

- Lighting → **Extended work hours** possible and workplace illumination may increase quality, but: Inputs and demand for more products?
- Lighting + ICT → **Savings** = the obvious benefit, but: note often forgotten „**PU aspects**“ (MFI!)

→ Need to understand better secondary effects on income and welfare

