

Productive end use in micro hydro power: **It could happen!**

Presented by Amalia Suryani on:

Webinar: Productive End Use -- Three examples of how to make it happen

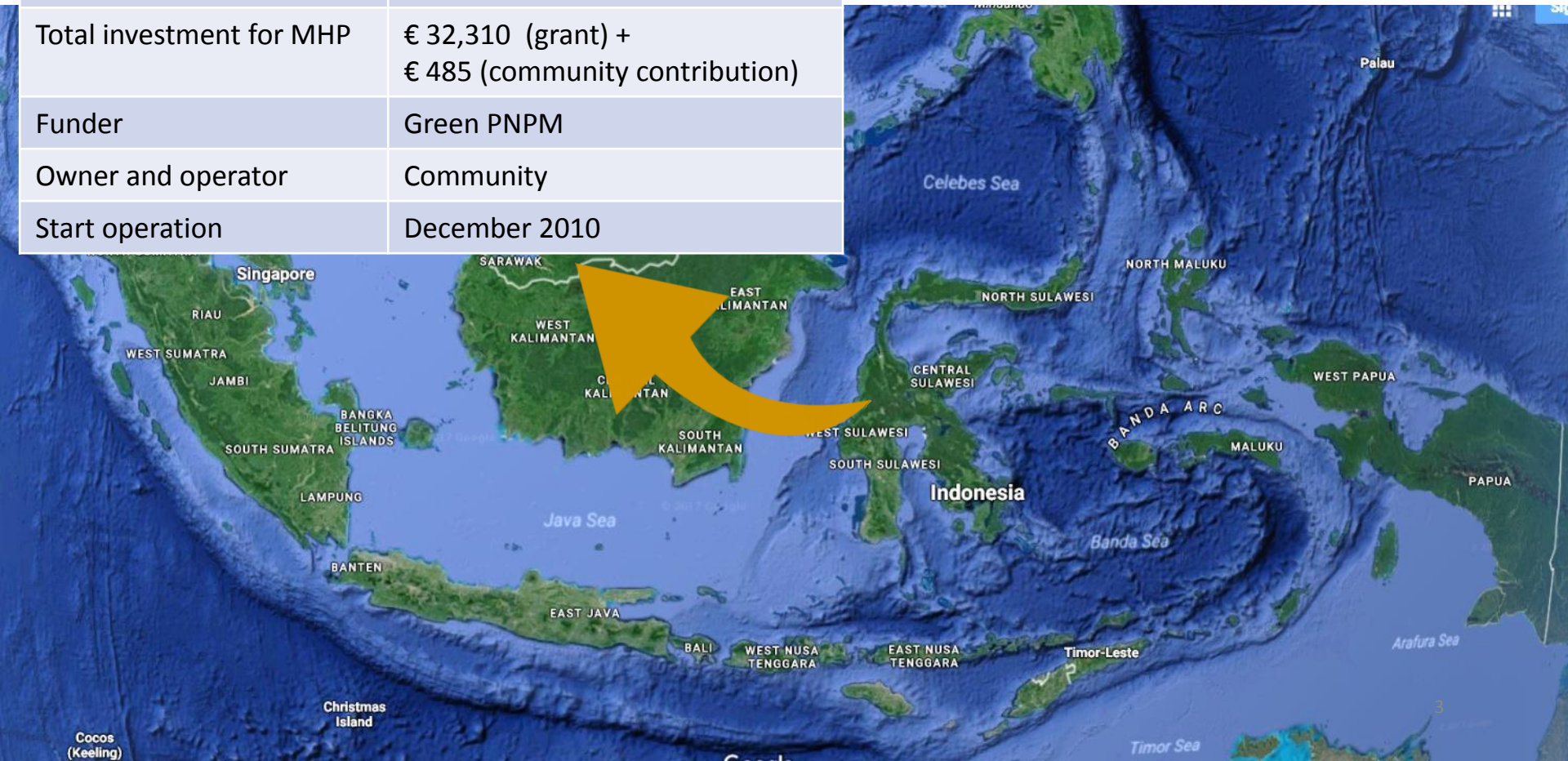
5 July 2017

Overview of “PEU Pilot Project” in 2012

	Sumatra						Sulawesi		
Village	Lembah Derita	IMPP	Paninjauan	Pangingiran Bawah	Wonorejo	Sungai Keruh	Salumokanan	Tawalian Timur	Tandung
Description									
Income collected from households (EUR/month)	76	40	200	60	320	480	120	48	52
Income collected from PEU (EUR/month)	No special tariff for PEU applied. The business owners pay only the household tariff.						20	14	14
Expenses for salary (EUR/month)	No info	16	160	22	72	280	80	21	32
Expenses for maintenance (EUR/month)	36	5	22	24	20	20	8	4	4
Number of customers	23	42	99	28	139	70	90	51	70
Monthly tariff per HH (EUR)	4.00-6.00	0.80 - 2.40	2.40 - 3.20	2.00	2.40 - 2.70	0.08/kWh	1.20 - 1.60	1.20	1.20
Difference (%) between pre- and post-pilot in profit/loss for MHP	0%	0%	0%	0%	0%	0%	+63%	+60%	+88%

General features of MHP Salumokanan

Features	
Installed capacity	7.5 kW (3-phase)
Number of households	90 (now reduced as grid entered)
Number of businesses	6 (18 appliances)
Total investment for MHP	€ 32,310 (grant) + € 485 (community contribution)
Funder	Green PNPM
Owner and operator	Community
Start operation	December 2010



How it started?



Prior pilot project

Village selection

Criteria:

- (a) MHP is operational
- (b) MHP management team is well established
- (c) Availability of well-running businesses with demand for electricity
- (d) High social capital
- (e) Accessibility



Preparation

Project socialisation & coordination

Entrepreneur selection

Procurement of appliances

Installation of appliances



Implementation

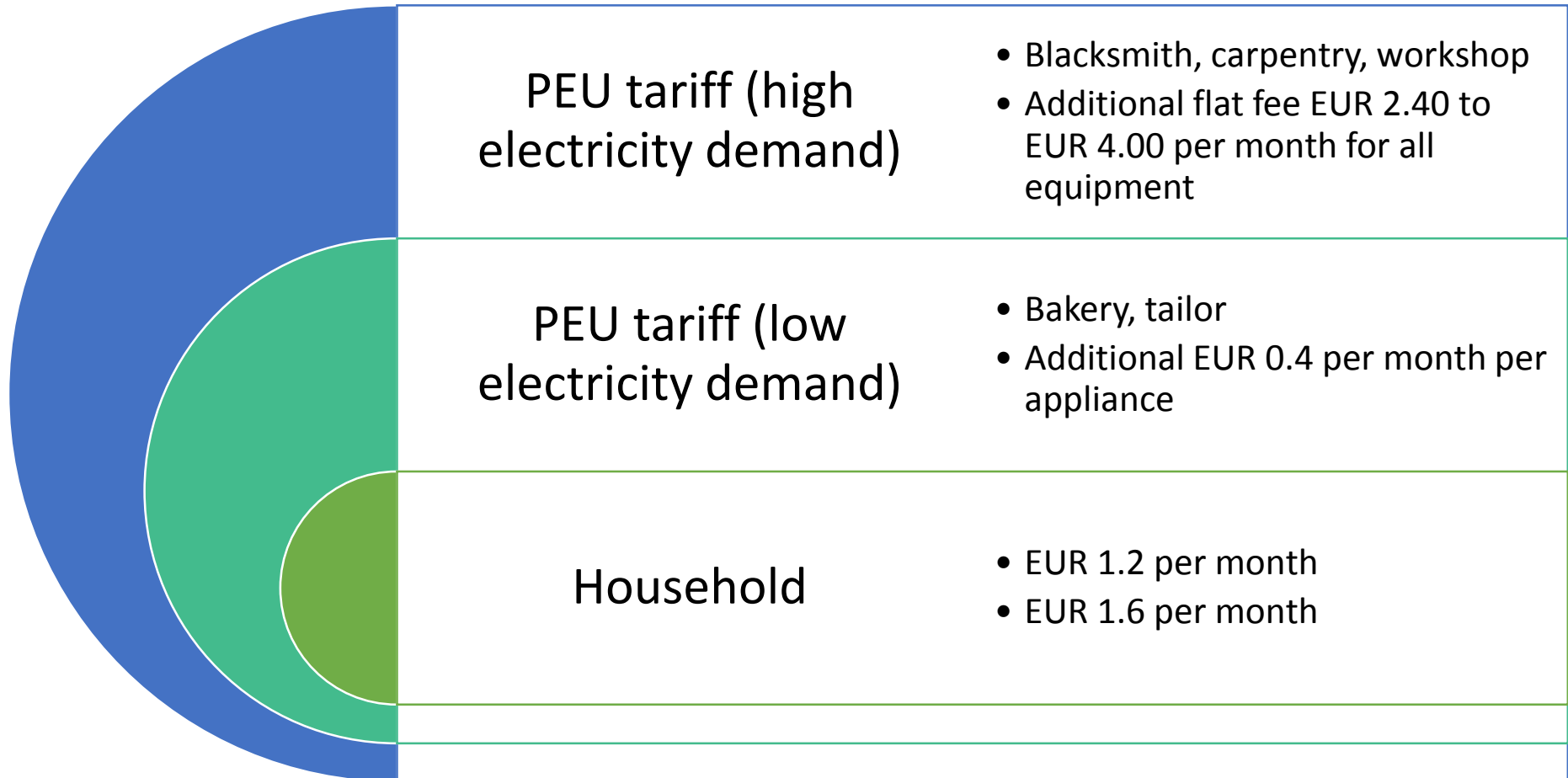
Facilitation

Technical assistance

Monitoring and data collection

Reporting

Tariff system



Summary of PEU applications

Type of PEU	Appliances	Load (Watt)	Unit price (EUR)
Blacksmith	Metal grinder	600	38
	Blower	600	68
Bakery	Mixer	170	29
	Vacuum packing	300	18
	Blender	170	18
Carpentry	Metal grinder	600	38
	Planer machine	580	120
	Hand drilling machine	710	45
	Trimmer machine	530	60
	Sander machine	180	50
	Circular saw	900	160
	Compressor	750	76
Coffee grinding	Coffee grinder	900	100
Tailor	Sewing machine	100	74
	Lockstitch machine	100	58
Workshop	Metal grinder	600	38
	Hand drilling machine	710	45
	Compressor	750	76

Owner and operator:

Group of entrepreneurs

Operational hours:

From previously 14 hours per day (except Sunday, Monday, Friday), the MHP operates 22 hours since PEU took place. Operational hours: PEU: 08:00-15:00
HH: 16:00 - 07:00

Investment:

Electrical appliances are provided through grant from EnDev within the pilot project



Impact

Better load factor of MHP with more use during the day (but was not measured)

Increase in operational time (+8 hours during the day)

Increase in income from electricity sales of around 60%

The majority of businesses reported a profit



The uses of electrical appliances had been able to speed-up the work; for instance to make one cupboard normally takes six days, by using these appliances only takes three days.

IMPACT

Bread making is a side-job and done by housewives. The one in Salumokanan recorded a profit of EUR 41 per month with increment of 20% since the pilot.



IMPACT



The production process is manual; normally conducted by 2 persons, one strikes the iron while the other generates wind by blowing through a bamboo to maintain the fire. They use charcoal to heat the iron. In the PEU pilots, we provided electric blower and grinder; so they neither need to generate the airflow manually nor go down-town to sharpen the utensil products. Average profit after pilot is EUR 52 per month or 30% increment.

*A **blacksmith** mostly produces agriculture utensil such as **hoe, axe, scoop, machete, sickle, scythe***

IMPACT



The incremental benefit by selling processed coffee is up to EUR 1/kg.

Most of community sell dry coffee cherries without grinding at a price of about EUR 0.6/kg. One kilogram of coffee cherries yields about 0.7 kg of ground coffee. This ground coffee sells at about EUR 2/kg. An electric off-the-shelf coffee grinder costs about EUR 100, and has a production rate of about 36 kg/hour.

IMPACT

Conclusions



Success factors

Main benefits

- Increased business profitability
- The use of off-the-shelf appliances
- Improved load factor

What was successful?

- PEU tariff applied in 3 villages
- Group-owned business performed well with increased profitability
- The use of off-the-shelf appliances

How can donors support PEU?

- Training on business development
- Grants or loans for appliances

Main shortcomings

- The use of specialized appliances
- No kWh meter installed
- “Grant attitude”

What was unsuccessful?

- Loan scheme to procure appliances
- Applying PEU tariff in 6 villages

Specific challenges to overcome

- Shifting the livelihood or business process (e.g. from agro-harvesting to agro processing)
- Limited/unknown market



Shortcomings & barriers

“Electricity will **not by itself change lives.
It’s **what people do with it** that matters.”**

(50 Breakthrough Report, LIGTT)

LIGTT: Institute for Globally Transformative Technologies, Lawrence Berkeley National Lab.



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