



PRO-SEED project

Pilot energy services

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In Cambodia:

1,6 M households rely on Kerosene lamp for primary or secondary source of lighting



1,7 M households have access to electricity through batteries





Battery use is:



- Inefficient: most of the batteries are not full after charging and most households doesn't know how to use them properly.
- Expensive: nearly 1\$ per kWh compared to 0,3 to 1\$ per kWh with REE.
- Polluting: batteries contains lead which is very toxic for the environment and human health.



Kerosene lamps are :

- Dangerous (high risk of fire)
- Hazardous to health (smoke is bad for human health)
- Dim (the lighting allows only to distinguish shapes in the dark)



Alternative to classic battery:

Energy pack including:

- Energy storage
- Discharge controller
- Charge controller





Alternative to kerosene lamp:

- Lamp including energy storage
- Efficient equipment (low energy use but good performance)
- Designed to withstand rural conditions of usage



This LED lamp gives 100 times more light than a kerosene lamp.



There are 3 ways to disseminate those equipments:

- Giving for free
- Selling
- Renting



Giving for free

Advantages	Drawbacks
Reach the poorest people	<ul style="list-style-type: none">• Families do not appreciate the value of the equipments• No after-sale maintenance• System is not sustainable• Potential misuse of power packs

After 1 or 2 years of use, equipments may be abandoned: lack of funds and after-sale service



Selling

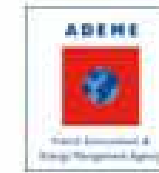
Advantages	Drawbacks
<ul style="list-style-type: none">• People are responsible for the equipment• No subsidy	<ul style="list-style-type: none">• The poorest are excluded• No maintenance service• Money goes out of the village

After 1 or 2 years the lamp may be abandoned: no after-sale maintenance service

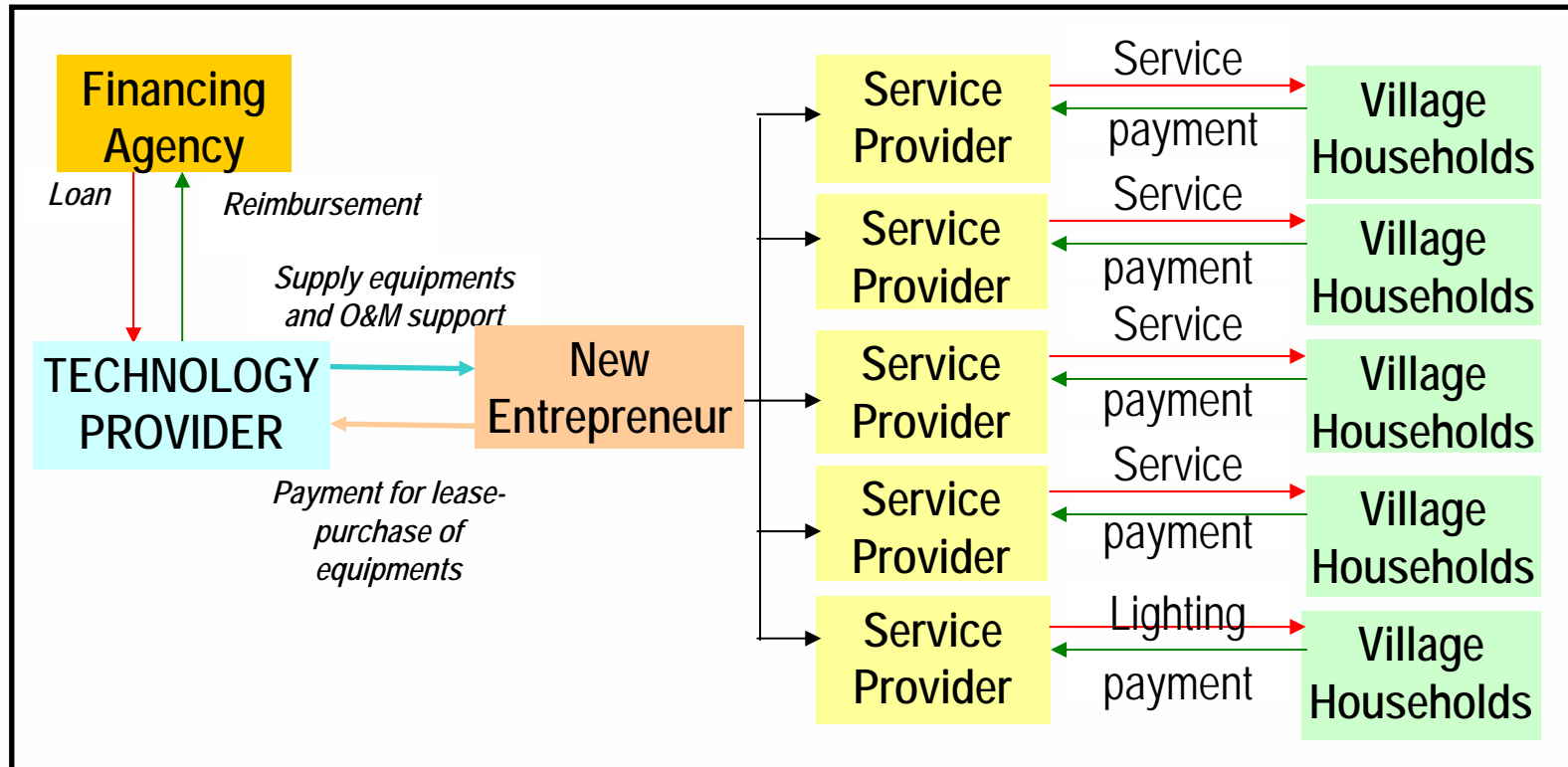


Renting

Advantages	Drawback
<ul style="list-style-type: none">• Reach the poorest people• No changes in families' habits for the lamps• Improved energy service for same expenditure• No subsidy• Employment creation• Maintenance assured• Money stays in the village	<ul style="list-style-type: none">• High investment cost for the operator / service provider



Example with lamp service



Rural entrepreneur:

- Supply of lamps and spare parts
- Maintenance
- Management

Rural operator:

- Perform the service:
- lamp recharge and delivery
 - money collection
 - find new clients

Households:
Benefit from the service



Charging system

Adapted to the field conditions:





Lamp rental service:

- Rental fee: 200r/day
- Investment: 1000\$

Service to 60 families

Additional revenue created in the village

Rural entrepreneurship promoted

Payback period: 3 years to 3 years and a half