



## Module 3: Analyse local economic structures and potentials for productive uses

### In brief

Under this module, the electricity supply situation and local economic structures are analysed in order to identify the most promising opportunities for electricity use. It is highly recommended to establish the technical and economic feasibility of productive use options before actually starting to plan concrete support activities.

*Modules 3* and *4* follow a simple three-step approach, from spotting opportunities for productive electricity use, to checking economic and technical feasibility and identifying areas where support is needed (bottlenecks to business success) (*Figure 4*).

The analysis will build on

1. inputs from **experts and established information sources** (to understand market structures, electricity supply, availability of other inputs and technical feasibility, etc.) and
2. the **entrepreneurial sense** of the (future) business owners, who should take **centre stage** as the *productive electricity users*.

Productive use programme planners should contact individuals within the target communities who often possess profound understanding of the natural, human, and physical assets of the area, the relative strengths, weaknesses, opportunities and threats of the local economic system, and local market potentials.

### Practical tasks

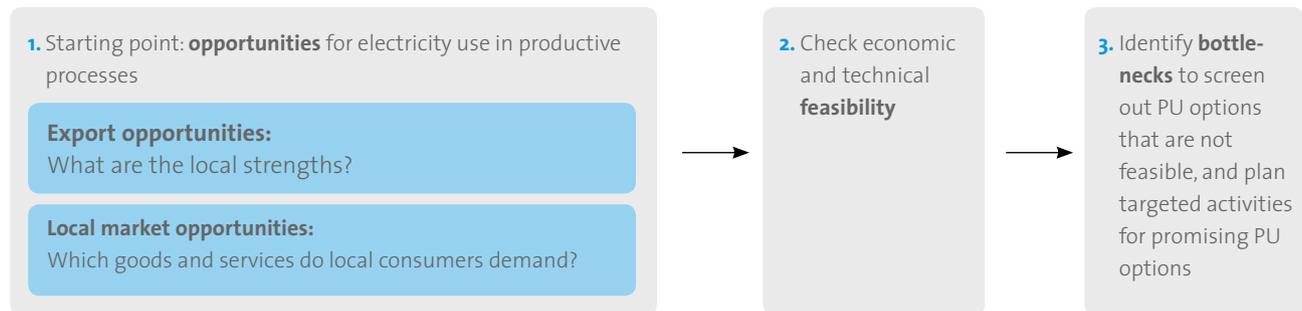
#### Task 3.1:

**Take stock of economic activities found in the target area, and identify those which could be upgraded through electricity use.**

In order to identify **opportunities for using electricity within existing business activities in the area**, the sequence of analytical steps outlined in *Table 5* has proven to be a useful approach. Be aware that such analysis should cover both production processes and services that already use other forms of energy input (e.g. draught animals, diesel generators, etc.), and those that currently do not use any form of energy input.



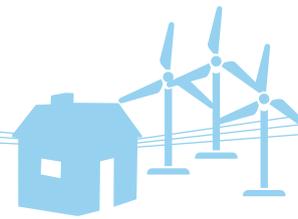
Figure 4 Analytical process, starting with search for opportunities.





**Table 5** Overview of key analytical steps for identifying viable productive use opportunities.

Generic steps	Information sources and how to tap them	Example: Agro-processing sector
1. Map out all productive / commercial activities in the target area and prioritise the most important sectors or those sectors with growth potential	Brainstorming in a community workshop	Backbone of the local economy: agriculture, more precisely staple crops
2. Apply an <i>electricity use</i> lens to the production processes and services in these sectors: Can the use of electrical equipment and machinery increase production efficiency or enable higher quality products and services?	Programme planners' advice, including assessment of business owners; examples from other areas	Grain milling: currently done with diesel-driven mills; electric mill could save costs per kg of grain milled
3. Technical analysis: <ul style="list-style-type: none"> <li>a. Is appropriate machinery/equipment available?</li> <li>b. Can maintenance and repair services be provided?</li> <li>c. Does the available electricity supply sustain the use of this kind of machinery?</li> <li>d. What technical skills does it require to run the equipment? Match with entrepreneur?</li> </ul>	Seek advice from experts, e.g. equipment vendors, institutes for industrial research, etc.	<ul style="list-style-type: none"> <li>a. Electric mills available in provincial capital;</li> <li>b. Can be repaired by local technician;</li> <li>c. Needs xy kWh – only feasible with grid electricity</li> <li>d. Miller who has experience with a diesel mill can easily be trained how to operate an electric mill</li> </ul>
4. Economic analysis: <ul style="list-style-type: none"> <li>a. In case of increased production volumes and/or higher quality output: Is there a market potential?</li> <li>b. Savings in production costs? Can higher quality output be reflected in higher sales prices?</li> <li>c. Quantify profit gains</li> <li>d. Financing plan for investment needed</li> </ul>	Business plan preparation undertaken by business owners under guidance from business training experts or MFI staff	<ul style="list-style-type: none"> <li>a. High local demand for milling, market already established</li> <li>b. Savings in diesel: USD 0.10/kg</li> <li>c. In an average week, 50 customers with 100 kg maize; diesel savings: USD 0.10/kg x 100 kg = USD 10.00/week</li> <li>d. Investment cost comprising mill and electricity connection = USD 300.00; financing cost at 10% interest; payback period = xy months (assuming constant production volume and price).</li> </ul>



Generic steps	Information sources and how to tap them	Example: Agro-processing sector
<p>5. Apply a value chain lens: Other bottlenecks upstream or downstream along the value chain to be considered?</p> <ul style="list-style-type: none"> <li>a. Availability of skilled labour?</li> <li>b. Raw material input?</li> <li>c. Transport for market access?</li> <li>d. Prospects for major changes in market size in the foreseeable future?</li> <li>e. Competition expected to arise and grow stiffer?</li> <li>f. Environmental impacts, disposal of waste?</li> </ul>	<p>Guided reflection exercise for business owners</p>	<ul style="list-style-type: none"> <li>a. Miller and his apprentice can easily handle electric mill</li> <li>b. Ample maize cultivation in the area</li> <li>c. Local customers bring their produce to the mill for processing</li> <li>d. Demand can be expected to remain stable</li> <li>e. Established market, milling business</li> <li>f. Emissions reduction due to replacement of diesel with cleaner source of energy; otherwise, no environmental impacts</li> </ul>
<p>6. Re-check against productive use programme objectives:</p> <ul style="list-style-type: none"> <li>a. At what level(s) are benefits being achieved: Only for the business owner? Also for local consumers?</li> <li>b. Implications (positive or negative) for employment opportunities?</li> <li>c. Will business be taken away from other enterprises? Zero-sum game at regional level?</li> <li>d. Long-term impacts for the region in terms of economic up-grading?</li> <li>e. Outreach to main target group?</li> </ul>	<p>Productive use programme planners and steering committee</p>	<ul style="list-style-type: none"> <li>a. Benefits mainly for millers</li> <li>b. Electricity makes sense due to cost-savings potential at constant production volumes</li> <li>c. Electricity use for grain milling has high replication potential, as there are many millers in the area; underpins development of local know-how and skills relevant to productive use of electricity</li> <li>d. Mills are run as micro businesses by low-income strata – match with target group</li> </ul>



Two energy services deserve special attention: **lighting and ICT**. This is because the various ways in which they can contribute to business success are rather generic by nature, and each are applicable to a wide range of businesses.

Productive use of lighting can come in the form of:

- ▶ extended working hours
- ▶ improved working conditions for higher precision and efficiency in a wide range of manufacturing tasks
- ▶ attracting customers after dark, due to safety and hygiene considerations.

ICT can contribute to business success by enabling:

- ▶ access to important market information (e.g. on prices, product quality, market size, and special sales events), both for sale of final products and purchase of input materials
- ▶ better customer relations
- ▶ opportunities for learning through innovative ICT based methods, including business management skills, technical skills, etc.

Experience shows that the use of lighting and ICT within existing enterprises has proven to need far less promotion and external support than the use of more specialised electrical equipment, because it does not require major transformations in business operations.

### Task 3.2

#### Generate new business ideas that require electricity

In addition to identifying potentials for upgrading existing productive activities through electricity use, the programme can encourage electricity-based business *start-ups*. It can support efforts to take up new productive activities that need electricity input, satisfy untapped market potentials in the region, shift value added from neighbouring areas or urban centres to the region, and even to access export markets.

**Workshops** at community level with selected participants (economically active portion of the local population) are usually the most effective approach to identifying what kind of support people need to break such new ground. Sometimes people need outside *inspiration* to develop new electricity-based business ideas, while in other cases specific *hurdles* need to be removed to allow people to *put their ideas into practice*.

For a very systematic approach to generating new business ideas with electricity input, it is recommended to take market opportunities as a point of departure (*Figure 4*), by asking:

- a. What goods and services are in demand with local consumers (**local market opportunities**)?
- b. What resources (natural, physical and human) does the region have to offer that give it a comparative advantage over other regions and countries in the production of goods and services (**export opportunities**)?



To explore local market opportunities, the following questions should be discussed:

- ▶ What goods are **currently imported from other regions**, but could be locally produced with electricity input (e.g. preserved food items processed and packaged with modern equipment that runs on electricity)?
- ▶ Is there a proven **demand for services** that could not be provided locally due to lack of electricity, i.e. for which people travel to urban centres or neighbouring regions (such as photocopying services and mobile phone charging services)?

To analyse their export opportunities, communities should discuss the following questions and seek expert views:

- ▶ Does the area hold particular **wealth in natural resources** which, with electricity use, could sustain the production of marketable goods (e.g. non-timber forest products, minerals, fertile soil or good climate, etc.)?
- ▶ Does the local **agricultural system** offer opportunities for export of (surplus) processed crops, fruit, vegetables, fish, meat and dairy products?

- ▶ Do local inhabitants have any particular **skills**, e.g. in crafts, on which they could capitalise with the help of electricity use?
- ▶ Does the area offer opportunities for providing **services that require electricity, yet could attract external revenues** (e.g. tourism development)?

The new productive use business ideas that emerge from such market studies must be **systematically screened for feasibility**. [Table 6](#) provides an overview of the key generic steps of such analysis.

Experience has shown that promoting business start-ups is more time- and funding intensive than promoting change in existing businesses. Inexperienced entrepreneurs-in-spe typically need strong hand-holding.



## SUMMARY

Table 6 Feasibility screening for business ideas based on electricity use

Generic steps	To be undertaken by:
<p>1. Describe the business idea:</p> <ul style="list-style-type: none"><li>a. the product or service</li><li>b. the production process</li><li>a. where the business would be based</li><li>b. who will run the business.</li></ul>	Entrepreneur
<p>2. Technical analysis:</p> <ul style="list-style-type: none"><li>a. What electrical machinery and equipment would be needed, and where would it be available?</li><li>b. Can maintenance and repair services be provided for this equipment and machinery?</li><li>c. Does the available electricity supply sustain the use of this kind of machinery? How much electricity will be consumed to produce a certain quantity of output?</li><li>d. What technical skills are required to operate the equipment? Match with entrepreneur?</li></ul>	Entrepreneur with advice from technical experts, e.g. from equipment vendors and institutes for industrialisation, etc.
<p>3. Operational analysis:</p> <ul style="list-style-type: none"><li>a. What production inputs and raw materials will be needed, where they can be procured, and at what cost?</li><li>b. How many people are needed for production, sales, and business administration, etc.?</li><li>c. How much output can be produced with a given amount of inputs and within a certain period of time?</li><li>d. Any regulatory provisions to be observed? Any safety provisions to be observed?</li></ul>	Entrepreneur with advice from technical experts, e.g. from equipment vendors and institutes for industrialisation, etc.



Generic steps	To be undertaken by:
<p>4. Economic analysis:</p> <ul style="list-style-type: none"> <li>a. What is the approximate market size?</li> <li>b. What would be the optimum price for the product(s) and/or service(s)?</li> <li>c. Considering possible output volumes, market size and price, how much would the monthly revenues be?</li> <li>d. How much would the input and operating costs be (materials and labour, electricity bill, rent, marketing costs, taxes and license fees, etc.)</li> <li>e. How much investment is required for electrical equipment, etc.? How could the required seed funding be mobilised?</li> </ul>	<p>Entrepreneur under guidance from business training experts or MFI staff</p>
<p>5. Apply a value chain lens: Other bottlenecks or major impacts upstream or downstream along the value chain to be considered?</p> <ul style="list-style-type: none"> <li>a. Transport for market access?</li> <li>b. Prospects for major changes in market size in the foreseeable future?</li> <li>c. Competition expected to come up?</li> <li>d. Environmental impacts, disposal of waste, etc.?</li> </ul>	<p>Guided reflection exercise for business owners</p>
<p>6. Check back with PU programme objectives</p> <ul style="list-style-type: none"> <li>a. At what level(s) are benefits achieved: Only for the business owner? Also for local consumers?</li> <li>b. Are there positive or negative implications for employment opportunities?</li> <li>c. Will business be taken away from other enterprises? Zero-sum game at regional level?</li> <li>d. Can long-term impacts be expected for the region in terms of economic upgrading?</li> <li>e. Is the business idea actually relevant for the main target group?</li> <li>f. Is the business idea compatible with the cultural and social norms of the target population?</li> </ul>	<p>Productive use programme planners and steering committee</p>



### Outcomes of Module 3

- ▶ List of opportunities for taking up electricity use within existing economic activities with benefits for the entrepreneur
- ▶ list of opportunities for new electricity-based economic activities that are technically and economically feasible.

Possible direct outcomes for the target group:

- ▶ increased capacity among the (future) entrepreneurs to systematically think through a transformation in their business operations (i.e. change to electricity-run equipment) or a new business idea
- ▶ increased capacity among implementing partners to conduct technical and economic analysis of electricity-based businesses, and value chain analysis
- ▶ linkages between entrepreneurs, equipment vendors and providers of maintenance services, etc.



## TOOLS AND INSTRUMENTS

### Readily usable tools and instruments

*For analyzing local economic structures and getting an overview of commercial activities in an area*

**Local Economic Development (LED)** is a participatory development process that encourages partnership arrangements between the main private and public stakeholders of a defined territory, with the final objective of stimulating economic activity. The first phase in the LED process is a territorial analysis, aimed at acquiring knowledge about the local economy and its existing resources. It comprises a preliminary analysis of the major socio-economic and political data of the territory, particularly through statistics and surveys.

Sources of LED tools and materials: see [Module 2](#).

#### **Method Finder's Practitioners' Guide: Participatory Appraisal of Competitive Advantage (PACA).**

A methodology to launch or adjust LED Initiatives. A set of tools that permit rapid appraisal of the competitive advantages and disadvantages of local communities. Delivers concrete, practical proposals to stimulate the local or regional economy (PACA Exercise).

#### **GIZ (2007) ValueLinks Manual. The Methodology of Value Chain Promotion.**

[Module 1](#) "Selecting a Value Chain for Promotion" provides guidance on conducting and supporting **market research**.

[Module 2](#) "Analysing a Value Chain" introduces different methods for **mapping and economic analysis of value chains**, to generate a clear picture of economic potentials and limitations, and entry points for interventions to strengthen a value chain.

#### *For generating new PU business ideas*

**Generate Your Business Idea** trainings (developed by ILO as part of the Start and Improve Your Business (SIYB) training package). A materials-based training programme (2-3 days) for potential entrepreneurs to find out whether they are the right person to start a business and to develop a feasible business idea (micro or small-scale). Participants should be able to read, write, and make basic calculations. Has been implemented in over 90 countries in Asia, Africa and Latin America through a network of locally based certified trainers. Further information:

[www.ilo.org/images/empent/static/seed/GYBf50307.pdf](http://www.ilo.org/images/empent/static/seed/GYBf50307.pdf).

#### **ESMAP (2008), Maximizing the Productive Uses of Electricity to Increase the Impact of Rural Electrification Programs. Formal Report 332/08, ESMAP, Washington DC.**

Proposes a systematic approach to analyze the technologies used in production processes in rural areas, and to see whether the use of electricity can help to remove limiting factors. Entails a thorough review of all productive or social activities taking place in a designated area, through substantial interaction with the anchor sectors in which these activities take place.