





## Module 4: Plan productive use promotion activities

### In brief

Under *Module 4*, a plan of programme activities will be developed that supports the viable opportunities for productive electricity use (*identified under Module 3*) in the most effective way possible, and that matches the budget and intended scope of the productive use programme (*as defined in Module 2*).

### Practical tasks

#### Task 4.1

##### Identify key bottlenecks

In order to determine the most (cost-)effective interventions to promote a set of prioritised opportunities for productive use of electricity, the main bottlenecks impeding the development of these business ideas should be identified. Clarity is needed on:

- ▶ factors that could possibly hamper the switch to electricity from other sources of energy, or the uptake of electricity in businesses that so far do not use energy sources
- ▶ possible challenges faced by business start-ups.

Such inhibiting factors can arise at a number of different levels, i.e. among the (future) business owners themselves, or when trying to ensure accessible services, or within the regulatory framework. *Table 7* can be used as an analytical tool to identify key bottlenecks at each of these different levels for a given productive use business opportunity.



**Table 7** Guiding questions for overcoming key bottlenecks that impede development of productive use business opportunities

Context	Business owners	Available services	Regulatory framework
<b>Decision for change / motivation for start-ups</b>	<p>What is the <b>level of transformation</b> that uptake of electricity use implies for <b>business operations</b>? What is the <b>scope of related risks</b>?</p> <p>What is the level of <b>entrepreneurial spirit</b> among the potential candidates for starting electricity-based businesses?</p> <p>(Experience from earlier private sector promotion programmes in the area? General level of business dynamics in the area?)</p>	<p>What information <b>channels</b> can be used to promote awareness of opportunities for productive use of electricity (e.g. via radio, television, newspapers, awareness-raising campaigns, and training)?</p>	<p>Are there any special regulations governing <b>limited liabilities for business start-ups</b>?</p>
<b>Investment</b> Connection to the grid and installation of RE system Acquisition of electrical machinery and equipment	<p>What is the <b>cash-flow situation</b> of the businesses or the individuals who want to start a business?</p> <p>What is the general willingness to take out loans among the target group?</p> <p>Are entrepreneurs informed about loan availability and conditions?</p> <p>Do they have collateral?</p>	<p>What <b>sources of financing</b> are available to business owners (formal and informal)?</p> <p>What are the <b>conditions for obtaining loans</b> (interest rate, loan tenure, etc.)?</p>	<p>Are there any legal regulations governing accounting for <b>accessing formal financing</b> services that are difficult for MSMEs to meet? Does insecure <b>land tenure</b> hamper investment?</p>
<b>Equipment acquisition &amp; installation</b>	<p>Do entrepreneurs have the capacity to make an <b>informed purchasing decision</b> for electrical equipment?</p> <p>Do entrepreneurs know about <b>equipment vendors</b> and installation services available in their area?</p> <p>Are the workplace conditions common among MSMEs suitable for installation of such equipment?</p>	<p>Is the required electrical <b>equipment and machinery available</b> in the area? If not, where can it be procured?</p> <p>Do equipment vendors provide <b>warranties, support for installation, and training in correct and safe operation</b>, etc.?</p> <p>Is there a neutral source of <b>information on the technical aspects</b> of this electrical equipment (performance, operating costs, and quality)?</p> <p>Is <b>repair and maintenance know-how</b> available locally?</p>	<p>What are the legal <b>product standards</b> for the electrical equipment?</p>



Context	Business owners	Available services	Regulatory framework
<b>Production process</b> Operation of new equipment and machinery	Do entrepreneurs have the <b>technical skills to operate</b> the electrical equipment? Are there any <b>safety concerns</b> related to the use of the equipment?	Is the <b>electricity supply</b> sufficiently stable to allow safe operation of the equipment? Is the <b>supply of input materials</b> sufficient and stable? Does the available transport infrastructure enable sustained supply?	Are there any special <b>safety requirements</b> for businesses that are difficult for MSMEs to meet?
<b>Business management</b> Business skills, accounting, and management of human resources	What is the level of <b>business administration skills</b> required to manage production and marketing of the new products and/or higher quantities of products? Do businesses have <b>informal obligations</b> (e.g. family ties) to sustain a certain number of staff (so that they are unwilling to replace staff with electrical machinery)?	If new business models are significantly more complex than existing ones, how and where can business owners acquire <b>advanced business management skills</b> ?	What <b>accounting regulations</b> are in force?
<b>Marketing</b>	Are <b>new marketing strategies and distribution models</b> needed for the new products and services? What additional skills, capacities or access to information do entrepreneurs need to enter into <b>export markets</b> (e.g. language skills, knowledge of formalities and procedures, awareness of quality standards)?	What <b>transport infrastructure and marketing channels</b> are available for export of goods to other regions or overseas markets?	What <b>quality standards and safety requirements apply in the domestic and export markets</b> for the new products? What are the <b>export procedures and formalities</b> ?



The relevant information about individual entrepreneurs' capacities and availability of services and general business environment will come to light in interaction with the target communities, including meetings and workshops organised under *Module 3*. If productive use programme planners need deeper insights into the circumstances that influence business owners' capacities and willingness to take up electricity use, (qualitative) interviews should be conducted with business people, service providers and community members interested in starting businesses.

**Box 3** Experience from a micro hydropower project in Indonesia: Productive use requires a change in traditions

**Experience from a micro hydropower project implemented by GIZ in Indonesia under EnDev demonstrates that taking up productive use of electricity requires a change in traditions.**

*In many remote villages [in Indonesia], subsistence farming still prevails. This means that most families produce much of what they need by themselves. Introduction of productive use of electricity requires a total break from this tradition owing to the differing divisions of labour and trading between families. This represents a major change in routines which have prevailed for centuries. Naturally, this process requires time and patience and cannot easily be imposed by outside development agents who visit the villages only periodically.*

#### Task 4.2

##### Assess the scale on which productive use opportunities are replicable

Some productive use opportunities are relevant for a huge number of existing enterprises in the target area (such as lighting in bars and shops, and electric water pumping and electric grain mills in agricultural regions), and there are new business ideas offering extensive market potential to sustain a high number of local producers and service providers (e.g. mobile phone charging, and fruit processing for export markets). However, there are also electricity-based businesses that could not survive if multiple competitors vie within a limited area (e.g. photocopying services, welding, etc.). In order to utilise limited programme resources effectively, the planners of productive use programmes must distinguish between the former and the latter scenarios, and tailor support activities to the **replicability of productive use opportunities: Specialised support** (for selecting equipment, gaining access to installation and maintenance services, and providing specialised technical training, etc.) should be provided only if productive use opportunities are **widely replicable**; more **generic support activities** (business management training, access to financing) can be designed in such a way that **more exotic productive uses** also benefit.



### Task 4.3

#### Develop a plan of productive use promotion activities

Planning of activities to promote productive electricity use should be based on the following criteria:

- a) Productive use promotion should **build on the existing strengths** among local private actors, promote **entrepreneurial talents** and pick up on the most obvious **opportunities**.
- b) The **key bottlenecks** inhibiting emergence of productive use opportunities should be addressed (keeping in mind that only business ideas whose economic viability has been established should be promoted, and which in the absence of such bottlenecks would emerge, driven by market forces).
- c) To ensure efficient utilisation of productive use programme resources, activities should be chosen for which there is plenty of fertile ground (**potential for replication**).
- d) Interventions should be prioritised in response to the **availability of partner institutions** that have or can develop the **capacities to implement** the selected measures.

*Table 8* provides an overview of possible productive use promotion activities, structured in line with the various levels and contexts in which bottlenecks may occur. The table contains an *indicative* set of **response options** rather than an exhaustive list of productive use promotion activities.





Table 8 Possible productive use promotion activities

I. Interventions to address bottlenecks at the level of (potential) business owners		
	Bottleneck	Possible response measures
Decision for change	Aversion to high risks, lack of entrepreneurial spirit	<ul style="list-style-type: none"> <li>▶ Organise exposure visits to enterprises that already successfully practice the proposed productive use.</li> <li>▶ Organise (regular or one-time) meetings of homogeneous groups of business persons to jointly review the options and risks involved, assess market opportunities, mutually analyse each other's business operations, and facilitate mutual encouragement.</li> </ul>
Investment	Lack of awareness about credit facilities, lack of trust in MFI, lack of knowledge of formal requirements	<ul style="list-style-type: none"> <li>▶ Organise training and awareness-raising sessions with MFI representative(s).</li> <li>▶ Invite MFI representative(s) to business association meetings to inform entrepreneurs about terms and conditions.</li> </ul>
	Lack of knowledge needed to make informed purchasing decisions for new equipment	<ul style="list-style-type: none"> <li>▶ Organise electrical equipment fairs where equipment vendors and business owners can get together.</li> <li>▶ Organise visits to urban markets and trade fairs for the equipment they need.</li> <li>▶ Provide information material on technical performance, electricity consumption and quality criteria, etc.</li> <li>▶ Invite vendors and manufacturers of electrical equipment to training workshops and business association meetings to present their products.</li> <li>▶ Organise meetings of homogeneous groups of business persons for exchanging information and experience with equipment.</li> </ul>
Production process	Lack of technical skills to operate new equipment and machinery	<ul style="list-style-type: none"> <li>▶ Organise technical training workshops, e.g. through local NGOs or existing training institutes.</li> <li>▶ Organise meetings of homogeneous groups of business persons for exchange of technical know-how.</li> </ul>

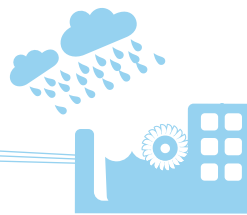


	Bottleneck	Possible response measures
Business management	Lack of business administration skills to manage the higher production volumes enabled through electricity use	<ul style="list-style-type: none"><li>▶ Offer BDS courses and facilitate business persons' enrolment in existing training programmes.</li><li>▶ Organise meetings of homogeneous groups of business persons for exchange of business management know-how.</li><li>▶ Mentoring.</li></ul>
Marketing	Lack of skills, capacities and/or information enabling access to regional, national and/or export markets	<ul style="list-style-type: none"><li>▶ Facilitate linkage with dealers operating at regional or national level and/or with exporters.</li><li>▶ Offer training or counselling services on product standards, packaging, formalities and procedures, pricing and translation services.</li><li>▶ Organise visits to national and international trade fairs.</li><li>▶ Facilitate access to ICT, e.g. the internet.</li></ul>
<b>II. Interventions to address bottlenecks at the service provision level</b>		
	Bottleneck	Possible response measures
Decision for change	Lack of access to information about market opportunities	<ul style="list-style-type: none"><li>▶ Establish a productive use information and demonstration centre, e.g. at the headquarters or regional offices of an energy service provider.</li><li>▶ Create a mobile information and demonstration unit.</li><li>▶ Facilitate access to ICT, e.g. the internet.</li></ul>
Investment	MFI have weak local structures and little outreach in the area; MFI lack experience with medium-term lending to MSMEs (3 to 5 years)	<ul style="list-style-type: none"><li>▶ Facilitate service delivery by existing MFIs, e.g. by offering partial risk guarantees for productive use loans.</li><li>▶ Increase awareness of productive use potentials among MFIs through demonstration projects and sample business plans.</li><li>▶ Include MFI representatives in participatory business plan preparations with (would be) entrepreneurs</li><li>▶ Broker collective procurement of equipment to attain special price offers.</li><li>▶ Provide incentives for existing MFIs to strengthen services in the area.</li><li>▶ Set up special productive use funds managed by MFIs or development banks.</li></ul>





	Bottleneck	Possible response measures
Investment	Lack of local availability of electrical equipment and machinery needed for productive uses	<p>Invite equipment vendors from an urban centre to visit the programme area for exhibitions and promotional activities at special events (e.g. agricultural machinery fair, market days, etc.).</p> <p>Organise visits to urban markets or trade fairs that feature the equipment needed.</p>
	Lack of service providers in the area with technical expertise to repair and maintain the equipment	<p>Initiate advanced training workshops at existing training institutes that professional technicians can attend.</p> <p>Work towards inclusion of relevant technical know-how in the curricula of local vocational schools, and train instructors accordingly.</p>
Production process	Energy services are insufficient in terms of quantity and/or quality	<p>Include representatives from energy service providers in productive use promotion planning to trigger and drive improvement of services for commercial clients.</p> <p>Broker special service contracts between energy service providers and commercial users.</p> <p>Set up industrial zones with reliable electricity supply that are not subject to load shedding.</p>
	Weak capacities at vocational institutions for expertise in the field of productive electricity use; weak public services, e.g. agricultural extension	Organise training of trainers (ToT) measures for vocational school instructors and extension agents, including e.g. demonstration of new tools and equipment for special skills (agricultural mechanisation and processing, furniture-making, car repair, etc.).
	Lack of certain input materials needed for new productive use-based production processes	Help establish and expand linkage between input providers (based in urban centres) and local business owners.
	Special requirements with regard to space availability, terrain conditions for the new production processes	Set up industrial and commercial zones where terrain conditions are appropriate and businesses can use joint facilities (e.g. for waste disposal and energy supply, etc.).



	Bottleneck	Possible response measures
Business management	Lack of business training opportunities	<ul style="list-style-type: none"> <li>▶ Work towards integrating business training into the portfolio of tertiary education institutions and vocational schools.</li> <li>▶ Extend outreach of existing entrepreneurship training programmes (often targeted at urban areas) to the productive use programme area; to be funded by electrification programmes, if necessary.</li> </ul>
	Lack of mentoring and counselling services for business owners	<ul style="list-style-type: none"> <li>▶ Facilitate setting up business mentoring / counselling service in cooperation with business associations</li> <li>▶ Extend outreach of existing MSME counselling services (often targeted at urban areas) to include the productive use programme area; to be funded by electrification programme if necessary</li> </ul>
Marketing	Weak transport infrastructure for haulage of goods to other regions or export to overseas markets	<ul style="list-style-type: none"> <li>▶ Advocate for development of transport infrastructure through government programmes.</li> <li>▶ Facilitate collective deliveries of goods to urban centres.</li> </ul>

### III. Interventions to address bottlenecks at the regulatory framework level

	Bottleneck	Possible response measures
	Neglect of MSME promotion in rural areas in development strategies and policies	<ul style="list-style-type: none"> <li>▶ Advise ministries on integrating the objective of creating a more enabling regulatory environment for MSMEs in development strategies and policies, and on developing relevant programmes, including budgeting.</li> </ul>
	Limited institutional MSME promotional competence among the responsible ministries and national authorities	<ul style="list-style-type: none"> <li>▶ Advocate for establishment of a national agency to promote MSMEs, with branch offices in outlying regions and provinces.</li> <li>▶ Facilitate sharing of good practice experience between government ministries and regional and national-level agencies.</li> </ul>
	Lack of attention to productive electricity use in national and sub-national rural electrification programmes	<ul style="list-style-type: none"> <li>▶ Share experiences and success stories from productive use programmes with decision makers responsible for rural electrification.</li> <li>▶ Advocate for inclusion of productive use objectives and indicators in rural electrification strategies and programmes.</li> </ul>

**Box 4** Promoting productive uses of renewable energy – technology-specific challenges and opportunities

The **unique features** of renewable energy (RE) sources, especially in the context of stand-alone systems, often directly imply particular restrictions to suitable productive use applications. Some of the most typical technological restrictions of stand-alone RE systems can be summarised as follows:

- ▶ First and foremost, the maximum **power output of RE-based systems is too low for many productive AC power uses**. Typical motive power applications like grinding, milling and sewing, etc., require more power than typical PV solar home systems (SHS) or micro hydro turbines can supply <sup>9</sup>.
- ▶ In addition, productive uses with high power demand can involve considerable **fluctuations in load** in stand-alone RE systems. To manage these load fluctuations, it may be inevitable to add a load control system to the RE scheme, which will imply substantial extra costs that need to be taken into account when planning productive uses of electricity. This is all the more important for motive applications which, depending on the characteristics of the motor used, may require 3-5 times higher power input for machinery start-up (so called **surge-current**).
- ▶ The availability of renewable energy resources is often subject to **seasonal fluctuations**; e.g., the output of a hydropower scheme can vary substantially over the course of the year. This fluctuation in power generating capacity needs to be taken into account when assessing productive use options.
- ▶ Some renewable energy resources also **fluctuate over the course of each day (i.e. on a 24h-cycle)**. This is always the case for solar energy, and to a lesser extent for wind energy. Often, peak power demand is not at the same hours as peak supply, creating a need for power storage. Therefore, productive use of power generated by RE systems works best whenever power demand for productive activities can be used to fill gaps in the demand curve in order to reduce storage and generation, e.g. productive electricity use that can be scheduled for times of excess supply. In solar powered systems, for instance, it is therefore typically good to explore (i) options for **daytime productive use applications** (because energy is produced at daytime and domestic loads are usually during the morning and evening), or (ii) applications that work with **alternative means of energy storage**, like pumping water for irrigation or livestock into a water basin.



- ▶ Hydro and wind power systems that generate motive power also offer a **direct drive** option for power applications as an alternative to transforming the generated power into electricity. With direct drive, machines are run directly by the turbine via a coupling or a belt and pulley transmission. The main advantages of such an arrangement are that the purely mechanical technology is usually very robust and relatively easy to handle, and that efficiency losses through transformation into electricity can be avoided. The main disadvantages are that the machines for productive uses must be installed on site where the power is generated.



- 9) While larger RE generators for such high-power productive uses are often technically feasible, they typically are economically less viable for such specific productive uses than alternative diesel generator sets due to the high upfront investment costs of RE, which requires a more constant distribution of demand over time than diesel generators .



#### Task 4.4

##### Identify opportunities for linking up with ongoing programmes

Productive use programme planners should now explore which of the prioritised productive use promotion activities can best be implemented in cooperation with ongoing programmes and projects in the areas of local economic development, private sector promotion and agricultural development, etc. (as mapped out under *Module 2*).

#### Task 4.5

##### Select partner institutions and determine what capacity development interventions will ensure the sustainability of productive use promotion

For those productive use promotion activities that have to be set up from scratch, partner institutions and service providers must be selected to implement the defined measures based on the mapping and capacity assessment carried out under *Module 2*. Memoranda of Understanding (MoU) and/or Terms of Reference (ToR) must be drafted in close collaboration with these partners to ensure maximum inclusion of the partners' local expertise. As some of the selected partner institutions may need support for building capacities specifically relevant to productive electricity use, the productive use programme team should take an active role and, for example, establish linkage between the selected institutions and practitioners with expertise in the relevant fields.

#### Outcomes of Module 4

- ▶ Clarity on key bottlenecks that could hinder productive use uptake, marking entry points for productive use promotion activities
- ▶ plan of productive use promotion activities
- ▶ selection of cooperation partners and/or service providers (e.g. consulting firms, NGOs, and ongoing projects and programmes for local economic development, small enterprise promotion and agricultural development, etc.)
- ▶ plan for capacity development among these institutions, if needed
- ▶ MoUs or ToRs with qualified implementing partners.

## TOOLS AND INSTRUMENTS

### Readily usable tools and instruments

**GIZ (2007) ValueLinks Manual. The Methodology of Value Chain Promotion. *Module 2***  
“Analysing a Value Chain” provides guidance on how to identify entry points for interventions to strengthen a value chain.

