

LEARNING

AgriCultures

Insights from sustainable small-scale farming



MODULE 5

Labour and energy in small-scale farming

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This publication forms part of the **Learning AgriCultures** series for educators, providing insights on sustainable small-scale agriculture.

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Please note:

This module is a first edition.

We welcome comments and suggestions for improvement.

Foreword to Learning AgriCultures series

Why Learning AgriCultures?

Over the years, the readers of ILEIA's magazines, as well as our international network of partners, have asked for support material explaining the principles behind sustainable small-scale farming. With 26 years of publishing practical cases from around the world, ILEIA has a wealth of material for exploring this subject. The Learning AgriCultures series is our response to these requests. Sustainability translates differently under specific local conditions so this series does not intend to offer solutions to all the problems. Its objective is to stimulate a culture of learning about sustainable small-scale farming. Through probing questions, and a variety of educational resources, we hope that this material will feed into and provoke discussions and deeper reflections over the important contributions of small-scale farming, and what sustainability means in different contexts. The series is not intended as a field guide nor does it focus on technical details about farming methods. It does however suggest further references for digging deeper into technical questions.

Who is it for?

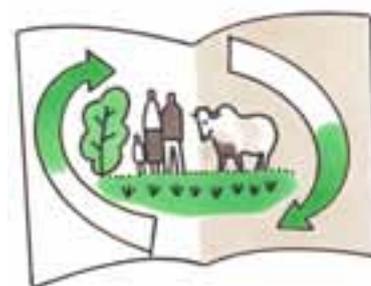
Learning AgriCultures is a learning resource particularly aimed at educators seeking support material for explaining about sustainable agriculture in their courses, at a university or college level, in special NGO training courses or other professional environments. Courses in which this series could be useful include agriculture, rural development, environmental studies, research & extension, agricultural policy-making, with students who will primarily, but not exclusively, be working in developing countries.

What is in it and how can it be used?

The Learning AgriCultures series has seven modules (see list below). It explores small-scale (family) farming and how it can become more sustainable. Each module has three learning blocks, looking at its theme from the perspective of: 1) the farm, 2) key issues in the wider context, and lastly 3) governance issues that affect farming sustainability. These learning blocks are followed by a section of educational support materials: practical cases (mostly drawn from 26 years of articles in ILEIA's archive), exercises, games, photos, videos, checklists for farm visits as well as further references (free books and websites). Illustrations and diagrams as well as a separate glossary of difficult terms provide further support to the series. Educators can draw on what is relevant to their own regional context and student group.

Learning AgriCultures: Insights from sustainable small-scale farming

- Module 1** • Sustainable small-scale farming
- Module 2** • Soil and water systems
- Module 3** • Cropping systems
- Module 4** • Livestock systems
- Module 5** • Labour and energy in farming
- Module 6** • Markets and finance for small-scale farmers
- Module 7** • Knowledge for small-scale farming



Summary of this module

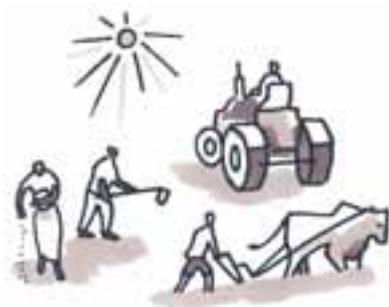


Figure 1: Labour and energy are critical factors for understanding the functioning and productivity of small-scale farming.

Small-scale farmer households work extremely hard in order to produce enough to sustain themselves. Getting the most out of their labour and time is a major preoccupation. Many challenges exist in rural areas that place a strain on how productive family farmers can be: low access to health facilities, water and sanitation services, and limited energy options. More and more rural farming families are finding they need to seek other employment on the side. They might work on other farms or industries in the area – or venture further, to jobs in the city or even in another region or country. Around the world, major population shifts are currently taking place, from rural to urban areas. Although the pace and characteristics of this trend differ from region to region, these shifts are having a profound effect on rural areas in all continents.

On one hand, labour migration provides an important economic injection into rural household incomes, leading to investment possibilities to for example improve or expand farms. Yet labour migration is selective – it is particularly the younger, more educated, more skilled, and often male members who choose to seek off-farm jobs. As a result, rural populations are generally becoming more “feminised”, and older. Naturally, this situation has great consequences for labour dynamics on rural small-scale farms. Labour productivity and gender relations change as women take on more responsibilities on the family farm, and in economic side activities as well. For those who leave their home in search of waged work, experiences vary. For those working in the agricultural wage sector, the seasonality of the work means that permanent contracts are rare, workers are poorly organised -and the sector is difficult to regulate. As a consequence, many workers suffer from long working conditions, underpayment as well as exposure to hazardous and unhealthy conditions, and unsettled families. All of these issues come up in this module, with ideas for stimulating discussion.

Labour-savings and energy technologies for rural small-scale farming households are other topics addressed in this module. Energy options are particularly limited in developing countries where most household energy comes from solid resources such as fire wood, crop and livestock outputs. Significant time is spent on gathering these “bioenergy” resources. Use of these resources also puts pressure on the wider environment, and families suffer negative health impacts from cooking on open fires. This module discusses some ways in which these laborious tasks can be eased, and brings up some of the wider systems’ ramifications of using different technologies and energy options. Among others, it refers to sustainability of different energies, links between energy production and climate change, energy and land use, as well as gender perspectives on energy and labour. The module ends with ideas on how small-scale farmers can be supported in improving their labour productivity (both on- and off-farms) and their access to sustainable energy options.

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Guide to educators

PURPOSES OF MODULE 5



Figure 2: Educators, the target group of Learning AgriCultures

For educators:

- to provide a systems approach to teaching about labour and energy dynamics in rural small-scale farming

For students:

- to understand about the dynamics of labour (on- and off-farm) and energy in small-scale farming; and
- to learn about improving the sustainable and equal access to and productivity of labour and energy (technologies) in small-scale farming systems.

How to teach Module 5

About 20 contact hours will be needed to teach this module. This does not include time for conducting interviews with farmers, or the time that students will spend on assignments. You will need to decide for yourself whether to use the entire module or parts of it when making your lesson plans.

At the end of this section, an example is given of how to make a lesson plan from the material included in this module. The total time required and duration of each lesson will vary depending on the level of your students, the knowledge of you, as educator, and the number of exercises and assignments you choose to include in the course. A very important component of the module is to visit and interview at least one farmer - so that students can better understand the practical realities about labour and energy in farming systems in their area.

What is in Module 5?

This module is the fifth in the Learning AgriCultures series. As with the other modules, it includes three learning blocks with theoretical information and a section of educational resources that provides support material. Specifically, the content of this module is as follows:

LEARNING BLOCK 1: Labour and energy on the farm

This block provides an overview of the dynamics of labour and energy in rural small-scale farming. It describes how tasks are divided between household members, gender-related management issues, how the tasks are carried out in terms of human labour (family and outside help), draught labour and mechanised labour - as well as energy resources that go into easing farming and household tasks.

LEARNING BLOCK 2: Labour and energy issues in the wider context

This block moves beyond the farm to look at broader contextual issues that affect labour dynamics and access to energy in small-scale farming. Issues include labour migration, rural feminisation and aging, HIV/AIDS, sustainability of different energy options, climate change and bioenergies. How these issues affect the options and sustainability of rural small-scale farming is central to the discussion.

LEARNING BLOCK 3: Governance of labour and energy

In this final block, different perspectives are given on how governance relates to labour productivity and energy use in small-scale farming. Gender issues of access and control, protection of agricultural workers' rights to fair and safe labour conditions, support for sustainable energy options and labour-saving technologies are some of the policy areas addressed.

EDUCATIONAL RESOURCES:

This section provides information about different kinds of support material that can stimulate deeper insights and discussions in class or assignments. Throughout the main texts, boxes suggest links to resources and to probing questions. These are indicated by the symbols found in Figures 3 and 4. The resources include:

- **Exercises and games:** for in-class use (and as assignments), to help deepen understanding of marketing and finance issues.
- **Cases:** suggestions for further reading and assignments based on articles from ILEIA's magazine archive, to expose students to different practical examples of different marketing and finance issues and how farmers deal with them, and to stimulate discussion.
- **Photographs:** for in-class use, to show practical implications of different issues raised in the module.
- **Videos:** for in-class use, to complement the teachings with visual examples from around the world.
- **Farmer interview(s):** suggested visit with small-scale farmer(s) (checklist and further on-farm exercises).
- **Further references:** suggestions for freely available books, articles and relevant websites.



Figure 3: Symbol to indicate link to suggested questions.



Figure 4: Symbol to indicate link to educational resources.

Glossary for the whole series

This is separate from the module and includes definitions for difficult terms for the whole Learning AgriCultures series.

Making a lesson plan

Three basic questions need to be asked when preparing a lesson plan:

- What do you want your students to learn?
- How are they going to learn it?
- How will you know if they have learned it?

A lesson plan therefore needs to reflect these questions by setting out the learning objectives, aims, or goals of the unit, and how it relates to the whole course. The lesson plan should also include a list of the materials needed and the learning aids and references that you will use. See the example below:

Example of a Lesson Plan

Lesson	The wider implications of energy for small-scale farming		
Time	3 hours		
Objectives	After completion of this session participants are able to: <ul style="list-style-type: none"> • Explain about different kinds of energy used in small-scale farming, particularly those used by farmers in their own country • Differentiate between fossil fuels and bioenergies • Understand links between energy and climate change • Understand advantages and disadvantages of biofuels for small-scale farming 		
Prerequisite	Basic knowledge about different kinds of energy, and about climate change Previous lesson with introduction to energies based on Section 1.3		
References	Sub-Section 1.2.2 (Other sources of power), Sections 1.3 and 2.4; also see R6 Further resources; and search ahead of time for statistics on your country's energy consumption patterns (e.g. go to http://data.worldbank.org/indicator)		
Time	Content	Teaching method	Teaching aid
20 min	<i>Central question:</i> What do students think are advantages and disadvantages of different energy sources?	<p><i>Introduction:</i> Make a link to the last lesson by referring to Figure 15, reminding about different kinds of energy that can be used in farming.</p> <p><i>Plenary discussion:</i> Use the idea of a matrix from Exercise 1.4, to get students to guess about how 5-6 energy sources compare in terms of 4-5 characteristics. These can be chosen ahead of time or together in class. Be sure to include at least one fossil fuel and one bioenergy.</p>	Figure 15 Exercise 1.4 Blackboard with chalk or flip chart with markers

Time	Content	Teaching method	Teaching aid
50	<p><i>Central question:</i> What are wider implications of using fossil fuels, and how does this relate to your country?</p> <p><i>Important points:</i></p> <ul style="list-style-type: none"> • Main types of fossil fuels • Statistics on global/national consumption of fossil fuels • Costs of different fossil fuels in your country • Fossil fuel use in agriculture (and by small-scale farmers) • Fossil fuel link to climate change 	<p><i>Plenary session:</i> Explain about fossil fuels, including the suggested points in the left column. Keep probing your students with questions about the points, before providing the responses.</p> <p><i>Optional:</i> Ask students to read the article on energy use in different types of agriculture (see R2.10). Use this in the discussion on fossil fuels and agriculture.</p>	<p>Sub-Section 2.4.1</p> <p>Bring in your country statistics</p> <p>Blackboard, chalk</p> <p>Optional: use article R2.10 on energy use in different types of agriculture</p>
10	BREAK		
60	<p><i>Central question:</i> What are alternatives to fossil fuels in rural areas and what are the wider implications of using these?</p> <p><i>Important points:</i></p> <ul style="list-style-type: none"> • Characteristics and country statistics of : <ul style="list-style-type: none"> o Renewable energies o Bioenergies o Biofuels • Greenhouse gas balances • Wider implications of different bioenergies 	<p><i>Plenary session:</i> Discuss the central question, relating the general information about different energy alternatives to your region.</p> <p><i>Watch a video:</i> e.g. about biogas development in China (long or short version). Discuss the questions it raises and how they relate to your region.</p>	<p>Sub-Section 2.4.1 (last point) and Sub-Section 2.4.2</p> <p>Blackboard, chalk</p> <p>Bring in your country statistics</p> <p>See video R4.5</p> <p>Computer, Projector</p>
20	<p><i>Central question:</i> Can family farmers benefit from biofuels?</p> <p><i>Important points:</i></p> <ul style="list-style-type: none"> • Competition with food crops • Potential income and other benefits 	<p><i>Organised discussion:</i> Read the two views on biofuels. Divide the class into two groups (for and against biofuels). Get students to think about potential biofuel crops for your area, and to take different sides of the debate.</p>	<p>Read article R2.11 Two views on biofuels.</p>

20	<i>Concluding remarks</i>	<p><i>Wrap up:</i> One idea is to look again at the Energy matrix made at the beginning of the lesson, to see how much has been learned.</p> <p><i>Prepare students for the excursion for next lesson.</i></p>	<p>Energy matrix</p> <p>R5.1 Field exercise about energy use on the farm</p>
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Next lesson: Field exercise about energy use on the farm

LEARNING BLOCK

Labour and energy on the farm



Woman farmer using draught power in Mali, photo by Ray Witlin, World Bank

How do small-scale farmers around the world manage labour and energy in order to get productive livelihoods? Who manages what in the household, and how are tasks divided along gender lines? Besides family members, what other sources of labour go into small-scale farming? What kinds of energy are used in farming and what are links between labour and energy?

1.1 Introduction

Labour is a critical factor of production in farming, and how household members of a family farm carry out different activities goes a great way to determining their wellbeing. Who does what and how workloads are carried out over the year determine how well the farm's labour is divided and how well the farm work can be managed. On small-scale farms, family labour is the most important labour source, though other people –not to mention animals and machines– come into the equation as well. Besides the dynamics of labour on the farm, how household members get access to energy is an important question: how much time needs to be spent on getting energy, as well as how farm households use it in their activities are others.

This learning block discusses all of these issues in considering farm management. The block is divided into two major sections. First Section 1.2 looks at how labour is managed on the farm, as well as different mechanisms in which workloads are eased. Different kinds of activities that are needed for the farm and farm household to function, who carries them out, and how, are subjects tackled in this section. Another major discussion looks beyond family members, towards different kinds of mechanisms that are used by farmers to ease family labour. These include getting help from people outside the family, and making labour more efficient through the use of tools, draught power and mechanisation. Looking at labour on the farm in terms of a wider system, labour dynamics become clearer when you also look at the connection between energy and labour inputs into the farm. Section 1.3 focuses on energy, looking at energy from a variety of sources: from natural resources such as the sun, wind and water – to plant-based energies like fuel wood and charcoal, which are the main energy resources accessible to small-scale farmers in developing countries. Other energies based on biological materials include biofuels and biogas – and even fossil fuels. How different sources of power and energy relate to labour in small-scale farming is briefly discussed.

1.2 Labour in the family farm system

Every farm has different kinds of labour demands. All crops have different requirements and seasons. Not only crops of the same species, but also for example, tree and arable crops differ tremendously in their labour intensity and time required. Farms that include livestock have daily labour requirements year-round as animals need regular feeding, water and cleaning of stalls, while dairy farming requires milking once or twice a day. At the same time, different climatic zones and weather patterns determine when and on which activities a farm's labour need to be focused. Farmers in arid regions require greater efforts for procuring water and irrigation, while temperate zones have very clear on- and off-farming seasons. Also, whether the farm is intensive or extensive has an impact on the labour inputs. While some of these differences are logical, others are less

clear cut. A farm's size, for example, does not necessarily determine the amount of labour that it requires: a small farm in a high rainfall area with irrigation facilities could require more labour than larger farms in low rainfall areas. The distribution of the labour requirement over the months will also be different: farms in low rainfall areas will have clear peak demands at sowing and harvesting time, while a farm in a high rainfall area will continuously need labour. Also, the access a farmer has to inputs such as fertilisers and pesticides or animal traction will alleviate labour and time that is put into making composts, killing pests by hand, and ploughing.

In general, there are two major areas of work that are found on every family farm, referred to in terms of “productive” and “reproductive” labour:

- **Productive labour:** all activities related to agricultural production and income generation.
- **Reproductive labour:** all activities related to ensuring the health and wellbeing of the people living and working on the farm.

The two types of labour are very interdependent in a family farm system; that is, how well one type functions has an effect on how well the other functions. On one hand, how much strength family members have to carry out the productive tasks depends on how well the family is kept healthy, well-fed and to a certain extent motivated. On the other hand, if production fails, the reproductive activities will not function well: there will then be insufficient food and money to keep the family members healthy and fit enough to be able to keep up with productive tasks. In other words, this can lead to a vicious downward spiral into poverty and hunger.

It is therefore very important when considering labour within the farm system, to pay attention to both types of labour. How the workforce is divided over the different tasks and who is responsible for what depends on many factors which are further discussed in sub-Section 1.2.1. This is followed by a look at different sources of labour that come into small-scale farms, in sub-Section 1.2.2. In sub-Section 1.2.3, the different kinds of labour activities that take place on a farm are outlined.

1.2.1 Division of labour on the farm

There are many tasks that need to be carried out on a farm. But who carries them out, and how and when, is determined by different factors. One important aspect that determines who does what is the division of labour according to perceived “gender roles”. This refers to the behaviours, tasks and responsibilities that a society considers appropriate for men, women, girls and boys. In many cultures, tasks carried out by women and girls are differentiated from tasks carried out by men and boys. Although there are many variations to the exact division of these roles, women and girls in rural societies are generally responsible for cleaning, preparing food, raising children and caring for family members, as well as tasks related to this, such as the fetching of water and fuel for cooking. All of these are reproductive tasks.



Figure 5: All members of the household are expected to help carry out labour tasks on the family farm.



Go to exercise R1.1 to compare a typical day's activities of a man, woman, boy and girl in a rural farm family in your region.



Figure 6: Rural women in developing countries tend to have longer working hours than men because they have “triple roles” as farmers, caretakers of their families and cash earners, often adding up to a 16-hour day (Carr & Hartl 2010).

When it comes to the productive tasks, there are also divisions of roles in terms of types of tasks as well as types of crops and livestock on the farm. Who ploughs, who sows, who weeds, who is in charge of caring for which crop or type of animal, who harvests, who sells what – all of these tasks are carried out by different members of the family partly determined according to cultural traditions. For example, in many rural societies, women are in charge of seed selection and sowing of the main food crops, weeding, harvesting and post-harvest activities such as threshing, winnowing and grinding; while men are responsible for land clearing and preparation (Carr and Hartl, 2010). Also, women more often look after the smaller animals such as poultry, while men and boys are in charge of the larger animals, and tasks such as herding cattle. Nevertheless, this division of roles is not always strictly adhered to, as there are times of the season when more people are needed in order to get tasks carried out quickly, such as seeding in response to rainfall, harvesting, and so forth. Also, socio-cultural traditions become less important the more a farm becomes geared towards market production: then economics play a larger role in determining who takes the lead in labour. In general, the more important a crop or animal product is to contributing to a farm family’s income, the more labour is taken on by men. As well, in general, the more technology is involved in the production process, the more men participate in it. However, women may also earn a small, independent income for themselves by selling fruit or vegetables from their home garden, or products they pick from the forest.

Decision-making about labour

Alongside these kinds of generalisations, it is important to realise that each farm system has its own mix of priorities and strategies, and how the labour tasks are managed is the result of a negotiation process within the family. In most rural societies, the management of the family farm is decided upon by the male members. Usually the head of the family decides which tasks should be prioritised, by whom and how they should be carried out. For example, decisions about which plots should be cultivated with which crop and which variety, when and how (e.g. on which crops to apply fertiliser or pesticides, what should be the focus of hired labour, etc.). Also, how income earnings from the farm should be spent can differ greatly between family members. In general, rural women prioritise spending income mainly on meeting family food needs and education for the children – while men often have other investment priorities. While these kinds of decisions can be made in consultation with other family members, how decisions are made depend on the views on gender roles of the (often male) household head.

When the household decision-maker has different ideas from other members of the family about where labour should be prioritised and how earnings should be spent, this can lead to a great deal of tension in the farm household. In Learning Block 3, the governance of labour and energy in terms of formal decision-making bodies of the government and other legal institutions will be discussed. Yet “good governance” is also a critical issue at the household level. In a well-governed household, decisions ensure the wellbeing of all the members of the family, so that they have enough motivation and are fit enough to carry out their various

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EDUCATIONAL RESOURCES

for Module 5



This section contains resources that can help students develop a deeper understanding about labour and energy dynamics of small-scale farming systems. Throughout the three learning blocks, different educational resources have been highlighted that can be used to stimulate discussions and as material for assignments. These include exercises, games, articles, photos, videos, a farmer interview checklist and field exercises, as well as references for further reading. They are brought together in this section.

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R1. Exercises and Games

This section includes four exercises and one game to support different lessons from the three learning blocks.

R1.1 The 24-hour day

(Source: adapted from *The Oxfam Gender Training Manual* by S. Williams, J. Seed, A. Mwau, Oxfam 1994, UK, p 179)



Figure 27: Exercises and games can help students understand issues better.

Objective of the exercise: To identify the daily tasks of men and women on the farm and household and to raise awareness of men and women’s workloads.

Time involved: 1 to 2 hours

Suggested use: Sub-Section 1.2.1, Division of labour on the farm

Number of participants: Minimum of two

Materials: Pen, paper (preferably flipchart)

Methodology:

- Ask the participants to form small groups. The participants can either choose a family household of which they have personal knowledge or use examples from their own families/relatives.
- Ask the group to imagine a day in the lives of the wife and husband in a particular season.
- Indicate per hour during 24 hours what activities the men and women do. (They can also include children in the schedule with girl and boy). Encourage the group to include all activities, even those which might not be thought of as work e.g. breast-feeding, knitting, community meetings.

	WOMAN	MAN
6:00	Wake up, wash and dress, Prepare the breakfast	
7:00	Help children get ready, eat Clean the kitchen	Wake up, wash and dress, eat breakfast
8:00	Take the children to school	Repair the fence

- Compare the 24-hour day clock with the other groups (if you have flipcharts put them on the wall) and draw out common points. Conclude and discuss these points.

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R2. Articles about practical experiences



Figure 29: Articles mostly from ILEIA's archive can be used to stimulate discussion on different aspects of labour and energy dynamics of small-scale farming.

Objective: To use articles about labour and energy issues from small-scale farming around the world to deepen the lessons from the three learning blocks.

Materials: All articles can be retrieved from the LEARNING pages on ILEIA's website (www.ileia.org) - and a selection of articles (indicated by a page number) is included at the end of this section.

Methodology: These articles can be used as additional reading material, as part of classroom discussions, or as part of student assignments. For example, students can use articles to prepare presentations addressing specific questions raised in the learning blocks. Some questions are suggested.

See page 106.

R2.1 Trying animal traction (Tanzania, 1992)

Where to use these articles: Section 1.2.2, Different sources of labour

What it is about: Keeping oxen is not considered to be very attractive in economic terms to farmers in this article, but it can reduce their workloads. This article describes the animal traction component of an integrated agricultural project in Tanzania.

Suggested questions:

- What training and equipment is needed for farmers to keep oxen?
- What is mentioned as the role of ox-mechanisation?
- What were the reasons for farmers to be sceptical about using oxen?
- What do you think are the benefits of using draught animals?

R2.2 Bridging gaps in water and labour supply (Nigeria, 1998)

See page 108.

Where to use this article: Sub-Section 1.2.3, The dynamics of different labour tasks on the farm (under Watering)

What it is about: Micro-scale irrigation is a minor but increasingly widespread activity of farmers in Nigeria. This article focuses on how farmers respond to the problems of water and labour scarcity, and potential low-cost improvements that can be made to current water management practices.

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R3. Photo gallery

Objectives: These photos, from around the world, are intended to support the teachings, to stimulate discussions and help students to better understand the issues within the three Learning Blocks.

Total time involved: Presentation during class time (20-30 minutes)

Materials: Photo gallery as power-point presentation with a beamer, or printout (see pages 144-150 for larger photos)

Methodology:

- Present the photographs and ask a number of questions to stimulate students to make links with larger issues; for example, what do they observe in the photo, and what does it mean in relation to small-scale farming (encourage them to reflect on environmental, socio-cultural, economic and policy aspects)
- Use the photographs to discuss similar initiatives in your region.

Photo Nr	From / Photographer	Story
 1	Bokeo, Laos Chantha Siliphanya	Farmers in Laos have a hard time getting a good price for their products. Many farmers in the province of Bokeo therefore give up farming and work as a labourer on company land instead. A group of farmers chose not to give up farming and instead decided to work together as an agro-enterprise. Pooling together, the farmers could invest in a tractor and maize sheller which have eased the workload. Now they are able to earn a better living from higher production of maize, and through better prices because of the sheller.
 2	Ceará, Brazil Pedro Jorge Lima/ ESPLAR	Growing conventional cotton requires the use of enormous amounts of pesticides. About 25 percent of the world's use of insecticides and more than 10 percent of pesticides goes to cotton crops. Some of these chemicals are considered to be the most toxic in the world. The health risks of pesticide exposure include birth defects, reproductive disorders and weaker immune systems. Some farmers like Gerardo Germano da Silva from Brazil are growing agroecological cotton, which is done without the use of chemicals. He has fewer health risks, and receives a better price for this cotton, which more than makes up for the extra labour he has to put in to keep the cotton pest-free without chemicals.
 3	Accra, Ghana Bernard Keraita	Most vegetables are grown in and around cities for the urban population. In most cases the water used for irrigation, watering and cleaning is highly polluted with human faeces. Watering cans are usually used for irrigation. This method contaminates vegetables as it applies water directly to the leaves. Applying water to the soil surface could reduce contamination. To find out how new techniques could be a solution to this, trials were conducted to compare furrow irrigation and drip irrigation with watering cans.
 4	India Mario van de Luytgaarden, FNV Mondiaal	In many cases, whole families need to work to earn enough income from which to survive. For this reason, child labour is common in many countries. Banning child labour is not always possible and may worsen the circumstances for the families. One starting point in India has been child labour schools set up by labour unions. At the same time, the labour unions are negotiating for better employment conditions, so the adults no longer depend on the employment of their children.

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R3. Photo gallery

Bokeo, Laos

Photo: Chantha Siliphanya

PHOTO 1



Ceará, Brazil

Photo: Pedro Jorge Lima/ ESPLAR

PHOTO 2



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R4. Videos

Objectives: To offer visual examples from around the world to complement the teachings and to deepen students' understanding of labour and energy issues in small-scale farming.

Total time involved: See video durations below – add time for classroom discussion.

Materials: The videos are available on CD-Rom or can be downloaded from the LEARNING pages on ILEIA's website; to present the videos, a computer and beamer are needed.

Methodology:

- Present the videos to illustrate points from the lessons and to stimulate discussions on them.
- Use the videos to discuss related issues and initiatives in your region.

R4.1 Why women matter

Duration: 3:22 minutes

Suggested use: Sub-Section 1.2.1, Division of labour on the farm

What it is about: More small farms are being run by women. However, global gender inequalities in agriculture result in less food being grown, less income being earned, higher levels of poverty, and greater food insecurity. This short video is about why women in agriculture matter and the various inequalities that they are facing. (Produced by the World Bank, 2008)

Suggested questions:

- What gender inequalities are presented in the video?
- What do you think are the root causes of these inequalities?
- Do you think gender inequalities exist in your country?
- Why is economic empowerment of women important?
- What is needed to change the situation for women farmers?
- How do you think men can play a part in this change process?

R4.2 A machine for millet: an example of participatory technology development

Duration: 9:54 min

Suggested use: Sub-Section 1.3.1, Developments in farm technologies

What it is about: An example of participatory technology development, this is a story of how a community in Southern India helped develop the “Millet Machine”, customising technology to fulfil their unique needs. The machine has

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R5. Farmer visit and field exercises

Objectives: To get closer to practical realities of small-scale farmers' labour and energy issues; to better understand the lessons in the three learning blocks by observing different aspects on one or more farms and talking to at least one male and one female farmer head directly; and to allow students to get practical experience in interviewing and synthesising information.

Time involved: Take time ahead of the interview to prepare questions and field exercises. The time needed for the visit will depend on how far the farmers live from the school; the interview should last at least 2 hours. Per field exercise, calculate half a day.

Suggested use: Visits can take place once the lessons in Learning Block 1 have been completed. Waiting until completing Learning Block 2 will allow for more insights into the wider contextual issues that affect small-scale farmers in meeting their labour and energy needs.

Materials: For the interview: pen and paper to take notes, tape recorder, camera and/or video camera.

Methodology:

- If possible, arrange interviews with both male and female farmers as well as their partners and family members. If possible do the interviews separately to be able to compare the answers of men and women.
- Prepare the specific questions to ask farmers according to the two field exercises suggested here – see R5.1 about energy use and R5.2 about time management.
- Following the visit(s), ask students to make presentations or a written report on their findings.



Figure 30: Visits to farmers bring practical realities alive.

R5.1 Field exercise about energy use on the farm

This exercise gets students to interview farmers, asking them to identify energy use in the farm system: what type of energy is invested in a farm/household; how is it used; what is recycled and what goes out?

Before going to the field:

- Ask students to read article R2.10 Energy use in agriculture: an overview found on page 129
- Divide the students into groups of 3-5 (or 2 if fewer people)
- Ask them first to draw a simple farm/household, according to Figure 31
- Make an initial checklist of questions (examples found below).

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R6. Further references for Module 5

This section provides a list of freely accessible resources that can help educators and students dig deeper into issues explored in this module. Resources include books and guides, as well as websites that offer further resources, photos and videos.



R6.1 Books and field guides

Appropriate Technology Vol. 34, No.1, Healthy food from urban gardens.

By: Appropriate Technology. 2003. ISSN 0305 0920 (Print). Research Information LTD, Grenville Court, Britwell Road, Burnham, Buckinghamshire SL1 8DF, U.K. E-mail: info@researchinformation.co.uk.

Download from: <http://www.appropriate-technology.org>

This quarterly magazine features constructive innovations, new policies, and technologies which are leading to improved incomes for urban and rural families, to more sustainable production from the land, and to the alleviation of poverty. Vol.34 No.1 focuses on presenting various success stories in urban gardening for health from around the world. Each issue also carries a regular feature called “Health matters” which presents appropriate and agriculture-related health issues and updates.

Lightening the load – labour saving technologies and practices for rural women

By: Marilyn Carr and Maria Hartl. 2010. ISBN 978 185339, IFAD, Via Paolo de Dono 44,00142 Rome, Italy, or by e-mail to ifad@ifad.org.

Download from: <http://www.ifad.org/gender/pub/load.pdf>

There is a wide range of technologies and techniques that could help address some of women’s labour constraints. This report from IFAD looks back at three decades of experiences in introducing labour-saving technologies and practices to rural women and persisting gender discrimination in access and control. It also takes into account major developments in science, technology and innovation over the last several years and shows they can benefit women.

Boiling Point

Journal on Household Energy from Practical Action

From: Bourton Hall, Bourton-on-Dunsmore, Rugby, Warwickshire, CV23 9QZ, UK, Tel +44 (0)1926 634501, Fax +44 (0)1926 634502. Email: Boiling.Point@itdg.org.uk.

Download from: http://www.itdg.org/?id=boiling_point and

New ones from: <http://www.hedon.info/BoilingPoint>

Boiling Point is a journal from Practical Action for those working with stoves and household energy. It deals with technical, social, financial and environmental issues and aims to improve the quality of life for poor communities living in the developing world. Themes discussed in the last

issues are scaling up; forests, fuel and food; poverty reduction; and enterprise development.



Donkeys for Traction and Tillage (Agrodok)

By: Luurt Oudman. 2004. AGRODOK-Series No. 35, Agromisa, P.O. Box 41, 6700 AA Wageningen, the Netherlands. E-mail: agromisa@agromisa.or.

Download from: <http://www.agromisa.org>

This Agrodok offers insight into the possibilities of donkey use, based on experiences with working donkeys around the globe. It is aimed at farmers, agricultural technicians and extension officers, for rural artisans and for people engaged in rural- and town transport with donkeys. The information provided is meant to assist them in tapping the work potential of the donkey in a manner that is humane for the animal.

ENERGIA news. Newsletter of the International Network on Gender and Sustainable Energy.

From: Energia c/o ETC Energy, P.O. Box 64, 3830 AB Leusden, the Netherlands. Subscription is free of charge. E-mail: energia@etcnl.nl

Download from: <http://www.energia.org/resources/newsletter/enarchive.html>

ENERGIA is an international network which links individuals and groups concerned with energy, sustainable development, and gender. ENERGIA's printed newsletter ENERGIA News provides a forum to collect, analyse, discuss and disseminate information and experiences in the field of gender and sustainable energy. It depends for articles on contributions from people working in the field directly focused on gender, women and energy issues. Each issue of the newsletter focuses on a particular theme.

IFOAM Training Module on Gender in Organic Agriculture

By: Inge van Druuten Vos. 2004. IFOAM, Charles-de-Gaulle-Strasse 5, DE-53113 Bonn, Germany

Download from: http://www.ifoam.org/growing_organic/7_training/t_materials/6_gen_publications/gender_tm_en.php

As a complement to IFOAM Training Manual Series, the IFOAM gender module provides information on using a gender sensitive approach in Organic Agriculture. The training module describes the main gender issues for small-scale farmers in organic agriculture in tropical regions. There are differences in relevant gender issues between Asia, Africa and Latin America, but also between different communities within the continents.

Labour saving technologies and practices for farming and household activities in Eastern and Southern Africa: Labour constraints and the impact of HIV/AIDS on rural livelihoods in Bondo and Busia Districts, Western Kenya.

By: Clare Bishop-Sambrook. 2003. IFAD and FAO, Food and Agriculture Organization of the United Nations (FAO) 2009, Viale delle Terme di Caracalla 00153 Rome, Italy.

Download from: <http://www.ifad.org/genderpf/pdf/kenya.pdf>

This report illustrates the difficulties of, and threats to, rural livelihoods. The HIV/ AIDS pandemic in rural areas is adding another dimension to the already precarious living conditions under which many farming families live. The fieldwork in Kenya done for the report complements the distance survey with an in-depth study of labour constraints in four farming communities which are particularly vulnerable to farm power shortages.

Making Sustainable Biofuels Work for Smallholder Farmers and Rural Households - Issues and Perspectives

By: Andrea Rossi and Yianna Lambrou. 2009. Bionergy at Food and Agriculture Organization of the United Nations (FAO), Viale delle Terme di Caracalla, 00153 Rome, Italy, Contact: olivier.dubois@fao.org.

Download from: <ftp://ftp.fao.org/docrep/fao/011/i0891e/i0891e00.pdf>

This paper provides an overview of the main risks and opportunities that may arise from liquid biofuel production and use in developing countries. Both the potential environmental impacts and the socio-economic effects of liquid biofuel production and use are discussed, focusing, in particular, on the household-level implications.

Making the Strongest Links: A Practical Guide to Mainstreaming Gender Analysis in Value Chain Development

By: Mayoux, Linda; Mackie, Grania. 2009., ILO, CH-1211 Geneva 22, Switzerland.

Download from: http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/instructionalmaterial/wcms_106538.pdf

This guide has been developed as a means to increase women entrepreneurs' capacity to access markets and build sustainable enterprises that create decent work. It has been informed by years of expertise in the ILO's work in Women's Entrepreneurship Development and Gender Equality (WEDGE). Most current value chain development has failed to integrate gender analysis. The document provides a framework and methodology for Gender Equitable Value Chain Action Learning which builds sustainable capacity and networks for ongoing Value Chain Development (VCD).

Mitigating effects of HIV/Aids in small-scale farming

By: Ard Lengkeek, Marian Koster and Mundie Salm. 2007. AGRODOK-Series No. 44. Agromisa, P.O. Box 41, 6700 AA Wageningen, the Netherlands.

E-mail: agromisa@agromisa.org.

Download from: <http://www.agromisa.org>

This Agrodok provides ideas to assist small-scale farmers in sub-Saharan Africa to mitigate problems brought on by HIV/AIDS. Agriculture can be adapted to the specific needs of people living with HIV/AIDS by for example changing how the farm is managed and making better use of local resources. Although this Agrodok focuses on HIV/AIDS, the ideas can be useful for households with members affected by other chronic illnesses as well.



Small-scale bioenergy initiatives: Brief descriptions and preliminary lessons on livelihood impacts from case studies in Asia, Latin America and Africa

Prepared for PISCES and FAO by Practical Action Consulting. 2009. Food and Agriculture Organization of the United Nations Climate Change and Bioenergy Unit, Viale delle Terme di Caracalla, 00153 Rome, Italy.

Download from: <http://www.pisces.or.ke/>

Around the developing world there are examples of small-scale initiatives which are working to provide improved energy access through the development and transformation of various Bioenergy resources into cleaner and more convenient forms of energy at local level. This report describes fifteen case studies from Africa, Asia, and Latin America which were undertaken to assess the impacts that different types of local-level bioenergy initiatives can have on rural livelihoods. The report concludes with preliminary lessons and recommendations for future work.

Tackling hazardous child labour in agriculture: Guidance on policy and practice

By: ILO. 2006. ISBN 92-2-118939-2. International Labour Organization, ILO-IPEC, 4 route des Morillons, CH-1211 Geneva 22, Switzerland. E-mail: ipec@ilo.org.

Download from: <http://www.ilo.org/ipecinfo/product/viewProduct.do?productId=2799>

Agriculture is the sector where over 70 percent of child labour is found. This sector is also under-regulated and with the notion of the “family farm” so common, a grey area between “helping out” and exploitative child labour exists and is complex. This manual has been produced to help policy-makers ensure that agriculture is a priority sector for the elimination of child labour.

Training resource pack on the elimination of hazardous child labour in agriculture

By: ILO. 2006. ISBN 92-2-117799-8 . International Labour Organization, ILO-IPEC, 4 route des Morillons, CH-1211 Geneva 22, Switzerland. E-mail: ipec@ilo.org.

Download from: <http://www.ilo.org/ipecinfo/product/viewProduct.do;jsessionid=?productId=1759>

This extensive training resource pack is designed for farmer trainers to run training courses for their fellow farmers on dangerous child labour. The courses are meant to help farmers to learn about hazardous child labour as a basis for taking action to eliminate such labour on their farms and in their villages and communities. It raises the awareness of farmers about the problem of child labour and why it is an issue to deal with.

R6.2 Relevant websites

Appropriate Technology

www.researchinformation.co.uk/aptearchindex.php

Appropriate technology is technology that is designed with special consideration to the environmental, ethical, cultural, social and economical aspects of the community it is intended for. This free downloadable magazine gives a wide arrange of articles related to livelihood and agricultural development.

ENERGIA – Gender and Sustainable Energy

www.energia.org

ENERGIA is an international network which links individuals and groups concerned with energy, sustainable development and gender. ENERGIA is active in Africa, Asia, Latin America and Oceania, as well as in Europe, North America and Australia. ENERGIA focuses in particular on capacity development to integrate gender and energy in policy, programmes and projects for sustainable development, and the consolidation of the network.

EASE Enabling Access to Sustainable Energy

www.ease-web.org

The EASE programme is implemented in Bolivia, Tanzania and Vietnam and undertakes activities in research, advocacy, and capacity building in order to stimulate the identification and implementation of viable energy projects in these countries. ACCESS TO ENERGY, The EASE Magazine on sustainable energy is available from the website.

FACT foundation – Biofuels for local development

www.fact-foundation.com/en

FACT promotes sustainable biofuels for local communities in developing countries, by providing knowledge and expertise on biofuel implementation, by field testing innovative biofuels and by giving specialist advice on demand. The website provides handbooks on Jatropha, media library, publications and useful links.

Food, Agriculture and Decent work/ ILO-FAO

www.fao-ilo.org/

FAO and ILO have joined forces to strengthen their impact on rural development and poverty reduction. This website contains a lot of information about labour and agriculture with important aspects such as child labour, youth employment and gender.

Global Bioenergy Partnership (GBEP)

www.globalbioenergy.org/

Existing since 2005, this international partnership stems from the G8 +5 Glen Eagles Summit, to bring together public, private and civil society stakeholders in a joint commitment to promote bioenergy for sustainable development. The Partnership focuses its activities in three strategic areas: Sustainable Development



- Climate Change - Food and Energy Security. The GBEP serves to provide a mechanism for Partners to organise, co-ordinate and implement targeted international research, development, demonstration and commercial activities related to production, delivery, conversion and use of biomass for energy, with a focus on developing countries. The GBEP also provides a forum to develop effective policy frameworks on bioenergies. This site has a number of interesting links to policy frameworks and initiatives.

International Labour Organization

www.ilo.org

The ILO is the global organisation responsible for drawing up and overseeing international labour standards. On their website you can read about the work of ILO, find publications about labour right and find links to other labour organisations and projects.

International Organization for Migration

www.iom.int

Migration is considered one of the defining global issues of the early twenty-first century, as more and more people are on the move today than at any other point in human history. There are now about 192 million people living outside their place of birth, which is about three per cent of the world's population. The website includes information on migration policies, publications and media sources.

Labour Saving Technologies

www.fao.org/sd/teca/tools/lst/index_en.html

The amount of power (time and energy) and the knowledge base a household can raise has a major influence on the household's livelihood strategies and is a major determinant of livelihood outcomes. This is an interesting website from FAO that has information on various labour saving technologies in agricultural practices, households and transport.

Labour Statistics for Agriculture

www.fao-ilo.org/fao-ilo-labourstatistics/0/

Labour statistics for agriculture are essential for policy analysis and development of the agricultural sector. On this website you can check different links of FAO statistics that can for example be used to support reports, proposals and research.

La Vía Campesina and Youth

www.viacampesina.org

La Vía Campesina is the international movement of marginal, small- and medium-scale producers, landless, rural women, indigenous people, rural youth and agricultural workers. La Vía Campesina promotes a model of "peasant" or family-farm agriculture based on sustainable production with local resources and in harmony with local culture and traditions. Rural Youth is one of the organisation's main issues. To mobilise the rural youth La Vía Campesina organises youth camps and meetings in different parts of the world.

Practical Action – Energy

<http://practicalaction.org/?id=energy>

Practical Action’s energy programme aims to increase poor people’s access to energy technology options, through improving the efficiency and productivity of biomass use, and through small-scale, low-cost, off-grid electricity supply. Practical Action works closely with communities to help them develop technology options which are appropriate to their needs. These options include micro-hydro plants, small-scale wind generators, affordable solar lanterns and biogas plants. The website provides practical information about these technologies, including videos and a series of technical briefs on a wide range of energy options from batteries and diesel to biomass, wind, solar and micro-hydropower.

Roundtable on Sustainable Biofuels (RSB)

<http://rsb.epfl.ch/>

This is an international initiative coordinated by the Energy Center at EPFL in Lausanne, France, that brings together farmers, companies, NGOs, experts, governments, and inter-governmental agencies concerned with ensuring the sustainability of biofuels production and processing. The RSB has developed a third-party certification system for biofuels sustainability standards, encompassing environmental, social and economic principles and criteria through an open, transparent, and multi-stakeholder process. Participation in the RSB is open to any organisation working in a field relevant to biofuels sustainability.

SPARKNET – Energy in East and Southern Africa

www.sparknet.info

SPARKNET is an interdisciplinary interactive knowledge network focusing on energy for low-income households in Southern and East Africa. SPARKNET focuses on three key themes – health, gender and forestry – and the relationship of these issues with energy poverty.

Women’s Entrepreneurship Development and Gender Equality (WEDGE)

<http://wedgeilo.weebly.com>

The ILO’s Women’s Entrepreneurship Development programme works on enhancing economic opportunities for women by carrying out affirmative actions in support of women starting, formalizing and growing their enterprises, and by mainstreaming gender equality issues into the ILO’s work in enterprise development. The website has a collection of resources related to women’s entrepreneurship, sustainable practices, monitoring and evaluation.

The International Forum for Rural Transport and Development

www.ifrtd.org/en/index.php

IFRTD is a network of individuals and organisations working together towards improved access, mobility and economic opportunity for poor communities in developing countries. On the website you can read about key issues relating to rural transport and development. Blog posts, discussions and other resources are

also to be found.

Women, Technology, Society

www.wigsat.org

This website promotes innovation, science and technology strategies that enable women to actively participate in technology and innovation for development. There are available resources in form of publications and other e-resources, especially about gender issues and ICT.



World Bank: Social protection and labour

www.worldbank.org/html/extdr/thematic.htm

There are six teams at the World Bank working to provide knowledge and toolkits on disability, labour markets, pensions, safety nets & transfer and social funds. On the webpage of this World Bank theme you can find various resources.