

How to do

Reducing rural women's domestic workload through labour-saving technologies and practices

Gender, targeting and social inclusion



How To Do Notes are prepared by the IFAD **Policy and Technical Advisory Division** and provide practical suggestions and guidelines to country programme managers, project design teams and implementing partners to help them design and implement programmes and projects.

They present technical and practical aspects of specific approaches, methodologies, models and project components that have been tested and can be recommended for implementation and scaling up. The notes include best practices and case studies that can be used as models in their particular thematic areas.

How To Do Notes also provide tools for project design and implementation based on best practices collected in the field. They guide teams on how to implement specific recommendations of IFAD's operational policies, standard project requirements and financing tools.

The **How To Do Notes** are "living" documents and will be updated periodically based on new experiences and feedback. Your comments or suggestions are most welcome. Please contact any of the people below.

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Acronyms

DRC	Democratic Republic of Congo
FAO	Food and Agriculture Organization of the United Nations
HHM	household methodologies
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome
IEG	Independent Evaluation Group (World Bank)
IFES	Integrated Food-energy System
IFRTD	International Forum for Rural Transport and Development
IMT	intermediate means of transport
MUS	Multiple Use Water Services
NGO	non-governmental organization
UNDP	United Nations Development Programme
WFP	World Food Programme

Introduction

Across all economies and cultures, women and girls carry out the bulk of unpaid domestic work (UN Women, 2015). The work typically involves water and fuel collection; food processing, preparation and cooking; travelling and transporting; and caregiving. It is particularly laborious and time-consuming in many rural areas of developing countries, where there is no or limited access to essential public services and labour-saving technologies. Coupled with women's often unpaid role in subsistence farming, this means rural women spend a larger proportion of the day on unpaid and undervalued tasks than men. This can restrict the income they bring in and have control over, their mobility and voice, and the health and nutrition of the whole family. When children, mainly girls, help the women in their family perform domestic chores, their schooling suffers.

The primary value of domestic labour-saving technologies and practices in rural and agricultural development programmes is to increase human capital. This is achieved by improving the well-being and nutrition of rural women and their families, and freeing up time for women of all ages. The saved time gives women more opportunities to participate in development and decision-making, with the possibility of undertaking more productive work with greater income potential. They may also choose to improve their quality of life by enjoying leisure time or looking after their own health. Men will also benefit from these technologies, depending on the extent to which they perform these domestic tasks.

Labour-saving technologies are also important for making rural areas more attractive locations to reside in, thereby reducing the pressure to migrate. There are also clear benefits to the environment and climate change mitigation efforts, for example by reducing the use of firewood for cooking and using more efficient and cleaner cooking methods instead.

Labour-saving methods are instrumental in achieving gender equality and women's empowerment, objectives that are central to IFAD's mandate. In practice, this means labour-saving technologies and practices should be integral components of the gender and targeting strategies of IFAD projects.

The Teaser on saving women's time through labour-saving technologies and practices describes the importance of reducing the domestic workload in rural living and the benefits involved. Examples are given from IFAD-supported projects.

This How To Do Note looks at the opportunities provided by labour-saving technologies and practices for rural women in the domestic sphere. The purpose is to inform IFAD country programme managers, project teams and partners of proven labour-saving methods available to reduce the domestic workload and how they can best be selected and implemented – to help promote equitable workloads between men and women and contribute to poverty eradication. The annexes give an overview of the most burdensome domestic chores and identify key labour-saving technologies and practices available to address them.

Labour-saving technologies and practices

Many labour-saving methods are applicable in rural development settings and are suitable for IFAD-supported projects. They are listed in table 1. Further details are provided in the annexes to this How To Do Note and the *Compendium of Rural Women's Technologies and Innovations* in the toolkit.

Table 1. Labour-saving technologies and practices to reduce the domestic workload in rural areas

Domestic task	Existing practice	Labour-saving technologies and practices
Water collection (annex 1)	Walking to fetch water from unsafe water source	Improved household water sources: <ul style="list-style-type: none"> ▪ Protected dug / shallow well and pump ▪ Protected spring ▪ Tube well / borehole and pump ▪ Public tap ▪ Rainwater harvesting from roof or ground ▪ Piped water into house or yard
Firewood collection (annex 2)	Wood collected from poorly maintained communally owned resources	<ul style="list-style-type: none"> ▪ Woodlots ▪ Agroforestry ▪ Improved fallow ▪ Alternative fuels, such as waste materials and organic by-products ▪ Fuel-efficient stoves
Cooking (annex 2)	Cooking on traditional open fires with traditional biomass or charcoal as fuel	<ul style="list-style-type: none"> ▪ Fuel-efficient stoves, using traditional biomass or modern biofuels, such as biogas and ethanol ▪ Small-scale low-cost power supplies, using renewable energy sources
Food processing and preparation (annex 3)	Manually processing and preparing food	<ul style="list-style-type: none"> ▪ Manually operated strippers and shellers ▪ Manual and motorized threshers ▪ Manual and motorized cleaners of grains / pulses ▪ Solar drying and milling equipment ▪ Manual crop processing ▪ Draught animal-powered and motorized crop processing ▪ Improved storage facilities ▪ Electric milk churners ▪ Small-scale low-cost power supplies, using renewable energy sources ▪ Multifunctional platform (power supply and various associated tools to ease workloads)
Travelling and transporting (annex 4)	All travel on foot and carrying loads on body	Intermediate means of transport: <ul style="list-style-type: none"> ▪ Donkey, wheelbarrow, cart, bicycle (+ trailer) ▪ Hippo water roller Affordable and safe public transport system Improved paths and feeder roads
Care provision (annex 5)	Looking after infants, young children and the elderly, ill or disabled people while undertaking essential domestic and productive tasks, but foregoing project activities and more profitable regular productive work	<ul style="list-style-type: none"> ▪ Rehabilitation / construction of care centre infrastructure ▪ Support to local stakeholders to set up and run temporary or sustainable care services ▪ Complementary awareness raising and training for both men and women on reproductive health, nutrition, hygiene, HIV/AIDS prevention, etc.

Key issues that determine adoption or rejection of labour-saving technologies and practices

The concept of introducing labour-saving technologies and practices to reduce the burden and increase the efficiency of women's work, at home and in productive settings, is not new. Over the past 30 years, many development projects have designed and introduced them, but with varying degrees of success. The following key issues can facilitate or hinder the adoption of labour-saving technologies and practices.

The perceived effectiveness of the technology to meet household needs

Labour-saving technologies in poor rural development settings need to be reliable and bring measurable advantages that are valued by heads of households. However, labour-saving technologies are sometimes only marginally more efficient than traditional technologies, and are therefore rejected. For example, the modest increase in work rates by using manually operated grain mills may be perceived as insufficient to justify the change in method (pounding by hand) and the cost of the equipment.

Prospects for the adoption of labour-saving technologies are also compromised when perceptions of performance or service-level improvements are not shared by both the project designers and beneficiaries from the outset. For example, in rural water supply projects, project designers typically place greater importance on water quality and health, while beneficiaries are often more interested in water quantity, reliability, convenience, affordability and safety (from attack when collecting water from certain areas). In such cases, a dialogue is required between both parties and behaviour change communication can be used to achieve beneficial changes in attitudes and behaviours.

The appropriateness of the technology in daily life

Labour-saving technologies developed or adapted by local artisans and manufacturers in consultation with women users are much more likely to be appropriate in women's lives than those developed in isolation from rural communities (Lambrou and Piana, 2006). Women's indigenous knowledge and experience in performing tasks and managing local natural resources need to feed into the development of technologies.

The use of local materials and labour to produce technologies supports the local rural economy. Relevant governmental ministries – such as agriculture, rural development or water – can assist the process by supporting rural artisans and manufacturers who produce technologies and corresponding tools, equipment and spare parts (World Bank, FAO and IFAD, 2008).

Generally, labour-saving technologies have better rates of adoption when they are easy and convenient to use by women and build on existing technologies and practices: for instance, fuel-efficient stoves that support rather than require a change in cooking habits.

The ability to slowly progress up a ladder of technologies (which becomes increasingly complex but also more effective) facilitates technological advancement in line with financial, operational and management capabilities of individuals and their organizations.

The acceptability of the technology

Traditional practices and beliefs may play a part in the acceptability of a labour-saving technology. They need to be understood before the technology is chosen. Some sociocultural barriers may be too entrenched to overcome, others are surmountable. For example, a project in India introduced bicycles to women for travelling beyond their village. Although bicycles had previously been a form of travel exclusively for men, communities accepted the change thanks to evident benefits to women's productivity (World Bank, FAO and IFAD, 2008).

Labour-saving technologies need to be accepted not only by the users, but the household budget holders as well, who are often men.

Labour-saving technologies such as improved water sources and fuel-efficient stoves can also be rejected for the simple fact that the taste, smell or colour of the “new” product (e.g. water or cooked food) is different or off-putting. Once again, behaviour change communication can be used as a tool to bring about beneficial behaviour outcomes.

It is also important to assess how women's and men's roles and workloads may shift as a result of labour-saving technologies and how this change is accepted. Particular attention should be paid to see if any negative behaviour changes arise, or if some people experience a loss of livelihoods; if so, mitigation measures may be required. For example, modern food-processing equipment may displace traditional, home-based methods. Measures are required to help the latter diversify into other sources of livelihood. This can involve the provision of credit, skills training, and information on new economic opportunities.

The income-generating potential of the technology

Labour-saving technologies are particularly attractive when they add value to performing a domestic task and the end product can be sold. For example, food-processing technologies such as grinding mills and cassava graters reduce processing times from hours to minutes and increase the output beyond a household's needs, providing an income-generating activity.

In some cases, increasing demand for modern technologies, including those that are cleaner and fuel-efficient, may create new income-generating activities for women or their households, as illustrated in box 1.

If labour-saving technologies have income-generating potential, they can also promote more equitable gender roles and responsibilities by attracting men to undertake domestic tasks which can become profitable. However, the risk, as seen with mechanized crop-processing technologies like grinding mills, is that men can more readily afford and run these technologies than women, and may not necessarily share the direct benefits of the increased income within the household.

Box 1. Technology-driven income-generating opportunities for women in the energy sector

The IFAD-supported Orissa Tribal Empowerment and Livelihoods Programme (2003-2014) in India promotes low-cost and sustainable green technologies that reduce human labour and pollution. The local Bonda tribes have relied on kerosene for years for internal lighting, which creates a smoky and unhealthy environment inside the small huts, and prices often inflate. Ninety young women from various self-help groups were trained to make solar torches – handy devices configured with LED bulbs and a small battery that can be recharged during the day using portable solar panels. They worked hard for weeks to learn about electronics and how to assemble the solar torches. The self-help groups sell the solar torches at a meaningful profit: the monthly income of each member reportedly increased up to Rs.3,000 (USD&60) (Nanda et al., 2012).

Other examples of income-generating opportunities for women in the energy sector include earning money by manufacturing lamps in Bangladesh; manufacturing and marketing clay liners for improved stoves in Kenya; making biomass briquettes for sale in Malawi; making briquettes from charcoal in Ethiopia, India and the United Republic of Tanzania; and operating diesel generators as businesses and selling energy services in Mali (INBAR, 2013; UNDP, 2001; World Bank, FAO and IFAD, 2008).

Integrating labour-saving methods during project design

Identifying workloads through gender-sensitive participatory approaches

The starting point for gender-sensitive policy and development programmes for improved food and nutrition security is understanding the workloads and daily activities of all household members and how the time burden is distributed, in the context of livelihood strategies and gender relations.

This takes place during the identification stage of the IFAD project cycle, as part of the broader gender-sensitive poverty and livelihoods analysis conducted to inform the project design. It is carried out by a gender and targeting specialist.

Gender-sensitive participatory approaches are used to understand people's workloads and activities, as well as their aspirations. They enable the voices of diverse groups to be heard, and help to understand the respective time poverty¹ of women, men, youth and children in daily life.

Participatory approaches include discussions with local authorities, meetings with communities and organizations (including the private sector), focus group discussions and individual household interviews.

Relevant field tools include:

- Daily activity charts that visually present the different activities undertaken, and the time involved, by different people throughout the day;
- Seasonal calendars that map the seasonal changes of different types of work, food availability and accessibility, diseases, gender-specific income and expenditure, water supply, etc.;
- Participatory maps that provide a visual representation of what groups of people perceive as their community and the significant natural, man-made and sociocultural features within it, including sources of water and fuelwood and modes of transport; and
- Focus discussions to determine access to resources, inputs and services.

Selecting labour-saving technologies and practices

The selection of technologies and practices to introduce can take place during the IFAD project design mission and/or at the beginning of project implementation. Gender-sensitive participatory tools are used to listen to technology preferences and aspirations of different members of rural communities. They also serve to learn about and integrate local customs and knowledge into labour-saving methods and project design, thereby promoting interest and local ownership. For instance:

- Pairwise preference ranking enables people to prioritize technology options and to understand the reasons for the ranking.

Detailed and practical guidance on a wide range of field tools is available in the FAO field guide to "Social analysis for agriculture and rural investment projects".²

Relatively large infrastructure investments that have labour-saving benefits, such as community water supplies, power supplies and feeder roads, are often identified during project design, with options and modalities refined later during implementation.

Technology selection may also be guided by government programmes – for example, the promotion of renewable energy in rural areas. This was the case in the IFAD-supported West Guangxi Poverty Alleviation Project in China (2002-2008), which participated in the government's biogas programme.³

An effective approach used by some IFAD projects is to offer a menu of options to rural women to ease their workloads through a Community Investment Fund. The Fund may be used for small and/or large investments, including fuel-efficient stoves, grinding mills, bicycles, and household water harvesting tanks or childcare nurseries.

¹ Time poverty essentially means having no choice but to work long hours. See the Teaser for the formal definition.

² <http://www.fao.org/docrep/014/i2816e/i2816e00.htm>

³ <http://www.ifad.org/lrkm/factsheet/energy.pdf>

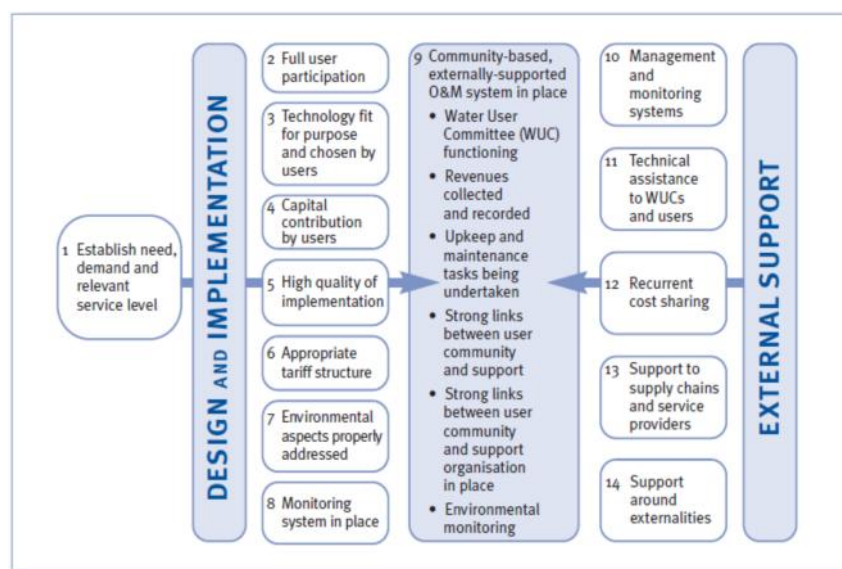
Delivering labour-saving technologies and practices

Women's participation

Facilitating women's participation – in design, planning, siting, construction, operation, maintenance, management and monitoring, in as far as is locally acceptable – is essential to ensure that they have real choices and that technologies and services are successfully adopted and sustained. Training sessions or other forms of knowledge transfer (such as informal peer training, learning routes, and south-south exchange visits) should be held at times and locations that are convenient for women so that their participation is not restricted.

Sustainability framework

Mapping out or describing a sustainability framework of a labour-saving method in project design helps to ensure all the necessary factors are considered. Too often labour-saving methods read like nice-to-haves in project design documents and are given very little attention in large programmes, rather than being set out as serious opportunities for improving women's daily lives. The sustainability framework for a community-managed rural water supply service (figure 1) provides an understanding of the factors that need to be considered. This may be modified for other labour-saving methods, and in different sectors and contexts.



Source: WaterAid, 2011

Figure 1. Example of a sustainability framework for a labour-saving service

Operation and maintenance

The breakdown of labour-saving technologies, and inability to repair them or the lengthy time lag to get spare parts to undertake repairs, increases the risk of women returning to traditional and burdensome means of performing tasks. Individuals, community committees, local authorities and local private companies need to have the capacity to operate, maintain, monitor and financially manage labour-saving technologies. Training women to undertake maintenance and repair can serve the double purpose of keeping labour-saving technologies in operation and providing a useful source of income (World Bank, FAO and IFAD, 2008). Refresher training will usually be necessary. For more complex technologies, such as small-scale power supplies, communities may also need to be made aware of external support networks for sustained use once the project is completed.

If labour-saving technologies are designed and manufactured locally, spare parts are more likely to be locally available. If this is not the case, the spare parts supply chain should be supported so that it is accessible and reliable to allow timely and cost-effective repair.

Associated costs and ability to pay

It is important to establish which project stakeholders are financially responsible for which costs, and over what period of time. Relevant costs to consider are:

- Capital costs: initial purchase of an asset, including transportation.
- Implementation costs: to run the project, raise awareness in the community, train people and provide ongoing support for households.
- Ability and willingness to pay: Can households afford the full cost of the technology or service? Are they willing to pay for capital and operational costs? Is the technology vulnerable to variations in household income? These are important considerations when women lack access to cash and male heads of households are reluctant to contribute (World Bank, FAO and IFAD, 2008). In such cases, women may need access to microcredit and men need to be brought on board.
- Operational costs: continuing purchase of consumable products, operation and maintenance, repair and replacement of spare parts.

Creating an enabling environment

Engaging at household and community levels

Interventions need to facilitate women's empowerment so that they are more able to express preferences, make choices and influence – both individually and collectively – the decisions that reduce drudgery and increase their income potential; for example, the formation of women's groups and access to microcredit and training to develop income-generating activities.

Other forms of empowerment could be through functional and legal literacy training, participating in infrastructure management committees, and participatory monitoring and evaluation of programme interventions.

Investments in labour-saving technologies and services also need to be complemented by community sensitization to the issue of equitable workloads and their impact on rural livelihoods.

Box 2. Facilitating shared domestic responsibilities between rural men and women in Lao People's Democratic Republic

The Women's Union of Lao People's Democratic Republic has developed a training tool to improve gender equality within the family and reduce poverty. It is known in Lao as *sam sang* – the “three good developments” or “three goods”: i) Good citizen; ii) Good development (of the individual and the community); and iii) Good and happy family. Training targets both male and female family members and is supported by monthly family visits from the Lao Women's Union staff. Results from the pilot show that there is a fairer distribution of roles for carrying out domestic tasks, including child-rearing and, to a lesser extent, for productive activities. Women report that their lives have become easier and that they have gained more free time. Women also report how they felt more at ease to participate in village meetings and express their views and proposals. IFAD is supporting this work through the Rural Livelihoods Improvement Programme (2006-2014) (IFAD, 2013).

Gender-transformative approaches go a step further than traditional methods of empowerment and sensitization. They stimulate positive behaviour change by enabling men and women, together, to understand and challenge discriminatory gender norms that drive gender inequalities and hinder growth (box 2).

Gender-transformative approaches engage with both women and men to reduce women's workload burden and strengthen women's voice to influence household expenditure, for example, to include labour-saving technologies. In addition to the example in box 2, other proven gender transformative approaches include household methodologies (HHMs), community listeners' clubs and community conversations.

HHMs build on a growing consensus that household members may have disparate and even conflicting goals rather than a single unifying goal. The methodology tries to address women's empowerment from the lowest level, their homes, so that they are then able to capitalize on development activities. Household members realize that inequalities in gender roles and relations can be part of the reason they stay poor, creating an impetus to change the status quo. This is facilitated by bringing disparate livelihood strategies pursued by women and men in a household – youth, middle-aged and the elderly – into one coherent strategy (box 3).

Box 3. Household methodologies

There are several different HHMs but they consist of the same key elements: the involvement of all household members to create a household vision; implementation support by service providers and facilitators; and an enabling environment at the community level to trigger transformative change.

There are two principal approaches for implementing HHMs: in groups, including producers' organizations, self-help groups and affinity groups, which are an entry point for reaching individuals; and in households, specifically the more vulnerable and poorer households that are excluded from development initiatives and groups. Trained facilitators undertake individual household mentoring.

Gender-sensitive participatory field tools are used to facilitate behaviour change and planning. For example:

- Vision road journey (planning the life journey of self-development, and gender relations, community relationships, local norms and the changes required); and
- Gender balance tree (analysing the division of labour between women and men, relative to household spending patterns, and defining desired changes) (Oxfam, 2015).

By mid-2015, more than 100,000 people had benefited from HHMs in IFAD-supported programmes and projects in Malawi, Nigeria, Rwanda, Sierra Leone and Uganda. The approach empowers women and sensitizes other family members to the divergent needs and livelihood strategies within their households and eventually facilitates a coherent family strategy for the future.

For more information, refer to the IFAD HHM toolkit at <http://www.ifad.org/knotes/household/index.htm>.

FAO has supported community listeners' clubs in the Democratic Republic of Congo (DRC) and Niger. The approach essentially aims to empower women to participate in decision-making and enable men and women to access information about rural living that would otherwise be inaccessible, and to take joint action (box 4).

Box 4. Community listeners' clubs

Participants in a community listeners' club in DRC defined it as "A group of men and women who wish to listen to radio programmes actively and systematically with a view to discussing the content and above all putting into practice the lessons learned".

The community rural radio and listeners' clubs work together to decide on topics for discussion. The radio station then disseminates the information and facilitates communication, sometimes with the help of an expert. The clubs actively listen to the radio programme and discuss the content. Discussions can be within or between clubs, and with local authorities or other stakeholders. The radio records and broadcasts the exchanges to fuel discussions. The clubs make decisions and find appropriate means to take action. Results of the experience are documented and shared with the wider community.

Gender issues are central to the functioning of the clubs, which are sensitive to strengthening women's voice so that they can play as active and equal a role as men.

For more information on listeners' clubs, see <http://www.fao.org/docrep/014/am604e/am604e.pdf>.

Engaging at national and international levels

Efforts at the household and community levels need to be supported by advocacy for gender equality and women's empowerment in national and international policies, laws and development programmes. Science and technology policies also need to mainstream gender and ensure that in technology development, poor rural women are recognized as innovators who possess invaluable indigenous knowledge. In addition, the reduction of women's domestic workload needs more visibility in policy engagement in line with the widely supported framework to: recognize the value of unpaid domestic work for society and the economy; reduce the burden of this work through public infrastructure investments and access to affordable and appropriate labour-saving technologies and practices; and redistribute responsibility for the work between women and men and from the individual to the collective.

The multisectoral causes and effects of a heavy domestic workload on rural livelihoods also require that the agriculture sector foster effective partnerships with other relevant sectors, namely water and sanitation, health, energy, roads, transport and care.

Conclusion

Labour-saving technologies and practices play a crucial role in releasing poor rural women of all ages from unpaid time burdens so that they have more time for productive work and to participate in development opportunities. An enabling environment through gender-transformative approaches, community and household dialogue, and policy dialogue can support labour-saving methods by engaging with men, challenging discriminatory gender roles and encouraging more equitable workloads. All of these outcomes are important steps towards inclusive and sustainable rural development and poverty eradication. However, the successful adoption and sustained use of labour-saving methods is dependent upon many factors, which need to be taken into account during project design and implementation.

Further details about relevant labour-saving technologies and practices for IFAD-supported programmes and projects are presented in the annexes and the IFAD report *Rural Women's Technologies and Innovations; Sharefair on Inspiring Agricultural Change 2014*.

Annex 1. Water collection

Context

Water is necessary for drinking, cleaning, washing, disposing of waste, caring for the sick, ensuring personal hygiene, and preparing, processing and cooking food. It is also used to care for livestock and to engage in many household-based income-generating activities. However, access to water at the household level is hampered by water scarcity, either in the physical or economic sense,⁴ in most countries in Africa, the Middle East, Western Asia, Southern Asia, Eastern Asia and in pockets of Central and South America.

Although great strides have been made over the last decade to improve sustainable access to safe drinking water, in 2015, 663 million people still used unsafe water, of whom 80 per cent resided in rural areas – nearly half in sub-Saharan Africa, and one fifth in South-East Asia (UNICEF and WHO, 2015).

Two thirds of households worldwide do not have access to water on their premises, and in some countries the proportion is more than 90 per cent (UNICEF and WHO, 2011). In these settings, women have the primary responsibility for its collection. When children help, it can be before, after or during school, taking its toll on their time and energy for education.

The recent study, *IFAD water investments and time saving for domestic water collection: A gender perspective*, analysed the impact of domestic water investments on time saved by rural household members in seven countries.⁵ The data showed that prior to investments, women spent on average three hours each day collecting water for all domestic purposes. Water collection round trips are reportedly longer on average in sub-Saharan Africa and arid countries than in other developing countries (UNICEF and WHO, 2011). When it takes so long to collect water, women cannot carry out other activities, and households are less likely to meet their minimum daily drinking water and hygiene needs, estimated at 20 litres per person per day (UNICEF and WHO, 2011). In such circumstances, it is also unlikely that water will be used at home for productive purposes, such as vegetable gardening, food processing and small livestock-raising, which are often under the women's control.

The mode of transport of water also has a bearing on women's time and health. Water is transported home on the carrier's head, back or hip or, whenever possible but less often, using animals. Women often carry a 20-litre container that weighs 20 kg. Over time, this can lead to backache and joint pains.

Furthermore, the quality of the water can be a health hazard if it has come from an unsafe source or been transported in unsafe containers and is not properly treated. Unsafe and insufficient water for domestic purposes causes water-related illnesses, such as diarrhoea and cholera, which are responsible for the deaths of thousands of children under the age of five every day.⁶ In turn, this increases women's workload because they are then responsible for caring for the sick and taking them for medical treatment. Medical costs also increase. Consistent consumption of unsafe water and living in unhygienic conditions can lead to repeated bouts of illness that can affect the individual's need for and ability to benefit from food, and results in chronic undernutrition (IFAD, 2015).

The negative implications of water collection are exacerbated by climate change (box A1) and for those with or caring for someone with HIV/AIDS (annex 5, box A5.2).

⁴ Physical water scarcity is when there is not enough water to meet all demands, including environmental flows, leading to severe environmental degradation, declining groundwater and distorted water allocation. Economic water scarcity is when there is a lack of investment or a lack of human capacity to satisfy the demand for water (FAO, 2012).

⁵ IFAD. 2015. *IFAD water investments and time saving for domestic water collection: A gender perspective*. Countries included Bangladesh, Gambia, India, Malawi, Peru, Uganda and Yemen.

⁶ Burden of water-related diseases, World Health Organization. http://www.who.int/water_sanitation_health/diseases/burden/en/.

Box A1. Climate change – increasing water collection times and the risk of disease

Highly variable rainfall (in terms of location, frequency and intensity) and higher temperatures mean that many communities will face more and longer droughts and a higher frequency of floods. Given the current substandard rural water infrastructure and management systems, this variability can lead to an increase in both water collection times and the risk of water-related diseases.

For example, communities in the IFAD-supported Lower Usuthu Smallholder Irrigation Project in Swaziland are faced with water scarcity. Before investments were made in rainwater harvesting systems, women spent a long time every day fetching water from distant sources. Sometimes they found the rivers dry and had to dig in the sand to get to the water or they were forced to share water sources with livestock, which posed significant health risks (IFAD, 2014).

Labour-saving technologies and practices

Rural water supply services in low-income countries are commonly managed directly by households and/or communities. The task of collecting water can be eased by creating sustainable sources that bring safe and reliable water closer to households:

- Protected dug/shallow wells and pump
- Tube wells or boreholes and pump
- Piped water into house, plot or yard
- Protected springs
- Public tap or standpipe
- Rainwater collection, namely roof rainwater harvesting

Accompanying approaches to help ease women's domestic workload include:

- Multiple Use Water Services (MUS), an approach to provide integrated water services for multiple uses. The reality of daily rural life demands water for domestic purposes, plus for small livestock watering, kitchen gardening and income-generating activities. Since women undertake these activities, improved access to safe and sufficient water is highly relevant to ease domestic and productive workloads.
- Promoting improved sanitation and hygiene. The root cause of waterborne diseases is excreta in water and on fingers, fields and food, which then enters the mouth. Improved collection, disposal and treatment of excreta and improved personal and environmental hygiene are complementary to water supply investments to reduce the incidence of diarrhoeal diseases. Proven approaches are: community-led total sanitation, participatory hygiene and sanitation transformation, community health clubs, and social marketing⁷ coupled with nutritional education.

The hardware (physical infrastructure) of water investments must be matched with the software (human and organizational capacity) if the outcomes are to be sustained. Water supply facilities in rural areas are predominantly managed by community-level water management committees. The formation, training and other support given to the members of these committees will determine the sustainability of the infrastructure.

⁷ For more on social (sanitation) marketing, see <http://www.wsp.org/toolkit/what-is-sanitation-marketing>.

Key information sources

- Rural Water Supply Network. <http://www.rural-water-supply.net/en/>
- EEA Eau et Assainissement pour l'Afrique (Formally known as CREPA). <http://www.ws-africa.org/index.php/fr/EnterpriseWorks/Vita>. <http://www.enterpriseworks.org/display.cfm?id=3andsub=20> <http://drwh.enterpriseworks.org>
- IDE. <http://www.ideorg.org/OurTechnologies/RopePump.aspx>
<http://www.ideorg.org/OurTechnologies/MultipleUseWaterSystems.aspx>
- Practical Action – Water. <http://practicalaction.org/water-and-sanitation-14>
- SKAT – Water and sanitation. <http://www.skat.ch/expertise/prarticle.2005-09-22.1950727681>
- WaterAid. <http://www.wateraid.org/uk/what-we-do/our-approach/delivering-services>
- MUS Group. <http://www.musgroup.net/>
- The Centre for Science and Environment, Delhi, India. www.rainwaterharvesting.org
- The International Rainwater Catchment Systems Association (IRCSA) factsheets. <http://www.ircsa.org/factsheets.htm>
- Southern and Eastern Africa Rainwater Network. <http://worldagroforestry.org/projects/searnet/>
- Warwick University Development Technology Unit. <http://www2.warwick.ac.uk/fac/sci/eng/research/structures/dtu/rwh>

References

- Adank, M., B. van Koppen, and S. Smits. 2012. *Guidelines for Planning and Providing Multiple-Use Water Services*. MUS Group, February 2012.
- EnterpriseWorks/Vita. 2009. *Domestic Rainwater Harvesting: Desk study summary*. EnterpriseWorks/Vita, Washington, D.C., June 2009.
- FAO. 2012. *Coping with water scarcity: an action framework for agriculture and food security*. FAO water reports 38. Rome: FAO.
- IFAD. 2007. *Gender and water, Securing water for improved rural livelihoods: The multiple-uses system approach*. Rome: IFAD. http://www.ifad.org/gender/thematic/water/gender_water.pdf.
- IFAD. 2014. *The Gender advantage: women on the front line of climate change*. Rome: IFAD.
- IFAD. 2015. *Nutrition-sensitive agriculture and rural development: Scaling-up note*. Rome: IFAD.
- UNICEF and WHO. 2011. *Drinking water: Equity, safety and sustainability*. UNICEF and WHO.
- UNICEF and WHO. 2015. *25 years of progress on sanitation and drinking water: 2015 update and MDG Assessment*. UNICEF and WHO.

Annex 2. Firewood collection and cooking

Context

In 2015, an estimated 1.1 billion people did not have access to electricity (IEA, 2015). Many more had a poor quality supply that was unable to meet all domestic needs. This is part of the reason why 2.7 billion people still rely on traditional biomass in the form of firewood, charcoal, crop residues and manure to cook and heat their homes. Although users of traditional biomass are mainly found in developing Asia (1.9 billion compared to 750 million in sub-Saharan Africa), they make up a higher proportion of the population in sub-Saharan Africa (80 per cent compared with 50 per cent in Asia). And the overwhelming majority of people who rely on traditional biomass live in rural areas (IEA, 2014).

Obtaining fuel from wood requires travel time to find it, and then time to cut and transport it, and prepare it for burning and use (World Bank, FAO and IFAD, 2008).

Various studies on firewood collection times in communities across nine regions/countries show that the average time spent collecting wood per household each day is more than 2.5 hours, although times vary considerably – from 40 minutes to 8 hours (IEG-World Bank, 2008).⁸ In some cases men have a significant amount of responsibility for firewood collection, but the largest share of the burden is carried by women (IEG-World Bank, 2008).

In many African, Asian and Latin American countries, rural women can reportedly carry up to 20 kg of firewood a day, making for heavy and tiring work (Lambrou and Piana, 2006).

Cooking in most rural households is still undertaken by women and children on an open fire (three-stone cooking) or an inefficient stove, requiring a lot of traditional biomass as well as time. Poorly ventilated smoke from cooking with such fuels exposes households to high levels of air pollution. Over time this can lead to cardiovascular, respiratory and eye diseases, as well as cancers. And it is responsible for the premature death of 4.3 million people each year. Despite women having greater exposure, mortality rates attributable to household air pollution can be slightly higher for men than women, owing to their larger underlying disease rates (WHO, 2014). Burns and poisoning (by fuel ingestion from kerosene lamps) are two other risks, in particular for children.

Firewood collection and emissions from cooking with traditional biomass in open fires or inefficient stoves are also important drivers of local environmental degradation and climate change (box A2.1)

Box A2.1. Impact of using traditional biomass on the environment and climate

Wood is usually collected free of charge from surrounding forest or scrub areas. However, if there is a lack of management or an influx of people into the area, unsustainable wood harvesting – in which demand exceeds natural regrowth – may occur, resulting in deforestation. This means people have to venture further afield to fetch wood, but it also results in a loss of habitat and biodiversity and in reduced carbon uptake.

Cooking with traditional biomass on open fires and leaky stoves releases emissions of carbon dioxide and short-lived pollutants such as black carbon and methane, which are major climate change forcers. Although energy-intensive activities (such as transport and industry) in developed countries have a much greater impact on global warming, household energy use in developing countries is still significant. For example, in South Asia, where over half of black carbon particles come from inefficient burning of traditional biomass, black carbon is disrupting the monsoon and accelerating the melting of the Himalayan-Tibetan glaciers. In turn, this jeopardizes water supply and food and nutrition security.

For more information on inefficient cooking and climate change, see <http://carbonfinanceforcookstoves.org/about-cookstoves/cooking-and-climate-change/>.

Although human activities are the leading causes of deforestation and desertification, the impact of climate change over the coming years is also expected to increase pressure to convert forests to agricultural land and accelerate the rate of desertification in some areas, including the drier areas of Latin America (IFAD, 2010; IFAD, 2012). In these areas, rural people find it harder to obtain biomass and forest resources for energy, which takes up even more of their valuable time. For example, in hilly villages in Nepal, extensive deforestation has increased collection times by 75 per cent per load, which translates into women spending an additional 1.13 hours each day collecting firewood (World Bank, FAO and IFAD, 2008).

⁸ Regions/countries include Benin, Burkina Faso, Ghana, Guinea, Indonesia, Madagascar, Nepal, South Africa, and Himachal Pradesh, Rajasthan and Tamil Nadu in India. <http://siteresources.worldbank.org/EXTRURELECT/Resources/appD.pdf>.

Labour-saving technologies and practices

Most poor rural households are on the bottom rung of the “energy ladder”, using the least convenient and energy-efficient biofuels: wood, crop residues and manure. Charcoal, coal and kerosene represent higher steps, and electricity and LPG (liquefied petroleum gas: commercial butane and propane) are at the top, while modern biofuels in liquid and solid form and other renewable energies such as solar and wind are expected to make an ever larger contribution (Lambrou and Piana, 2006).

Biomass is expected to continue to be the preferred domestic energy source in developing rural areas. This is because households practice “fuel stacking”, in which they use various fuels to meet their daily energy needs, rather than rely completely on just one type. The following fuel-efficient stoves reduce the time needed for firewood collection and cooking and promote more efficient and sustainable use of traditional biomass:

- Mud stoves: ideal for refugees who, on returning home, can build and maintain another stove without external inputs. Fuel savings: 20-60 per cent from open fires. Fuel efficiency: 20-30 per cent. *Example:* the Anagi stove in Sri Lanka. Retail prices vary between US\$0.81 and US\$1.80 (WFP, 2012).
- Ceramic stoves: low-cost, durable, easy to maintain. Local source of income if manufactured and sold. Fuel savings: 30 per cent from open fires. Fuel efficiency: 15-25 per cent. *Example:* the Jiko stove, in several African countries. Retail prices (Kenya) US\$4–6.5 (WFP, 2012).
- Prefabricated stoves: heat up quickly, require little maintenance, attractive to users. Fuel savings: 30-60 per cent from open fires. Fuel efficiency: 20- 50 per cent. Retail prices start at US\$20 (WFP, 2012). *Example:* Envirofit stoves sold in Africa, Latin America, South-East Asia. The Biolite HomeStove produces 94 per cent less smoke than an open fire.
- Plancha stoves: specifically designed to provide a hot flat surface on which to cook food, such as tortillas in the case of Mexico and Central America. Fuel savings: 50-70 per cent (www.cleancookstoves.org).
- Fireless cooker: uses stored heat to continue cooking food already partly cooked on a traditional stove. A simple basket, insulated with local resources such as banana leaves or old clothes, can reduce fuel use by 40 per cent (<http://practicalaction.org/fireless-cooker>).

Firewood can be a renewable energy source if collected from sustainable sources such as woodlots. Wood-based fires can also be beneficial in terms of heating, repelling mosquitoes, binding thatch, and in cultural life. Charcoal cooks food relatively quickly and produces less smoke than firewood. Home-based charcoal can be made from cooking with firewood, and taken to scale as an income-generating activity through collection clusters and briquetting (box A2.2).

Box A2.2. Producing charcoal from home cooking – a value chain for women

With funding from an IFAD grant, the International Network for Bamboo and Rattan has successfully created home cooking-based charcoal production value chains for 15,000 poor rural women in Ethiopia, India and the United Republic of Tanzania. The women have been trained to put out fires when they finish cooking to prevent smouldering. The charcoal is collected from their houses and clustered at the community level, processed into briquettes through partnership-based enterprises, and then sold to local enterprises at a competitive price. Their households became microenterprises and they themselves became microentrepreneurs, generating incremental income without incremental work. Bamboo was promoted for firewood and biomass as the most sustainable and affordable option because it is fast-growing and grows year-round.

Biomass briquettes (organic waste densified into various-sized chunks) provide an environmentally friendly alternative to firewood and charcoal. They have a high heating value and emit 40 per cent less carbon dioxide than firewood.

The stoves listed below promote the switch to cleaner and more energy-efficient modern biofuels:

- Solar stoves: reflect solar energy to the cooking vessel. Useful as a complement to combustion-based stoves. Value highly dependent on local climate, cooking needs and availability of other biomass. *Examples:* successful in Tibet, with state subsidies to set up a local market; and in Bolivia Altiplano, where they were introduced by non-governmental organizations (NGOs) through village demonstrations and training sessions (https://energypedia.info/wiki/GIZ_HERA_Cooking_Energy_Compendium).
- Alcohol stoves: burn ethanol or methanol very cleanly. Fuel efficiency: 70 per cent. Safer than petroleum by-products of LPG and kerosene because they do not explode. Stoves bring status, but are expensive. *Example:* Project Gaia in Brazil, Ethiopia and Nigeria aims to promote clean-cooking alcohol stoves and fuels for commercial application under local ownership (www.projectgaia.com).
- Biogas stoves: use clean-burning methane gas produced by a domestic biodigester supplied with animal manure, human excrement, agricultural waste and water. Fuel efficiency: 50-65 per cent (www.cleancookstoves.org). The bioslurry from the digester provides organic fertilizer (<http://www.ifad.org/pub/thematic/biogas.pdf>). (See annex 3 on Flexi Biogas systems.) *Example:* the IFAD-supported West Guangxi Poverty Alleviation Project, China (2002-2008) provided biodigesters to 30,000 households, saving 56,000 tons of firewood annually (Rota and Sehgal, 2012).

Key information sources

- Biolite. 2013. <http://www.biolitestove.com/homestove/overview/>
- GIZ energy. <http://www.giz.de/Themen/en/12941.htm>
- GIZ HERA Cooking Energy Compendium. https://energypedia.info/wiki/GIZ_HERA_Cooking_Energy_Compendium
- Global Alliance for Clean Cook stoves. <http://www.cleancookstoves.org>
- The Charcoal Project. <http://www.charcoalproject.org/>; The Paradigm Project <http://theparadigmproject.org/>
- The Partnership for Clean Indoor Air. <http://www.pciaonline.org/>
- Stockholm Environment Institute. <http://www.sei-international.org/household-energy>
- International Network for Bamboo and Rattan. <http://www.inbar.int/>
- Woodlots, agroforestry and improved fallow. <http://teca.fao.org/printpdf/technology/labour-saving-technologies-and-practices-woodlots-agro-forestry-and-improved-fallow>

References

- FAO. 2010. *Global Forest Resources Assessment*, Forestry Paper 163. Rome: FAO.
- International Energy Agency (IEA). 2014. *World Energy Outlook 2014*. Biomass database. Paris: IEA.
- IEA. 2015. *World Energy Outlook 2015*. Electricity access database. Paris: IEA. <http://www.worldenergyoutlook.org/resources/energydevelopment/energyaccessdatabase/>.
- IEG-World Bank. 2008. *The welfare impact of rural electrification: a reassessment of the costs and benefits*. An Independent Evaluation Group Impact Evaluation. Washington, D.C., World Bank.
- IFAD. 2010. *Desertification*. IFAD factsheet. <http://www.ifad.org/pub/factsheet/desert/e.pdf>.
- IFAD. 2012. *Environment and natural resource management policy; resilient livelihoods through the sustainable use of natural assets*. Rome: IFAD. http://www.ifad.org/climate/policy/enrm_e.pdf.
- Lambrou, Y., and G. Piana. 2006. Energy and gender issues in rural sustainable development. Rome: FAO. <ftp://ftp.fao.org/docrep/fao/010/ai021e/ai021e00.pdf>.
- Practical Action. 2012. *Making mud stoves in Sudan*. Practical Action.
- Rota, A., and K. Sehgal. 2012. Livestock and renewable energy. Livestock Thematic papers, Tools for project design. Rome: IFAD. <http://www.ifad.org/lrkm/factsheet/energy.pdf>.
- Sagar, A., and S. Kartha. 2007. Bioenergy and Sustainable Development? *Annual Review of Environmental Resources* 32: 131-67.
- UN Energy. 2007. *Sustainable Bioenergy: A Framework for Decision-Makers*. New York: United Nations.
- USAID. 2010. *Fuel-Efficient Stove Programmes in Humanitarian Settings: An Implementer's Toolkit*. Washington, D.C.: USAID, 73.
- WFP. 2012. *WFP Handbook on Safe Access to Firewood and alternative Energy (SAFE)*. 2012 Edition. Rome: WFP.
- WHO. 2014. *Burden of disease from household air pollution for 2012*. Geneva: WHO. http://www.who.int/phe/health_topics/outdoorair/databases/HAP_BoD_results_March2014.pdf?ua=1.
- World Bank, FAO and IFAD. 2008. *Gender in Agriculture Sourcebook*. Washington, D.C. www.worldbank.org/genderinag.

Annex 3. Food processing and preparation

Context

It is estimated that women provide 85 to 90 per cent of the time that is spent on household food processing and preparation across a wide range of countries (FAO, 2011).

Household food processing and preparation includes shelling, threshing, cleaning, drying, storage, milling, grating and oil extraction. It is an integral part of household food and nutrition security and can promote a diverse diet, minimize post-harvest losses, and provide marketable products. Food processing needs vary considerably across communities and countries. Traditional manual means of crop processing are generally time-consuming and arduous. However, improved technologies, such as grinding mills, cassava graters and oil expellers, are now found in much of the developing world, reducing processing times from hours to minutes and providing an income-generating activity (Carr and Hartl, 2010). Mechanized crop-processing technologies are predominantly owned by male entrepreneurs, because of the investment required, followed by community organizations and women's groups. Mechanization has also often moved processing from a household level to group, community and industrial levels.

Although processing services have freed up time for some women, they can be too costly for poorer households. Manual and/or cheaper technologies are more affordable, given the resources of women and vulnerable households, but this must be matched with effective performance. Improved processing technologies and storage methods also provide opportunities to reduce food waste. Preserving more of the harvest translates indirectly to saving labour.

The tasks of food collection and provision are also part of the household chores performed by women, but are beyond the scope of this paper. Homestead food production such as vegetable gardens, backyard livestock, and small fish ponds are energy- and time-saving approaches for domestic food production, details of which may be found in the Integrated Homestead Food Production toolkit (<http://www.ifad.org/knotes/index.htm>).

Labour-saving technologies and practices

Food preparation and processing technologies can be powered manually, by draught animal or by motor. The rapid spread of processing technologies in rural areas in developing countries has been fuelled by the increasing availability of energy supplies in local areas (Carr and Hartl, 2010).

Development programmes may combine the provision of food-processing technologies with an energy supply, such as the United Nations Development Programme (UNDP) Multifunctional Platform Programme in West Africa. The multifunctional platform consists of a diesel engine and associated tools such as grinding mills, huskers, battery chargers, pumps, welding stations and carpentry equipment. UNDP focused on the reinforcement of economic activities for men and women around the platforms, including the development of female entrepreneurship in rural areas. While widely reported to reduce the daily drudgery of women's work, there were also widespread problems in the local capacity for preventative maintenance and repair and in access to spare parts. Reliance on an affordable diesel supply also represented a challenge in some areas and is an environmentally unsustainable solution, but it was found that the platform can process and run on jatropha oil instead (Sovacool et al., 2013).

Integrated Food-energy Systems (IFES), which essentially combine food and energy production on the same site, aim to address the interrelated challenges of food security, energy access and climate change. They can be small-scale operations managed at the household or group level to meet domestic needs and sustain local livelihoods, or large-scale operations designed for commercial activities. The most common forms of IFES are agroforestry, growing trees for fuelwood and charcoal as well as producing food, and the use of by-products/residues of one type of product to produce another – for example, biogas from livestock residues (see IFAD's work on biogas below), animal feed from by-products of corn ethanol, or bagasse for energy as a by-product of sugar cane production for food purposes (FAO, 2010).

Since many rural communities are not likely to be connected to central power grids in the near future, small-scale and low-cost community-based power systems have proved successful in providing an electricity supply for basic needs such as lighting, heating, pumping and processing. These systems can be powered by diesel generators or the renewable energy sources of solar, wind, micro-hydro and biofuels.⁹

⁹ Diesel sets generally have fewer initial investment costs (than renewable energy-run systems) but their running costs are high due to the fuel costs and high cost of spare parts and technical services. <http://practicalaction.org/small-scale-hydro-power-2>.

Affordable off-grid electricity from solar energy products is becoming increasingly available in rural areas in Africa and Asia thanks to financial innovation in small-value payment systems, like mobile money, combined with new pay-as-you-go technology. For example, the two companies Take Mobisol and Off-Grid: Electric in East Africa have electrified more than 50,000 off-grid homes in the United Republic of Tanzania over the last two years, and are set to reach 200,000 by the end of 2015, with their solar solutions powered by digital finance (Winiacki, 2015). Their clients are likely to have otherwise remained energy-poor because of difficulties in accessing credit from formal financial institutions.

As described above, livestock waste and residues from small-scale integrated farming systems can be used to create renewable energy in the form of biogas. By using renewable resources and non-polluting technology, biogas generation at the farm level serves to eradicate or drastically reduce firewood collection, remove waste and improve environmental sanitation, produce energy, and provide a source of safe organic fertilizer (Rota and Sehgal, 2012).

IFAD has successfully piloted the Flexi Biogas system in India, Kenya, Rwanda and Sao Tomé and Príncipe. It is a portable above-ground system including a 6 m x 3 m plastic bag digester made of tarpaulin and housed in a greenhouse tunnel. Compared to traditional fixed-dome systems it costs less to build and operate, is simpler to use, requires fewer cattle, and yet produces roughly the same amount of gas with the same cooking time. Using the Flexi Biogas system, a family with just one or two cows can produce 60-100 kg of high-quality fertilizer and 2.8 m³ of biogas for cooking (IFAD, 2015).

Key information sources

Information on manually operated strippers and shellers, manual and motorized threshers, manual and motorized cleaning of grains and pulses, solar drying equipment, manual crop processing, draught animal-powered and motorized crop processing, and improved storage facilities is available on FAO's agricultural technologies and practices platform (<http://teca.fao.org/>).

- Solar milling. <http://solarmilling.com/>
- Zeer pot fridge. <http://practicalaction.org/zeer-pot-fridge>
- Electric milk churners. <http://www.thewaterchannel.tv/thewaterblog/348-freeing-up-her-time-with-electric-churners>
- UNDP and Government of Burkina Faso National Multifunctional Platform Programme. <http://www.undp.org/content/undp/en/home/presscenter/articles/2010/04/21/la-plateforme-multi-fonctionnelle-all-ge-les-fardeaux-de-la-femme/>
- IFAD work on livestock and renewable energy
 - Explanation of how biogas works. <http://www.ifad.org/lrkm/factsheet/energy.pdf>
 - How a portable biogas digester works. <http://www.ifad.org/pub/thematic/biogas.pdf>
 - How to mainstream portable biogas systems into IFAD-supported projects. http://www.ifad.org/knotes/livestock/biogas_htd.pdf
- Examples of renewable energy projects providing small-scale low-cost electricity systems. <http://practicalaction.org/energy>
- FAO Integrated Food-energy Systems. <http://www.fao.org/energy/78517/en/>
- Energypedia, developed within the Dutch-German energy partnership "Energising Development" (EnDev) implemented by GIZ. Provides information on solar, hydro, bioenergy, wind power in development. https://energypedia.info/wiki/Main_Page
- UN Energy. http://www.un-energy.org/cluster/energy_access. Renewable energy. http://www.un-energy.org/cluster/renewable_energy
- United Nations Environment Programme (UNEP) Climate change mitigation – energy. <http://www.unep.org/climatechange/mitigation/Energy/tabid/104339/Default.aspx>

References

- Carr, M., and M. Hartl. 2010. *Lightening the load: Labour-saving technologies and practices for rural women*. IFAD and Practical Action Publishing Ltd. <http://www.ifad.org/gender/pub/load.pdf>.
- FAO. 2010. "Climate-Smart Agriculture": *Policies, practices and financing for food security, adaptation and mitigation*. Rome: FAO. <http://www.fao.org/docrep/013/i1881e/i1881e00.pdf>.
- FAO. 2011. *The State of Food and Agriculture: Women in Agriculture, closing the gap for development*. Rome: FAO.
- IFAD. 2015. *How to do: mainstreaming portable biogas systems into IFAD-supported programmes*. Rome: IFAD.
- Rota, A., and K. Sehgal. 2012. *Livestock and renewable energy. Livestock Thematic papers, Tools for project design*. Rome: IFAD. <http://www.ifad.org/lrkm/factsheet/energy.pdf>.
- Sovacool, B. et al. 2013. The energy-enterprise-gender nexus: lessons from the multifunctional platform in Mali. *Journal of Renewable Energy* 50: 115-125.
- Winiacki, J. 2015. CGAP [Blog]. *Financial innovation and solar power: conquering energy poverty*. <http://www.cgap.org/blog/financial-innovation-and-solar-power-conquering-energy-poverty> [accessed 13/12/2015].

Annex 4. Travelling and transporting

Context

In rural areas of developing countries, women and girls spend more time and effort than men travelling on foot while carrying heavy loads (IFRTD, 2015). In environmentally degraded areas, women may also be forced to travel longer distances in search of firewood and water (see boxes A1 and A2.1). These journeys can be risky, especially if women and children are forced to venture into insecure environments. In Africa, women typically spend up to 2,000 hours each year on transportation tasks, which is three to four times greater than the time spent by men (Blackden and Wodon, 2006).

Although domestic-related travel and transport tasks are necessary, women are often forced to make difficult choices between fulfilling domestic and/or productive transport requirements (World Bank, 2001). For example, during the peak agricultural season, women may have to choose between giving priority to the immediate need of firewood for cooking, or the longer-term need of transporting the harvest home for storage.

The enrolment and attendance of children in schools is also affected by the availability of accessible roads and dependable transport. Without either, there may be higher personal safety risks, which prevent children, particularly girls, from going to school.

With less access to and control over resources, women have fewer opportunities than men to use different types of motorized and non-motorized travel and transport technologies to ease the burden of transport (Fernando and Porter, 2002; Carr and Hartl, 2010; IFRTD, 2015).

Labour-saving technologies and practices

Two approaches can alleviate the burden of transport for women: intermediate means of transport (IMTs) and improved paths and feeder roads.

IMTs traditionally include donkeys, wheelbarrows and carts, which can be used for collecting water and firewood as well as carrying tools to and from the fields, carrying crops from fields to grinding mills and markets, and transporting children and the elderly to health clinics. However, their value strongly depends on their acceptance by women and men and how they are subsequently used. For example, IMTs such as bicycles can change who performs a domestic task from women to men. However, men may also see the value in bicycles for their own needs, leaving the women to conduct their domestic tasks as before. A project in South Africa distributed donkey carts to ease firewood collection, but the carts were monopolized by the men, who used them to collect and sell wood from resources closest to the homestead, leaving women to travel even further to get firewood for domestic use (Venter and Mashiri, 2007; World Bank, FAO and IFAD, 2008).

Two interesting modern IMTs are bicycle trailers and the hippo water roller:

- **Bicycle trailers:** used for transporting fuel, water, harvests and other goods where other means are too expensive. Depending on their structure, they can carry around 200 kg of load. They can be made in small village workshops and adapted to users' needs. In general, structures are strong and rigid but as light as possible. *Example:* bicycle trailers were developed by Practical Action South Asia (Sri Lanka) and then adopted by Practical Action East Africa (Kenya) and in Nepal and Zimbabwe. They have been used for domestic and productive activities, including as ambulances and mobile libraries (Practical Action, 2002).
- **The hippo water roller:** a rolling barrel-shaped container that holds 90 litres of water (4.5 times more than a standard 20-litre jerry can) and can be pushed using a long metal handle. The effective weight on level ground is 10 kg. To date, hippo rollers are used in 21 African countries. They are manufactured in and shipped from South Africa, but a mobile manufacturing unit has been introduced, whereby rollers can be built locally and at a lower cost. Most roller projects are in partnership with NGOs, governments and the private sector (www.hipporoller.org).

Improved paths and feeder roads make IMTs easier to use. The use of a wheelbarrow with a load of 50 kg compared with head loading (20 kg capacity) can reduce the time spent on water transport by 60 per cent (Mwankusye, 2002; World Bank, FAO and IFAD, 2008). Improved feeder roads also physically enable the extension of public transport systems, which can make longer travel easier for women, provided they are affordable and safe. Accessible roads also enable children to go to school. Experience in Morocco, for example, has shown that thanks to good accessible roads, girls' enrolment in school has increased from 28 to 68 per cent (IFRTD, 2015).

If transport policy and development are to address gender equality and women's empowerment, the three factors of mobility, accessibility and safety need to be factored into planning and provision.

Key information sources

- Animal traction development. <http://www.animaltraction.com/>
- Animal Traction Network for Eastern and Southern Africa. <http://www.atnesa.org/>
- FAO technology platform. <http://teca.fao.org/technology/labour-saving-technologies-and-practices-manual-carrying-wheelbarrows-hand-carts-and-global-Transport-Knowledge-Practice>. <http://www.gtkp.com/themepage.php&themepgid=9>
- Hippo Water Roller Project. <http://hipporoller.org/>
- International Forum for Rural Transport and Development (IFRTD). <http://www.ifrtd.org/en/>
- Pan Africa Bicycle Information Network. <http://www.ibike.org/pabin/>
- Planning rural roads. <http://www.ruralroads.org/en/indexen.shtml>
- Practical Action – Transport. <http://practicalaction.org/transport-13>
- Skat – Mobility and transport. <http://www.skat.ch/expertise/prarticle.2005-09-22.3372902652>
- Transaid. <http://www.transaid.org/>
- World Bank Rural Transport. <http://go.worldbank.org/HY50Z2ZJP0>

References

- Blackden, C.M., and Q. Wodon. 2006 Gender, Time Use and Poverty. Introduction in *Gender, Time Use and Poverty in Sub-Saharan Africa*, C.Mark Blackden and Quentin Wodon, eds. Working Paper 17. Washington, D.C.: World Bank.
- Carr, M., and M. Hartl. 2010. *Lightening the load: Labour-saving technologies and practices for rural women*. IFAD and Practical Action Publishing Ltd. <http://www.ifad.org/gender/pub/load.pdf>.
- Fernando, P., and G. Porter. 2002. *Balancing the load: Women, gender and transport*. London: Zed Books.
- International Forum for Rural Transport and Development (IFRTD). 2005. Children's mobility. <http://www.ifrtd.org/index.php/issues-2/71-children-s-mobility> [accessed July 2015].
- IFRTD. 2015. Gender. <http://www.ifrtd.org/index.php/issues-2/83-gender> [accessed July 2015].
- Mwankusye, J. 2002. Do Intermediate Means of Transport Reach Rural Women? In *Balancing the Load: Women, Gender and Transport*, Priyanthi Fernando and Gina Porter, eds. London: Zed Books, pp. 39-49.
- Practical Action. 2002. *Bicycle trailers*. Technical brief. Practical Action.
- Venter, C.J., and M. Mashiri. 2007. *Gender and Transport: Towards a Practical Analysis Framework for Improved Planning*. Paper prepared for 26th Annual South Africa Transport Conference, Pretoria, July 2007.
- World Bank. 2001. *Women and rural transport in development*. Rural transport knowledge base. Rural travel and transport program 2001. http://www4.worldbank.org/afr/ssatp/Resources/HTML/rural_transport/knowledge_base/English/Module%205/5_2a%20Women%20and%20Rural%20Transport.pdf.
- World Bank, FAO and IFAD. 2008. *Gender in Agriculture Sourcebook*. Washington, D.C.: World Bank. www.worldbank.org/genderinag.

Annex 5. Care provision

Context

Care work includes all the paid and unpaid activities that take place in households and communities related to raising children and looking after elderly, ill or disabled people. Care also concerns the requirements of the woman herself, in particular maternal nutrition.

Recipients of care may need to be fed, bathed, clothed, educated and socialized, and have their emotional and health needs taken care of.

Responsibility for care provision usually falls on women and girls.

Care work in the household is commonly associated with raising children and looking after the ill, but research suggests that, in recent years, the proportion of elderly and disabled people living in rural areas has grown, increasing the need for elderly and disabled care (box A5.1).

Women and girls in households affected by HIV/AIDS can bear a significantly higher burden of care (box A5.2).

Box A5.1. A growing proportion of elderly and disabled in rural areas

The proportion of elderly and disabled living in rural areas has increased in recent years because of reduced family sizes and the migration of fit and able youth in search of off-farm urban work. Today, 20 per cent of people living in extreme poverty have a disability. In Asia and Latin America, the proportion of elderly people (roughly 10 per cent of the population, in 2014) is expected to increase (to 17 per cent by 2030), with most residing in rural areas and dependent on farming for their livelihood (Enablement and MetaMeta, 2015).

Box A5.2. HIV/AIDS and the domestic workload

A heavier domestic workload exacerbates the coping strategies of families living with HIV/AIDS. For example, people living with HIV/AIDS need up to 100 litres of water per person per day, rather than the normal 20 litres, to take antiretroviral medicine, for washing and cleaning during bouts of diarrhoea, and for replacement feeding of infants. Without access to enough safe water, the risk of opportunistic infections increases for those with compromised immune systems and can speed up the progression from HIV to AIDS (WHO and USAID, 2010).

In turn, illness and death associated with AIDS reduce household labour and assets needed to fulfil work demands by:

- Lowering human capacity. Infected people cannot work during bouts of sickness and need care and support from other household members, invariably women and girls. Affected households have fewer opportunities to participate in development activities, including women's groups and infrastructure committees.
- Diminishing control over and access to other key resources and assets. Financial resources are reduced by loss of earnings and rising expenses to buy medicine and food. Households are sometimes forced to sell their productive assets (draught animals, tools and implements) to raise cash. Physical assets may be taken from widows by relatives of a deceased husband.
- Marginalizing and excluding household members from on-farm and off-farm work and community activities as a result of social stigma and discrimination by the community (FAO, 2004).

Labour-saving technologies and practices

Care work, in terms of responsibilities and service provision, in developing countries has received relatively little attention compared to other aspects of social and economic development. This is reflected in the very limited sources of information on unpaid care work and proven care arrangements in a development context. However, this is set to change with target 5.4 of the Sustainable Development Goals to "recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social

protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate" in support of gender equality and women's empowerment.

Recent policy research points to the need for government and development agencies to recognize care provision and domestic work as critical societal functions that contribute to the social and economic development of communities. It calls for the redistribution of these responsibilities across society so that all stakeholders are involved – the state, private sector, civil society and households – while not forgoing the quality of care services (Razavi, 2009).

A multi-stakeholder and multisectoral approach is therefore needed to reduce the care burden on rural households, and in particular women and girls. Although care provision is largely beyond the scope of IFAD's mandate, there are relevant interventions that help to lighten the unpaid care work burden:

- Improving basic infrastructure to enhance access to water, sanitation, energy and transport – these are important first steps to build the enabling environment (refer to annexes 1 to 4).
- Rehabilitating or constructing local childcare nurseries/care centres.
- Supporting local stakeholders, such as self-help women's groups, community-based organizations or civil society, to set up and run local care services on a permanent basis or for a limited period of time to free up time for carers to participate in training events, other project activities or work during critical periods of the agricultural calendar.
Examples: in Nepal (<http://www.ifad.org/media/success/nepal.htm>);
in Mongolia (http://www.ruralpovertyportal.org/country/voice/tags/mongolia/mongolia_nomadic);
in Latin America and the Caribbean (<http://www.ifad.org/gender/tools/gender/>).
- Partnering with specialist agencies to fund and implement complementary interventions in rural care provision.
Example: Working with UNICEF in Zambia
(http://operations.ifad.org/es/web/ifad/operations/country/project/tags/zambia/368/project_overview).
- Providing education and information on nutrition, hygiene and health (including reproductive health) to improve the health of household members, and thereby reduce their need for care.
- Mainstreaming HIV/AIDS prevention, care and support in development programmes, where relevant.
- Advocating for improved care provision in rural areas from the state, private sector and civil society as a prerequisite for gender-sensitive decent employment opportunities that do not compromise the quality of care.

Key information sources

- United Nations Research Institute for Social Development (UNRISD), work on Political and Social Economy of Care. <http://www.unrisd.org/research/gd/care>
- International Labour Organization (ILO), Work and family: the way to care is to share. Part of the campaign for "Gender equality at the heart of decent work". http://www.ilo.org/wcmsp5/groups/public/@dgreports/@gender/documents/publication/wcms_101758.pdf
- Water, people with disabilities and the elderly. <http://thewaterchannel.tv/dossiers/none-left-behind>

References

- Elson, D. 2005. *Unpaid Work, the Millennium Development Goals, and Capital Accumulation*. Paper presented at the Conference on Unpaid Work and the Economy: Gender, Poverty and the Millennium Development Goals. 1-3 October 2005, Levy Institute.
- Enablement and MetaMeta. 2015. *Disability and age inclusive water management*. A position paper. Enablement and MetaMeta, February 2015, the Netherlands. http://media.wix.com/ugd/d21f77_8537ec63330c4ce78f4cbf759bc683ed.pdf.
- FAO (date unknown). *Labour-saving technologies and practices for households*. FAO HIV/AIDS Programme. <ftp://ftp.fao.org/docrep/fao/007/ae502e/ae502e04.pdf>.
- FAO. 2004. *Addressing HIV/AIDS through Agriculture and Natural Resource Sectors: A guide for extension workers*. Social-Economic and Gender Analysis Programme (SEAGA). Clare Bishop-Sambrook. Rome: FAO.
- Razavi. 2009. *Key policy initiatives on equal sharing of responsibilities between women and men, including in the context of HIV/AIDS*. UNRISD. <http://www.un.org/womenwatch/daw/csw/csw53/panels/keypolicy/Razavi.pdf>.
- Razavi and Staab. 2012. *Global variations in the political and social economy of care: worlds apart*. UNRISD.
- UNRISD. 2010. *Why Care matters for Social Development*. UNRISD Research and Policy Brief 9. http://www.unrisd.org/published/_rpb/_rpb9erev-1/RPB9eREV.swf?EnablePrinting=True?EnableDownloading=False.
- WHO and USAID. 2010. *How to integrate water sanitation and hygiene into HIV programmes*. World Health Organization and USAID. http://whqlibdoc.who.int/publications/2010/9789241548014_eng.pdf.

Bibliography

- Bardasi, E., and Q. Wodon. 2009 *Working Long Hours And Having No Choice*. World Bank. <http://elibrary.worldbank.org/content/workingpaper/10.1596/1813-9450-4961>.
- Bishop-Sambrook, C. 2003. *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*. A joint study by IFAD Eastern and Southern Africa Division and FAO Agricultural and Food Engineering Technologies Service of Agricultural Support Services Division. Financed by the Government of Japan.
- Bishop-Sambrook, C. 2014. *The time poverty trap: rural women's poverty of time is one of the biggest challenges facing smallholder development in subSaharan Africa*. Social reporting blog post. IFAD, 23 October 2014. <http://ifad-un.blogspot.it/2014/10/the-time-poverty-trap-rural-womens.html>.
- Carr, M., and M. Hartl. 2010 *Lightening the load: Labour-saving technologies and practices for rural women*. IFAD and Practical Action Publishing Ltd. <http://www.ifad.org/gender/pub/load.pdf>.
- De Schutter, O. 2012. *Women's rights and the right to food*. Report submitted by the Special Rapporteur to the Human Rights Council in accordance with Council resolution 13/4, 24 December 2012. http://www.srfood.org/images/stories/pdf/officialreports/20130304_gender_en.pdf.
- FAO. 2011. *The role of women in agriculture*. ESA working paper No. 11-02, prepared by the SOFA team and Cheryl Doss. <http://www.fao.org/docrep/013/am307e/am307e00.pdf>.
- FAO. 2015. *Running out of time: the reduction of women's work burden in agricultural production*. Rome: FAO. <http://www.fao.org/3/a-i4741e.pdf>.
- FAO, IFAD and ILO. 2010. *Gender dimensions of agricultural and rural employment: Differentiated pathways out of poverty – Status, trends and gaps*. Rome: FAO. http://www.ifad.org/pub/gender/agriculture/GRE_WEB.pdf.
- FAO and IFAD. 2011. *Gender, science and technology in the rural sector: an overview of FAO/IFAD contributions*. Gender dimensions in rural science and technology. Unpublished manuscript.
- Gesellschaft für Internationale Zusammenarbeit – German International Cooperation agency (GIZ, formally GTZ). 2009. Gender Equality and Infrastructure. *Water Energy and Transport Factsheet*. GTZ.
- Institute of Development Studies (IDS). 2015. *Balancing paid work and unpaid care work to achieve women's economic empowerment*. Policy briefing, issue 83. IDS.
- IFAD. 2012. *Gender equality and women's empowerment policy*. Rome: IFAD.
- IFAD. 2013. IFAD Gender and rural development brief: Southeast Asia. Rome: IFAD.
- IFAD. 2014. *Household methodologies for gender equality and social inclusion*. Toolkit. Rome: IFAD. <http://www.ifad.org/knotes/household/index.htm>.
- International Network for Bamboo and Rattan (INBAR). 2013. *An innovative, scalable and pro-poor home cooking-based charcoal production value chain for women*. Progress report. Unpublished. INBAR, China.
- Lambrou, Y., and G. Piana. 2006. *Energy and gender issues in rural sustainable development*. Rome: FAO. <ftp://ftp.fao.org/docrep/fao/010/ai021e/ai021e00.pdf>.
- Nanda, S., R.O. Prakash, and P. Mohapatra. 2012. Illuminating the darkness in Orissa, India. *Making a difference in Asia and the Pacific IFAD Newsletter*, Issue 41, February 2012. http://www.ifad.org/newsletter/pi/41_full.htm#6.
- Nesbit-Ahmed, Z. 2015. Institute of Development Studies (Blog). *Advocating for care in the post-2015 agenda*, 17 January 2015. <http://www.ids.ac.uk/opinion/advocating-for-care-in-the-post-2015-agenda> [accessed 26/11/2015].
- Oxfam. 2015. *Examining pathways towards engendered change; involving men and women in care work in West Nile, Uganda*. Oxfam International.
- Rota, A., and K. Sehgal. 2012. *Livestock and renewable energy*. Livestock Thematic papers, Tools for project design. Rome: IFAD. <http://www.ifad.org/lrkm/factsheet/energy.pdf>.
- Salm, M., and M. Lanting. 2011. *Labour and energy in small-scale farming*. Ileia, First edition 2011. <http://www.agriculturesnetwork.org/resources/pdfs/learning-module5>.
- Stevano, S. 2015. *It is time*. IFPRI blog, 6 May 2015. <http://www.ifpri.org/blog/it-time>.
- United Nations Conference on Trade and Development (UNCTAD). 2011. *Applying a gender lens to science, technology, and innovation*. UNCTAD.
- UNDP. 2001. *Generating Opportunities: Case Studies on Energy and Women*. UNDP.
- UN Women. 2015. *Progress of the world's women 2015-2016: transforming economies, realizing rights*. UN Women.
- WaterAid. 2011. *Sustainability Framework*. WaterAid.
- World Bank, FAO and IFAD. 2008. *Gender in Agriculture Sourcebook*. Washington, D.C. www.worldbank.org/genderinag.



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