Milka Warimu, 42, spreads out coffee to dry at the Assumption Sisters of Nairobi congregation's wet mill facility at Ngoingwa Parish, Kawira village, Thika, Kenya. [Photo by Will Baxter for CRS]

# Gender-Sensitive Labor-Saving Technologies and Practices

## INTEGRATING LABOR-SAVING TECHNOLOGIES AND PRACTICES INTO PROJECT DESIGN AND IMPLEMENTATION

### WHY DO WE NEED LABOR-SAVING TECHNOLOGIES AND PRACTICES?

Women comprise, on average, 43 percent of the agricultural labor force in developing countries.[I] Depending on the context, women are involved with various agricultural activities, including land preparation, planting, weeding, harvesting, post-harvest handling, and marketing. This is termed their productive labor. Women and girls carry out the bulk of unpaid reproductive labor;[II] this includes child and elder care, water and fuel collection, meal preparation, laundry, and other tasks. Women also have community labor commitments, such as the provision of community resources and tasks linked to preserving culture and tradition.[III] Rural women simultaneously manage triple responsibilities, which consume energy and time, particularly when there is limited access to essential public services and labor-saving technologies. Due to this triple burden of unpaid agriculture activities, domestic responsibility, and community labor, rural women and girls spend a larger proportion of their day on unpaid and undervalued tasks than men and boys.[IV] This can restrict women's income as well as the amount of income she has control over, her mobility and voice, and the health and nutrition of the whole family.[V]

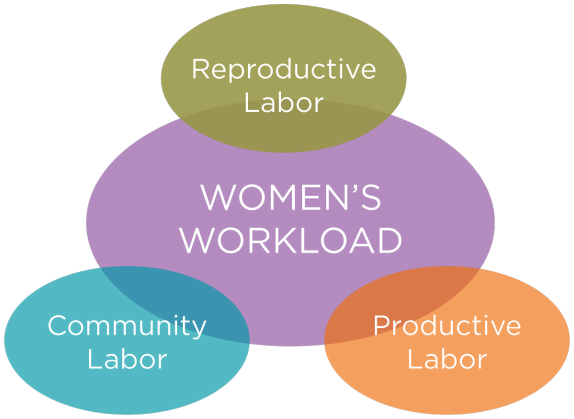


Figure 1. Women's triple burden of work.

Gender-sensitive labor-saving technologies and practices in rural and agricultural development programs, when properly planned and integrated as part of a holistic approach, can potentially improve the well-being and nutrition of rural women and adolescent girls by reducing women's energy usage and time spent.[VI] The saved time could lead to women having more opportunities to participate in development activities, increased community participation, leisure time, or to undertake additional productive work to increase income,[VII] depending on how women choose or are able to use it. Entire families and communities – including men – can benefit from these technologies, by reducing the drudgery of agricultural and domestic tasks through mechanization and the possibility of shifting workloads.

Gender-sensitive labor-saving technologies and practices can play a large role in addressing rural women's work burden which has been increasing given changes in the economic, natural, and socio-cultural environment.[VIII] There are also clear benefits to the environment and climate change mitigation efforts from strategically increasing and investing in women's access to climate-smart agriculture practices that can be labor-saving,[IX] such as decreased deforestation and pollution depending on the technology or approach. Labor-saving technologies and approaches integrated with other gender transformative approaches can be instrumental in advancing gender equality and women's empowerment.[X]

With proper assessment, planning, and implementation, labor-saving technologies and practices can increase income, reduce drudgery,[XI] potentially increase health and nutrition outcomes for families, among other positive outcomes.[XII] Labor-saving technologies and practices should be an integral component of the gender integration strategies of CRS projects and particularly agriculture-related projects.

## WHAT ARE LABOR SAVING TECHNOLOGIES?

Labor-saving technologies and practices address specific labor, time, and gender-based constraints to reduce time and/or effort needed in carrying out a task.

### EXAMPLES OF TECHNOLOGIES AND PRACTICES

**Mechanization:** Shellers, drum seeders, weeders, jab planters, treadle pumps,
**Inputs:** Drought resistant seeds, trees for woodlots, storage bags
**Infrastructure:** Milk coolers, rainwater harvesting reservoirs, livestock pens
**Transport:** Animal or energy-based bicycles or carts
**Mobile technology for service provision:** Veterinary, weather, insurance
**Integrated practices:** Climate-smart agriculture, agro-forestry, watershed management
(Source: FAO 2019)

For more examples see *CRS's living database of labor-saving tools and approaches.*

## INTEGRATING LABOR-SAVING TECHNOLOGIES AND APPROACHES INTO PROJECTS

Successful adoption and sustained use of labor-saving technologies, approaches and strategy are dependent upon many factors that project design and implementation teams must consider.[XIII] This brief is not exhaustive of all necessary considerations but acts as a list of best practices and key areas of inquiry. To better understand if, and how, a project should include labor-saving technologies, approaches, or strategy, teams should consult gender and other sector analysis results to guide their decision and initial selection; assess the appropriateness for the end user; consider price point; determine delivery model, acquisition and maintenance; understand and support an enabling environment; consider risks; and determine how to monitor and evaluate. As additional considerations arise, based on the context and needs of the targeted audience, these should be included. This brief dives deeper into these best practices and areas of inquiry.

### GENDER ANALYSIS

Through the design, implementation and adaptation of the project, targeted end-users' desires, inputs, and voices should be included, creating an inclusive, participatory process. Labor-saving technologies are much more likely to gain general acceptance and result in widespread benefits if the need for them has been expressed by rural women and men themselves.[XIV] The gender and other sector analyses and assessments can start this process. When conducting gender or other sector analyses for a proposal or during start-up, questions related to time use, workload, access to technologies, and decision-making power over the adoption of technologies and practices relevant for the project need to be incorporated. The analysis can gather information using daily calendars, seasonal calendars, transect walks and conversations with the target audience. These tools will help to provide detailed information on roles and responsibilities within the sectors in which labor-saving technologies may be deployed, target audience perceptions of what activities have heavier energy and/or time requirements, and where the target audience would like to see workload reduced. Inquiring about other labor-saving technologies and approaches they have tried and what was the result will be insightful for project implementation. Information on who within the household makes decisions related to technology and practice adoption, use of income, and who has control and access to sector-specific technologies will be important in designing the technology deployment and the need for complementary gender-specific approaches. The analysis will provide the initial information needed for identifying appropriate technologies or practices to test and validate with the end-user.

## SELECTING THE TOOL, PRACTICE OR STRATEGY

Using data from the analysis, teams can search for technologies that can meet the targeted outcomes, and audience needs. The team can use CRS' living database of labor-saving tools and approaches as a starting point in identifying potential technologies and practices. Other resources which may be helpful in selecting possible labor-saving technologies approaches are:

- UC Davis Feed the Future Horticulture Innovation Lab
- FAO Technologies and Practices for Small Agricultural Producers
- Feed the Future Appropriate Scale Mechanization Consortium
- IFAD Compendium of Rural Women's Technologies and Innovations

The team can also speak with peer organizations, agriculture extension services, vocational training programs, private sector vendors, and manufacturers to identify existing technologies available in-country, or adaptations to existing technologies that can accommodate the price point and other considerations while maintaining quality.

## APPROPRIATENESS OF THE TOOL, APPROACH OR STRATEGY

Labor-saving technologies have higher adoption rates if they are easy and convenient for the end-user to operate.[xv] Therefore, when selecting a technology or practice, it is important to confirm it is appropriate for use by the targeted end-user. To do this, the project team can review end-users' preferences and other data from the analyses and include targeted end-users in the selection process. The team should also plan to test the technology with the targeted audience. For example, if a technology is being selected for women with young children to use, then the technology needs to be tested with women who have young children to identify any barriers she may face and to validate her interest in using it. The project should budget for testing before going to scale.

*For an in-depth labor-saving technology assessment to be used post-implementation, check out the* ***INGENAES Technology Assessment Toolkit.***

### CASE STUDY: WHEN A TECHNOLOGY IS NOT TESTED WITH THE RIGHT END USER: -- SMALL-SCALE POTATO PROCESSOR

A project in Bolivia invested in a mechanized potato selection technology. The team was certain that the technology would work, and in theory, it had the potential to save a lot of time. However, the designers of the technology tested it with men instead of women, who are mostly engaged in grading potatoes. The technology required lifting heavy bags of potatoes up high. Most of the women found it difficult to lift the bags of potatoes. Later the technology was adapted taking into consideration women's needs. The adapted technology was adopted and time-saving in selecting potatoes was observed. This could have been avoided by asking the right questions and testing with the target audiences during the design phase. (Mudege et al, 2020)

See INGENAES for additional technology profiles.

## PRICE POINT OF TECHNOLOGIES

For technologies to be adopted and scaled, they need to be affordable and the benefits need to exceed the costs. A too-high price point will inhibit the target audience from adopting it and allowing it to scale within the community. Users' willingness to pay depends on many factors, including assets and income controlled by the end-user, perceived value, and previous knowledge of the technology, level of risk aversion, and available information.[XVI] It is important to understand if the intended audiences have control over the income that will be used to purchase and maintain the technology. Data from the gender analysis can shed light on this question. Information on willingness to pay can be gathered initially through targeted focus group discussions with end-users.[XVII] When planning to scale, more rigorous willingness to pay studies can be conducted.

If the cost is too high for an individual to purchase or maintain, the project could explore if local manufacturing while maintaining quality will lower costs, and is feasible. The project may want to explore a fee-for-service option. This approach could include Private Service Providers (PSPs) or Private Agriculture Service Providers (PASPs) adding smaller and less expensive technologies to their product portfolio, and/or projects could partner with an entrepreneurship program with a fee-for-service option.

## DELIVERY MODEL, ACQUISITION AND MAINTENANCE

Just as important to what the tool can do or who will use it, is how the technology will reach the end-user. Some technologies may need to be imported, while others may already be locally available. If not locally available, the project may want to engage local manufacturers in producing a quality product. The team needs to confirm if there are existing maintenance and repair services available, or if the project will need to support this needed player through training within the value chain. Building the capacity of and identifying sustainable maintenance providers that will be available beyond the project timeframe will be critical to sustained use of the technology.

On the issue of maintenance and upkeep, the team must also confirm if spare parts and inputs are available locally or will need to be imported. The project team should consider who would provide training, if necessary, on use and maintenance of the technology or practice, either to the end-users or identified maintenance technicians, and who will provide follow-up support as needed. These factors must be taken into account when determining the most appropriate technology, for the intended end user, to ensure its sustainability. To support sustainability and scalability, the project should explore delivery models that minimize subsidies and are market-based, such as a last-mile agent or local shops.

### CASE STUDY: HOW PROVIDING IMPROVED TECHNOLOGIES FREE CAN BE COUNTER-PRODUCTIVE

In one district of India, women potters had started making improved chulas (stoves), designed in collaboration with village women, and selling them for Rs 40 each (US$0.9). Although women really wanted these new chulas, they had no cash of their own and were afraid to ask their husbands for the full amount. Some pretended that the stoves cost only Rs 15 and were able to get this sum from their husbands, hoping to pay the remainder over a period of time. Development workers in the area worked out a system with the women and the potters that stoves would be subsidized at 50 per cent, with the idea that many more women would then be able to get the money from their husbands. In the process, it was felt that women would become more empowered and be able to open negotiations with their husbands on other issues of importance to them. However, before the scheme could take off, the state government started to distribute chulas made outside of the area free of charge. The local women potters lost their jobs, many of the free stoves were dismantled by husbands for their metal parts and a chance for a change in household dynamics was lost. (Source: Ghertner, 2006.)

## CREATING AN ENABLING ENVIRONMENT

The introduction of labor-saving technologies, by itself, is not enough to achieve women's empowerment or other intended project outcomes. The labor-saving technologies and/or approaches should be integrated within a larger holistic approach addressing the numerous external factors that influence women's capacity to adopt new technologies or practices. These factors can be best understood and factored in through a socio-ecological model at the household, community and institutional/systems level. To increase adoption and uptake of the technology or practice, project teams will likely need to support an enabling environment at each level.

At the household level, an enabling environment that values and supports women's reproductive and productive work may induce technology adoption and continued use. Unfortunately, in many rural settings, inequitable household dynamics still dominate, and women, despite their work both at home and in agriculture, are not free to take decisions and control their production needs, let alone control the spending of the income they generate.[XVIII] There are gender transformative approaches that enable men and women, together, to understand and challenge discriminatory gender norms that drive gender inequalities and hinder growth.[XIX] By understanding intra-household dynamics, the project can incorporate these gender-transformative approaches, such as the SMART Couples approach , Gender Champions approach, or SILC + GTA, which seek to increase household decision making, and work towards creating and fostering the necessary enabling environment. These transformative approaches can also serve as time and labor-saving strategies themselves through a focus on more equitable distribution of work, in addition to enhancing the overall environment for uptake and adoption of technologies.

At the community level, it is important to understand and consider the culture of the community and whether the new technology will be accepted, based on gender norms and roles. Through conversations with community members, including the targeted end-users, and the gathered data from the gender and other sector analyses, teams can better understand the possibility of community acceptance or rejection of the proposed intervention

At the institutional level. Engaging government and key agriculture sector offices is also part of creating an enabling environment. Gender strategies and policies can be assessed to identify areas for advocacy, influence, and collaboration. Project teams should understand whether there is a gender-sensitive policy environment for technology adoption, and understand the level of coherence amongst key agricultural sector policies which include technology. By understanding the policy environment project teams can leverage the existing action plans and strategies that target women and their needs.

In engaging with the private sector, teams should consider a market-forward initiative that could engage PSPs or PASPs to identify technologies that might be helpful, appropriate for their client base, and then sell them with CRS as a facilitator instead of main provider. Market-based ideas that are led or co-led by the private sector and governmental partners can increase adoption, innovation and sustainability long after the project has ended.

Changing local or national government policies may be out of the scope of the project, but understanding and engaging with local government, agriculture offices, and private-sector, to affect policy and start sensitization conversations is key to the adoption and sustained use of labor-saving technologies.

Irma Sales, one of 18 women who are part of a CRS Savings and Internal Lending Communities (SILC) group in the community of Arroyo Grande, Municipality of La Democracia, Huehuetenango.
[Photo by Luis Cocón for CRS]

## POSSIBLE RISKS

As stated above, labor-saving technologies can benefit men and boys by reducing drudgery through mechanization and other possible benefits. 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.[XX] Another concern is the displacement of women to more labor-intense practices if the technology is adopted by males instead of the targeted female audience. Project teams must understand these risks and mitigate them through the promotion of gender-transformative approaches and monitoring who is using and controlling the technology through ongoing evaluations.

Increasing women's paid productive work can be an outcome of labor-saving technologies. However, if the income generation encourages the use of more time for productive work with another person not taking up care work, there could be an adverse effect on women and their families' nutrition.[XXI] Understanding this trade-off and how best to address it within the project based on the evidence is important for the team to address and monitor.

Lastly, although some labor-saving technologies can produce environmental benefits and support climate change mitigation efforts by decreasing biowaste, increasing rainwater harvesting, or decreasing deforestation;[XXII] others could have possible adverse effects on the environment and climate. A few questions project teams should ask, and monitor are:  What are the current energy constraints for the target community? Will the new technology create greater stress on the public supply of electricity, fuel, water, or other public resources? Could this increased stress on public resources lead to greater competition possibly leading to conflict? Are there complementary activities the project can include to mitigate these risks?  This information can be gathered through analyses during the design phase, through ongoing conversations with the target audience and monitoring, evaluation, accountability, and learning (MEAL) activities.

## ONGOING MONITORING AND EVALUATION

After implementation, it is important to consistently monitor adoption and use, including these gender components of technologies and practices. Teams should collect data on women's activities and time use before and after the technology adoption, to understand better the extent the technology is decreasing their time burden. Teams can also set up MEAL systems to gather information on what women are doing with the increased time available, how the technology is being used, who is using it, and who is in control of the technology and potential income generated. The abovementioned possible risks and unintended consequences should also be monitored throughout the MEAL processes, to document and adapt as needed to address or mitigate these risks. Other considerations regarding the impact on the agricultural value chain, PASPs or other market-based issues should also be included in the MEAL processes. At this stage, adjustments may need to be made if the technology is not producing the desired outcomes.

## CONCLUSION

Labor-saving technologies and practices play an important role in releasing rural women of all ages from unpaid time burdens so that they have more time for productive, care work and themselves. Through a gender-sensitive participatory approach, the project, and targeted end-users, together, can select the most appropriate tool/approach based on their needs, constraints, and ability; determine affordability; develop a delivery model that can reach the intended audience; and work towards creating an enabling environment. All these outcomes are important steps towards inclusive and sustainable rural development and women's empowerment.

*For more information contact your Regional Technical Advisors for Agriculture and Gender or Valerie Davis, STA – Nutrition/Gender Sensitive Agriculture.*

Irma Sales, used SILC savings and other family funds to purchase this grinding mill. [Photo by Luis Cocón for CRS]

## ENDNOTES


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