

Transforming Livelihood Systems: Meeting needs in a changing world

TAADOUD INTEGRATED NATURAL RESOURCE MANAGEMENT LEARNING BRIEF 2 

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This is the second in a series of learning briefs under the Taadoud II: Transition to Development project, a collaboration led by Catholic Relief Services. The collaboration includes Catholic Agency for Overseas Development (CAFOD), Norwegian Church Aid (NCA), World Vision, and Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University. The project is funded by UK Aid. The learning brief series aims to promote awareness and understanding of natural resource use and management in Darfur to support the Taadoud II program and wider programs and policies to effectively build resilient livelihoods.

Livelihood strategies are the way people support themselves. People change their strategies as their opportunities, risks, and limitations change. **A change in a household's strategies can affect members of the household differently.** Often changes that benefit a household as a whole increase women's risk and labor burdens. Furthermore, when nearly all livelihood strategies depend on natural resources, changes to the strategies will change demands on natural resources. How one set of households changes the way they use natural resources will affect other households who also depend on those same resources. This could **cause conflict over those resources and deplete them.**

This brief reviews how farming, agro-pastoralist, and pastoralist livelihood systems in Darfur are permanently changing in response to major changes, or transformations, in social, economic, and political forces, and in the face of ever-increasing pressure on natural resources. This brief reviews these changes by livelihood specialization, describes the different roles men and women play in these changes, and highlights how the changes impact them differently. We examine how changes in strategies affect the resilience of those strategies and how past strategies have become less effective, driven in part by pressure on natural resources. At the same time, we see how innovations are providing new opportunities to increase production and revenues while sustainably managing natural resources. Many of us have ideas about how pastoralist or cultivating strategies function and determine how to support them based on these ideas. However, **all livelihood strategies are transforming, and as existing strategies evolve and new strategies emerge, we must update our understanding of the strategies so that programs and priorities can also evolve to support the new reality.**

Introduction

People make plans and choices about how to use their capacities and resources to maximize benefits like income or food, balancing them against risks. Institutions, customs, and policies both support and limit these strategies. When risks or benefits for activities change, or policies and institutions change, households change their strategies accordingly.

People often make short-term changes to their strategies to *cope* with shocks. For example, a farmer may do more construction labor for a week to pay for medical costs. Longer-term changes, like shifting from growing sorghum to sesame, are called *adaptations*. When the livelihood system itself (the economy, rules, laws, policies, environment, etc.) permanently changes to such a scale that incremental adaptations are inadequate, then we say it *transforms*—and livelihood strategies require transformational adaptations (Pelling, O'Brien, and Matyas 2014). At the same time, adaptations made by large sectors of the population can change or push the transformation of the system in a particular direction. For example, the provision of a dam to increase water availability may increase the number of animals kept by nearby households, or a desire to have more animals may push a community to organize building a dam.

Unlike adaptations in response to a crisis, transformational adaptations are proactive, in expectation that current strategies will continue to become less effective or that alternative strategies will continue to be more effective. While they may happen gradually and therefore go unnoticed, transformational adaptations are significant and essentially permanent.

The economy, social norms, institutions, politics and laws, climate, population density, power structures, access to technology, and many other features of life in Darfur and throughout Sudan have changed rapidly and permanently in recent years—they have transformed. In response to these changes, households in Darfur have changed through transformative adaptations to be able to continue to support themselves.

Transformational adaptations may include starting new activities or permanently abandoning previous activities for which people have built expertise across generations. This may mean large shifts in priorities among activities, increasing one activity and reducing another. Sometimes something happens to open new opportunities, like the discovery of gold or road improvements that make different crops more profitable. When an activity becomes more profitable, people tend to increase their investment in that activity, often at the expense of another activity.

On the other hand, sometimes things happen that make certain activities more difficult or risky, or less profitable, like reduced land fertility or insecurity resulting in violent theft of animals. People might then reduce or even abandon certain activities and turn to other activities. Sometimes they have done these new activities in the past and have skills but are using them in new ways. Other times the alternative activities are new to them, and therefore they may not have the skills or resources to maximize profit. New activities might be different from their traditions and not considered dignified, like a pastoralist who must abandon herding to cut firewood or a farmer who must sell his land to cultivate another family's land for wages.

Programs that support profitable, dignified alternative activities that can be engaged in on a large scale can facilitate positive transformations.

Transformations in the data

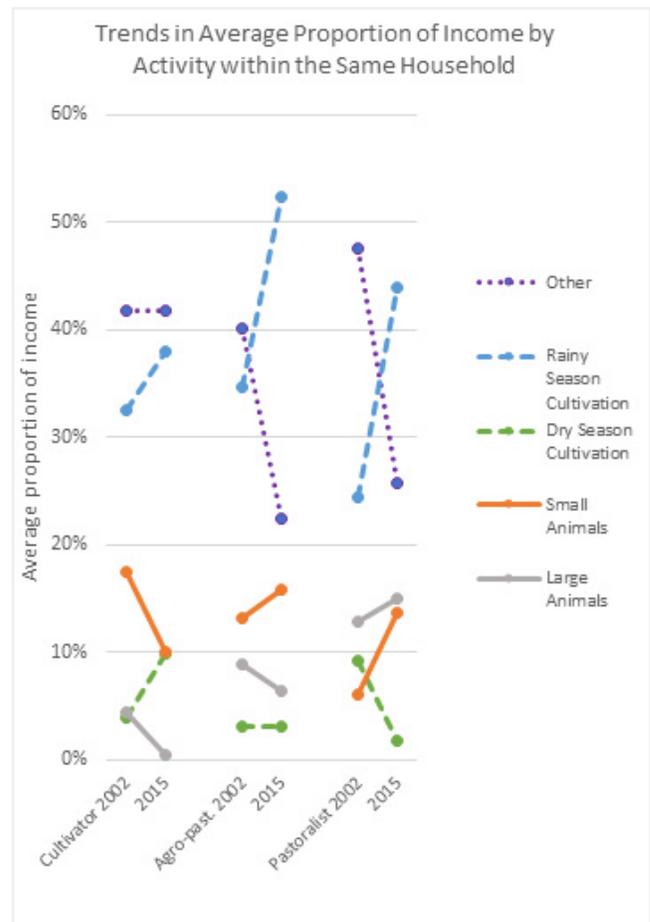
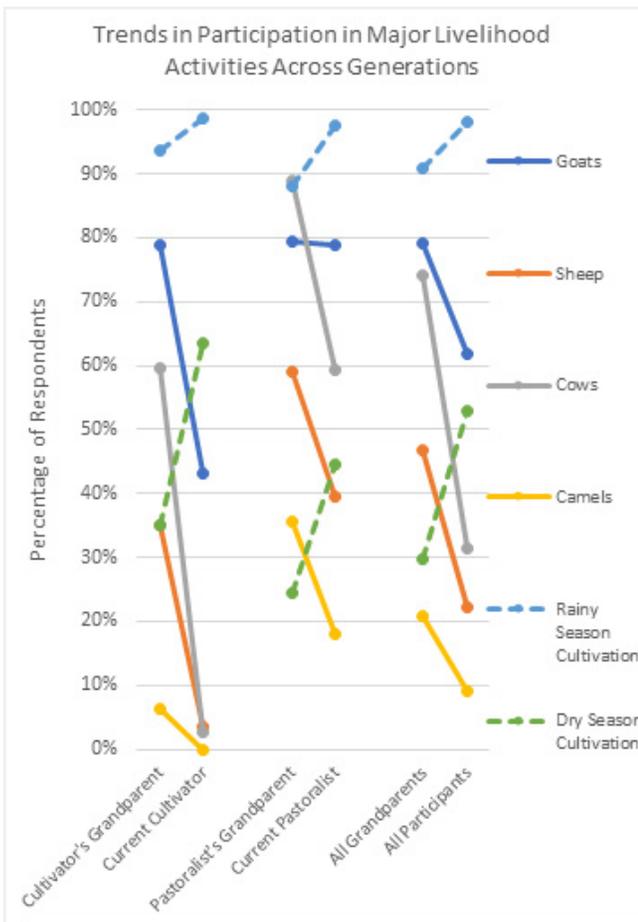
This brief uses quantitative and qualitative data from the operational research (OR) during both Taadoud I and Taadoud II (OR1 and OR2) to examine how livelihoods have transformed in Darfur over the past generation, with a detailed look at more recent years. Figures 1 and 2 provide slightly different but complementary, reinforcing views of populations in Darfur. Each shows a different picture of the same long-term transformations. Figure 1 shows the proportion of households using an activity at all, comparing the current generation to their grandparents. Figure 2 looks at the average proportion of household income for different

activities, showing trends from 2002 to 2015. Based on the lessons from these data sets, we conducted additional interviews asking people for more detail about why they are changing their strategies and the impact of those changes.

Both datasets show similar trends: generally people are reducing their dependence on animals and increasing their rainy season cultivation. Both pastoral and cultivating strategies have shifted away from large livestock (cattle and camels). Though many pastoralists still have herds of large livestock, the general trend is toward smaller livestock

Figure 1. OR2 comparison of the average proportion of the households using an activity, showing trends from grandparents to current generation.

Figure 2. OR1 comparison of mean proportion of household dependence on animal and cultivation activities, showing trends from 2002 and 2015.



(sheep and goats). Previously, farmers often kept small herds of large livestock to complement their cultivating activities. Now, very, very few farming livelihoods include large livestock, though almost half of cultivators still have at least some goats. Cultivation, on the other hand, is increasing in importance for all strategies. Pastoralists drastically increased their cultivation between 2002 and 2015, replacing other less-profitable sources of income. Farmers' loss of animals during the conflict resulted in increased dependence on cultivation. Interestingly, although almost half of people with pastoralist strategies practice some dry season irrigated cultivation, it is on a very small scale. The rest of this brief explores these and other trends, and their implications for resilience, equity, and natural resource management.

1. Cultivation-focused strategies have fewer animals than previously, while more pastoralists have added cultivation to their strategies, and on a larger scale.

All households explained that their grandparents had larger herds because they had access to more pasture and could supplement fresh pasture with crop residues. Cultivators once had many more animals to provide income along with their cultivation, but over generations, and especially during the conflict, they have reduced this activity to a minor, but still important, complementary activity. Over decades, as pastoralists or agro-pastoralists lost their herds through droughts, theft, or disease, they found it increasingly difficult to rebuild their herds. Many of the pastoralists interviewed for this brief still maintain herds, but the herds are smaller than in previous generations. While past generations were able to support their families with the herds only, today's herds are too small to support the family, so pastoralists must do other activities. Many pastoralists have increased cultivation to reduce the need to sell animals and to make their smaller herds more profitable. This trend increased pressure on good *goz*¹ land and took some pastureland out of the common grazing systems.

to data collected in 2015, risk of theft was still too high for many cultivators to invest in animals. Data collected four years later showed that with improved security many cultivators reinvested in animals as a complementary activity, using surplus from the bumper harvest in 2018. But these same households also reported that they did not intend to rebuild herds to be as large as they were before. Instead, they intend to keep a small number of livestock as assets that could be easily sold in case an urgent expense arises, such as an illness. In other words, the role of animals in their strategies changed from a source of income to a shock response. To compensate for the loss of income from livestock, these households have tried to get more profit from their rainy season cultivation by switching to improved seed or to cash crops.

Perhaps the biggest change in all strategies, but especially among cultivators, is the rise of irrigated vegetable cultivation as a major source of income, facilitated by better transportation infrastructure and increased urban demand. Those unable to engage in irrigated cultivation have often resorted to low-return activities like charcoal making, firewood collection, hay collection, and increased sales of crop residues, all strategies that deplete natural resources.

2. Difficulty accessing land for rainfed crops is changing the strategy among cultivators from expansion onto additional land to maximizing value produced by the same land.

General population growth, land purchased by commercial farmers, expansion of existing cultivation, and more pastoralists cultivating in the rainy season have increased pressure on the land. Cultivators report the area available to farm per household and land fertility are declining, reducing the success of their traditional livelihood strategies. Compared to 20 years ago, cultivators have lost fields and must rent land if they want to expand the

¹ Goz land is light, sandy clay soil suitable for rainy season crops like sorghum, millet, and okra.

area they cultivate. **More and more, the strategies are shifting from expansion to intensification,** cultivating the same land year after year, abandoning the tradition of shifting among fields to allow them to recover. This intensification causes soil fertility to decrease unless people invest in fertilizers, but that option too is costly for many. Others are shifting to alternative crops or cropping patterns that increase the value of the crops in order to get more value from the same fields.

a. Rainfed **cash crops** are becoming more important for cultivators' income.

Traditional grain crops are well adapted to the soil and climate of Darfur, providing a low-risk source of food and income, but they have low market value. Today, families cannot grow enough on their limited land for both consumption and to pay rising cash expenses. Instead, **cultivators are increasingly shifting from grain to high-value cash crops** like sesame, groundnuts, and watermelon. Although these crops produce more value per *feddan* (acre), they are riskier because they require more investment in seed, labor, and other inputs, and are more vulnerable to dry spells and drops in price when market demand decreases. Therefore, while **cash crops may increase income, they also increase risk.** Together, inflation and the COVID-19 pandemic have created problems for households who have invested in cash crops. The pandemic has made it difficult for traders to travel and closed many markets, while the high cost of fuel for traders has reduced the price they can offer the farmer for produce. Reduced income among urban populations has also reduced demand for cash crops. At the same time, inflation has increased the cost to purchase food grain. This has created problems for people who reduced grain farming to invest in cash crops. As the market and risks change, households are trying to balance how much grain to grow to feed their families and as insurance against food-related shocks versus how much cash crops to grow for income and wealth creation.

Technology may be providing some answers. Cultivators reported that increased access to technology like improved seed, pesticides, fertilizer, ploughs, oil presses, and groundnut shellers has increased yields and profits from both grain and

cash crops. But not all cultivators can get these. **Appropriate training and systems to share the costs associated with mechanical equipment increase their benefits even more and make them available to more people.** In some cases, the provision of this technology, like renting a plough, repairing tractors, or pressing groundnuts, becomes an activity in itself for some landless youth. **Training in correct use of technologies will further increase the benefits from these innovations. Supporting group activities like savings groups, grain banks, and producers associations' functions to improve access to technology will increase income. Further, the operations of these groups could be upgraded to be more sophisticated in a way that allows their activities to respond to changing opportunities and risks, or to support the variety of strategies of individual members. These changes would increase each of these activity's ability to increase income and reduce vulnerability to market fluctuations.**

b. Small-scale irrigated cultivation is becoming much more important, especially to cultivating specialists.

With reduced access to good rainfed *goz* land, many cultivators have increased irrigated cultivation along *wadis*. Previously, when people had to draw water by hand and markets were inaccessible, irrigated cultivation was limited and relegated to women. **Women controlled all aspects of the activity, including the profits.** With better road infrastructure, market demand, and mechanical pumps, irrigated cultivation has become very profitable and therefore a more important household livelihood activity. As a result, men have stepped in to "manage" it. Women continue to do the majority of the labor, but men operate the pumps and most often control the profits. In this case, the household as a whole is benefitting from expanding the activity but women are taking on the burden, while men enjoy the profits.

Pastoralists rarely reported doing irrigated cultivation, and if they did it was usually on a very small scale. It does not complement livestock in their strategies, and they have social barriers to getting access to the very limited land by the *wadis* that is appropriate for this activity (Young, Satti, and Radday 2020). Nevertheless, **recently settled pastoralist women expressed the desire to do more irrigated cultivation but said they had neither the**

skills nor access to irrigable land. When trainings are organized, women often do not feel that they can participate.

3. While large livestock are still a major source of income for pastoralists, they are shifting toward sheep and goats.

Data from 2018 (Figure 1) show that compared to previous generations, **all livelihood strategies are less dependent on livestock herding.** Figure 2 shows slightly different trends in the shorter period from 2002 to 2015. During this interim period, pastoralist livelihood strategies maintained their large livestock while investing in small livestock. Small livestock herds often remain closer to the villages, and may be managed by young women and boys, increasing their responsibilities. This shift also changes the way pastureland is used and increases the risk of more crop damage. **Systems for managing pastureland for herds of small livestock near settlements must be adjusted to prevent overgrazing and conflict (Satti et al. 2020).**

4. New activities provide opportunities, but they are different for men and women.

Not all transformations included shifts between or within cultivation and livestock. Many shifts include new opportunities, especially for the youth. Youth in Darfur are often more literate, more traveled, more comfortable with new technology, and less constrained by tradition than older generations. They also have less access to natural resources. **While youth have the most access to new technologies, there are some barriers, and women face more barriers than men.**

a. Young men are increasingly looking for off-farm opportunities, often migrating out of the village in search of them.

Livestock and cultivation require hard labor and are becoming more difficult with increasing pressure on natural resources, pushing young men to look for alternative activities. Many reported they maintain a field in their home villages with paid labor or keep animals with a relative's herd, but look for

other activities to be the center of their livelihood strategies. Gold mining and expatriate "soldiering" are highly desired activities, but mining is uncertain and there are few men with the social connections needed to get a post as a soldier. Instead, many young men are turning to technology, often technology that supports cultivation and animal husbandry. For example, they maintain tractors or rent out pumps, operate motorcycle taxis, or charge mobile phones through solar units. **As pressure on natural resources continues to grow, off-farm activities are becoming more important sources of income and at the same time provide avenues to sustainably increase the productivity and profits of cultivation and livestock.**

b. Gender roles change along with changes to livelihood strategies, often to the disadvantage of women.

Events in recent years have expanded opportunities open to women, and in some cases, their control over resources, but this change has also increased their labor burden.

With social changes and education, women are being allowed to travel more and are much more often engaged in marketplace activities, even managing their own businesses, yet they still have the same duties in maintaining the household. Savings groups have been very helpful to women, giving them not just access to funds but also a support network to learn business skills and to receive advice from others. Most women report they are able to maintain control over their market activities, and that they are able to use them to improve the household's diet or even to invest in other livelihood activities. On the other hand, many women report that when husbands see their wives earning cash incomes, they shift to women the responsibility for some expenses men traditionally cover, like education and healthcare. So, although women do tend to spend more of their income on households' immediate needs than men, this shift means that not all of their increased income is a net increase to cover the costs of a household's immediate needs.

Targeting women with training and support with new technologies may allow them to control more resources while also reducing their labor burden.

Support to women for increased income needs to include open discussions with both husbands and wives on how they divide or share responsibility for expenses, balancing men's responsibility for long-term investment with women's responsibility for immediate household needs, and the potential increase in women's labor burden.

5. Shifting to increase or start new activities may require new skills and resources that many households may not have.

Over generations, people learn skills related to their most productive activities from their parents as they work alongside them, with each generation adding more learning. People are therefore generally somewhat expert in the activities at the center of their livelihood strategies. Households need the most support when they are attempting to shift to new activities, but programs are often based on the activities central to people's livelihood strategies that they already know well. Often women, not men, make the first efforts in new activities, when those activities are still small scale and not very profitable. However, systems for getting access to natural resources, finances, and even training are generally directed at men, except for activities that are traditionally for women. Women and men manage the same activities differently because they have different responsibilities in the household and face

different barriers. Including women in activities like training with men, or simply conducting the same activities separately, might not meet women's needs equally. **Learning what activities families want to do more and offering training and support for those activities may have more impact than providing training on activities they are already doing on a large scale.** This support needs to take into account the different needs of women and men, even when they engage in the same livelihood activities.

Conclusion

Traditional livelihood strategies are becoming less resilient and less able to support households. New strategies with new activities are emerging, but they require new skills and resources. These changes have different impacts on cultivating and livestock herding strategies, and on men and women. We observed **three major transformational trends among livelihood strategies: 1) cultivation and herding activities are changing to increase cash output; 2) people are increasingly engaging in activities in which they do not have experience or lack skills; and 3) new opportunities for off-farm activities provide**

alternatives to and/or increase the productivity or profitability of cultivation and livestock. People who have specialized in certain activities for generations have developed extensive skill sets for those activities, but often lack the skills and resources to expand non-specialist activities or to branch into new activities. **Though new opportunities are opening up for women, some activities may not benefit them because they increase demands on women's labor while decreasing their control over their production.**

Key takeaways

- Recent and ongoing changes to all livelihoods are drastic and permanent, affecting how natural resources are used.
- There are three major trends in livelihoods:
 - » Cultivation and herding activities, and livelihood strategies in general, are changing to increase cash income.
 - » People are increasingly engaging in activities in which they have few skills and little experience.
 - » New opportunities for off-farm activities provide alternatives to cultivation and herding, or can increase their productivity.
- These changes affect men and women differently:
 - » Though new opportunities are opening for women, some changes are harmful because they increase demands on women's labor while decreasing their control over production outputs.
- **As all livelihood strategies are changing and new strategies emerge, the programs and priorities for supporting households must take these changes into account:**
 - » Programs should support profitable, dignified alternative activities that can be engaged in on a large scale to facilitate positive adaptations that reduce risk or increase profit.
 - » Programs and institutions need new, flexible strategies to maintain natural resources equitably and sustainably as livelihood strategies are changing how natural resources are used.
 - » Program activities should be adapted to improve access to technology to increase output or profit, to encourage responsible intensification strategies, and to reduce vulnerability to risks associated with market fluctuations. This will increase income and resilience while supporting sustainable natural resource management.
 - » The first stage of new program activities should be to learn how people want to change their livelihood strategies and then offer support that will facilitate those changes in a positive way. Doing so may have more impact than supporting livelihood activities that people already do at scale.

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