



## Article

# Social Innovations for Empowering Pastoralist Women: Evidence from Dasenech, South Omo, Ethiopia

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**Abstract:** Innovations are vital for empowering women and youth by introducing alternative pathways for development. This study focuses on a social innovation project executed in Dasenech, South Omo, Ethiopia. The project introduced innovative initiatives (index-based livestock insurance (IBLI), a goat market value-chain system, an eco-friendly hydraulic ram pump, fodder production, and a vet drug store). Key among the goals of these initiatives was the empowerment of pastoralist women by promoting the livelihood base of the Dasenech Pastoralist Community. The present study assessed the contributions of these innovations to the empowerment of women and youth. We employed a mixed-method research approach to pool both quantitative and qualitative data using a household survey through Kobocollect, FGDs, KIIs, and case stories. We computed empowerment by employing a 5DE model with five domains, i.e., production, resources, income, leadership, and time use. The findings suggest that 93% of the project participants were empowered, recording “adequate achievements” in line with the 5DE model, i.e., with scores of at least 80% in four of the five requirements. Technological innovations that properly assess the context of the intervention area and, most importantly, that use proper avenues of implementation with women and youth as owners and leaders, have the capacity to empower such individuals in the economic, social, and political spheres.

**Keywords:** social innovations; empowerment; 5DE; pastoral women and youth; VESAs; Ethiopia



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## 1. Introduction

The United Nations’ Sustainable Development Goals (SDGs) 2015–2030 aimed at addressing the most pressing social, economic, and environmental challenges in order to ensure inclusive and sustainable development throughout the world (Saxena et al. 2021). With the deadline to achieve these SDGs around the corner, meeting the “Leaving No One Behind” goal needs to be at the top of the agenda for any development initiative. With a significant proportion of its population, i.e., 30%, still below the poverty line (World Bank 2020), Ethiopia has a huge task in lifting up those in vulnerable segments of society. A significant leap forward requires innovative development pathways. Innovations are vital for introducing alternative pathways toward growth and community empowerment. Innovations that take various issues from social, economic, and ecological vantage points into account in order to minimize the burden of the community, allowing it to be more productive (Malhotra et al. 2009), are destined to be sustainable (Lv et al. 2018). Such innovations could help realize growth, as they have the potential to achieve women and gender empowerment (Malhotra et al. 2009), job creation (Ciriaci et al. 2016), and salaried employment (Okumu et al. 2019; Dosi and Mohnen 2019).

We argue that social innovation projects and initiatives have the potential to empower women and youth in marginalized pastoral communities. Innovations, as conceptualized

in this study, are materializations of creativity in the form of technology, procedures, and initiatives aimed at tackling societal problems. An oft-cited study defines innovation as “the generation of a new idea and its implementation into a new product, process, or service, leading to the dynamic growth of the national economy and the increase of employment as well as to a creation of pure profit for the innovative business enterprise”. (Urabe 1988). Innovations are a necessity if a problem of scale is to be effectively addressed, leading to a desired change (Szemző et al. 2022; Vercher 2022; Lv et al. 2018; Urabe 1988). Innovations to tackle a livelihood problem and/or disaster in a way that empowers communities and increases their resilience are likely to ensure sustained growth (Lv et al. 2018; Malhotra et al. 2009). These are crucial in tackling a multitude of natural, social, and economic problems that vulnerable pastoral women and youth are grappling with.

Pastoralism, as a system of livestock production in which people rely on herding and managing domesticated animals, primarily cattle, camel, and goats for their livelihoods (Dong 2016), should be at the center of the “Leaving No One Behind” agenda of the SDGs. The SDGs seek to, among other things, eradicate poverty from the face of the earth by 2030. Pastoralist communities in Africa, Ethiopia included, are noted for being highly reliant on “livestock as a source of economic and social wellbeing, and various types of strategic mobility to access water and grazing resources in areas of high rainfall variability” (AU 2010, p. i). The Pastoralist Development Policy and Strategy of Ethiopia was approved by the Council of Ministers in October 2020 after a draft document was published by the Ministry of Peace in March 2019. The incumbent pastoralist policy was a leap forward for three major reasons. First, it valued pastoralism in its own right. Second, it recognized that previous approaches were prejudiced against the pastoral way of life, hindering pastoral mobilities and failing to listen to the voices of pastoral communities. Third, it recognized the fact that pastoral development needs to be centered on the pastoral way of life, rather than on the imposition of another. However, a criticism of the policy was that it was not properly aligned with the African Union’s Policy Framework for Pastoralism either in theory or practice (Krätli 2021). This is because it prioritizes transitioning from this way of life toward an agropastoral or agrarian lifestyle, rather than inducing innovative ways to make pastoralist communities more productive, thereby sustaining their livelihood of choice.

Ethiopian pastoralist communities, who occupy over 60% of the land, require proper attention if the SDG agenda is to be realized. The Dasenech are pastoralist communities living in the lower Omo Delta, South Omo Zone, Ethiopia. The woreda is organized into 40 *Kebeles*, including the major town Omoroate, of which 29 of the *kebeles* are situated by the Omo River. The community is vulnerable to recurrent drought and concomitant disasters including the death of livestock, which is the major livelihood base of that community. The community shares borders with the Hamar and Nyangatom within Ethiopia and with Turkana in Kenya.

This study, which is part of a wider study on social innovations for women and youth empowerment toward resilience in Ethiopia, assesses the “Innovation for Resilience” (I4R) project, one of the projects funded by the RESET PLUS Innovation Fund, investigating its contribution to women and youth empowerment. The RESET PLUS Innovation Fund was launched in 2019 to support social innovations that targeted vulnerable communities in five regions/clusters in Ethiopia, namely Afar, Amhara, Oromia, SNNPR (now split into four different regions), and Somali. The project required that women make up 50% of its beneficiaries. Various international and local implementers and co-implementers were involved in executing the EU-funded projects, with CORDAID in collaboration with Fair & Sustainable Ethiopia as facilitators. The I4R project was led by CST Ethiopia (an entity representing the overseas development and humanitarian Catholic agencies of England and Wales/CAFOD, Scotland/SCIAF and Ireland/Trocaire), partnering with Agri-Service Ethiopia and HEKS (Swiss Church Aid). With women making up at least as 50% of its target beneficiaries, the I4R project aimed to enhance the empowerment of women and youth through an index-based livestock insurance (IBLI) system, the installation of hydraulic ram

pumps on the Omo River, an enhanced goat market value-chain system, fodder production, and veterinary services. The innovations were reported to be based on existing need in the respective localities, and they were acclaimed by both project implementers and funders.

These social innovations sought to improve the livelihood of the communities. A report by CST Ethiopia<sup>1</sup> claimed that the I4R project targeted 1692 (724 Male and 968 Female) direct and 5675 (2600 Female and 3065 Male) indirect beneficiaries. The project was originally planned to be executed between 1 November 2021 and 31 October 2022. However, it was granted a no-cost extension for three months, i.e., up to 31 January 2023. One of the project's innovations was the IBLI, which was adopted as disaster risk strategy intended to protect livestock and pastoral livelihoods in general. Policy holders are expected to pay for the premium. IBLI payouts for beneficiaries are computed taking the costs of fodder and nutritional inputs needed to keep the animals alive during a time of disaster in a form of drought. The IBLI innovation made payouts to 439 beneficiaries (254 subsidized HHs and 184 unsubsidized ones who covered the premium by themselves). The report by the implementer claimed, "a total of 1414 HH (975 FHH) unsubsidized HHs purchased the premium and 439 HH renewed it". This was the result of awareness creation efforts with various stakeholders, including the community and local government.

The hydraulic ram pump technology was another innovation introduced by the I4R project. Ram pumps operate mechanically to lift water to a higher elevation using water pressure, without the need of any power source. The materials used for the construction of the pumps were locally available and the devices are easier to build than other pumps. The pumps were easy to operate as long as a water source was available and required little maintenance. The water from these pumps was meant for small-scale irrigation to support agro-pastoral crops and vegetable production, as well as to provide water for livestock. Although the innovation faced a problem during the initial stage of implementation in relation to the elevation of the flow of the Omo River, this was overcome by installing a windmill in collaboration with the local government. The project installed two windmills to support the hydraulic ram pumps, benefiting 84% of the members of the Village Level Social Associations (hereafter, VESAs) by allowing them to engage in farming. During our field visit, about 5 hectares of land was being irrigated using the pumps. Additionally, the project used VESAs as a platform for the diffusion of the innovations. The project established one drug store in one of the project's *kebeles*, Ocholoch. The third innovation was a market system approach to the goat market value chain. It focused on enhancing the livelihood of pastoral and agro-pastoral communities by addressing the constraints in the existing livestock market system. The goat market value chain introduced a new way of organizing work processes and structuring the business. Members of the VESAs were also involved in the goat-fattening business with a Goat Collection Centre and a market and trading structure established at the local level. The objective of the present study was to assess the contributions of these innovations to the empowerment of pastoralist women.

#### *Conceptual and Analytic Framework*

We employed the concept of empowerment laid out by Eyben et al. (2008) as our guiding conceptual framework and the socio-ecological model<sup>2</sup> as our analytic framework. Eyben et al. (2008) described empowerment as freedom and choice, which is realized when "individuals and organized groups are able to imagine their world differently and to realize that vision by changing the relations of power that have been keeping them in poverty". An aspect of empowerment is collective action to reduce inequalities with the goal of providing equitable access to labor, land, and financial markets. In line with this, we employed the Five Domains of Empowerment (5DE) metric in our quantitative survey. The 5DE is based on the original Women Empowerment Agricultural Index (WEAI) (Alkire et al. 2013). We developed an index of empowerment using five domains: production, resources, income, leadership, and time use.

The socio-ecological model examines the "complex interplay among the individual, relationship, community and society".<sup>3</sup> The first of these, the 'individual,' considers variables

of a personal and biological nature, including, but not limited to, age, gender, education, and income. At this level, the focus should be on addressing changes in attitudes, beliefs, and behaviors through training and capacity enhancing mechanisms. The relationship strand is focused on the individual's interactions and relationships with his/her immediate social circle. At this level, programs may consider family and peer-focused programs to promote uptake. The third strand, i.e., "community," includes schools, workplaces, and neighborhoods. The wider fourth strand deals with broader societal issues and factors that nurture the social/ecological context which the innovation is set to address. At this level, the focus is on social and cultural norms (gender norms included). Broader economic, educational, and policy factors also fall within this domain. Projects, programs, and innovations that aim to tackle inequality and promote empowerment need to focus on women and youth. Initiatives that challenge discriminatory societal norms and that promote norms fostering equality are in sight here (see Figure 1).



**Figure 1.** The Socio-Ecological Model. Source: <https://www.cdc.gov/violenceprevention/about/social-ecologicalmodel.html> (accessed on 25 July 2023).

## 2. Materials and Methods

We employed mixed-research methods in this study. Both qualitative and quantitative approaches were used to gather primary data from different sources. Mixed-method designs are procedures for collecting, analyzing, and mixing both quantitative and qualitative data in a single study or multiphase series of studies. The assumption of this method is that the combination of various types of data could provide a better context for the research problem and could yield more detailed findings. The quantitative approach we employed was a household survey that enabled us to collect data based on predetermined theories and instruments. The survey was used to produce numeric data and to examine the relationship among variables. In addition, qualitative research was used to explore and understand the meanings of phenomena and their personal experience from a participant perspective (Creswell 2009). We utilized quantitative methods to assess the overall benefit of the project and women's empowerment levels, whereas the qualitative method was employed to explore participants' subjective understanding of empowerment. We adopted a cross-sectional survey design with an approximate longitudinal tint. We used household survey questionnaires to collect primary data through kobocollect. We collected qualitative data using key informant interviews, representative case studies from our intervention, focus group discussions, and partial participant observations. We also consulted relevant literature, including some data from the baseline assessment and the project's final report to corroborate and complement our findings.

### 2.1. Study Design and Sampling Strategy

As stated earlier, the study employed a mixed-method research approach with a cross-sectional survey design. The study was meant to assess the contributions of innovative initiatives to the empowerment of pastoralist women in the Dasenech District, South Omo, Ethiopia, if any. Women made up the primary study population.

This study is part of a bigger research project that assessed innovations implemented in five regions in Ethiopia, i.e., Afar, Amhara, Oromia, SNNPR, and Somali. To this end, multistage cluster stratified sampling was adopted to select study sites. Stratification, i.e., dividing the population into relatively homogeneous subsets, is a crucial process in creating a representative sample. As this study focused on women, stratification helped us make the

sample more representative than simple random sampling. The wider study targeted all of the 13 intervention areas (24 woredas) in the respective regions (Afar, Amhara, Oromia, SNNPR, and Somali). This study was focused on one of the interventions implemented by CST in the Dasench Community, Southern Ethiopia. For the qualitative data, the sample selection was entirely purposive.

For our quantitative survey, a proportionate sample was drawn from the Dasenech community in Southern Ethiopia based on national level data, computed using Yamane's formula (Yamane 1967), given by:

$$n = \frac{N}{1 + N(e)^2}$$

where  $n$  = sample size,  $N$  = total population,  $e$  = error tolerance or confidence interval, and for 95% confidence interval,  $100\% - 95\% = 5\%$  or 0.05 error. At the time of the study, there were more than 20,000 direct beneficiaries in the five regions at a national level. Based on the above formula, the total sample size was 385. We added 5% ( $n = 19$ ) for attrition to obtain a final initial sample size of 404 households. This initial sample size was adjusted to account for the effect of the sample design we were pursuing, i.e., we simply multiplied the computed sample size by the design effect of  $D = 3$ . That gave us a total of 1213 project clients for the survey for all 13 projects. This sum was proportionally distributed among the respective projects vis-à-vis their respective number of clients. Dasenech, as one of the projects, had a proportionate sample size of 72 for the household survey.

We collected survey data from 72 representative households, which were proportionately allotted. We also conducted eight key informant interviews (KIIs), two focus group discussions (FGDs), and three in-depth interviews.

There were six participants in each FGD on average. In addition to the interviews we held with local authorities and project implementers, we also held in-depth interviews with three young and adult women for our case study. The participants we selected as case study women had been rated as "relatively successful" by the local authorities and project co-implementers. The case studies aimed to detail the lived experiences of female beneficiaries in terms of the project and to learn their perspectives on empowerment and the challenges they faced, if any, regarding the ability to exercise agency.

## 2.2. Method of Data Collection: Tools and Procedures

Our field data collection activities were guided by a standard field procedure with a broad set of actions being implemented sequentially.

Data were collected from various sources through multiple data collection techniques or tools that include:

- Desk review: We reviewed reports (submitted by CST and shared by the facilitator CORDAID) on each project's accomplishments. We also reviewed literature that was relevant to the topic under study.
- Household survey: A survey questionnaire was used to study the households in the four study *kebeles* (the lowest administrative unit in Ethiopia), employing kobocollect with the aim of generating quantitative data. The questionnaire had predominantly close-ended and a few open-ended questions of relevance (socio-demographics, empowerment issues, challenges/barriers, and opportunities). Four data collectors, who are university lecturers with sufficient research experience and one native speaker of Dasenech, were recruited and trained on kobocollect, qualitative interviewing, and basic research ethics. Two gatekeepers were used as an entry point to build rapport with community members and to select the sample respondents. Then, we collected data from household members who met the sampling criteria. The survey period lasted for two weeks in September 2023.
- Focus group discussions (FGDs): A checklist was prepared to gain insights into community perceptions, norms, and values related to, among other things, women

and youth empowerment. We conducted four FGDs in the two study kebeles in the district; one woman only and one man only. The reason we decided to homogenize gender was that women tend to be silent in discussions when they are with men, as we noticed from our research in different parts of rural Ethiopia. We asked the study participants, including the project beneficiaries (both old and young; women and men), among other things, how the innovative project challenged gender norms and benefited women in various aspects of their lives. The FGDs facilitator was an experienced researcher who could speak the local language.

- **Key Informant Interviews:** A checklist was prepared to collect data from relevant key informants at both institutional and community levels. We held open-ended, in-depth, and semi-structured interviews with informants who had good exposure to and knowledge about the I4R project and the social innovations being executed in Dasenech. The key informants included local authorities who had been addressing administrative issues for the project and project implementers. The project implementers had been supporting the beneficiaries from the project inception up to its completion. The key informant interviews helped us pool data on the benefits of the interventions, the role and status of women and youth as beneficiaries of the interventions, and the respective communities in general from the stakeholders' perspective.
- **Case study:** We collected three case studies from project beneficiaries who were identified by both local authorities and project implementers as relatively more successful. As stated earlier, we employed case studies/stories to detail the lived experiences of women as project beneficiaries in order to learn their perspectives in terms of empowerment and challenges they were facing when attempting to exercise agency.
- **Observation:** During the data collection period, the researchers undertook a field visit to the study site. The aim of the field visit was to document the processes and events taking place on the ground. Our specific focus was how the project was being implemented relative to the empowerment of women.

### *2.3. Ethics and Informed Consent*

The study is a part of a wider national level study that has been through a rigorous ethical review at various stages. Our proposal was reviewed by Hawassa University's Research Ethics Review Committee (HU-RERC)-RERC 14/2023. The HU-RERC reviewed the proposal based on ethical principles, including 'respect for persons', 'beneficence', and 'justice'. The review also determined if 'the objectives were ethically achievable' and 'if the proposed research methods were ethically sound'. Beyond this, the proposal for the wider study that involved all 13 social innovation projects in different parts of Ethiopia passed through a rigorous competitive review for both quality and ethical issues. There were over 51 proposals from public universities and research institutions that were competing for funding. CORDAID Ethiopia organized a panel of reviewers which recommended our proposal for funding. Then, the project was given written support from Hawassa University's Office of the Vice President for Field Research. The proposal and the instruments were validated in a workshop organized by the facilitator, CORDAID Ethiopia, in which stakeholders including implementers, co-implementers, and researchers from five public universities in Ethiopia participated. We received input and validated our proposal and our instruments of data collection. We then piloted the household survey instrument using Kobocollect. The pilot was conducted on individuals similar to our target participants. This allowed us to check various issues, including the ethical viability of our questions.

In terms of informed consent, as we used Kobocollect for the survey along with the qualitative interviews, we used a verbal informed consent statement, read out by our data collectors. Our data collectors were female and male university lecturers from various Universities in Ethiopia, aged 30–37 years. They were trained on kobocollect, interviewing, and research ethics before they conducted the survey and interviews. The data collectors asked for verbal consent from all study participants. The consent read-out detailed the purpose of the study, the information sought, and promised anonymity and confidentiality.

A couple of the data collectors who were not able to speak the local language (Dasenech) used local translators. We faced no refusal from any individual or household sampled in the study. Both the quantitative and the qualitative data were anonymized and kept confidential in a way that no one could identify a specific participant in the study.

#### 2.4. Method of Data Analysis

We employed descriptive statistics and developed a model based on the Five Domains of Empowerment (5DE). The 5DE model enabled us to compute the contributions of the Social Innovations toward the empowerment of women and youth.

#### The Five Domains of Empowerment (5DE)

The 5DE is based on the original Women Empowerment Agricultural Index (WEAI) (Alkire et al. 2013). We developed an index of empowerment using five domains: production, resources, income, leadership, and time use. Each of the five domains is given a weight of 1/5 (20 percent). The participation responses of women and men in the households were captured using a five-point Likert scale questions. The individual items in the survey had five possible responses: strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), and strongly agree (5). For the analysis, the responses for each indicator were recorded as 1 (either agree or strongly agree) and others are coded as 0.

The indicators were operationalized as follows.

$$5DE = H_e + (H_n \times A_a)$$

where  $H_e + H_n = 100\%$  and  $0 < A_a < 100\%$ .

In the above formula,

- $H_e$  is the percentage of empowered women, where 'empowered' means that a woman has adequate achievements in four of the five domains or is 'empowered' in a combination of the weighted indicators that make up at least 80 percent of the total.
- $H_n$  is the percentage of women not yet empowered, and
- $A_a$  is the percentage of domains in which disempowered women have made adequate achievements.

Hence, the 5DE Index yields a value between 0 and 1, where higher values indicate greater empowerment.

An alternative way of writing the 5DE index is:

$$5DE = 1 - M_o = 1 - (H_n \times A_n)$$

where  $M_o$  is the disempowerment index, calculated as the product of the proportion of disempowered women ( $H_n$ ) and the percentage of domains in which disempowered women have not accomplished adequate achievements ( $A_n$ ).

We analyzed the qualitative data using thematic categorization of issues (Maxwell 2012).

### 3. Results

#### Basic Socio-Demographics of the Study Participants

The findings indicated that most, i.e., 97%, of the study participants were married. The average household size for Dasenech woreda, 7.1, was higher than the national average for rural households, which is approximately 5. The age composition of the study participants resonates with the national population structure in Ethiopia, where the majority of the population is young. Likewise, three-fourths of the study participants in Dasenech were aged 18 or below (see Table 1). This suggests a high dependency ratio, although dependency varies over time (e.g., when there is a disaster of some kind) and culture (where, as in most parts of Ethiopia, people have cultural responsibilities to take care of their parents and grandparents. Further, children may not be 'urged' to leave their parents' homes when they reach 18, unless they find or create a job to earn a living).

**Table 1.** Sociodemographic profile of the study participants,  $n = 72$ .

Scheme 57	%
Gender	
Female	57.7
Male	42.3
Marital Status of the Respondent	
Married	97.2
Single	2.8
Divorced	0.0
Widowed	0.0
Indicators	
HH Size and Age Composition	
Average HH Size	7.1
% 0–5 Age	25.5
% 6–18 Age	39.6
% 19–64 Age	34.1
% Above 64 Age	0.4
Education	
Average year in school	1.06
No Formal Education	54.9
Primary School	45.1
Secondary school or higher	0

Source: Household survey, September 2023.

The majority of the study participants, i.e., 55%, were not attending formal education. Indeed, a majority of the study participants, i.e., 54%, had never undergone formal education.

We computed the tropical livestock units (TLU), that refers to changes in the number of animals per adult members of a household, to support that household, implying food security and potential for economic empowerment at a household level. The computation goes is as follows: “A TLU of one is equivalent to a 250 kg animal. A camel, for example, would give 1.0 TLU, while a sheep or goat would be equivalent to a TLU of 0.1”. As shown in Table 2, the TLU for cattle among the participants in the Dasenech community was 3.23, and those of goats and sheep were respectively 7.55 and 6 (see Table 2).

**Table 2.** Livestock ownership,  $n = 72$ .

Livestock Ownership	Dasenech
Oxen	0.45
Cattle	3.23
Goats	7.55
Sheep	6.00
Donkey and Mule	1.27
Poultry	2.42
Camels	0.14
Horse	0.00
TLU (Tropical Livestock Units)	4.9

Source: Household survey, September 2023.

As shown in Table 2, the overall TLU for Dasenech CST project participants was 4.9. According to another study conducted in Ethiopia, pastoralist communities need to exhibit a TLU per capita of 3.0 to guarantee sufficient stock in terms of both consumption and sales.<sup>4</sup> Hence, the TLU for the participants from the Dasenech community was higher than the required standard (see Rothman-Ostrow et al. 2020). The fact that the innovations by the I4R project targeted livestock, with its goat-value chain development scheme and

Index-based Livestock Insurance (IBLI), makes it likely that the project contributed to improvements in this regard.

With regard to the accrued benefits, all of the survey participants claimed that the innovations implemented by the project “influenced household level decisions” in favor of women. All the women who participated in the household survey also reported that they had learned new skills. From an economic viewpoint, the women reported that the project had benefited them; 98.4% claimed that the project had helped them “improve their income,” and 95% reported that it had helped them “increase their assets” (see Table 3).

**Table 3.** Perceived benefits of the project,  $n = 72$ .

Perceived Benefits	%
Learned new skills	100
Influenced household decisions	100
Support to increase assets	95.2
Learned new practices	100
Income improved	98.4
Job opportunity created	91.9

Source: Household survey, September 2023.

Over one-third of the project beneficiary women, i.e., 35%, claimed that the project helped them achieve “some improvement” in the economic sphere (see Table 4). The implication here is that all of the innovations had been crafted and implemented in such a way that they could focus on the economic base of the target community i.e., livestock. One way or another, the goat market value chain, the hydraulic ram pump, fodder production, and the vet drug store fostered a better livestock trade, averting the crises that result from both re-current drought and animal diseases.

**Table 4.** Respondents by their views on their empowerment,  $n = 72$ .

Dimensions of Empowerment	Women %	
Economic Empowerment	No Improvement	1.4
	Little Improvement	6.9
	Not Sure	2.8
	Some Improvement	34.7
	High Improvement	54.2
Social Empowerment	No Improvement	1.4
	Little Improvement	6.9
	Not Sure	2.8
	Some Improvement	38.9
	High Improvement	50
Political Empowerment	No Improvement	0
	Little Improvement	11.1
	Not Sure	8.3
	Some Improvement	45.8
	High Improvement	34.7

Source: Household survey, September 2023.

Another sphere of influence and opportunity resulting from the project was that of empowering the female beneficiaries in ‘social’ frontiers, i.e., in terms of participating in village or *kebele* (the lowest level of political administration) -level social issues. As shown in Table 4, 50% of the women reported that they experienced a high degree of improvement in the social sphere due to the contributions of the project. The findings proved to be sound, as the project used VESAs where women were taking the lead, both in terms of numbers and leadership; 4 out of 5 members were women and most of the VESAs were women-led. This resonates with the findings of our qualitative study, where female FGD participants

argued that the training, the experience or sharing visits, and the discussions in the VESAs helped them express themselves and made them feel socially empowered (FGD 1, FGD 2, September 2023).

As Table 4 depicts, over one-in-three of the study participants lauded the project for creating an opportunity for them to improve their “political empowerment” in terms of their participation in *kebele* (i.e., the lowest political administration) affairs. We asked about their involvement as individual citizens: 35% of the women and 33% of the youth rated a ‘high degree of improvement’. On another level, 35% of the women believed that the project had brought about ‘some improvement’ in terms of their political empowerment.

As shown in Table 5, we computed the results of empowerment based on the method put forward by Alkire et al. (2013). The findings revealed that 7% of all women were disempowered. This, in terms of the 5DE model, suggests that they have not realized adequate achievements in at least four of the five domains or a combination of the weighted indicators that make up at least 80 percent of the total. By implication, 93% of the women were empowered, having realized adequate achievements in at least four of the 5DE.

**Table 5.** Computation of empowerment index,  $n = 41$ .

Measure	CST, Dasenech
Disempowerment headcount, $H_n$	0.07
Average inadequacy score, $A_n$	1.00
Disempowerment index, $M_0$	0.07
5DE Index ( $1 - M_0$ )	0.93
Number of observations	41

Source: Household survey, September 2023.

As stated earlier, the VESAs were predominantly women-dominated at a ratio of 4 to 1. We can therefore deduce here that innovative initiatives that challenge existing discriminatory gender norms can substantially contribute to women empowerment.

The project alerted its beneficiaries about the value of asset creation using their livelihood-base. The project beneficiaries confirmed that they were now aware of asset creation and accumulation in a way that was not the case before. Livestock, for example, was considered to be a sign of wealth, i.e., having a larger number won the holder’s respect in the community. For a long time, the community did not consider generating income and asset accumulation using their livestock. The goat market value-chain is facilitating animal-fattening and trade, practices in which the community has since been actively engaged.

The project’s strength was explained by the community from various perspectives. The project’s ‘foresightedness’ was confirmed by the FGD participants, i.e., that the innovations it introduced all targeted the livelihood-base of the community. This was well received by the community members who were actively engaged in the introduced changes. The training and awareness efforts were proactive to ensure that they would be embraced by women and the community at large. All the project beneficiaries were actively engaged from the outset. The FGD participants agreed to share their opinion about whether the project had been implemented as promised; it should be noted, however, that the demand among the community was sometimes beyond its capacity. FGD participants indicated that other members of their community who were not part of the program always asked for such an opportunity (FGDs 1, 2, September 2023). However, the community also indirectly benefited, as the goat market value chain encouraged them to consider asset accumulation by selling their goats, which was not a traditional practice.

The timeliness of the innovations also enabled project participants to mobilize the community. A participant opined, “The drought worsened, our livestock were in poor health. We were very happy when the season came where the project appeared to save our livelihood. Their [beneficiary] selection criteria were fair and we the community were engaged from the inception”. (FGD 2, September 2023). The livestock insurance came at a

time of a dire need, as the community had been affected by drought and later flooding of the Omo river. Almost all of the *kebeles* of the district were on safety net support due to the drought.

An interview with a local authority suggested that the project had contributed in empowering women both economically and culturally. He argued that women had valuable information and resources in the community, as they are the predominant members of community-level organizations called VESAs', i.e., 20 of a total of 25 members (Personal Interview, September 2023). An observation about the project as an 'engine of empowerment' by community level implementers was that the project used VESAs as vehicles for cascading good practices. VESAs were used to serve as platforms to reach a grassroots level. The system was organized in a way that encourages peer-to-peer information exchange and experience sharing, where members of one VESA imparted their knowledge to the next.

In terms of gender empowerment, the project enabled women to have control over resources. This was proved by various means, e.g., some women were decision makers in terms of buying and selling goats and fulfilling their household asset needs. This was not made in a coercive way; rather, it was the outcome of community negotiations and agreement in the VESAs, where people of different age groups (young and old) and men and women convene to discuss various issues, including gender roles. According to the community development officer, who works at the local level to support development activities, the zonal administration recognized the change. Notably, they "award(ed) the woreda for the highest record they exhibited, where selected women from the project area were repeatedly invited to attend and get recognition at higher-level events". The events were meant to encourage the expansion and scaling up of the innovative initiatives at the *kebele* level (personal interview, September 2023).

#### Example Case Story

##### Innovations in the life of a Pastoralist Woman in Dasenech: GK's life Story

GK is in her early thirties. She is a resident of Fejej kebele, in Dasenech, South Omo. She had a family of four, living with her husband and two daughters. GK was involved in the CST project for over two years. Her livelihood is based on animal husbandry. She was recruited by the project due to drought-induced devastation that resulted in the loss of her livestock. Her livestock vanished before her eyes due to a lack of pasture. She had trouble feeding her children. There was also lack of clean water for her and her community. She survived those hard times due to the safety net support, though the support was not enough, given her dire situation. Beyond this, payments from the safety net usually came late.

GK was recruited by the social innovation project that understood the difficult situation she was in. She opines, "My animals died frequently due to drought. I was willing to contribute to the insurance scheme for my livestock. I was also willing to gain membership in VESA and saved money every week after they selected me for the benefits and that was expected of me as a member. I was selected publicly in a transparent manner that the community gave their consent". GK's life was one of struggle for survival before she was involved in the project. Animal husbandry was a major part of her livelihood, although she and her family were also taking part in fishing at Lake Turkana. She was challenged by thieves whom she blamed for stealing their fishing nets. Conflict and animal raids by neighboring communities were also a challenge for GK and her community. GK was trained before she was entitled to gain membership to a VESA. The series of trainings by the project, discussions, and debates within her VESA helped her develop her concept of self and her self-confidence. She felt that she was socially empowered as a woman who can express her ideas confidently. GK observed that earlier, in their community's culture, "if a man does not allow or orders, women can do nothing. But now we have started to solve everything through discussion.

If my idea is acceptable, my husband will buy it". The outstanding benefit GK noted was the Index-based Livestock Insurance (IBLI) and the ETB 5000 seed money she was given to buy three goats and animal fodder. That, according to her, saved the lives of her animals. She then started benefiting from the goat market value chain when she and her fellow VESA members brought their goats to the goat collection center built by Agri Service Ethiopia. That facilitated income generation by selling goats. She claimed, "We have saved more than 150,000 Birr in our VESA. So, I am glad that I have benefited from all this".

GK remembered the challenge she and her fellow VESA members faced in terms of believing in the potential of the IBLI at first, as it was largely new for them. She later gained confidence when the organization kept its promises in giving them pay for livestock loss due to drought. Those who were not covered were very disappointed". GK enjoys the change in the life of her household. She was then able to fund the purchase of fishing nets from Kenya for her husband from her savings; this, in turn, consolidated their household income beyond merely feeding her household. She spoke pointing to her daughter in her embrace, "This is my second daughter whom I am hugging now, her body was not like this before, but now she is well-nourished. Thank God". GK was also humble enough to provide suggestions for an even better outcome. She opined, "If the goat business is to be considered further, a strong linkage with suppliers needs to be established. We and the suppliers must agree on how much to deliver per kilogram. Because merchants are smart, they only see their own interests. That should not be on our loss. It would be great if the district government was also involved in monitoring the situation. The other is that we do not have our own veterinary clinic in our neighborhood. So, we use the one established for Ocholoch kebele. We would be happy if we got one for our kebele. We do not have a goat shelter [collection center] either. We use the one for Ocholoch". If one thing had to be sustained and scaled up from the innovations, GK's priority would be the IBLI. She supported scaling up the IBLI, as there were many others in need of it out there.

#### 4. Discussion

Livestock is the livelihood-base of the Dasenech community. The area is a drought-prone woreda (district) that is on Safety Net support. The community resides by the side of the Omo River, with potential for development but also vulnerability to flooding. Innovations and initiatives that target this community need to prioritize the resource base there. The innovations by I4R project implemented in the study area, in collaboration with stakeholders including Agri-Service Ethiopia and HEKS, considered the livelihood context of the target community. The innovative interventions suited the context.

The innovations implemented, i.e., the goat market value-chain, hydraulic ram pump, fodder production and storage, vet drug store, and especially the index-based livestock insurance (IBLI), considered the needs of women, aiming to tackle the drought-induced catastrophe that was having consequences on livestock. IBLI was shown to be crucial in averting crises due to herd-mortality-shocks among pastoral communities (J. Mills et al. 2016). The ram pump technology, despite needing some modifications, as already recognized, helped the community to utilize the Omo water resource for agriculture, especially vegetables, after being improved by fitting a windmill. The project team collaborated with the District Water, Energy, and Mines Office in this endeavor. The technology, if utilized effectively, has relatively low maintenance costs compared to other motor-assisted pumps. It could therefore be a viable option (Inthachot et al. 2015) for other, comparable settings. The goat market value chain effectively harnessed the potential of the area, as the community has a rich potential that is measured in livestock units, with a TLU score of 7.55 for goats (see Table 2) and an overall average TTU score of 4.9 for selected livestock. This attests to the potential for livestock trading and production, as a TLU score of 3.0 should be sufficient for the wellbeing of a household (see Rothman-Ostrow et al. 2020).

The implementation of innovative initiatives and technologies, if embraced from a sustainability point of view, managing the trade-off between economic, social, and ecological vantage points, could help harness the development potential of such an area (Lv et al. 2018). Beyond that, there is strong evidence that innovations are vital in solving the pressing challenges that the world is facing at present (Vercher 2022). The project beneficiaries were able to save and accumulate assets, enabling the women beneficiaries to be economically empowered. Previous studies have also confirmed the potential of innovative technologies in asset accumulation and job creation if evidence-based implementation strategies are pursued (Vercher 2022; Okumu et al. 2019; Dosi and Mohnen 2019; Ciriaci et al. 2016). This was evident in the implementation of technologies by the I4R project.

From a socioecological model perspective, the individual and their relationship to the community and society interplay, determining the degree of success in the implementation of an innovation. From innovation adoption and utilization perspectives, individuals could be weighed from the point of view of their skills, education, and capacity to use such an innovation (Kilanowski 2017). At an individual level, innovations need a skills premium for better adoption and receptivity. Interestingly, the innovations implemented as part of the I4R project were simple to understand. Except for ram pump maintenance, which might need advanced skills, the rest of the innovations did not seem to require sophisticated skills. Otherwise, illiteracy could have been a great barrier among the Dasenech community; indeed, our data suggest that 55% of the community never received a formal education, with the remaining 45% attaining only primary school level. This finding is in line with that of (Mekonnen 2014), who observed that access to education is a challenge for this community.

The other strand in our analytic frame, the adopted socio-ecological model, is 'the relationship' that "A person's closest social circle-peers, partners and family members-influences their behavior and contribute to their experience".<sup>5</sup> The strategy pursued by the innovator (the implementer) involved using VESAs that embraced 25 members. The first relationship circle for the individual, other than his/her household, are the women and men in the VESAs. The VESAs were observed to be challenging the patriarchal gender norms during their frequent discussions, enabling women as decision makers and owners of assets, including livestock. This is a positive leap from a women empowerment perspective (Seymour et al. 2023). The members discuss various social and economic issues, including project matters. The findings revealed that the VESAs served as a conducive frontier for the diffusion of the innovations among the community, to the extent that the demand was beyond what the project could offer.

In a rural context, social innovations contribute by introducing a unique dimension of interaction among development actors. From the perspective of the community, the innovations have the capacity to promote leadership within the communities themselves (Vercher 2022). Our field observations, FGDs, KIIs, and case stories confirmed that the community, the third important strand of the socio-ecological framework, was highly receptive to the innovations introduced by the project. Beyond that, VESAs, as the major platforms for the adoption of these innovations, were managed and led by the communities themselves. In all of the four *kebeles*, we collected data as the community witnessed the capacity of the innovations to influence their livelihood in positive terms. The pastoralist communities of Africa (AU 2010), the Dasenech Community included, are living in a vulnerable and food insecure situation (see FDRE 2019). This is mainly due to the recurrent drought-induced factors that affect them, resulting in the death of livestock. The project's goal of tackling that societal problem through the provision of IBLI, the promotion and development of a goat market value chain, fodder production, and the provision of veterinary services by establishing a vet drug store at a local level (albeit at a small scale) motivated the community to embrace the changes. The ram pump technology, with all its limitations, also introduced the possibility of utilizing the water of the Omo River. The project overall benefitted from the fact that the strategy considered both the physical and the social environment<sup>6</sup>.

Social innovations are social, as they target society in terms of social change (Judith et al. 2016). The societal level variables included cultural norms and practices and their

relationship to the introduced innovations. The findings of our study revealed that the implementation strategy the project was successful enough to challenge patriarchal and discriminatory practices. Women were leading the VESAs and were able to voice their views, which was not the case in social gatherings in the past. This is positive progress toward empowerment. Should this approach be expanded, it could yield substantial positive results.

Social innovations have partially succeeded in addressing problems which are beyond the bounds of dominant 'government' methods (Szemző et al. 2022). For innovations to have a sustained impact on the various frontiers of empowerment, they need to capitalize on job creation and asset accumulation (Okumu et al. 2019; Dosi and Mohnen 2019). Another study noted that social innovations need to utilize various strategies, but they also need to capitalize on 'ecosystem building' if they are to have a lasting effect (Szemző et al. 2022). The challenge at the societal level, however, was lack of capital, as the community had been affected by drought and flooding for the past several years; in this case, the project had to be subsidized. The study participants also indicated that some of them had difficulties paying the service for the premium to cover IBLI. Consolidating the engagement of the community in productive activities like small scale irrigation through the utilization of the ram pump could help individuals improve their income in future. Strengthening the goat value chain and engaging the community in livestock trading could also facilitate economic and social empowerment. This was confirmed by another study that noted that innovations have the capacity to empower women (Malhotra et al. 2009).

## 5. Conclusions

This study was interested in assessing the contributions of innovative initiatives toward empowering pastoral women in the Dasenech community in South Omo, Ethiopia. Evidence suggested that technological innovations that consider the potential of the intervention areas have the capacity to empower women and youth in the economic, social, and political spheres. This, however, is premised on using proper avenues of implementation. The effective utilization of VESAs by the I4R project as an implementation platform created a context whereby women-controlled assets, exercised leadership, and decided on their own future. To these ends, innovative technologies and initiatives, should they aim to empower women, need to pursue community-engaging approaches and strategies to bypass implementation hurdles. The issues of scale, sustainability, and further empowerment can be properly addressed if the innovations in question maximize awareness creation, skill enhancement, access to finance, and engaging project beneficiaries and the community at large in income generating activities.

The major limitation of this research was that there was no comprehensive baseline data to compare the outcome and contribution of the social innovations with the period before; this forced the study to be based on the lived reflections of the key project stakeholders, especially its direct beneficiaries. Future studies may consider a higher-level quantitative analysis including, but not limited to, a propensity matching score to compare project beneficiaries with other non-intervention groups.

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if ‘the objectives were ethically achievable’; and ‘if the proposed research methods were ethically sound’. The HU-RERC approved the research to be conducted.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

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**Conflicts of Interest:** The authors declare no conflict of interest.

## Notes

- 1 CST Ethiopia (2023, February) Final Narrative Report.
- 2 <https://www.cdc.gov/violenceprevention/about/social-ecologicalmodel.html> (accessed on 25 July 2023).
- 3 See note 2 above.
- 4 <https://www.unescwa.org/sd-glossary/livestock-unit> (accessed on 5 August 2023).
- 5 See note 4 above.
- 6 See note 2 above.

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