



# A different

Gender integration in livestock and fish research

# kettle of fish?

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RESEARCH  
PROGRAM ON  
Livestock and Fish



Royal Tropical Institute

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## 6 GOOD DATA, SMART ANALYSIS, MEANINGFUL CONCLUSIONS: TOWARDS A GENDER ANALYSIS FRAMEWORK

*Jane Poole, Nicholas Ndiwa and Mildred Mmbone*

*International Livestock Research Institute (ILRI)*

### Organizations

ILRI

### Species



**Methods:** Quantitative surveys, framework/tool, gender disaggregated data

**Summary:** This framework focuses on the collection and analysis of gender-disaggregated data, including appropriate indicators to answer key questions

### Locations



**A** RESEARCHER INTERVIEWS a farm household and discovers that it owns four cattle. The wife owns two, and her husband two. On the face of it, the couple seems to be equal. But the woman's animals are calves, while the man owns two fully grown cows, which are much more valuable. Gender equity is an important concern, but the data do not have the detail required to allow the researcher convert the livestock numbers into a value that reveals this.

Such methodological problems are frequent in gender analysis within livestock and fisheries research. Researchers typically include questions with gender dimensions in their questionnaires: who owns what, who controls a particular asset, etc. But all too often, the questions are not specific enough. This could produce misleading results and be a waste of effort.

### What you find depends on what you look for

Even if the data are sufficiently detailed and disaggregated by sex, researchers may not make proper use of it. The data have to be aggregated again for analysis. But the method of aggregation may hide rather than reveal key issues, and the analysis approach may not explore gender-related question to the required accuracy.

An example: in two households, A and B, both wives own two goats each. In Household A, the husband also owns two goats, while in Household B the husband owns ten. Clearly a difference in equity, but one that may be missed if the researcher merely counts up the women's goats without adjusting for the household's total ownership.

A methodological framework with guidelines on the minimum required data details would have helped point the researcher the potential challenges of insufficient indicators and possible solutions.

## **Building a framework**

We are building such a framework to overcome these methodological challenges on sex disaggregated data and gender indicators. The framework consists of guidelines on the definition of gendered indicators, data aggregation and analysis. We expect that this framework will be useful for both gender and non-gender scientists in the design, implementation and analysis of their gendered project data.

We are developing this framework around four gender concepts:

- Access and control of livestock-related resources
- Decision-making
- Market participation
- Control over benefits.

We have developed a set of indicators (to be published by ILRI) to measure each of these concepts, selected based on a literature review. The description of each indicator includes references to the key literature (CARE 2012, Doss 2013, Doss et al. 2013, Galié et al. 2015, Njuki et al. 2011).

For each indicator, the framework offers:

- A definition of the indicator
- The rationale behind using that indicator
- The type of data sex-disaggregated data to collect
- Guidelines on how to store the data in the computer
- Suggestions on how to summarize the data and calculate the indicators: both in terms of the unit of analysis (such as the household) and across the study
- "Red flags" – issues to watch out for each type of indicator.

Table 6.1 shows an example indicator for domestic, transport and farm assets. This is one of four indicators reflecting the concept of "access and control of livestock-related resources".

Table 6.1 Example of an indicator in the framework

Unit	Domestic, transport & farm (including livestock) asset
Designation	1.1
Definition	Ownership of key domestic, transport & farm assets, including livestock, by individuals
Rationale	<p>The number of assets owned by a female within a household, relative to the total number of assets owned by all members, is an indication of level of equity. This is the most basic indicator to look at ownership of individual assets, by gender.</p> <p>Although we provide options for summarising the assets across asset type there is value in looking at individual assets for more detailed information. For household and population summary proportions, the closer to 1 the proportion, the higher is the equity (female / male).</p>
Disaggregated by	Gender; asset type
Data required	Asset; asset type; age, owner and form of asset ownership (male, female, joint)*
	<p><b>Option A</b></p> <p>Individual asset ownership by each gender (Yes = 1 / No = 0)</p> <p><b>Option B</b></p> <p>Total number of assets owned by each gender</p> <p><math>a_{gi}</math> = Number of assets owned by gender (females or males) <math>g</math> in household <math>i</math></p> <p>Proportion of assets owned by female members relative to the whole household or male</p> <p><b>Calculation (at household level)</b></p> $p_i = \frac{\text{Number of assets owned by females in household } i}{\text{Total number of assets owned by household } i}$ <p>or</p> $p_j = \frac{\text{Number of assets owned by females in household } j}{\text{Total number of assets owned by males in household } j}$ <p>Calculate for each asset type (domestic, transport, farm and livestock) separately. Could apply a threshold for gender adequacy – defined as whether female members of a household reached a set threshold for asset ownership, (1 = Adequate, 0 = Not adequate)</p>

**Option A**

Proportion of females or males who own individual assets across households

$$p_g = \frac{\text{Number of households with gender (females or males) } g \text{ owning assets}}{\text{Total number of households in survey}}$$

Proportion of assets owned by females plus proportion of assets owned by males may equal 1 where no joint ownership.

**Option B**

Average number of assets owned by each gender across households

$$a_g = \frac{\sum_{i=1}^n a_{gi}}{\text{Number of households in survey } (n)}$$

**Summaries**

where  $g$  = gender (females or males),  $i$  = household

Average proportion across households by gender or the ratio of assets owned by female members to that owned by male members

$$p = \frac{\sum_{i=1}^n p_i \text{ or } p_j}{\text{Number of households in survey } (n)}$$

Calculate for each asset type (domestic, transport, farm and livestock) separately.

**Options A & B**

Calculate separately for each form of ownership (male, female, joint). The value of indicators may represent differences in level of rights an individual has over the asset (e.g., joint ownership implies less rights compared to sole ownership).

Combine the results with indicators on decision making to determine the product "rights" in terms of ownership and decision-making on use.

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**Comments**

Use only in dual-gendered (adult) households. A special consideration will need to be applied for female-only or male-only households in the dataset.

Be clear when defining ownership in terms sole or jointly owned.

The unit of measurement for domestic, transport and farm assets is usually the individual asset (e.g., a tractor, a television). For livestock then the asset could be defined at species level (e.g., cattle, sheep) or at individual level (e.g., a cow, a sheep).

\* This approach assumes equal importance (economic or social value) for each asset owned. It is important to specify the unit of measurement.

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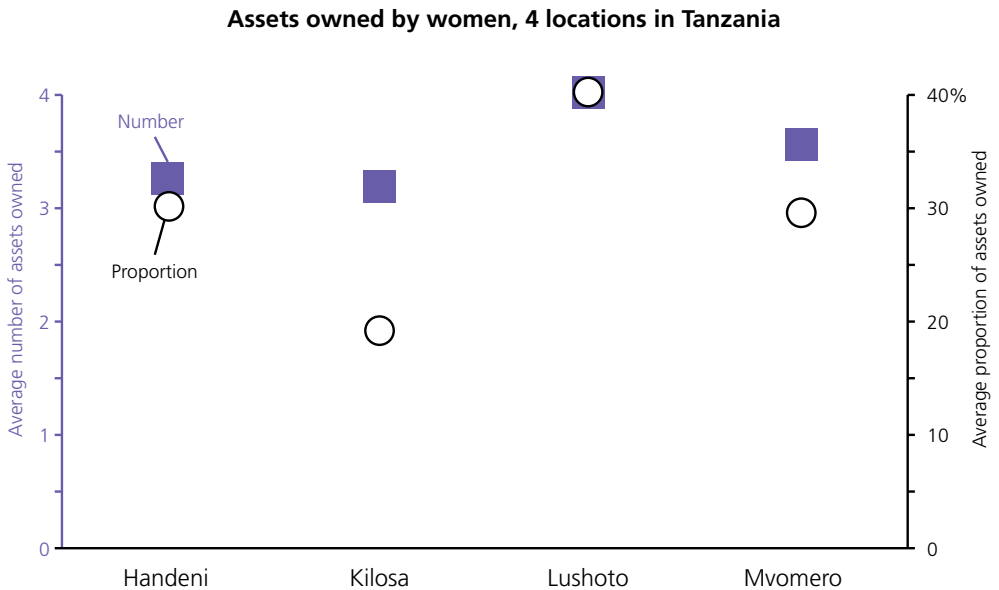


Figure 6.1 Example of how the data-aggregation method leads to different interpretations

### What you do depends on what your questions are

**Fit for purpose.** Often, there is a tendency to assume that once you have an indicator all is solved. But this is not correct. Our framework gives guidance, but the researcher still has to make choices. How you aggregate depends on what questions you want to answer. Ask whether the aggregation method is fit for the intended purpose.

We are testing the framework using baseline data collected by the “More Milk in Tanzania” project (ILRI 2014). This project targeted pre-commercial marginalized smallholder cattle-keeping households.

Figure 6.1 demonstrates the implications of aggregating data on the number of assets owned by households at four locations. Two researchers treated the data in different ways:

- **Researcher A** summed the **number of assets** owned by each woman, and then tested for differences among the locations (the red diamonds; left-hand y-axis). Women in the four locations owned an average of between 3 and 4 assets. No significant differences ( $p=0.24$ ) were detected among the locations.
- **Researcher B** calculated the **proportion of assets** owned by the women in their households by dividing the number of female-owned assets by the total number of assets owned by the household (the blue circles; right-hand y-axis). Women owned between 19 and 40% of the household

assets. This researcher then tested for differences in this indicator between locations. The analysis showed significant differences ( $p < 0.001$ ) in gender equity between locations, with women in Kilosa, Handeni and Mvomero having a lower share of assets than those in Lushoto.

The difference in conclusions was due to the method of aggregation used by the two researchers. Researcher A considered only the women's individual asset-base. By calculating the proportions, Researcher B captured gender equity within the household and took into account the household's wealth status.

### Quality checks for gender-disaggregated data

**It is all about the gender research question.** What type of aggregation to do, and how to do it, depends on the gender research question you want to answer. Properly defined questions will guide you how to define your indicators, collect your data, and summarize, analyse and interpret the information.

**Data are key.** A researcher's ability to accurately answer any gendered research question depends on the quality, quantity and type of gender-disaggregated data available. Data that are **sufficiently detailed** allow researchers to summarize them in a way that captures enough information to answer gender research questions.

**Example:** Rather than just counting the number of cattle, the researcher can also collect the age and breed of each animal to calculate a more precise value of the animals, either in monetary terms or as "tropical livestock units" (a measure of the size of animals).

When the data are sufficiently detailed, the researcher has the **flexibility** to look at the data from different dimensions, and to derive higher-level indicators to assess the intended concept.

**Example:** Detailed data on numbers of cattle of different ages and breeds can be analysed in terms of the animals' value, or by some other indicator.

**Composite indices can get messy.** If not derived properly, higher-level indicators or composite indices may hide or distort important gender-related information. Make sure that an index retains sufficient variability in the data, yet can be easily understood and used to draw conclusions.

**Example:** When deriving an index for domestic assets it is better to use weighted values that take into account each asset's monetary value (or for livestock, the type and age of the animal) rather than a simple count of the assets.

**Context matters.** Gender concepts do not have universal meanings across locations or cultures. When defining indicators and drawing conclusions from the analysis, bear in mind the socio-economic and cultural context in the target community.





**Examples:** In some places, “land ownership” is defined in terms of the user of the land; elsewhere it depends on holding a title deed. In some cultures, women are not permitted to own assets, while in others joint asset ownership is the norm. The data and conclusions should accurately reflect the reality on the ground.

**Gender indicators are specific.** Gender-disaggregated indicators are specific to an individual’s household situation. The researcher should be clear how indicators can be used, or not used, for different situations (such as if all the adults in a household are men, or all are women).

**Example:** Imagine a village where many households have no adult women. In such households, the proportion of assets owned by women is zero. If we sum across all households in the village, the average proportion of assets owned by women would be inappropriately small, not because individual women own little, but because there are so few women.

**Input from a gender expert is key.** Incorporating the gender lens in research requires constant and consistent input from gender experts. Gender concepts may be difficult for non-specialists to grasp and are fluid in meaning; they may change depending on the context, the subject under study, and time.

## Validating the indicators

Our next step will be to validate the indicators and data-aggregation guidelines in the framework with data from different countries. We plan to do this using existing datasets from Tanzania and Ethiopia. We will document each step in the data management and analysis process so we can refine our methodological framework. We will also derive lessons that other researchers can use when doing similar studies and analyses. We will apply both summary and formal statistical methods of analysis to answer generic research questions such as “What is the gender equity of asset ownership? Does this vary across asset type and for livestock, across species?” When we have completed the validation and adjusted the methodology, we aim to publish the analysis tools in STATA, a data-analysis package commonly used in agricultural research.



*“Gender-disaggregated data are the only way you can answer a gender-related question.”*

**Nicholas Ndiwa**  
*Data analyst, ILRI*



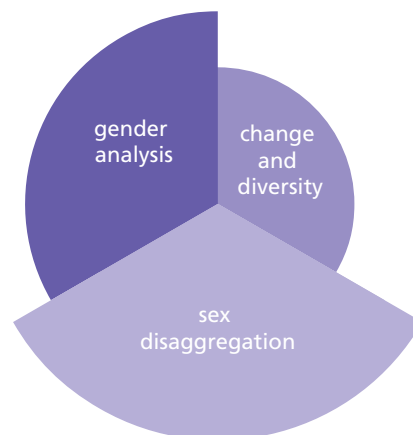
<https://youtu.be/e5pFVwG911w>

## Situating the research

*The project is not a research project, approach or intervention, but builds a framework for collecting sex-disaggregated data and producing and analysing gender indicators. The framework and gender indicators can both be applied to gender-integrated research questions, and used to support in-depth analysis of how gender relations affect innovations (and vice-versa).*

*The framework proposes:*

- *Systematically collecting sex-disaggregated data that are **about** and **from** women and men.*



- *Collecting and analyzing data that speak to four critical gender analysis concepts: **access and control** over livestock related resources, **decision-making, market participation and control over benefits**. The framework points out how details and specificity of data are key to making a meaningful gender analysis. It also offers guidance on what calculations and summaries can be made, and how these can be interpreted.*
- *The framework points to the applicability of indicators to dual and single-adult households, and as such consider differences between household types.*

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