# Summary of Six Pilot Studies on Gender and Trade

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## Contents

# List of Abbreviations

| | |
|---|---|
| ANSD | National Agency of Statistics and Demography, NSO of Senegal |
| BDEF | Economic and Financial Data Bank |
| BNS | Bureau of National Statistics of Kazakhstan |
| CG | Compilation Guidelines (for measurement of gender-in-trade statistics) |
| DSF | Statistical and Tax Declarations Database |
| Geostat | NSO of Georgia |
| GPG | Gender pay gap |
| HS | Harmonized System |
| ICBT | Informal Cross Border Trade |
| ISIC | International Standard Industrial Classification |
| KES | Kenyan Shillings |
| KNBS | Kenya National Bureau of Statistics, NSO of Kenya |
| KRA | Kenya Revenue Authority |
| NIS | National Institute of Statistics, NSO of Cameroon |
| NSO | National Statistical Office |
| QEI | Quarterly Economic Inquiry |
| SBR | Statistical Business Register |
| UNECA | United Nations Economic Commissions for Africa |
| UNECE | United Nations Economic Commissions for Europe |
| Zimstat | NSO of Zimbabwe |
| ZimRA | Zimbabwe Revenue Authority |

# Introduction

The present report summarizes the results and lessons learnt from the United Nations Development Account (UNDA) project "Data and statistics for more gender-responsive trade policies" aimed at strengthening countries' capacity to develop and use gender-relevant statistics to inform trade policy.

Different components of the UNDA project comprised pilot studies on gender-in-trade statistics carried out in Georgia (2021), Kazakhstan (2022), Cameroon, Kenya, Senegal, and Zimbabwe (all 2023) under the guidance of UNECE and UNECA and with active participation of UNCTAD.

The report reflects the following activities prescribed by the terms of references for the current consultancy:

1. Analyse the data on gender and trade collected in the six pilot studies of the project (Cameroon, Georgia, Kazakhstan, Kenya, Senegal, Zimbabwe).
2. Prepare a summary report comparing the advantages, disadvantages and challenges related to the studies' methodologies, data sources and challenges, and highlighting key findings from each study. The report should include a section on future directions of work, which identifies next steps for countries with different statistical systems (as represented in the pilot studies) as well as for methodological work that could be conducted internationally.

The report consists of three parts. In Part 1 the methodological approaches used in the pilot countries are described and challenges and opportunities for sustainable production of gender-in-trade statistics are considered. Part 2 provides an overview of the study results in the six countries, and Part 3 contains conclusions and recommendations with regard to future work.

The author highly appreciates the overall guidance from Andres Vikat (UNECE) as well as excellent cooperation with the UNCTAD and UNECA colleagues during different phases of the UNDA project implementation. Sincere thanks go to the representatives of the national statistical offices from Georgia, Kazakhstan, Cameroon, Kenya, Senegal, and Zimbabwe whose dedicated work made the implementation of the gender-in-trade project possible.

# Part 1. Methodology

## 1.1. Overview of the methodology used in the pilot studies

The easiest way to describe the methodology applied to the pilot studies of the six countries – UNECE projects in Georgia (2021) and Kazakhstan (2022) and UNECA projects in Cameroon, Kenya, Senegal, and Zimbabwe (2023) –is to refer to the *Compilation Guidelines for measurement of gender-in-trade statistics* (UNCTAD, 2023). Hence, the *Compilation Guidelines (CG)* will be used to explain various methodological aspects that were selected at different stages of the pilot studies. However, two issues need to be pointed out. First, the chronological sequence of the gender-in-trade studies carried out in the six countries is important: the lessons learnt during the first pilot in Georgia were used in the subsequent studies which continued in Kazakhstan and ended with the simultaneous implementation in the four African countries of the UNECA project. Second, the formulation of methodological principles contained in the CG was importantly driven by the six pilot studies: different approaches were tested in order to see what works in practice and what kind of difficulties may be encountered by countries with different institutional backgrounds.

The primary goal of the gender-in-trade studies in every country was to obtain valid gender-in-trade indicators reflecting different dimensions of gender differences using any relevant disaggregations to the extent possible. In addition, it was no less important to assess the feasibility of producing gender-in-trade statistics and requirements for their regular replication by countries in the future. For this purpose, different aspects such as institutional data exchange mechanisms, possibilities of data linking, availability of sex-disaggregated surveys, etc. were studied.

The implementation of the pilot studies demonstrated that the conditions necessary for using the microlinking approach – the preferred method for producing gender-in-trade indicators from the available sources by means of linking trade and non-trade (gender-disaggregated) data at the enterprise level (CG, Section 4.1) – were broadly in place in every pilot country. However, the gender-in-trade indicators produced as a result of microlinking different in terms of their types (dimensions), levels of disaggregation, representativeness and levels of reliability.

The sections below discuss the key aspects of the methodology: availability of trade microdata, data exchange and data linking mechanisms, availability and quality of non-trade data sources, including sex-differentiated variables.

## 1.2. Availability of trade data and preparation for microdata linking

***Foreign trade and data exchange mechanisms***

The availability of individual trade data represents the first step for carrying out microdata linking. The gender-in-trade analysis in all six pilot countries was confined to goods trade. The latter is universally compiled by the customs agencies, whereas the national statistical offices are usually the producers of official statistics on foreign trade. Thus, due to the existence of different actors carrying out collection (customs) and dissemination (NSO) of trade data, the issue of data exchange mechanisms between these players naturally arises and the ways how theses mechanisms are solved (periodicity of data exchange, types of trade variables shared, etc.) may be country-specific.

In every pilot country the NSOs were identified to be responsible for implementing the gender-in-trade studies. Hence, it was apparent that possession of detailed trade datasets at the level of enterprises by the NSOs was critical for combining trade and all available non-trade data (containing, importantly, sex-disaggregated variables of interest).

As it was already mentioned, the trade data at enterprise level was ultimately made available for the purposes of the project in every pilot country. Thus, it was one of the positive outcomes of the pilot studies that microlinking was carried out in every country. However, the trade data preparation process was different in each pilot country leading to a number of important conclusions in relation to specific goals of gender-in-trade analysis as well as to general aspects of statistical production.

According to the best international experience, national statistical offices play the coordinating role in the national statistical system and are granted access to all kinds of statistical information produced by public agencies (including confidential) which is required for producing official statistics. This is, however, not always implemented in every country's practices due to specific national legislation, institutional practices, or too general formulations in the legislative acts (laws, memorandums of understanding, etc.) governing the issues of data exchange. Confidentiality or state security is usually cited as the main reason for refusing NSOs to access certain data. Such limitations in data exchange between government agencies may result in inefficiencies related to the production, dissemination, and use of official statistics. The implications related to such inefficiencies will be further considered in the section on non-trade data sources.

In Georgia and Kazakhstan, the process of trade data preparation for the microlinking went smooth, as the NSOs of both countries receive full trade datasets at the transaction level from the national customs agencies on a monthly basis[1]. A similar situation was found in practically every country of the Eastern Europe, Caucasus and Central Asia (EECCA) region: in a 2023 survey on gender-in-trade statistics the

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[1] Kazakhstan was the only pilot country where in addition to the customs agency, the national statistical office also collected a part of external trade data (namely, on trade transactions between Kazakhstan, Russian Federation, Kyrgyzstan, and Armenia within the Eurasian Economic Community).

EECCA NSOs indicated that they regularly received disaggregated trade data from the national customs agencies and faced no difficulties in this regard.

The NSOs of Senegal (ANSD) and Zimbabwe (Zimstat) also had detailed trade data at their disposal. However, the situation was different in Cameroon and Kenya where the NSOs received trade datasets in a somewhat restricted form due to confidentiality reasons. In particular, the Cameroon NSO (NIS) receives from the national customs agency a dataset on a monthly basis containing detailed cross-tabulations of exports and imports by commodity codes (at a 10-digit HS level) and countries. This practice essentially limits the scope of disseminated variables of external trade statistics to the commodity-country pairs. The Kenyan National Bureau of Statistics (KNBS) receives the enterprise-level data from the Kenyan Revenue Authority (KRA-Customs) with all standard variables necessary for disseminating all standard variables of trade statistics. However, the enterprise-level dataset shared by the KRA-Customs to the KNBS does not contain business IDs and names of trading enterprises. Apart from the fact that the unavailability of enterprise ID codes limits the possibility of disseminating external trade data by enterprise characteristics (TEC statistics), it practically excludes the application of the microlinking approach.

The solutions to the two cases were found in the process of discussions with the national stakeholders. In the case of Cameroon, it was agreed that the customs agency would provide the enterprise-level data to the NSO based on the official request. As an official request for trade data with enterprise IDs required changes in the data exchange mechanisms (described in the existing memorandum of understanding between the NSO and the KRA) a different approach was used: the KRA offered to perform microlinking based on the internal KRA data sources available at its customs and income tax units. This resulted in an outcome which turned out unique among all UNECE and UNECA pilot countries: the use of microlinking based *fully on administrative sources*.

Although the enterprise-level trade microdata was made available in Cameroon and Kenya for the purposes of the pilot project, it should be noted that it was only a temporary solution. Hence, for the purposes of producing gender-in-trade statistics, it is recommended that the NSOs from the respective countries seek to establish permanent mechanisms for obtaining full access to trade data. Obviously, availability of trade data would be also beneficial for the purposes of general dissemination of foreign trade statistics, providing more flexibility to the NSOs to analyze and produce many more variables and better satisfying various users' demands.

Ultimately, the lists of enterprises which had at least one export or import transaction in the recent 4-5 years as well as HS codes for top export and/or import commodities were prepared for every pilot country. The total number of trading enterprises from the customs datasets varied from about 16,000 in Zimbabwe to more than 120,000 in Kazakhstan.

Finally, the preparation of the trade data envisaged classification of the enterprises by the trading status, i.e., as two-way traders, exporters, importers, and non-traders. It was important to identify enterprises belonging to the latter type and remove them from the gender-in-trade analysis. For this purpose, the

minimum transaction criterion was used, implying that the companies were classified as non-traders when the average annual value of their exports and imports was lower than $1000 each. While the share of non-traders in the total export and import values was negligible, the total number of such enterprises (which also may include physical persons) turned out to be quite high, reaching, for example, ca. 47% in Senegal.

### *Data linking of trade and non-trade data*

Although trade data was ultimately made available for the purposes of gender-in-trade analysis in every pilot country, the actual process of microlinking demonstrated importance of another aspect of data sharing – use of common identifiers by different agencies for ensuring technical aspects of data exchange.

The issue of common identifiers by different national data producers is a technical feature which is, closely related to cooperation between agencies in exchanging data. The use of different identifiers often represents the result of insufficient inter-agency cooperation. When the NSO uses its own system of identifiers for different units of statistical observation (such as enterprises, individuals, etc.) which differs from the classifications of the same units used by other government agencies for their administrative purposes, the NSO will struggle to efficiently link data from different data sources even when the access to required data is granted by the administrative data owners. The result is again an insufficient level of leveraging information available in the country for the purposes of statistical data production.

The pilot studies in the UNECE countries showed no difficulties with regard to data linking: both Georgia and Kazakhstan had the single identification codes for legal units (such as businesses, government entities, etc.) used by all public agencies. However, the UNECA pilots studies demonstrated that the issues related to the data exchange mechanisms were present in three out of the four pilot countries. Only in Senegal the NSO had full access to the trade data at the enterprise level and both trade and non-trade data sources used the same national identifiers.

As it was already mentioned, the NSOs of Cameroon and Kenya do not have full access to enterprise-level trade data. As a result, if the existing data exchange mechanisms remain in place in Cameroon, the NSO will be able to replicate the microlinking analysis only if it makes ad hoc requests to the national customs agency to receive trade data at the enterprise level. In Kenya, while the microlinking was performed by KRA based on the administrative data, the issues of sustainability of this approach arise, as it is usually the responsibility of NSOs to conduct statistical analysis of gender issues.

In Zimbabwe, although Zimstat receives trade data at the enterprise level from the customs agency of the Zimbabwe Revenue Authority (ZimRA), there were still challenges of data exchange mechanisms with regard to the use of common identifiers for statistical production. The trade database available at Zimstat contains the IDs of enterprises used by ZimRA (so-called business partnership, BPs), but Zimstat uses its own statistical ID codes for enterprises, and only a limited number of legal entities have a BP

number in the database. As a result, manual data linking of trade (ZimRA) and non-trade (Zimstat surveys) data was necessary.

Table 1.1 summarizes the data exchange mechanisms in the four countries and describes implications for sustainable production of gender-in-trade indicators in the future.

**Table 1.1. Summary of data exchange mechanisms in the pilot countries**

| Country | Enterprise-level trade data availability at the NSO | Use of unique identifiers | Implications for gender-in-trade analysis by NSOs |
|---|---|---|---|
| Georgia | Geostat receives trade data from the national revenue service | The same identifiers are used by Geostat and other government agencies | Necessary mechanisms are in place. |
| Kazakhstan | The Bureau of National Statistics receives trade data from the customs agency and collects trade data from enterprises for EEC trade. | The same identifiers are used by BNS and other government agencies | Necessary mechanisms are in place. |
| Cameroon | Trade data provided to the NSO by the customs agency includes cross-tabulations of commodity-country variables. | The same identifiers are used by NIS and other government agencies | NIS needs to receive full access to trade data from the customs. |
| Kenya | Enterprise-level data provided to KNBS by KRA without company IDs and names. | KNBS relies on internal statistical ID codes for enterprises which are different from business IDs used by KRA | KNBS needs to receive identifiable trade data from KRA. It is highly recommended for KNBS to use business IDs in order to carry out data linking and improve enterprise coverage in business surveys. |
| Senegal | Trade data at enterprise-level with identifiers provided to ANSD by the customs agency. | The same identifiers (NINEA) are used by ANSD and other government agencies | Necessary mechanisms are in place |
| Zimbabwe | Trade data at enterprise-level with identifiers provided to Zimstat by ZimRA. | Zimstat relies on internal statistical codes, the use of business IDs (BPs) from the ZimRA's trade database is limited. | It is highly recommended for Zimstat to use business IDs in order to carry out data linking and improve enterprise coverage in business surveys. |

## 1.2 Overview of non-trade data in the pilot countries

As the primary variables in goods trade data are concerned with the commodities (their value, physical volume, type), the gender-in-trade statistical indicators can be calculated only from non-trade data sources containing gender variables. This implies that gender-in-trade analysis can only be as good as the available non-trade data which in turn depend on the availability, scope and representativeness of registers and statistical surveys containing sex-disaggregated variables of interest.

This section discusses the availability of non-trade data in the pilot countries with the view of producing aggregated and disaggregated indicators in the three areas of gender-in-trade statistics: i) employment; ii) earnings/wages; and iii) ownership in trading enterprises. The summary of key non-trade data sources and desired variables are presented in Table 1.2.

**Table 1.2. Non-trade data sources and enterprise variables for gender-in-trade analysis**

| Non-trade data sources | Enterprise Variables |
|---|---|
| Statistical business register (SBR) | Name and ID |
| Structural business statistics (SBS) surveys | Address |
| Structure of earnings surveys | Legal form of business organization |
| Tax administration records | Registration date(s) |
| | Active/non-active status |
| | Area of economic activity (ISIC) |
| | Size |
| | Turnover |
| | Employment* |
| | Earnings* |
| | Skill levels of employees* |
| | Attained education level of employees* |
| | Investments |
| | Ownership shares* |
| | Foreign/domestic ownership* |

*Note: Variables with \* are (potentially) sex-differentiable*
*Source: Compilation Guidelines, Chapter 4.*

### *Statistical business registers*

Availability and proper maintenance of statistical business registers (SBR) is critical for obtaining the basic characteristics of the trading enterprises (registration details, size, ownership, etc.). In addition, SBR represent a foundation (sampling frame) for business sample surveys. The pilot studies showed that

the quality of SBRs in the pilot countries was different, with and the UNECE countries having much developed business registers than their UNECA counterparts.

Thus, the SBRs in Georgia and Kazakhstan contained almost one million and over two million units, respectively. The SBRs included practically all the enterprise details indicated in Table 1.2, including sex-disaggregated ownership characteristics. Maintenance of SBRs in both countries heavily depends on permanent updating with the use of other administrative sources, including national revenue agencies and public registers.

The situation was different in the UNECA pilot countries, where updating SBRs are not always based on permanent data exchange mechanisms with other administrative organs (first of all, with revenue authorities). The number of enterprises contained in the SBRs of Kenya and Zimbabwe was significantly lower than the number of business entities in the national revenue agencies, amounting to as low as 5,000 business units in the Zimstat's SBR. One of the immediate implications of incomplete SBRs consists in the fact that business surveys in the two countries are conducted without application of probability-based sampling design: the NSOs of both countries are forced to contact all enterprises which are available in the sampling frame (SBR) with certain consideration of non-response. This approach is likely to be inefficient in terms of resources (a large number of enterprises interviewed) and to contain biases due to an incomplete sampling frame.

The SBRs of Senegal and Cameroon are largely based on the data from centralized systems of accounting and financial information. The access to the centralized data on enterprises by ANSD and NIS allows them to ensure relatively good coverage (at least as good as that in revenue agencies). However, the centralized nature of such a database does not fully take into account specific requirements of the NSO as one of the database users. As will be discussed later, this leads to significant data gaps – especially with regard to sex-disaggregated data – which affect the quality of available data and essentially limit the number of linked enterprises with proper variables for producing gender-in-trade statistical indicators.

Limited data exchange mechanisms at the level of individual data in Kenya and Zimbabwe and the primary focus on accounting information in the SBRs of Senegal and Cameroon resulted in the fact that none of the UNECA pilot country NSOs possessed sex-disaggregated data on ownership in the SBRs. However, the ownership-related analysis of gender-in-trade was still performed in Kenya due to the fact that the KRA which performed microlinking of customs and tax data possessed sex-disaggregated enterprise ownership data in its databases.


*Statistical surveys and data linking*

The availability of non-trade data that was used for gender-in-trade analysis also varied by the pilot countries. This directly affected the range of aggregate and disaggregated gender-in-trade indicators produced within the project scope.

As it was mentioned, all pilot countries except Kenya performed microlinking using data from NSO registers and statistical surveys. The primary sources of non-trade data represented structural business statistics and labour surveys which contained sex-disaggregated variables on employment and wages. For the five countries that used microlinking of customs trade data and NSO's statistical surveys and registers, the main points on the non-trade data sources, data linking and produced indicators are provided below.

- The SBS and labour surveys used in Georgia and Kazakhstan apply similar principles for selecting enterprises: large- and medium-size enterprises are fully enumerated while smaller enterprises are sampled. In Georgia labour-related data are included in the SBS surveys whereas Kazakhstan conducts establishment labour surveys separately. Data on skill levels is included in Georgia's separate structure of earnings survey conducted once in 4 years. Kazakhstan collects labour data by skill levels every year. The number of surveyed enterprises equals approximately 20,000 in Georgia and more than 80,000 in Kazakhstan.
  As a result of microlinking, the trade value coverage ratios (the share of export/import values of linked companies in total exports/imports) were quite high in both countries. For example, the trade value rates for Georgian two-way traders and importers were above 90% and 80%, respectively.
  Combining data from enterprise surveys and SBRs allowed Georgia and Kazakhstan to produce all aggregated indicators on employment, earnings, and ownership as well as use different disaggregations by size, skill levels, gender-specific ownership.
- In Zimbabwe the Quarterly Employment Inquiry (QEI) represented the primary non-trade data source used. The sample size of the QEI is 5,000 enterprises and it contains sex-disaggregated data on employment and wages. It should be noted that sex-disaggregated data on wages are considered not as reliable as that on employment, which implied minimum use of wage data. Due to the issue of different identifiers in the databases the microlinking was largely carried out through manual matching and the number of matched enterprises equalled approximately 500.
- Cameroon relied on the centralized information database through the Statistical and Tax Declarations Database (DSF) of the Directorate of Taxes under the Ministry of Finance. The number of enterprises linked was more than 4,000. Due to gaps in sex-disaggregated variables it was possible to link only the employment data.
- In Senegal the non-trade data on sex-disaggregated employment and wage data was obtained from the Economic and Financial Data Bank (BDEF). The data linking process was quite successful, and the export and import value coverage ratios for linked enterprises exceeded at least 75%. However, the data gaps in the BDEF in terms of sex-disaggregated variables resulted in using only a limited number of enterprises for gender analysis (approximately 800 and 300 enterprises for different samples).

The Kenyan pilot represented a special case where the administrative data of KRA (trade data from the customs agency and non-trade data from the income tax agency) was used for microlinking, and all three gender dimensions of employment, wages, and ownership were characterized.

A number of obvious advantages in using administrative data from a revenue agency can be named. Tax enforcement mandate as well as greater availability of resources manifested in their human, financial and technological capacity allow revenue agencies to achieve a significantly wider coverage and data compliance of enterprises compared to national statistical offices facing more challenges with resources, enterprise registers or survey coverage. Given these advantages, the Kenyan pilot succeeded in compiling and analyzing sex-disaggregated data on owners and managers (directors) of a large number of enterprises.

On the other hand, there are a number of drawbacks in using purely administrative data for statistical analysis. First, administrative bodies have different institutional priorities, and sustainability of production of gender-in-trade statistics is not guaranteed. Second, there can be essential conceptual differences between administrative and statistical data: for instance, the concepts of turnover, average number of employed persons, etc. used for statistical and tax purposes often differ from each other. Finally, some specific tax issues may impact data availability. An example of tax-specific issues in Kenya was related to the legal definition of income tax payers. The KRA enterprise-level data on the number of employed persons and their wages were derived from individual records of income tax payers (which is obviously a clear advantage from the data point of view). However, only those physical persons are considered income tax-payers – and hence, reported by enterprises for income tax purposes and contained in the KRA income tax database – if their average monthly income is above 24,000 Kenyan shillings (less than $200). Thus, the employment data used for gender-in-trade analysis missed a large number of employed persons with wages lower than the cited revenue threshold[2].

The summary of results on microdata linking by pilot countries is given in Table 1.3.

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[2] Starting from 2022, changes in the tax legislation will result in universal coverage of employed persons irrespective of their income level. Hence, the mentioned data gaps in the income tax database will no longer be present.

**Table 1.3. Summary of results on microdata linking by pilot countries**

| Country (pilot study date) | Summary of data sources and microlinking results | Gender-in-trade indicators available from microdata linking |
|---|---|---|
| Georgia (2021) | <ul><li>Trade data for 2016-2020 used.</li><li>Approx. 50,000 trading enterprises (customs database) linked to statistical surveys and registers.</li><li>High trade value coverage ratios</li><li>Main non-trade data sources:<br>- SBS annual surveys, 2016-2020 (sample size approx. 18,000)<br>- 2017 SES<br>- SBR</li><li>Sex-disaggregated variables available on employment and wages (SBS), employee skills (SES), ownership (SBR)</li><li>Employment and wage sex-disaggregated variables available for all linked enterprises</li></ul> | <ul><li>Employment: women's share in employment (2016-2020), disaggregated by trading status (two-way-traders, exporters/importers, non-traders), legal form, area of economic activity, commodity group (HS), enterprise size, employee skill levels (for 2017), foreign/domestic ownership, gender-specific ownership.</li><li>Earnings: gender pay gap (2016-2020), disaggregations similar to employment indicators.</li><li>Ownership: number of women owners in trading enterprises (as of 2020), trade-weighted ownership share of women, disaggregated by enterprise trading status, enterprise size, foreign/domestic ownership)</li></ul> |
| Kazakhstan (2022) | <ul><li>Trade data for 2017-2021 used.</li><li>Approx. 120,000 trading enterprises (customs database) linked to statistical surveys and registers.</li><li>High trade value coverage ratios</li><li>Main non-trade data sources:<br>- Annual labour surveys, 2017-2021 (sample size approx. 85,000)<br>- SBS, 2017-2021<br>- SBR</li><li>Sex-disaggregated variables available on employment, wages, employee skills (LS), ownership (SBR)</li><li>Employment and wage sex-disaggregated variables available for all linked enterprises</li></ul> | <ul><li>Employment: women's share in employment (2017-2021), disaggregated by trading status (two-way-traders, exporters/importers, non-traders), legal form, area of economic activity, commodity group (HS), enterprise size, employee skill levels, foreign/domestic ownership, gender-specific ownership.</li><li>Earnings: gender pay gap (2017-2021), disaggregations similar to employment indicators.</li><li>Ownership: number and share of women owners in trading enterprises (as of 2021), number</li></ul> |

| | | |
|---|---|---|
| | | and share of enterprises with women top managers (as of 2021), trade-weighted ownership share of women, disaggregated by enterprise trading status, enterprise size, foreign/domestic ownership) |
| Cameroon (2023) | • Trade data for 2016-2018 used.<br>• Approx. 50,000 trading enterprises (customs database) linked to statistical surveys.<br>• High trade value coverage ratios<br>• Main non-trade data sources used:<br>- DSF database, 2016-2018 (centralized register)<br>• Sex-disaggregated variables available on employment and wages<br>• Data gaps in sex-disaggregated variables on wages for linked enterprises | • Employment: women's share in employment (2016-2020), disaggregated by trading status (two-way-traders, exporters/importers, non-traders), legal form, area of economic activity, commodity group (HS), enterprise size.<br>• Earnings: significant data gaps for sex-disaggregated wages, not calculated. |
| Kenya (2023) | • Trade data for 2018-2022 used.<br>• Approx. 40,000 trading enterprises (customs database) linked to income tax records.<br>• High trade value coverage ratios<br>• Highest number of linked enterprises among all pilot studies (almost 20,000)<br>• Main non-trade data sources:<br>- income tax data, 2018-2022, for taxpayers with income above KES24,000.<br>• Sex-disaggregated variables available on employment, wages, employee skills, ownership | • Employment: women's share in employment (2018-2022), disaggregated by trading status (two-way-traders, exporters/importers, non-traders), legal form, area of economic activity, enterprise size, commodity group (HS), employee skill levels, gender-specific ownership, gender-specific management (men-only, women-only, mixed).<br>• Earnings: gender pay gap (2017-2021), disaggregations similar to employment indicators.<br>• Ownership: number of companies with men-only, women-only, and mixed owners in trading enterprises (as of 2022), number of female and top managers in trading enterprises (as of 2021)<br>• |

| Senegal (2023) | • Trade data for 2018-2021 used.<br>• Approx. 20,000 trading enterprises (customs database) linked to statistical surveys.<br>• High trade value coverage ratios<br>• Main non-trade data sources used:<br>- BDEF database, 2018-2021 (centralized register)<br>• Sex-disaggregated variables available on employment and wages<br>• Data gaps in sex-disaggregated variables on employment and wages for linked enterprises | • Employment: women's share in employment (2016-2020), disaggregated by trading status (two-way-traders, exporters/importers, non-traders), legal form, area of economic activity, commodity group (HS), enterprise size.<br>• Earnings: gender pay gap, disaggregations similar to employment indicators. |
|---|---|---|
| Zimbabwe (2023) | • Trade data for 2018-2022 used.<br>• Approx. 15,000 trading enterprises (customs database) linked to statistical surveys.<br>• Low trade value coverage ratios<br>• Main non-trade data sources used:<br>- QEI, 2018-2022 (sample size of 5,000 enterprises)<br>• Sex-disaggregated variables available on employment<br>• Indicators not validated | • Employment indicators attempted but not yet validated. |

# Part 2. Results of pilot studies

The pilot studies in the six countries produced a large range of indicators on gender differences in trade, and their more detailed descriptions are provided in the national reports[3].

The key results provided below are structured by the three main areas of gender-in-trade statistics[4]. In general, every pilot study identified significant gender differences with ownership-related gender disparities being the most pronounced.

## 2.1. Employment in trade enterprises

The aggregated employment indicators (women-to-men employment ratio or women's share in total employment) were produced by each country, as the sex-disaggregated employment data proved to be the most widely available. In addition, company-level data on enterprise size, economic activity sector (according to the ISIC/NACE or equivalent national classifications), legal form was available in the country datasets allowing for calculation of relevant disaggregated employment indicators. In addition, Georgia and Kazakhstan produced breakdown of employment indicators by skill levels and by ownership (together with Kenya).

During the accounting period similar levels and trends in women's share of employment were revealed in Georgia, Kazakhstan, and Kenya registering slight improvements and equalling 39% in Georgia, 34% in Kazakhstan and in 2020 and 2021, respectively (Figure 2.1).

**Figure 2.1. Women's share in employment in Georgia, Kazakhstan, and Kenya**



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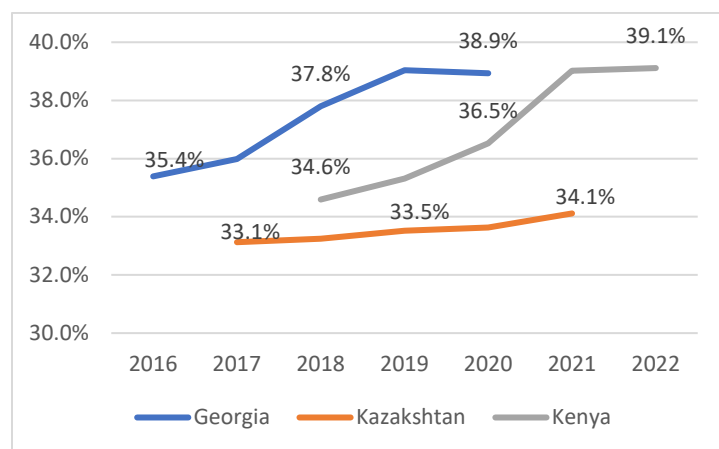
[3] Due to the fact that all pilot countries performed microlinking, the number of possible disaggregations of gender-in-trade indicators is larger than those presented in the national reports.
[4] The survey results for Zimbabwe were not finalized and they are not cited in this report.

Lower levels of women's employment were present in Cameroon and Senegal, where the average share of employed women over the reporting period did not exceed 25% (Figure 2.2).

**Figure 2.2. Women's share in employment in Cameroon and Senegal**



**a) Cameroon**

**b) Senegal**
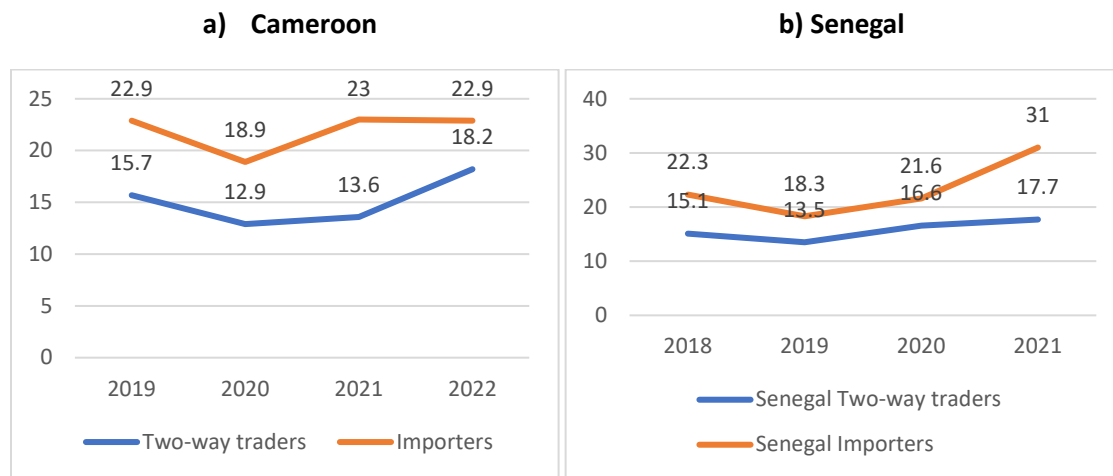
A number of disaggregated employment indicators were calculated by the pilot countries providing additional insights about gender differences in employment. Some examples of such indicators disaggregated by enterprise size and skill levels are provided below. Thus, in Kazakhstan more pronounced gender differences in employment tend to occur in large enterprises, whereas no such patterns were found in Cameroon and Senegal (Figures 2.3-2.5).

**Figure 2.3. Kazakhstan: share of women's employment by enterprise size, 2017-2021**
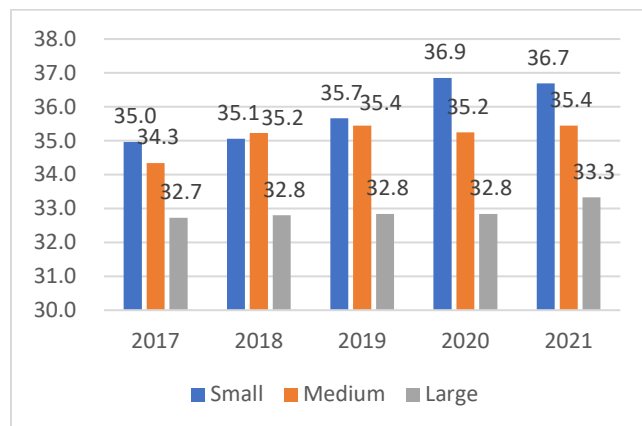
**Figure 2.4. Cameroon: share of women's employment by enterprise size among two-way traders and importers, 2019-2021**
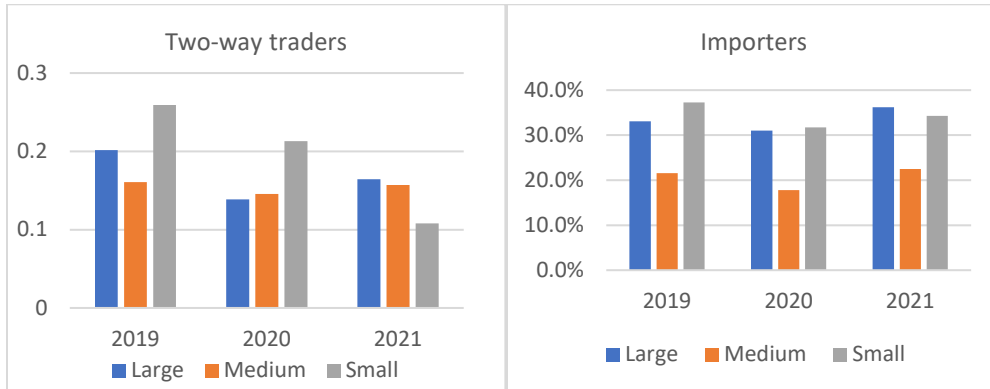


**Figure 2.4 Senegal: share of women's employment by enterprise size, 2019-2021**
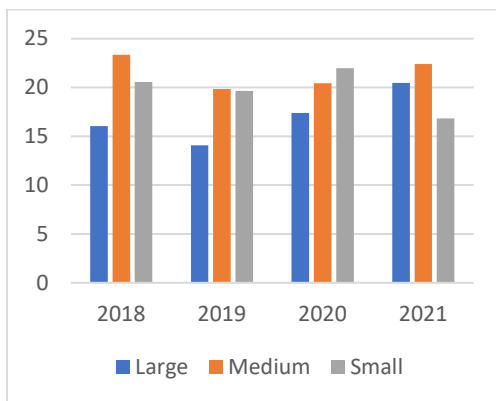


With regard to skill levels, Georgia and Kazakhstan data showed that women's shares in employment were the highest among high-skilled women in Georgia, whereas in Kazakhstan there was a near gender equality among the ISCO category "professionals" (Figures 2.6-2.7).

**Figure 2.6 Women's share in employment by skill levels in Georgia, 2017**
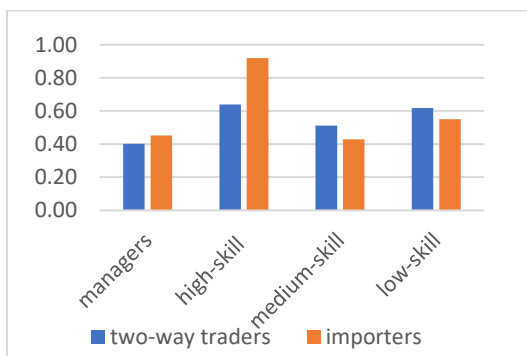
**Figure 2.7. Women's share in employment by ISCO skill categories in Kazakhstan, 2017-2021**
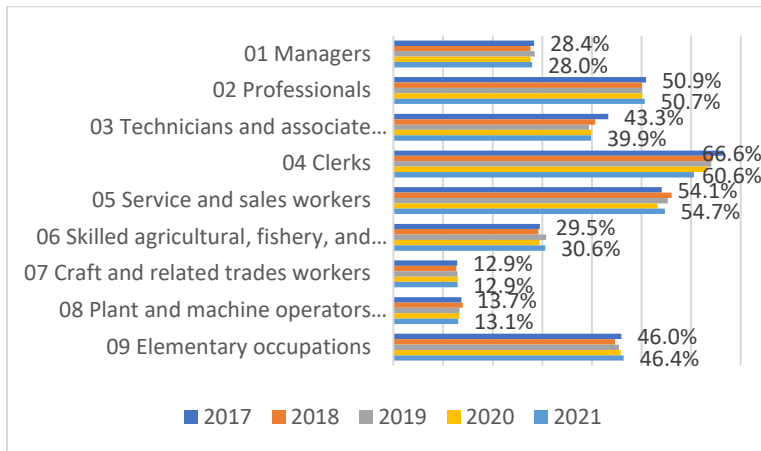


Finally, the employment data disaggregated by gender-specific ownership and management in Georgia, Kazakhstan and Kenya revealed considerably higher women's employment shares in women-owned enterprises.

In Georgia (Figure 2.8) the women's share of employment in women-owned enterprises (defined as women's share at least equalling men's share) exceeds that in men-owned enterprises by more than 15 percentage points over the 5-year period under consideration.

**Figure 2.8. Employment ratios in Georgian trading enterprises by gender-specific ownership**
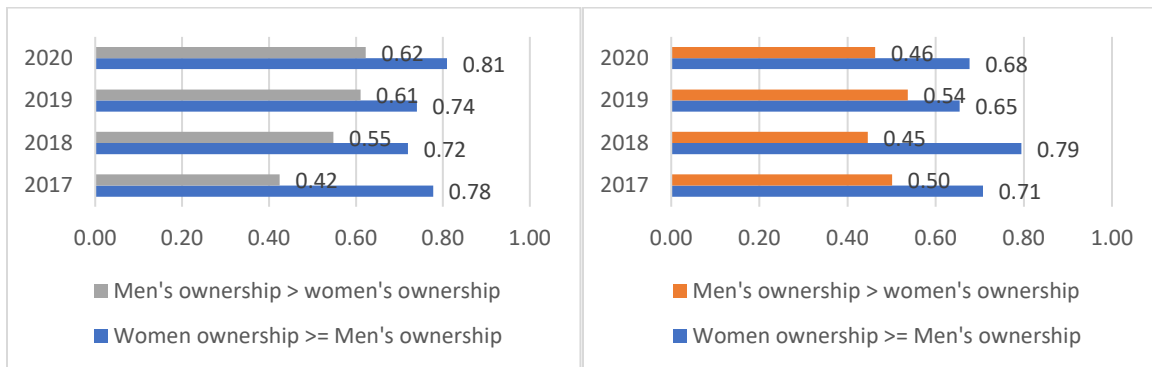


The analysis of enterprises broken down by sex of top managers in Kazakhstan (Figure 2.9) showed that not only women's employment shares are higher in women-led enterprises, but in the former the number of employed women exceeds that of employed men even in absolute terms (i.e. the share of women's employment is higher than 50%).

**Figure 2.9. Women's employment ratios in Kazakhstan in women- and men-led enterprises**
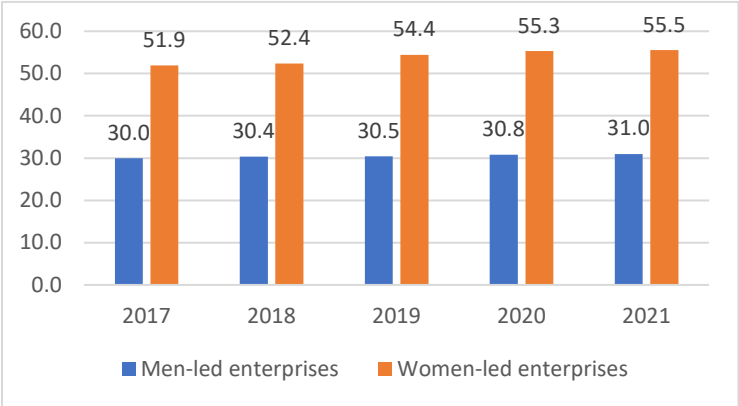


Finally, the women's employment shares were the lowest in the men-only-owned trading enterprises in Kenya compared to enterprises with women-only or mixed ownership (Figure 2.10).

**Figure 2.10. Women's employment ratios in Kenya by gender-specific ownership**
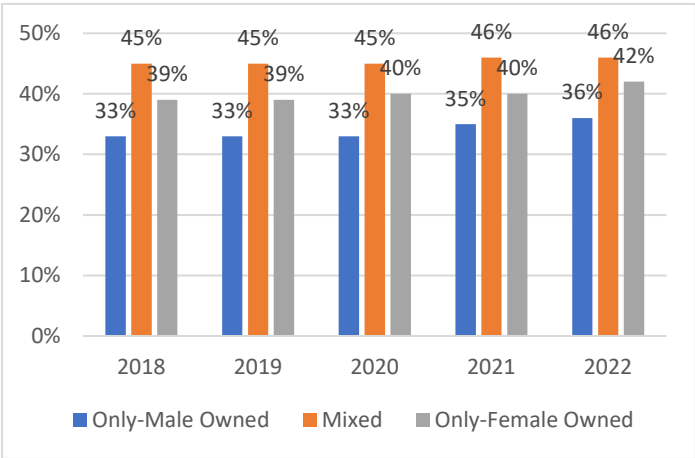
## 2.1. Earnings in trade enterprises

The sex-disaggregated indicators (basically equivalent indicators of women-to-men wage ratios and gender pay gaps) were calculated in Georgia, Kazakhstan, Kenya and Senegal. The availability of wage data differentiated by sex proved to be more problematic in UNECA pilot countries. The indicators were volatile for Senegal due to a relatively small number of observations, while the earnings-rated data gaps did now allow Cameroon to produce these indicators at this stage.

In general, the gender pay gap was significant in every pilot country which produced its estimates, oscillating between 24.3% in Kenya and 31.7% in Georgia in the last reported year (Figure 2.11).

**Figure 2.11. Gender pay gap in Georgia, Kazakhstan, and Kenya**
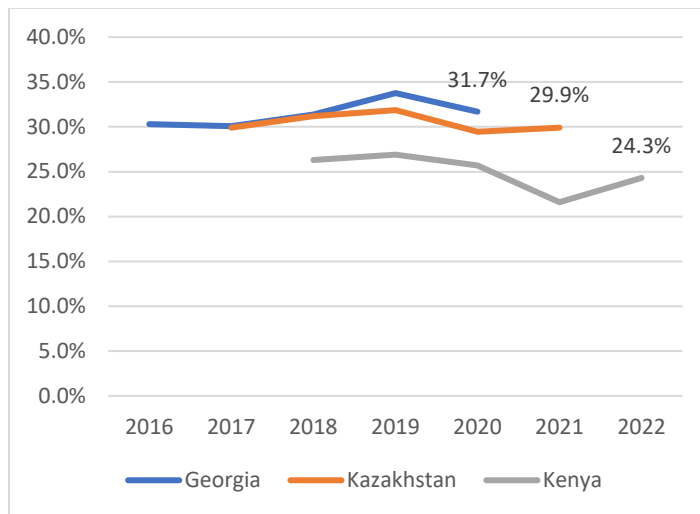


As it was mentioned, a relatively small number of linked enterprises containing sex-disaggregated wage variables resulted in volatile gender pay gap estimates over 2018-2021 in Senegal. This indicates a need for additional efforts on collecting data under consideration (Figure 2.12).

**Figure 2.12. Senegal: Gender pay gap, 2018-2021.**

### (a) by trading status,



### (b) by enterprise size
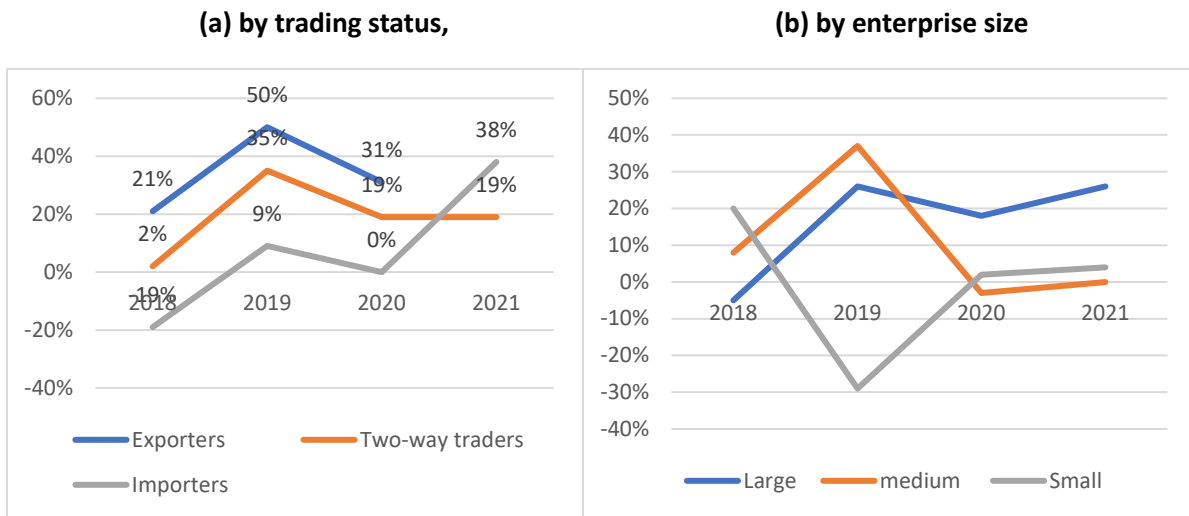


Similar to the employment figures, the women's relative wages for enterprises with women-only and mixed ownership in Kenya manifested significantly better trends compared to those in men-owned enterprises (Figure 2.13). It should be noted that in women-owned enterprises three out of five years were characterized by a negative GPG, with a particularly high gender difference in favour of women in the COVID-impacted 2021.

**Figure 2.13. Gender pay gap by gender-specific ownership in Kenya**
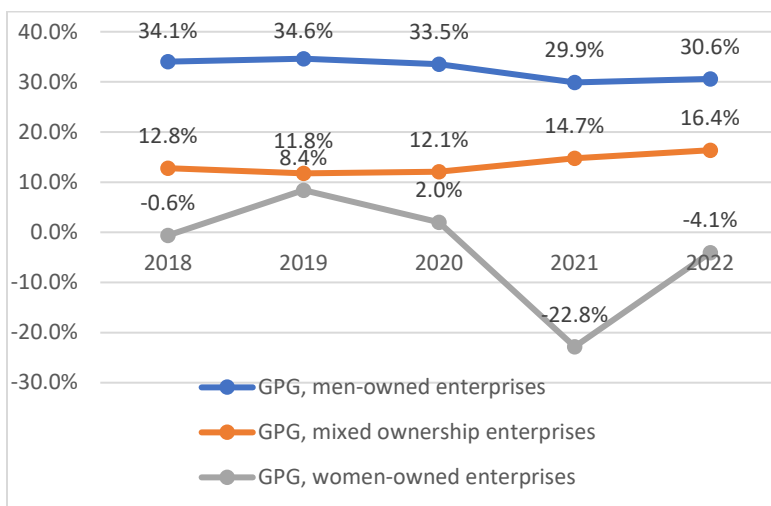


Similar results with regard to gender-specific ownership and management of trading enterprises were obtained in Georgia and Kazakhstan, where gender pay gap estimates in women-owned and women-led

enterprises were significantly lower compared to men-owned and men-led enterprises, respectively (Figures 2.14-2.15).

**Figure 2.14. Gender pay gap by gender-specific ownership in Georgia**

**a) Two-way traders**



**b) importers**
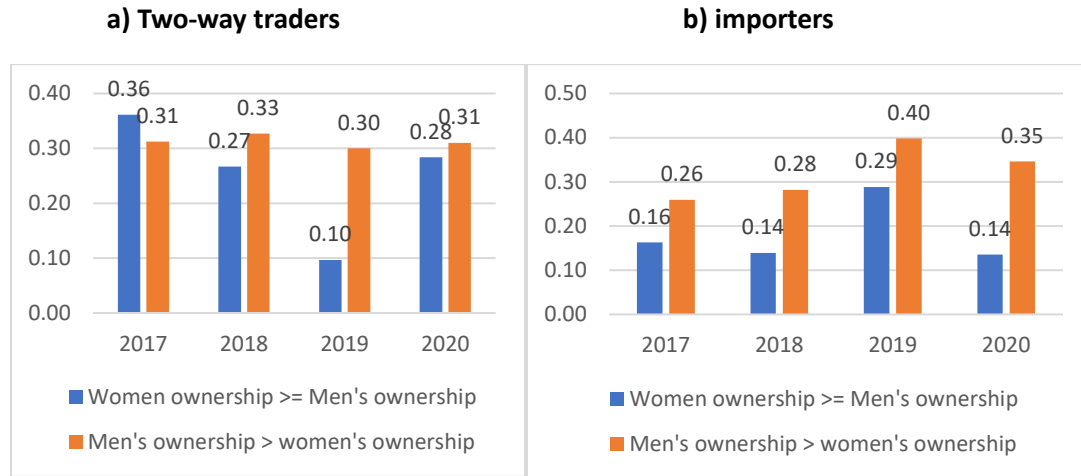
**Figure 2.15. Gender pay gap in women- and men-led enterprises in Kazakhstan.**
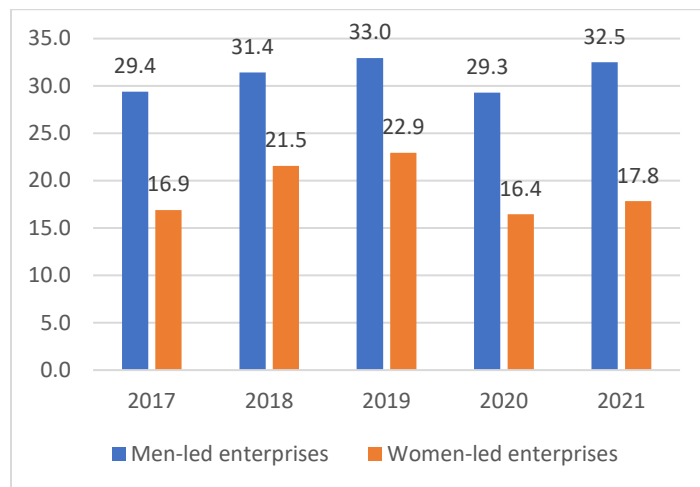
## 2.3. Ownership and management in trade enterprises

In general, the sex-differentiated ownership data turns out to be the most difficult to obtain. The pilots confirmed this universal finding as only three countries managed to produce estimates of gender differences in terms of owning and managing enterprises from the existing sources. On the other hand, the gender disparities in terms of ownership tend to be the most pronounced, which underlines its importance for gender analysis.

The NSOs of Georgia and Kazakhstan were able to produce the sex-differentiated indicators on ownership and management using their SBRs. It should be noted that in the gender-in-trade survey seven out of nine EECCA region countries reported having the ownership variable in their SBR but only three of them have it differentiated by sex.

The pilot NSOs of the UNECA region indicated the lack of (or very limited data on) the ownership of enterprises, with no sex disaggregation. However, the data is still available in the countries, as shown in the case of Kenya, where the ownership and management indicators were calculated with the administrative data of KRA.

There was still a number of limitations in the ownership data. The main limitation consisted in the fact that the sex-disaggregated ownership data were not available for companies owned by legal entities. Given that it is predominantly large companies that are owned by legal entities this limitation is significant in terms of valuing ownership of total assets in the foreign trade sector.

The calculation of the simple number of owners and managers of the trading enterprises in the three countries shows that men significantly outnumber women in both categories. Furthermore, the gender differences described below are likely to be higher if full disaggregation of ownership data for legal owners were possible.

In Georgia, men outnumber women more than 9 times as owners of two-way traders, almost 5 times as owners of exporters and more than 3 times as owners of importer companies (Figure 2.16).

**Figure 2.16 Number of women, men and legal owners of trading companies by trading status**
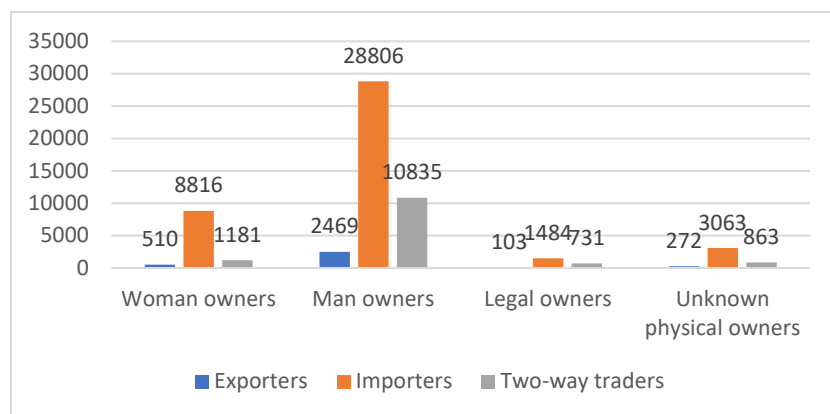
In Kazakhstan, the number of companies with at least one men owner exceeds that with at least one women owner 2.15 times among residents and 5.1 times among non-residents (Figure 2.17). Finally, in Kenya, 63% of enterprises were owned by men only, 12.6% by women only, and 24.4% had mixed ownership, whereas the number of male managers exceeded that of women managers approximately 2.9 times (Figure 2.18)

**Figure 2.17. Number of companies owned by at least one man, woman, or legal entity in Kazakhstan**
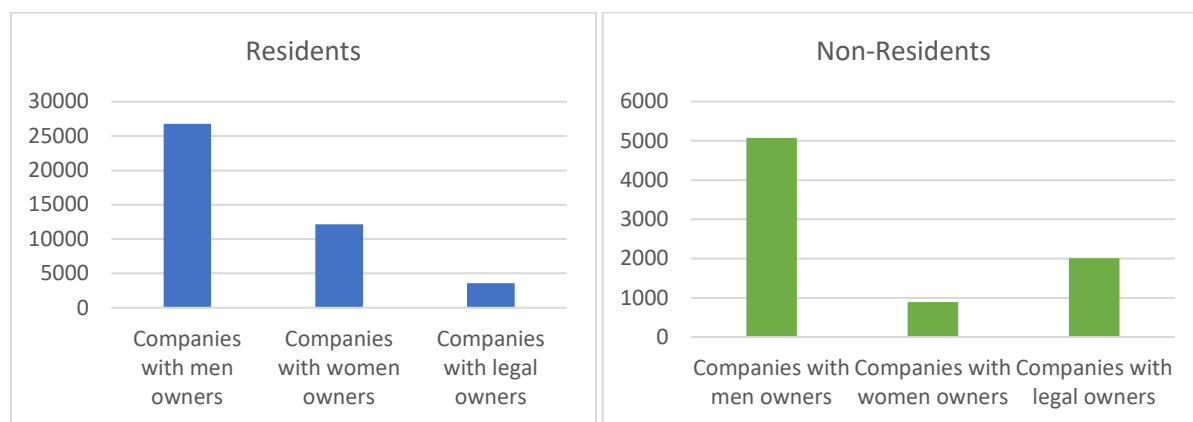


**Figure 2.18. Ownership of trading enterprises and number of directors by sex in Kenya**
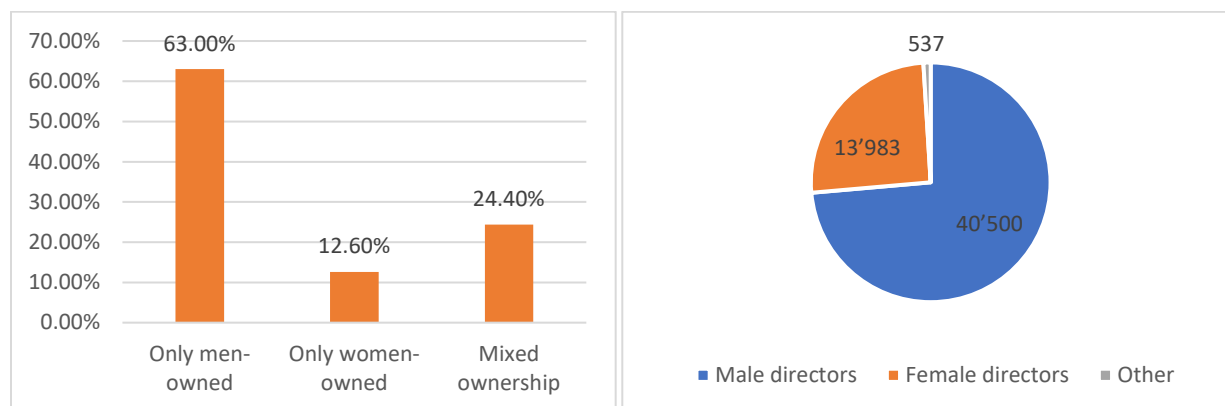


In order to assess the overall ownership in the trade sector by sex, the ownership data in Georgia and Kazakhstan was weighted using, respectively, trade turnover value and total assets of the trading enterprises. The results demonstrated significant gender differences in enterprise value ownership. In Georgia the men's ownership in trading enterprises (in terms of turnover value) exceeded the women's ownership approximately 9 times for two-way traders, 5 times for importers, and 4.5 times for exporters (Figure 2.19). In Kazakhstan, the men's share in enterprise asset value exceeded that of women approximately 4 times (Figure 2.20). As it was already mentioned above, the significance of legal ownership in both countries implies that the gender disparities are likely to be even higher, if full data disaggregation were possible.

**Figure 2.19. Percentage ownership of trading companies by sex in Georgia, trade-value-weighted**
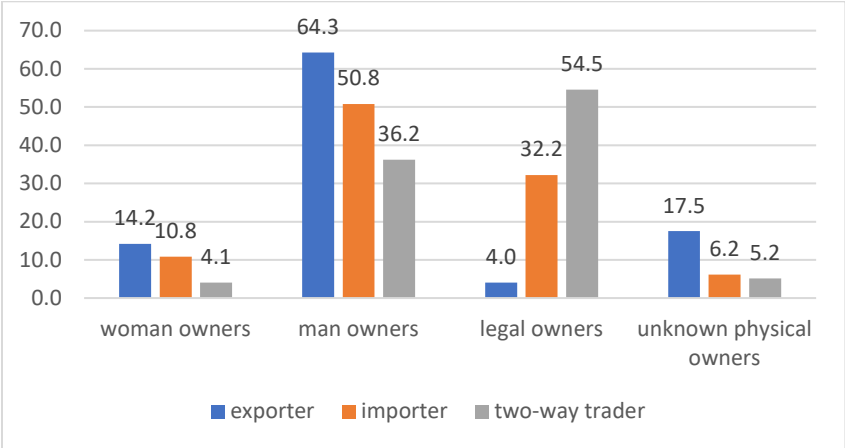


**Figure 2.20. Distribution of companies with male, female and legal owners in Kazakhstan**
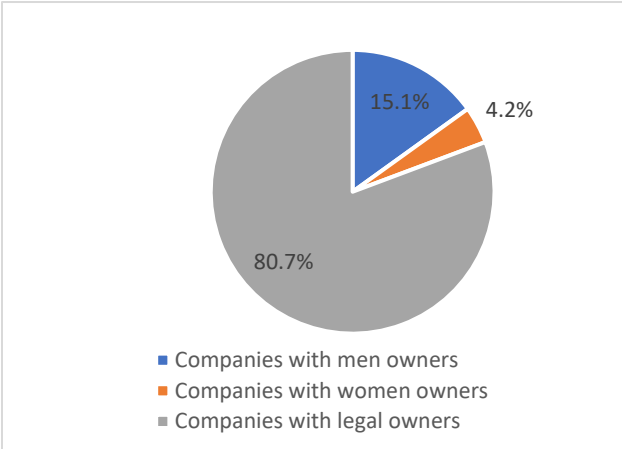
# Part 3. Conclusions of pilot studies and directions for future work

The pilot studies in the six countries demonstrated that production of at least some gender-in-trade indicators using microdata linking is a feasible task. Regular production of these indicators requires, firstly, the availability of a) proper data exchange mechanisms between data producers and b) good quality non-trade data sources containing sex-differentiated variables. On the other hand, despite using already existing data, the dissemination of gender-in-trade indicators still requires additional human and financial resources. Hence, it is important to establish good cooperation with different data users to ensure the corresponding demand for the gender-in-trade analysis.

General conclusions from the six pilot studies are presented below.

- Availability of comprehensive goods trade datasets provides the foundation for microdata linking. The pilots showed that the trade datasets produced by the national customs agencies are proper for gender-in-trade analysis.
- In some cases, there is a need for additional agreements with the data-producing agencies (customs/revenue agencies) to ensure full access of the NSOs to trade data. Such access is considered to be greatly beneficial not only the production of gender indicators in trade, but the general statistical infrastructure as well, namely, the statistical business registers and enterprise surveys.
- The NSOs are highly recommended to fully exploit national identification numbers of enterprises used by other government agencies and, in particular, by the national revenue agencies for the general purposes of statistical data production.
- The Kenyan pilot provided an example of a successful implementation of the study using only administrative sources. However, despite a number of advantages, the specific drawbacks associated with the use of administrative data in gender-in-trade analysis represent sustainability of analysis by the administrative bodies as well as potential differences in administrative definitions of observation units and economic/statistical concepts.

Based on the results of the pilot studies, the following ***outline of an action plan*** related to future work on gender statistics in trade can be formulated as follows:

1. Numerous international initiatives encourage production of trade data with analysis of gender aspects. The gender-in-trade statistics represents a developing area, and the work on *mainstreaming gender-in-trade statistics* into statistical production is ongoing. Early implementation of the methodology on gender-in-trade provides an opportunity of ensuring good quality statistics in this area.

2. Countries need to *identify the institution* responsible for production of gender-in-trade statistics. For obvious reasons, the NSOs are deemed to be the most suitable candidates for this purpose.

3. *Data exchange mechanisms* between the agencies producing trade data and the NSOs are to be in place in order to guarantee availability of data on trading enterprises for gender analysis.

4. The NSOs need to adapt their statistical surveys and registers to the methodological requirements of gender-in-trade statistics. In particular, *representativeness of the key sex-disaggregated variables* (on employment, wages, and ownership) should be ensured.

5. While some NSOs may be lacking certain types of data for producing gender analysis in trade across all dimensions and by different disaggregations, it became evident from the pilot studies that production of aggregated indicators in the area of employment (and possibly wages) is still feasible. Thus, production of the indicators on women's share in employment as well as women-to-men wage ratio (gender pay gap) can represent a good start.

6. Production of gender-in-trade statistics will help the NSOs to strengthen their general statistical capacity and produce a positive impact on other areas of statistical production. For this purpose, the NSOs are recommended to actively cooperate with international organizations and other development partners.

7. In order to ensure proper demand for gender analysis in trade, the NSOs are recommended to reach to different stakeholders with the initial estimates of gender-in-trade indicators. The availability of such estimates is the initial step towards inducing such interest.