How many people are globally employed in the forest sector?[1]

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ABSTRACT

The question of how many people are employed in the forest sector globally seems straightforward to answer. However, due to the nature of the forest-related labour markets and insufficient employment data in several countries, it is difficult to capture the total workforce at the global scale. The present study developed a new estimating procedure to deal with missing data points enabling the estimation of total employment in the forest sector. Results reveal that approximately 33 million people were employed globally between 2017 and 2019, accounting for 1 per cent of total employment across all economic activities. The finding underlines the importance of forests and the forest sector in people's livelihood. Further, it highlights the need to ensure the availability of reliable and comparable forest-related employment statistics, as well as method refinement to increase the accuracy of estimates.

KEYWORDS:

Forest sector, employment, forestry, wood industry, paper industry

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1 INTRODUCTION

Information on the number of employed people is a crucial indicator for the distribution of socio-economic benefits derived from forest and forest sector labour activities. However, quantifying how many people are employed and how much they contribute to global employment is not a straightforward exercise, as quantitative information remains limited in several countries. The nature of the forest-related labour market, which is characterised by a high degree of informality, made it difficult to estimate the total workforce. Previous studies attributed to this knowledge gap. For instance, FAO (2014) estimated that global formal forest-related employment was 13.2 million people in 2010-2011, and additionally at least 44 million people were employed in the informal forest sector. For the same period, Li et al. (2019) revealed that the forest sector globally employed over 18 million people directly and supported 45 million jobs through direct, indirect and induced impacts. Another study by Lippe et al. (2021) estimated that at least 64 million full-time equivalent persons were employed in the forest sector in 2015. The different numbers reported in the literature result, among other things, from differences in data used, the units applied, the definition of the forest sector, the estimation procedures and the number of countries included in the analysis. In light of this debate, the present study presents an improved and up-to-date estimation procedure that can accurately determine the magnitude of total employment in the forest sector at the global and regional scales. The method developed in this study can provide further guidance for improving the viability of harmonised employment statistics in the forest sector.

2 METHODS

2.1 Terminologies and definitions

An estimation of forest-related employment necessitates a clear and consistent definition of the forest sector. In this study, the forest sector corresponds to the International Standard Industrial Classification (ISIC), encompassing three main subsectors, i.e. forestry and logging (forestry), the manufacture of wood and products of wood (wood industry) and the manufacture of pulp, paper and converted paper products (paper industry). As specified by ISIC Revision 4 (United Nations, 2008), the forestry subsector (ISIC division A02) incorporates silviculture, raw wood-producing activities, the extraction and gathering of non-wood forest products, and products that undergo little processing in the forest, such as firewood and charcoal. The wood industry (ISIC division 16) covers the manufacturing of semi-finished wood and products of wood. The paper industry (ISIC division C17) refers to the manufacture of pulp, paper and converted paper products.

2.2 Data

The comprehensive review of possible data sources revealed that the ILO microdata is the best available database providing comparable and robust employment statistics. ILO employment microdata is derived from the systematic international standardization

of national Labour Force Surveys (LFS) or similar household surveys. Following the 13th International Conference of Labour Statisticians (ICLS) definition, the concept of total forest-related employment in this study refers to the sum of persons in employment with formal and informal jobs, which the latter cover persons engaged in forest-related production for their own final use and thus constituting an essential basis for their livelihood.

ILO employment microdata are recorded in the unit of headcount. From a time series perspective, however, ILO employment microdata is only available for the years in which LFS or other similar household surveys took place, resulting in information on various data points may be missing in a given year. The employment estimates in this study were thus derived from an average of three years between 2011 and 2019, resulting in three reference periods: 2011–2013, 2014–2016 and 2017–2019, respectively. The analysis covers 185 countries, representing 99 per cent of the global forest area.

2.3 Estimation procedure

The measurement of ILO employment data aligns with international guidelines that allow for comparable and standardized data for all countries and regions. Moreover, ILO microdata allows for a breakdown of employment statistics by nature of jobs and gender. Despite this, an overview of global forest-related employment requires substantial country coverage beyond the current provision. The present study endeavours to fill the gaps in the missing forest-related employment data points. The "wave-based method" was developed on the assumption that the distribution of sub-sectoral forest-related employment and employment of the main economic activities are closely related.

The method involves two main steps. In the first step, a balanced panel of data of countries that reported at least one data point on employment is generated for each forest-related subsector. For instance, a missing data point in forestry is estimated using ILO modelled estimates in agriculture factored by the country employment coefficient. The country-specific employment coefficient is the share of forestry employment in ILO modelled estimates in agriculture to the closest available data point. The same procedure is applied to the wood and paper industry subsectors using the ILO modelled estimates in manufacturing as a benchmark.

The second step is to estimate the forest-related employment figures for countries not covered by the ILO microdata. The procedure assumes that countries in the same geographical domain are likely to be homogeneous in terms of forest-related employment. The balanced panel of forest-related employment data derived from the first step and the ILO-modelled estimates are thus used to generate regional employment coefficients for each subsector and data point. The number of persons employed for countries for which no data is available is therefore derived from the ILO-modelled estimates factored by the regional employment coefficient of the respective subsector.

3 RESULTS

The number of persons employed in the forest sector is estimated to be approximately 33 million for the period 2017-2019, accounting for about 1 percent of total employment

across all economic activities. Among subsectors, most of the workforce is in the manufacture of wood and wood products, representing 58 percent of total forest-related employment. Overall, a declining number of persons employed in the forest sector can be observed (Figure 1). The number of people employed in forest-related activities decreased by around 15 percent from the period 2011–2013 to 2017–2019. Reasons that may explain the decline of forest-related employment include increased productivity, for example, through mechanization and improved forest management practices, and the use of employment ILO-modelled estimates as the benchmark to fill in the gaps in missing data points. Globally, the share of agriculture and manufacturing in total employment has dropped across country income groups (ILO, 2019). Since this trend is reflected (in ILO-modelled estimates for the forest sector, this results in a decreased estimate of forest-related employment during the considered periods.

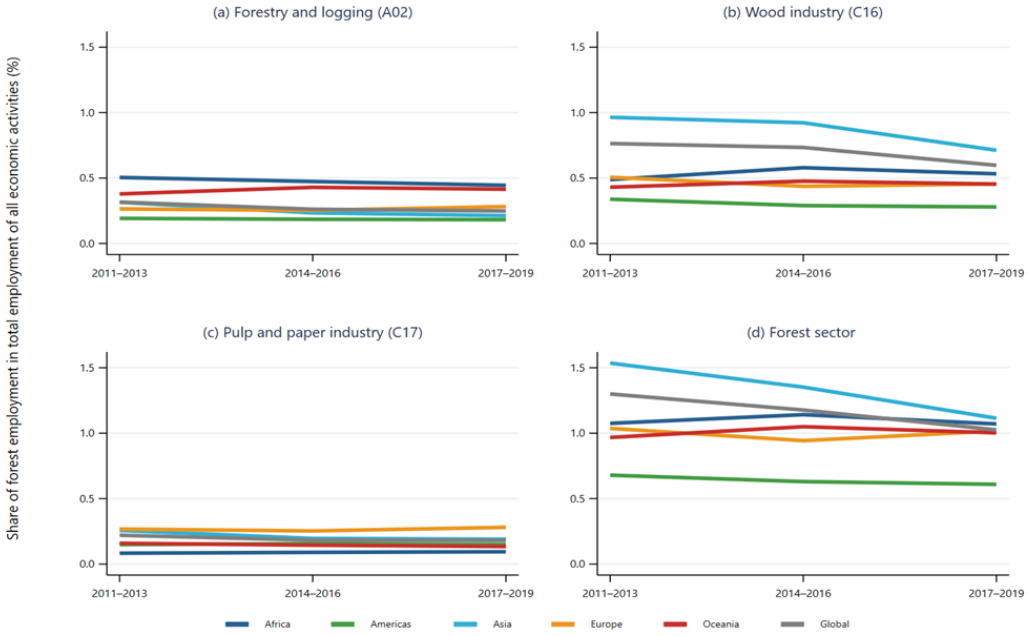

Figure 1. Employment trends by region and subsector (Lippe et al., 2022)

4 DISCUSSION AND CONCLUSION

Quantifying total employment in the forest sector, particularly at the global level, presents methodological challenges due to the lack of country coverage for which reliable employment statistics are available. The nature of forest-related work, which is characterised by a high degree of informality and seasonality, makes it more challenging to capture the full extent of the total workforce. The wave-based method is a promising way to deal with incomplete time series and to get a global overview of how many persons are employed in the forest sector. Nonetheless, some uncertainties should be highlighted. First, the method applied to fill data point gaps use employment estimates modelled by the ILO- as a benchmark. In that sense, the estimated number of persons in employment for missing data points are “imputations on imputations”. This caveat could also affect the accuracy of the estimated number of persons in employment in the forest sector in general. Second, the forest-related employment numbers for several

countries are derived solely from ILO-modelled estimates and estimated regional employment coefficients. The fact that there are countries with no forest-related employment data available could lead to over- or underestimation of global employment in the forest sector. This is true, particularly in countries with a significant forest sector labour market. Finally, the current estimate of forest-related employment is based on all countries included in ILO-modelled estimates. However, some subsectors may not appear in all countries used in the estimating process. The number of employed persons in the forest sector could thus be overestimated. This study, therefore, highlights the need to further refine the method in order to minimise the uncertainties affecting the accuracy of the estimates. The importance of forests and the forest sector for people's livelihoods underlines the need to ensure the availability of reliable and comparable statistical data on forest-related employment.

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