

Informal Employment in the Forest Sector: A Scoping Review

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Abstract: Informal employment has been observed for decades and inevitably accompanies the formal economy globally, and it does not disappear to date along with economic growth. Particularly in developing countries, informal employment has increased beyond expectation. This scoping literature review, therefore, aims to identify and analyze the magnitude, causes, characteristics and socioeconomic effects of informal employment in the forest sector on a global scale. The literature analysis reveals that informal employment is predominant in the forest sector. Poverty, lack of education and migration are the causes of informal employment both in general and in the forest sector. Informal employment in the forest sector has various decent work deficits. At the same time, informal employment in the forest sector has induced and enlarged socioeconomic effects of working poverty and occupational accidents and illnesses.

Keywords: cause of informal employment; characteristics of informal employment; socioeconomic effects of informal employment; scoping review; forest sector



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1. Introduction

According to the International Labor Organization (ILO), more than six workers out of ten and four enterprises out of five in the world belong to the informal economy [1]. In accordance with the ILO [2], approximately two billion workers worldwide, who constituted 61.2% of the global workforce in 2016, were informally employed. Among these, 51.9% was in the informal sector, 6.7% in the formal sector and 2.5% in the household unit. Moreover, developing and emerging countries, with comparatively low socio-economic development levels, occupied 93% of the global informal employment. Overall, 69.6% of the employment in these countries was informal employment, in contrast to only 18.3% in developed countries. Furthermore, informal employment accounted for 85.5% of total employment in Africa, 68.2% in Asia and the Pacific, 68.6% in the Arab States, 40.0% in the Americas, and 25.1% in Europe and Central Asia. The ILO [2] also depicts that own-account worker is the largest group of informal employment globally and regionally. Agriculture, with 93.6% of informal employment, is the sector with the highest rate of informality, followed by industry with 52.2% and services with 47.2%. The study further reveals that informal employment exists not only in the informal, but also in the formal sector and household sector. In other words, informal employment is a very widespread phenomenon in the economy and society. Formal and informal work are not clearly separated into two worlds, but are interconnected [3].

Understanding the situation of informal employment well requires clear and internationally comparable definitions. Over the decades, the definition and concept of informal employment have been developed and described from different viewpoints. In accordance with the ILO, informal employment is defined as “the total number of informal jobs, whether carried out in formal or informal enterprises, or the total number of persons engaged in informal jobs during a given reference period” [4]. It defines informal employment in a quantitative manner and reflects a statistical concept of informal employment.

Another definition of informal employment was presented at the 17th International Conference of Labor Statistics (ICLS). “Employees are considered to have informal jobs if their employment relationship is, in law or in practice, not subject to labour legislation, income taxation, social protection or entitlement to certain employment benefits (advance notice of dismissal, severance of pay, paid annual or sick leave, etc.)” [5]. Ahn and Ahn [6] define informal employment as “jobs or activities in the production and sale of commercial goods and services that are not regulated by law”. The above two definitions of the ICLS and [6] are similar, because both define informal employment in terms of the quality of informal employment.

In the present study, we use the following detailed definition of informal employment, which defines informal employment in a more concrete way. Before this, we would like to describe the definition of employment. The Cambridge Dictionary says employment is the fact of someone being paid to work for a company or organization. This is a general definition of employment. The ILO defines employment as people of working age who are reported to produce goods or provide services for at least one hour for pay or profit or have a work from which being absent is only temporary [7]. This definition talks about employment from the standpoint of formal work. On the contrary, informal employment comprises [8]:

- (a) Those in the informal economy who own and operate economic units, including (i) own-account workers, (ii) employers and (iii) members of cooperatives and of social and solidarity economy units.
- (b) Contributing family workers, irrespective of whether they work in economic units in the formal or informal economy.
- (c) Employees holding informal jobs in or for formal enterprises, or in or for economic units in the informal economy, including, but not limited to, those in subcontracting and in supply chains, or as paid domestic workers employed by households.
- (d) Workers in unrecognized or unregulated employment relationships.

Forest plays an important role in the economy and society and is an important source of food, fuel wood, construction material and medicinal products, specifically for the rural population. Particularly in developing countries, informality, low productivity and wages, as well as hazardous working conditions are features of labor in the forest sector. Estimates in 2011 revealed that 13.2 million people across the world were formally employed in the forest sector, which includes roundwood production, wood processing and pulp and paper [9]. At least additional 41 million, accounting for 75% of total forest-related employment, was employed in the informal forest sector during the same time period.

Employment in general is the dominant source of income for the majority of the population. It may determine the standard of living and drive economic development [10]. Paying attention to informal employment in the forest sector is compliant with ILO’s Decent Work Agenda and the United Nation’s 2030 Agenda for Sustainable Development. The transition from informal to formal employment is consistent with the Sustainable Development Goal 1 “End poverty in all its forms everywhere”, Goal 5 “Achieve gender equality and empower all women and girls”, and Goal 8 “Promote sustained inclusive and sustainable economic growth full and productive employment and decent work for all” and can help the realization of other goals in these programs.

To the best of our knowledge, no effort has been made yet to literature review and analysis of the magnitude, causes, characteristics and socioeconomic effects of informal employment in the forest sector. The paper attempts also to identify research gaps related to informal employment in the forest sector on a global scale. Hence, a scoping literature review is conducted. The scoping review method was selected, since it has been developed to review and analyze rather broad topics [11]. The research questions of this literature review are:

- (1) How did the magnitude of informal employment in the forest sector (forestry and logging, wood industry and paper industry) change over time?
- (2) Which factors cause and characterize informal employment in the forest sector?
- (3) What are the socioeconomic effects of informal employment in the forest sector?

The results of our literature review and analysis should help to identify starting points and provide guidance for research on informal employment in the forest sector. The outline of this paper is as follows. Section 2 describes the methodology used in our study. Section 3 presents the results of the literature review and analysis of the dynamics, causes and characteristics of informal employment in the forest sector as well as decent work. Section 4 discusses our main results followed by the conclusion.

2. Methodology

For a first assessment of the state of research on informal employment in the forest sector and the choice of our method of the subsequent in-depth literature review, we started with an orientating literature study. This revealed a lack of suitable amounts of literature on informal employment in the forest sector. Consequently, instead of a systematic literature review, we chose scoping review as our method. To strengthen our literature analysis, we further utilized the available statistics about informal employment in agriculture and non-agriculture as benchmark to address the situation and magnitude of forest-related informal employment.

2.1. Literature Source Identification and Search Strategy

The sources of our bibliographic databases for our literature search comprise the Food and Agriculture Organization (FAO), the ILO, Google Scholar, Scopus and the Web of Science. The reference period of this literature study is 2010 to 2020. The following combination of search strings was used:

- Search string 1: informal AND employment;
- Search string 2: informal OR employment;
- Search string 3: the forest sector;
- Search string 4: informal employment in forest;
- Search string 5: informal AND employment AND in forest;
- Search string 6: informal OR employment OR in forest;
- Search string 7: informal employment forest;
- Search string 8: informal AND employment AND forest;
- Search string 9: informal OR employment OR forest.

The analysis of titles, abstracts or introductions of the publications found with the different search strings revealed that “informal employment forest” gave the highest number of on-topic publications.

Applying “informal employment forest” resulted in 2898 matching FAO publications in English for the period 2010–2020. The 1000 publications ranked as most relevant were selected for the first screening. Among ILO publications, 916 publications in English were found with the search string “informal employment forest”. All publications found were selected for the first screening. In Google Scholar, 51,600 matching publications in English were found with “informal employment forest”. Out of these, the first 300 publications were selected for the first screening. In Scopus and the Web of Science, 30 and 10 matching publications were found, respectively. All of them were selected for the first screening. This searching process has been illustrated in Figure 1 step 1.

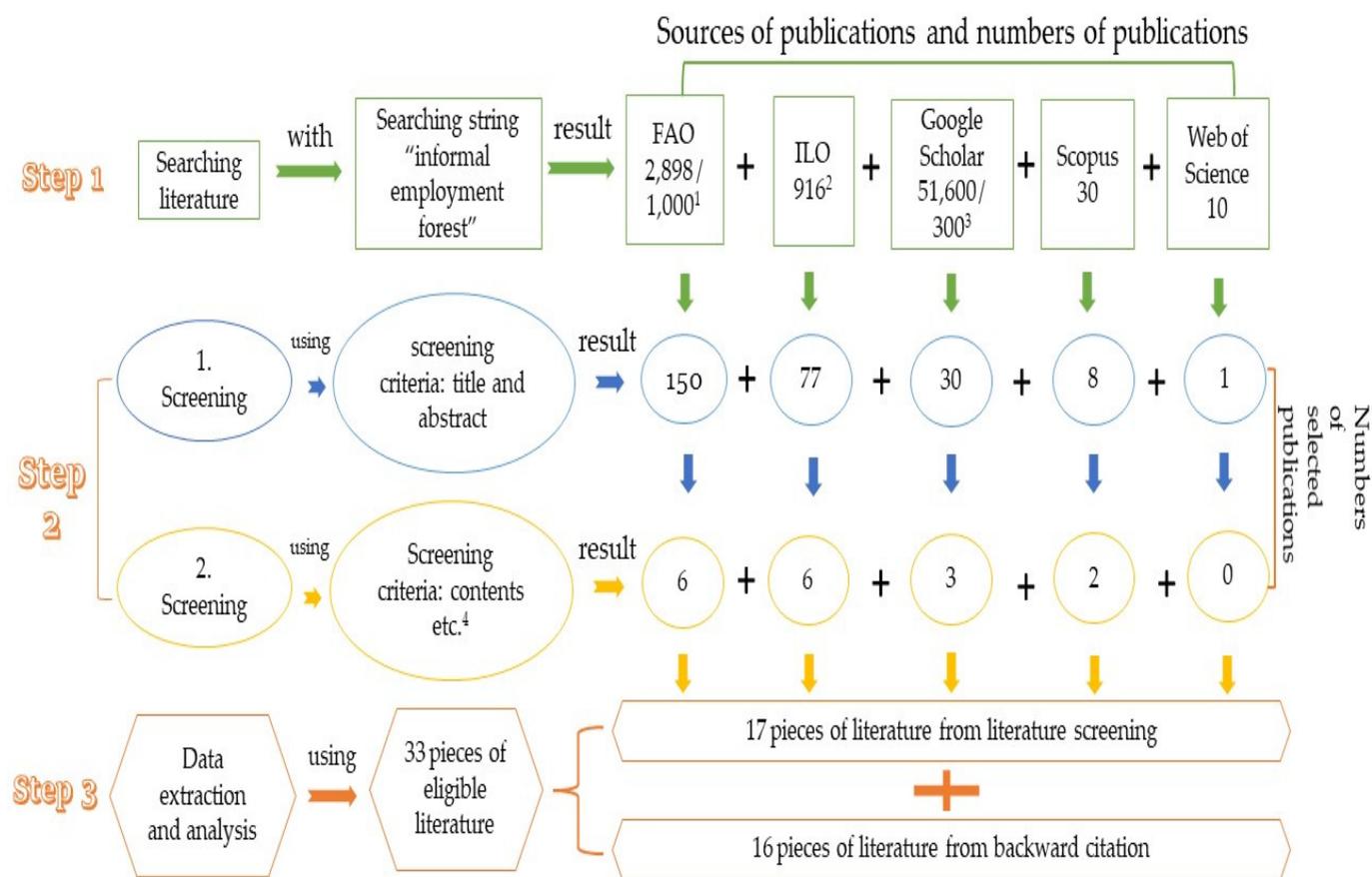


Figure 1. The procedure of literature screening. ¹ The searching result is 2898 pieces of literature, and we used the first 1000 publications. ² The searching result is 916 pieces of literature, and we used all. ³ The searching result is 51,600 pieces of literature, and we used the first 300 publications. ⁴ Contents etc.: table of contents, outline, executive summary, introduction, and if necessary relevant chapters.

2.2. Literature Screening

The screening process was performed by two steps illustrated in Figure 1 step 2. Screening criteria permit decisions as to which part of the literature should be read by the authors in the screening process. In the first step of literature screening, the titles and abstracts of the publications were read. As a result of the first literature screening, 150 relevant publications from FAO, 77 from the ILO, 30 from Google Scholar, 8 from Scopus and 1 from the Web of Science were selected for further screening. This is illustrated in the first line of step 2 in Figure 1.

In the second step of screening, we read outlines, executive summaries, introductions and relevant chapters of the publications. In the case of peer-reviewed papers, we read the entire publication. Through the second screening, we obtained in total 17 publications, including 6 from FAO, 6 from the ILO, 3 from Google Scholar and 2 from Scopus. The second line of step 2 in Figure 1 illustrates this step.

The relevance of the literature was evaluated according to the analytical criteria defined in Figure 2. Analytical criteria in Figure 2 are used in the screening to judge whether these themes are covered by the literature. We have defined six analytical criteria for the literature review (cf. first and second column of Figure 2). These analytical criteria have been selected to address the aspects of the research questions. Criterion 1 and 2 correspond to research question 1; criterion 3 and 4 correspond to question 2; criterion 5 and 6 correspond to question 3. The first column of Figure 2 describes each criterion, and the second column specifies the content of analysis. The third column provides details about the scope of each criterion.

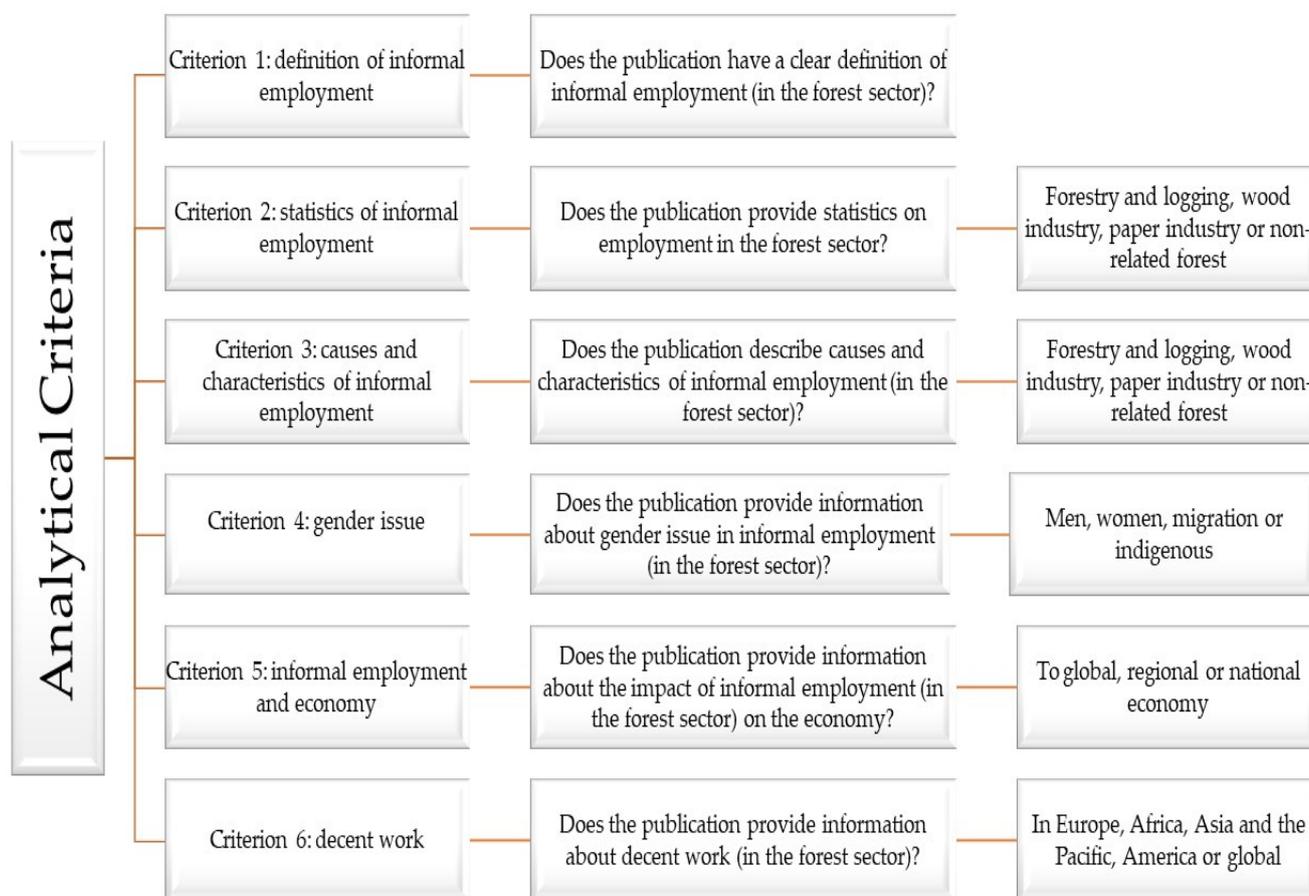


Figure 2. The analytical criteria of literature screening.

In order to test the applicability of the analytical criteria, the first and second author independently read the first 10 publications randomly selected from the total 2256 publications. Subsequently, the two authors randomly selected and independently read another 10 publications to verify again the applicability of the analytical criteria. As a result, no further adjustment to the analytical criteria was required. All of the literature examined in the two steps was finally also examined by the third author. After the verification, the first author read all the literature acquired from the step 1 of Figure 1. As a result of the screening of titles and abstracts, 266 publications were selected for the second screening.

For the second screening, after verification of the analytical criteria, in line with the scoping review implemented by [12], the first and second author first of all read 25% of the selected 266 pieces of literature in order to avoid any bias. Each of the two authors, who read the 25% of the selected publications independently, checked the relevance of that literature against the analytical criteria and discussed the results with the third author. A publication that was rated as relevant if at least two of the three authors had selected it for the third screening, i.e., for data extraction and analysis. This result is the step 3 in Figure 1. The first author screened all selected 266 publications.

As a result of the second screening, 17 publications listed in Table 1 were selected for a thorough literature analysis. Table 1 presents the eligible literature including analytical criteria that are covered by each publication. In the process of literature analysis, we have also obtained relevant literature from backward citation of the eligible literature. Table 2 lists the eligible literature from backward citation in accordance with the analytical criteria. In total, 33 publications were analyzed.

Table 1. Eligible literature after literature screening.

Sequence Number	Author	Year of Publication	Quality of Paper	Geographical Coverage	Criterion 1 Definition	Criterion 2 Statistics	Criterion 3 Causes and Characteristics	Criterion 4 Gender Issue	Criterion 5 Economy	Criterion 6 Decent Work
1 [13]	Garland, J. J.	2018	grey literature	global			yes			yes, global
2 [14]	FAO	2014	grey literature	global					yes, global	
3 [15]	ILO	2019	grey literature	Vietnam			yes			yes, Asia
4 [16]	ILO	2019	grey literature	global			yes	yes		yes, global
5 [17]	FAO	2017	grey literature	Kosovo				yes		
6 [18]	Renner, M. et al.	2008	grey literature	global		yes, non-related forest				
7 [19]	Osei-Tutu, P. et al.	2010	grey literature	Ghana					yes, SMEs	
8 [20]	Chen, M.A. et al.	2004	book	global				yes	yes, global	yes, global
9 [21]	Garland J. et al.	2020	grey literature	global						yes, global
10 [22]	Ahn, P.-S.	2007	grey literature	global	yes					
11 [23]	ILO	2011	grey literature	global						yes, global
12 [24]	Estruch, E.; Rapone, C.	2013	grey literature	global						yes, global
13 [25]	ILO	2019	grey literature	global			yes			yes, global
14 [9]	FAO	2014	grey literature	global		yes, non-related forest	yes			
15 [2]	ILO	2018	grey literature	global				yes		
16 [26]	Ackerknecht, C.	2010	grey literature	global	yes					yes, global
17 [8]	ILC	2015	grey literature	global	yes					yes, global

Note: The numbers in the square brackets are the sequence numbers of the respective publication according to the list of references (cf. pp. 19–21).

Table 2. Eligible literature from backward citation.

Sequence Number	Author	Year of Publication	Quality of Paper	Geographical Coverage	Criterion 1 Definition	Criterion 2 Statistics	Criterion 3 Causes and Characteristics	Criterion 4 Gender Issue	Criterion 5 Economy	Criterion 6 Decent Work
18 [27]	Adam, Y.O.; Pettenella, D.	2013	peer-reviewed	global					yes, SMEs	
19 [28]	Carr, M.; Chen, M.A.	2001	grey literature	global	yes			yes	yes, global	
20 [29]	FAO	2007	grey literature	global					yes, global	
21 [30]	FAO	2020	grey literature	global		yes		yes		yes, global
22 [31]	UNECE and FAO	2020	grey literature	global			yes	yes		yes, global
23 [32]	ILO	1998	grey literature	global			yes			yes, global
24 [4]	ILO	2002	grey literature	global			yes			yes, global
25 [33]	ILO	2011	grey literature	global		yes				yes, global
26 [34]	ILO	2013	grey literature	global	yes			yes		yes, global
27 [3]	ILO	2019	grey literature	global				yes		yes, global
28 [35]	ILO	2019	grey literature	global				yes		yes, global
29 [36]	Karabchuk, T.; Zabirowa, A.	2018	grey literature	global						yes, global
30 [37]	Husmanns, R.; Jeu, B.d.	2002	grey literature	global	yes	yes				
31 [38]	Rothboeck, S.; Kring, T.	2014	grey literature	global			yes			yes, global
32 [39]	Slonimczyk, F.	2014	grey literature	global			yes			
33 [40]	IIED	2018	grey literature	global					yes, SMEs	

Note: The numbers in the square brackets are the sequence numbers of the respective publication according to the list of references (cf. pp. 19–21).

3. Results

As the final result of the literature screening, in total 33 publications (17 identified by search string and 16 by backward citation) were selected for a thorough literature analysis. The rather small number of eligible publications very well reflects that informal employment in the forest sector is not extensively covered by publications. The majority of publications are comprised of grey literature, including reports and working papers of FAO and the ILO. Both global and national issues are discussed by these sources. Three of the eligible publications discuss national issues and the others discuss issues on a global scale. Among the themes covered by these sources, informal employment, occupational safety and health (OSH), decent work, and gender are the most important ones.

In the following sections, results of the literature analysis regarding the magnitude, causes, characteristics and socioeconomic effects of informal employment in the forest sector are presented.

3.1. The Magnitude of Informal Employment in the Forest Sector

One important fact of the dynamics of informal employment is that informal employment does not gradually decrease or disappear in pace with economic development, which is contrary to many people's expectations [20]. Not only developing countries, but also developed countries have informal employment, though with a new guise [34] (Section 3.1). The shares of informal employment in developing and emerging countries (69.6%) are higher than that in developed countries (18.3%) [2]. Globally, informal employment in rural areas is almost twice the size of that in urban areas with 43.7% [2].

Table 3 and Figure 3 present the dynamics of informal employment and informal employment in agriculture and in the non-agriculture sector, respectively, in 10 developing countries from 2010 to 2019. The two diagrams prove that informal employment has never disappeared in the wake of economic development regardless of the sector. Table 3 shows the number of informal employments in the 10 countries in the period of 2010–2019. These numbers have illustrated that informal employment exists all the time in these countries in last years. In Figure 3, the GDPs of the 10 countries have consistently expanded from 2010 to 2019, which means the economies of these countries have grown constantly over time. In comparison to the growth of the economy, informal employment in these countries has neither been eliminated in agriculture nor in non-agriculture. For the informal employment rate of the forest sector, we can refer informal employment rate in agriculture, since in the ILOSTAT, the forest sub-sector is included in agriculture. It can be seen from the figure that most developing countries have high and constant informal employment rates in agriculture.

Furthermore, the 10 countries depicted in Figure 3 have larger informal employment rates in agriculture than in non-agriculture. This is a general phenomenon and different only in certain years and certain countries. ILO statistics on the informal employment rate by economic activity include only developing countries, and the informal employment rates in agriculture in many of these countries account for more than 90% to nearly 100% of total employment in agriculture.

Ackerknecht [26] also argues that much of the work in the forest and wood industries is informal. The author points out that developing and transition countries have much more informal employment than developed countries. Only 23% of workers in all sectors are under social protection and welfare systems in developing countries, in contrast to 86% in developed countries. FAO statistics on informal employment revealed that 41 million people were employed in the informal forest sector, whereas 13.2 million were employed in the formal forest sector in 2011, and the informal sector has created 124 billion USD revenue in that year [9]. Moreover, 840 million people were collecting fuelwood and charcoal for their own use, accounting for 12% of the world's population [9].

Table 3. Informal employment (thousands).

	Bosnia and Herzegovina	Brazil	Colombia	Costa Rica	Ecuador	Mongolia	Peru	Serbia	South Africa	Uruguay
2010	271.4	–	12,909.5	722.0	4104.1	538.9	12,145.1	542.6	4749.5	637.5
2011	252.0	41,811.8	13,247.3	635.5	3973.2	583.9	12,077.1	464.1	4654.5	629.5
2012	274.1	41,637.7	13,608.5	732.3	3984.4	618.7	11,775.9	421.2	4630.1	565.7
2013	258.9	41,522.7	13,524.9	785.2	4016.6	621.4	11,708.7	526.9	4848.9	571.6
2014	237.7	43,340.1	13,473.9	801.8	3928.6	553.2	11,586.9	628.9	4921.2	390.9
2015	247.5	41,857.5	13,794.5	817.6	4162.1	575.5	11,717.4	605.2	5473.1	393.7
2016	244.2	41,151.7	13,733.7	755.8	4561.3	581.5	11,770.2	657.5	5413.4	403.7
2017	202.5	42,303.6	13,769.9	783.6	4855.6	635.3	11,896.2	605.1	5607.9	396.2
2018	182.1	43,320.6	13,946.1	801.3	4870.2	611.4	12,178.8	560.9	5792.8	391.8
2019	185.5	44,311.5	13,755.0	843.7	4984.2	475.7	12,338.7	541.7	5747.8	389.8
2020	167.7	39,919.8	–	709.3	–	481.3	11,038.0	491.6	4798.2	–

Data Source: ILOSTAT, <https://ilostat.ilo.org/topics/informality/> (accessed on 9 December 2021).

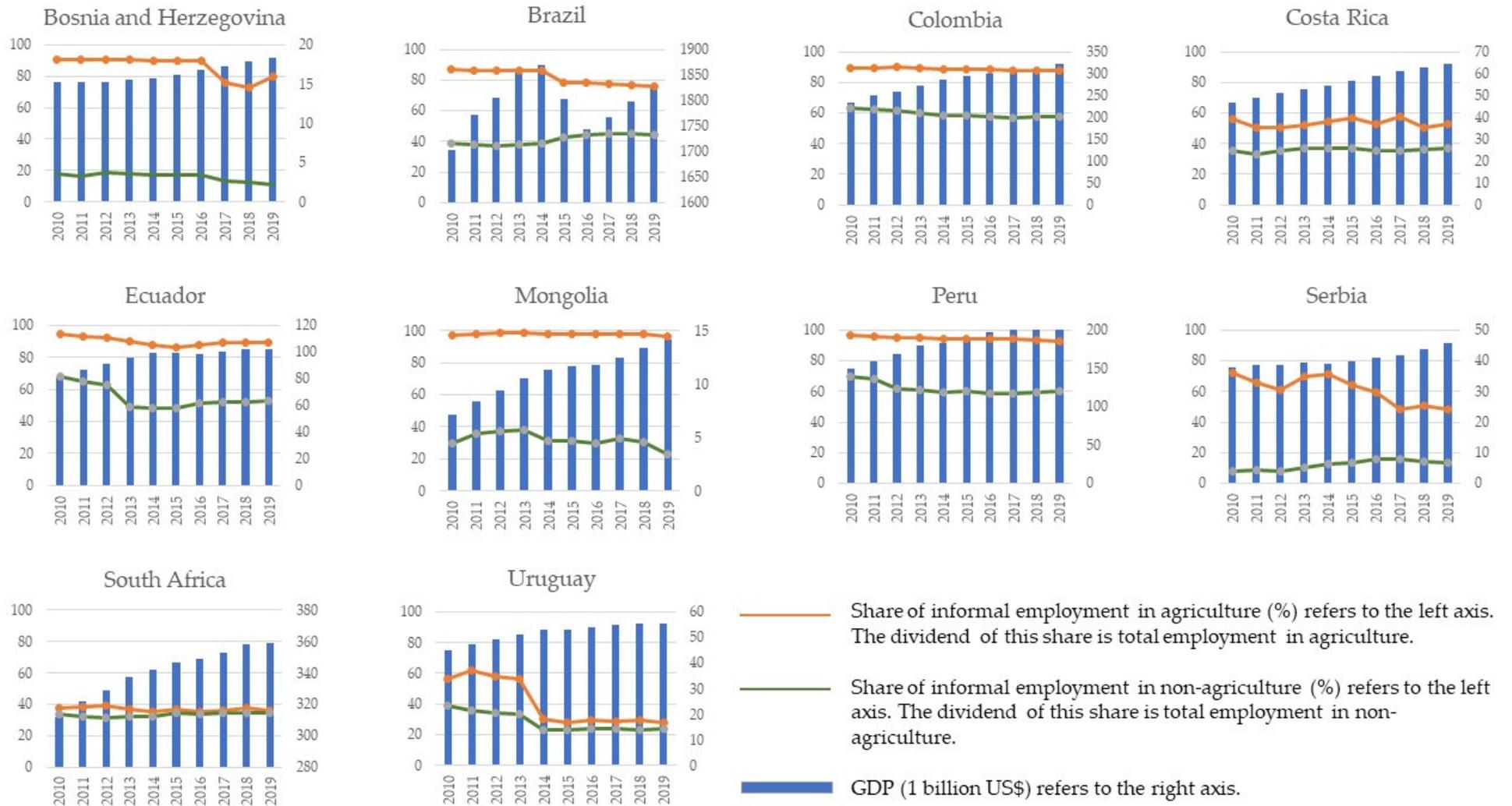


Figure 3. Share of informal employment (agriculture and non-agriculture) and GDP (Constant 2015 US\$) over the year 2010–2019. Data Source: ILOSTAT.

3.2. Causes of Informal Employment in the Forest Sector

3.2.1. Poverty and Flexibility

Poverty is deemed to be a primary cause for people entering into informal employment [4,20] even though many informal jobs can only provide limited income and dangerous working conditions and cannot ensure to pull them out of poverty usually. Underemployment and unemployment could induce poverty, and poverty could be further exacerbated without unemployment compensation [20]. Under the circumstances, people often have to enter into informal employment when there is poverty and no job opportunity in the formal sector and other means of livelihood. As poverty is a reason for general informal employment, it is reasonably believed that poverty is also a cause of informal employment in the forest sector. However, poverty exists not only in informal employment, but also in formal employment, for example when income of formal employment is low or a large number of family members depend on a low income [2].

Even though poverty is a cause of informal employment, not all workers in informal employment are in poverty, because some people enter or stay in informal employment for the sake of evading official procedure and tax declaration [34] (Section 1.1). Slonimczyk [39] also argues that better opportunities of upward mobility are the reason why workers enter into informal employment voluntarily. Some workers enjoy flexibility and autonomy of the informal sector, such as self-employment, and workers can have better opportunities in the informal sector than in the formal sector given their education and experience. Apart from this, self-employed and micro-entrepreneurs have higher earnings as informal. Poor institutional design makes the public insurance unappealing, if coverage could be substituted by other means, such as through a spouse with a formal job.

3.2.2. Education and Training

The lack of professional knowledge and vocational training is usually acknowledged as a characteristic of informal workers and as a reason for their inability to find a formal job or run a business [4]. Education has a negative correlation with informal employment: the more educated the people are, the less they are in informal employment and vice versa. This has been proven both in the emerging and developing countries as well as in developed countries. Regardless of emerging and developing countries and developed countries, the share of informal employment in total employment decreases from no education, primary education, secondary education to tertiary education [2].

The publications reviewed do not indicate that the negative correlation between education and informality would be any different in the forest sector. This negative correlation can be applied not only to employees, but also to employers: the more education the employers have, the less of them have informal enterprises. This is also applicable in both developing and developed countries [2].

In accordance with the ILO, the main method by which workers in developing countries find their jobs is through their personal network, that is through friends, relatives, or other members in their social network [35]. This means, if a worker is informally employed, his friends, relatives, and acquaintances who seek a job by his assistance will probably also become informal workers. The phenomenon of finding a job primarily through a personal network could be explained by information asymmetry due to an imperfect job search system. In other words, job announcements by employers in the formal sectors cannot be accessed by jobseekers due to inaccessibility of information or low educational level of jobseekers. Unlike in developed countries, media and internet are rarely used to find employment in developing countries [41]. Alongside this, formal employment agencies, public, private, university/school career office, and employment with apprenticeship coordinated by vocational school are also not used widely by jobseekers in developing countries [41]. Although not specifically indicated in the reviewed publications, there is no evidence that information asymmetry is not a cause of informal employment in the forest sector, too.

The development of economy, particularly the growth of capital-intensive and high-tech industries, has resulted in the mode of jobless growth and the demand of high-skilled workers in the industrial and service sectors [4]. As a result, not only employers are willing to have informal employment to reduce labor costs and adapt to the changing market conditions, but also employees are forced into informal employment owing to their insufficient qualifications for a job [36]. This could also happen in the forest sector and result in more informal employment along with the development of capital-intensive and high-tech industries.

3.2.3. Migration

Migration increases informal employment. Migrant workers are mainly in low-skilled and informal employment, and wages of informal migrant workers are significantly lower than those of formal workers [34] (Section 6.2). In Latin America and elsewhere, substantial rural–urban migration, mostly for better health care and educational facilities, has accelerated urbanization and contributed to the increase of informal employment [4]. Although publications do not provide specific information, it is likely that migration from rural to urban areas increases informal employment in enterprises of the forest sector located in urban areas.

It is worth noting that, although migration increases informal employment in urban areas, informal employment is still higher in rural areas [37]. Unfortunately, publications do not explain why. Apart from this, migrants in foreign countries tend to be employed informally or become informal workers, especially when they are illegal and/or have insufficient language and workings skills.

3.3. Characteristics of Informal Employment in the Forest Sector

3.3.1. Security Deficits

Most of the workers in the forest sector are informally employed and concentrated in small and medium-sized enterprises (SMEs). SMEs have provided 75% of all jobs in the forest sector [16] and taken up 80–90% of employment in all forest enterprises in some countries [40]. A study of the Ghanaian forest sector showed that the Ghanaian forest sector enterprises are predominantly informal and SMEs. They are not registered under national legislation and are outside of association, legality and tenure security. Many policies and programs, however, are only aimed at formal and large-scale enterprises, not at informal enterprises [19]. Despite this, the case of Ghana manifests that informal enterprises and workers in the forest sector can contribute significantly to poverty reduction, people's income and livelihood as well as local economic development, even more than the formal ones.

Informal employment cannot just be described as no rules or regulations at all. Actually, informal employment has informal or private rules that are implemented by the groups of informal workers in the course of their working activities. Nonetheless, informal employment does not provide [4]:

- ◆ Labor market security. Informal employment lacks employment opportunities, such as high-level employment, and access to public infrastructure.
- ◆ Employment security. Legal and social protection for pension and maternity, social protection against occupational accidents and illnesses, protection against arbitrary dismissal, regulation on hiring and firing, employment stability compatible with economic dynamism are not available for informal employment.
- ◆ Skill reproduction security. Training, apprenticeships and access to new technology and equipment are very limited to informal employment. The majority of workers in the forest sector has inadequate skills and qualifications [24], and among informal workers this situation is even worse. The unwillingness of enterprises to provide training has exacerbated the skill enhancement of informal workers.
- ◆ Income security. Informal workers often have unstable and insufficient income. Many can be described as “working poor”. One study on the informal carpentry sector in

Sudan [27] found that 88% of the enterprises employed only 1.5 workers on average and 12% of the enterprisers employed 3 workers. The workers were mostly unpaid or poorly paid apprentices. Workers in the sector were only employed when there is heavy workload.

- ◆ Representation security. Informal workers are not represented by trade unions and have no voice there. Without trade unions and social dialogue, informal workers cannot claim their rights at work and even do not know their rights. This has further deteriorated the plight of informal workers.

Although working in informal employment is not necessarily associated with poverty, the phenomenon of working poverty is more prevalent in informal employment than in formal employment. For instance, as a result of their studies of the informal carpentry sector in Sudan, Adam and Pettenella [27] mention that the earnings of rural informal workers are equal to low paid workers in the formal sectors. Furthermore, the authors reveal that due to the inadequate managerial quality and public relations, the employers in the informal sector do not focus on how to improve their enterprises, but on blaming the constraints facing their business.

In addition, the ILO [42] argues that the creativity and innovation of entrepreneurs in the informal sector that are essential for social and economic development have been weakened because of the bare livelihood provided in the informal economy. The two sides have induced a vicious circle to entrepreneurs: on account of the lack of personal ability, entrepreneurs have to enter into the informal sectors; afterwards, the precarious working conditions of the informal sectors would further lower the creativity and innovation of the entrepreneurs. Informal employees are also confronted with such vicious circle, since they face a similar or worse situation than the employers in the informal sector.

3.3.2. Occupational Accidents and Illnesses

Working in the forest sector is one of the most hazardous activities, with high numbers of occupational accidents and illnesses, including fatalities, traumatic injuries, disabling accidents, near-miss incidents, non-fatal occupation injuries and work-related illnesses [21]. Work-related illnesses in the forest sector include Lyme disease, heat stroke and heat-related ailments, disease caused by cold weather, obesity and diabetes among sedentary truck drivers and machine operators, skin cancer and human immunodeficiency virus infections [13]. Alongside this, the remote and challenging working space, the involved chainsaw, heavy machinery, climbing, and exposure to chemicals are also major factors for high accident rates in the forest sector [25].

Mechanization and new technologies, on the one hand, could improve productivity, while on the other hand, they could also give rise to new accidents in the workplace [3]. This challenge asks for upgraded training and education for workers to master new machinery and skills. Regarding the forest sector, general legislation on operational safety and health (OSH) is insufficient, and a professional forestry-specific industrial system for OSH needs to be created [25].

3.3.3. Gender and Informal Employment in the Forest Sector

Gender imbalance is also noteworthy in formal and informal employment in general and in the forest sector. A report of the ILO [35] states that in contrast to men, women are less informally employed globally. Overall, 63% of men have been employed informally, versus 58% of women. Altogether, 740 million out of 2 billion workers in informal employment were women, and this held true both in developing and developed countries, as well as in agricultural and non-agricultural sectors [2]. However, in low- and lower-middle-income countries, informal employment is higher for women, whereas in upper-middle- and high-income countries, informal employment is higher for men [2].

Among contributing family workers, the share of women is much larger than that of men, globally. Nonetheless, the incidence of contributing family work is degressive along with income growth, from around 30% in low-income countries and less than 1% in high-

income countries in 2018 to around 1% globally in the next five years [35]. Additionally, the shrinking tendency is expected to be more intensive in middle-income countries and among women [35].

In physically demanding jobs, women are excluded due to their physical limitations. Forestry and logging, manufacture of wood, sawmilling and manufacture of paper and paper products are characterized by physically demanding work and jobs with difficult working conditions, including outside work, extreme temperatures, contaminants, hazardous equipment and noise. The majority of women is engaged in collection of woodfuel or harvesting of medicinal plants and other non-wood forest products (NWFPs) [16] or working in administration. Like in other businesses and enterprises, women are under-represented in senior positions and trapped in informal and low paid or unpaid jobs in the forest sector [31,42]. “It is well known that the forestry sector is heavily male-dominated: for example, the share of women among forest professionals is very small, particularly at municipal level, and forest work is often perceived as being limited to timber production only (including the cutting and selling of trees), which requires physical strength. Consequently, women are significantly under-represented in decision-making processes in relation to forests and the products and services that forests provide” [17] (p. 3).

An assessment of gender issue in Kosovo’s forestry conducted by FAO [17] found that “in general, women do not attend training for forest-related activities, and have less access to information, including forestry law. There are still some social constraints concerning women’s participation in forestry activities, including meetings and decision-making opportunities. Forestry work is not generally seen as ‘decent work’ for women. Because women might have young children, and are usually overloaded with the domestic activities that are socially attributed to them, they have difficulties attending meetings. Women relying on forests as a source of income (self-employed and subsistence) also have fewer opportunities to receive government loans, and are often not aware of government services for poor women or opportunities for microcredit” [17] (p. 23). All of the above factors have restrained women’s participation in forest work. The double burden of household and employment is not only common for women in Kosovo, but a global phenomenon [42].

The Kosovo’s case reflects the traditional view that women should do more homework and that forestry is a male profession. This is also limiting women’s engagement in forest-related activities. Moreover, the lack of knowledge about valuable products of forest, the absence from training and grant opportunities, and less access to information has also restricted women’s engagement in forestry activities [17].

3.4. Socioeconomic Effects of Informal Employment in the Forest Sector

3.4.1. Working Poverty

Informal employment in the forest sector is a long-term problem, and hence generates a variety of effects on the society and economy. On the one hand, informal employment provides jobs and income to workers in the forest sector and can reduce unemployment and underemployment. This is the positive side of informal employment. However, on the other hand, these jobs do not necessarily provide sufficient income and have various work deficits. In general, average earnings of informal employment is lower than that of formal [20]. Additionally, informal employment could be seasonal, irregular and short-term. All these result in instable and insufficient income and livelihood as well as augmented expenditure of informal workers [22]. Poverty is more common in informal employment than formal employment, and working poverty also happens easier in informal employment than formal. This also results from average lower and unstable income and higher expenditure of informal employment as compared with formal employment.

3.4.2. Negative Effects of Occupational Accidents and Illnesses

Traumatic injuries can be physical and mental. Both of them will often last for a long time. “The emotional and financial costs to workers and their families of fatalities and disabling injuries cannot be calculated” [13] (p. 48). The immeasurability of injuries

has produced huge loss especially to informal workers in the forest sector, who cannot receive or can only receive little legal and social protection and compensation. Injuries and illnesses could be devastating to informal workers and their families, because informal workers cannot earn income anymore and must pay for a huge amount of treatment and recovery costs.

In this context, “adequate social security coverage—including attention to risk prevention, health care and economic compensation for the harsh and potentially dangerous working conditions—is fundamental to improving working conditions in forests and timber industries” [26] (p. 63). Limited organization and supervision as well as the lack of skills are recognized as the causes of the majority of accidents [25], which shows although forest work is hazardous activity, accidents and injuries could be reduced and even avoided through endeavor. Good safety and health performance in forest work are possible and have also been proved by clear evidence [32].

3.5. Instruments to Mitigate Informal Employment

Regarding the above mentioned causes and effects, international organizations, such as FAO and the ILO, and national governments have planned and implemented numerous strategies and programs to decrease informal employment [15,43,44]. The decent work initiative has been promoted by international organization and countries to transform informal into formal employment.

Promotion of Decent Work

Decent work “involves opportunities for productive work that delivers a fair income, security in the workplace and social protection for families; good prospects for personal development and social integration; freedom for people to express their concerns and to organize and participate in the decisions that affect their lives; and equality of opportunity and treatment for all women and men” [24] (p. 2). The four pillars of decent work are employment, social protection, rights at work and social dialogue.

Obviously, informal employment cannot fulfill the conditions of decent work and is a form of work with large decent work deficits, which was expected to be eliminated along with economic development. However, de facto, informal employment could not disappear only because of economic growth [34] (Section 3.1). A legal framework and the execution of rules and regulations as well as policies and measures are necessary for the development of decent work and the transition from informal to formal employment.

“Decent employment in forestry is a key to improving food security and nutrition for millions of people who rely on forests for their livelihoods” [24] (p. 1). Promoting decent work in the forest sector means advancing the four strategic pillars of decent work—employment, social protection, rights at work as well as social dialogue. For the sake of reducing decent work deficits, various measures and policies have been proposed by scholars and organizations. Chen et al. [20] have put forward suggestions on the basis of the four pillars of decent work:

Goal 1: Promoting opportunities

Strategy 1.1—promoting employment-oriented growth;

Strategy 1.2—promoting a supportive environment;

Strategy 1.3—increasing access and competitiveness;

Strategy 1.4—improving skills and technologies.

Goal 2: Securing rights

Strategy 2.1—securing rights of informal wage workers;

Strategy 2.2—securing rights of the self-employed.

Goal 3: Promoting protection

Strategy 3.1—promoting protection against common contingencies;

Strategy 3.2—promoting protection for migrant workers.

Goal 4: Promoting voice

Strategy 4.1—organizing informal workers;

Strategy 4.2—promoting collective bargaining;
Strategy 4.3—building international alliances.

The ILO [16] has also brought forward their policies on improving informal employment: facilitating the transition to formal economy, enabling an environment for sustainable forest enterprises, enhancing skills and training, raising awareness on occupational safety and health, strengthening social protection and promoting effective social dialogue. The Recommendation 204 by the International Labour Conference proposes a framework to reduce informal employment [8]. Figure 4 illustrates what ILO's member countries should focus on to improve decent work in line with the Recommendation 204. These policies base also on the four pillars of decent work.



Figure 4. Framework to improve decent work of the Recommendation 204. Source: own illustration based on the Recommendation 204.

Both the measures and policies of decent work proposed by scholars such as Chen et al. [20] and organizations such as the ILO address the four pillars of decent work. The ILO has also put forward “channeling appropriate levels of investment, domestic and foreign, into those sectors of economy that increase labour absorption and improve productivity in the rural and urban economy is a significant part of the response to reducing the growth of informality” [34] (Section 3.1).

Causes and extent of informal employment are country specific [38]. Consequently, countries should formulate their own measures and policies in line with their specific national and local conditions. Rothboeck and Kring [38] suggest that the transition towards formalization should have three stages: short-term, medium-term and long-term. These comprise among other measures supporting enterprises in creating decent jobs, facilitating SMEs in enterprise registration and access to capital, technology and market and improving the whole macroeconomic situation [38]. It is worthwhile to note that an integrated policy package instead of piecemeal approaches is desirable for the purpose of fostering decent work [34] (Section 1.1).

4. Discussion and Conclusions

The literature review revealed that there is very little empirical information available about informal employment in the forest sector. The majority of publications are grey literature published by international organizations. However, the information provided in the grey literature meets the standards of good scientific practice. The internal quality control procedures of international organizations like FAO and the ILO comprise external reviews by scientists prior to the publication of a paper.

There is a very limited number of peer-reviewed papers about informal employment in the forest sector. This is in contrast to the number of publications about informal employment in general. Since there is only limited information available about the causes and characteristics of informal employment in the forest sector, one often has to deduct its causes and characteristics from other sectors assuming that they are comparable.

Based on the information available we can conclude that in terms of quantity, informal employment is very severe in the forest sector on a global scale. The majority of workers in the forest sector is informally employed, especially in developing and emerging countries. With regard to severity, informal employment in the forest sector is found both in emerging and developing countries as well as in developed countries. Although developed countries have high economic and social standards, informal employment, in general and in the forest sector, is still not eliminated.

The recent publication by Lippe et al. [45] gives evidence that visible employment in the forest sector has reached 21 million people full-time equivalents (FTE) in the forest sector, including forestry and logging, wood industry and paper industry. Invisible employment, which is at the same time often also informal employment, encompassed 36–66 million people FTE in 2015. The authors define visible employment as the number of employments that is captured in the official employment statistics. Invisible employment refers to employment that is not officially recorded in labor statistics. This number could include informal employment, formal employment and subsistence workforce. Based on the analysis, the majority of invisible employments are likely to be informal and subsistence.

Our literature review found that a fundamental problem for analysis of informal employment in the forest sector is the inconsistent and fragmented statistical data on informal employment as well as on OSH. Time series of the statistics are often disrupted and the number of countries, for which data about informal employment in the forest sector is available, is limited. This result is consistent with the statement in the reviewed literature [14]. And this is specifically true for Africa as well as Asia and the Pacific [29]. Hence, statistical analysis of informal employment is even a greater challenge in developing countries and regions where the forest sector is dominated by informal employment [45].

On top of that, the information and data on occupational accidents and illnesses in the forest sector are also very hard to acquire from developing countries [13]. This reflects that insufficient attention has been given to the problem in developing countries. Without sound data, it will be difficult to address the underlying problems and to improve OSH in developing countries. Insufficient statistical data on informal employment as well as on occupational accidents and illnesses in the forest sector restrict thorough research and analysis on these problems.

It is evident that data collection on informal employment in the forest sector should be widely encouraged. However, publications analyzed do not provide recommendations on how to acquire more and better data about informal employment in the forest sector. We believe that better coordination and harmonization of data collection efforts on international, regional and national level would improve data availability and quality. Hence, organizations and governments should coordinate their efforts and harmonize data collection protocols to close data gaps. Data collection should be supported specifically in developing and emerging countries, which have extensive informal employment in the forest sector, and in countries whose information and data on informal employment in the forest sector is not fully disclosed.

Regarding causes and characteristics, poverty, lack of education and migration are relevant in general and in the forest sector. The publications analyzed, however, are rather descriptive and not supported by systematic research. Interdependencies between causes or regional differences are yet to be discovered and analyzed on the basis of empirical research.

A prominent difference between the forest sector and many other sectors is its high rate of occupational accidents and illnesses. Decent work deficits are even more severe for informal workers in the forest sector. Skill development, provision of safety equipment and working environment as well as general improvement of decent work in the sector need to be strengthened.

Informal employment in the forest sector has both positive and negative socioeconomic effects. By comparison, the negative effects of informal employment in the forest sector, including safety and health of informal workers and working poverty, could be much larger than its positive effect. The positive effects of informal employment in the forest sector, such as providing income to and improving living conditions of workers as well as advancing the development of enterprise and the economy, are usually short-term and temporary, whereas the negative effects could be long-term and very heavy.

Empirical research about socioeconomic effects of informal employment in the forest sector is not reflected in the publications analyzed either because empirical research about socioeconomic effects of informal employment is missing in general or could not be found with the search strings applied. Very few recommendations are published about the mitigation of negative effects. Improvement of income, skill development, training and OSH are promising. However, this is not enough. Clear instructions on how this could be done are required, too.

In order to transform informal into formal employment, international organizations and scholars have proposed plenty of policies and measures to support decent work. However, in the publications reviewed there is no evidence that the policies and measures have been successful in the forest sector. Policies and measures aiming specifically at the forest sector seem to be scarce anyway.

Informal employment in the forest sector has divergent characteristics between countries and regions. Hence, recommendations and guidance on the transition from informal to formal employment introduced by international organizations should be ‘tailormade’ and should consider framework conditions specific to a country or region based on thorough analysis. One-size-fits-all solutions are most likely not successful. Nevertheless, international guidance and policies could be a reference and standard for domestic and local policies and strategies. Consequently, when countries formulate policies on the transition from informal to formal employment as well as on improving decent work, it is not recommended to simply copy and paste policies of other countries or regions.

Unintended consequences are also to be considered. One example from Russia highlights this. With the aim of transforming the economy and strengthening the labor market, the Russian government has made efforts toward tax law, labor law, small and medium-sized business, as well as an institutional reform, which has adversely led to the enhancement of informal employment in the manufacturing and agricultural industries because of the reduction of formal employment in these industries. This is contrary to its original will of increasing formal employment in these sectors [36].

Economic growth is not equal to job creation, and a large number of jobs created by economic growth are low paid and poorly regulated [34] (Section 3.1). That means economic growth alone is insufficient to reduce informal employment and working poverty. Given this circumstance, employment-oriented economic policy, which is aimed at encouraging decent work and poverty reduction, should also balance the whole macroeconomy and benefit the economy and society [34] (Section 3.1).

Notwithstanding, “economic growth in upper-middle- and high-income countries in the next few years is expected to be driven almost exclusively by productivity growth rather than by employment growth” [35] (p. 9). This is an unfavorable news for the transition and reduction of informal employment in both the forest sector and other industries. How to

balance economic growth and the transition from informal to formal employment needs more attention and effective policies of countries and governments. These policies should not base on sacrificing economic growth or the transition of informal employment, but should coordinate the two aspects and simultaneously benefit the development of decent work and green jobs in the forest sector.

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