

Toxic Care: Plantation Maintenance Work and Social Reproduction on Palm Oil Monoculture Plantations

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Abstract

The expansion of palm oil plantation has drawn scholarship attention. On one hand, studies have examined how palm oil plantation development serves an important instrument for employment creation, poverty alleviation and rural development. On the other hand, there is plenty of research that shows adverse impacts of such expansion on socio-ecological conditions. This includes the recruitment of women plantation workers into maintenance work with flexible labour relations. Meanwhile, literature on palm oil plantations in Indonesia has not paid significant attention on care work. Employing feminist political economy perspective, this article attempts to understand care work in palm oil monoculture plantations, particularly in relations to maintenance work on plantation. Through the concept of social reproduction, care work is understood in a broader term as a way to draw the entanglement between production and reproduction in palm oil monoculture plantations. This article argues that women workers participation into maintenance work on plantations show the articulation of social relations based on patriarchal system with palm oil competition in the global market. From the perspective of the women workers, participation in the maintenance work is viewed as a livelihood strategy. The strategy that involves works with risk of regular exposure to toxic chemicals is understood as toxic care.

Keyword: care work, social reproduction, palm oil plantation, women workers

Introduction

Palm oil plantations are one of the favourites in Indonesia's plantation sector mainly due to the position of the Indonesian palm oil sector in the global vegetable oil market. Since 2007, Indonesia has been the world's largest producer of crude palm oil. According to Figure 1, Indonesia accounts for about 59 per cent of the

world's palm oil production. In 2021, Indonesia's palm oil plantations reached 14,586,597 hectares with production reaching 45,741,845 tonnes (Central Bureau of Statistics 2022). The importance of Indonesia's palm oil plantation sector is accompanied by the expansion of palm oil plantations. Figure 2 shows the trend of land expansion and production of palm oil plantations between 2017-2021, which shows an increasing trend.

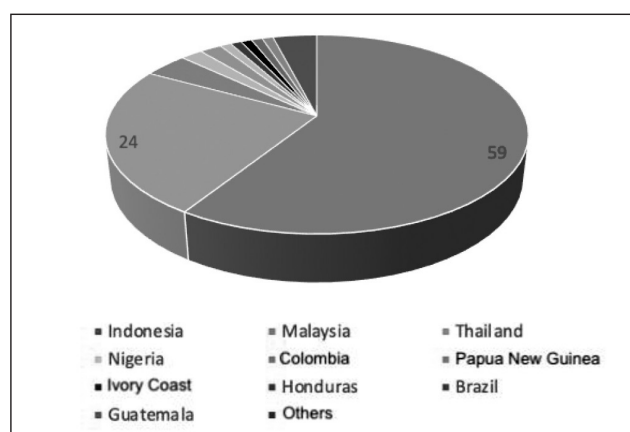


Figure 1. Contribution of Palm Oil Production to Global Palm Oil Production in 2023

Source: USDA Foreign Agricultural Service (2023)

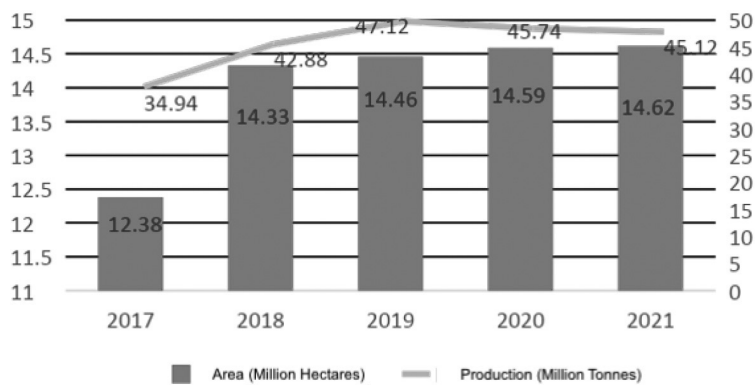


Figure 2. Expansion of Indonesian Palm Oil Plantation Area and Production

Source: Central Bureau of Statistics (2022)

The growth of Indonesia’s palm oil sector cannot be separated from palm oil’s important position in the global vegetable oil market. Figure 3 shows how palm oil dominates global palm oil consumption. This is partly due

to the view that palm oil is the most efficient commodity (see Figure 4). In addition, palm oil is also seen as a flexible commodity as it can be processed into different products (Alonso-Fradejas et al. 2016).

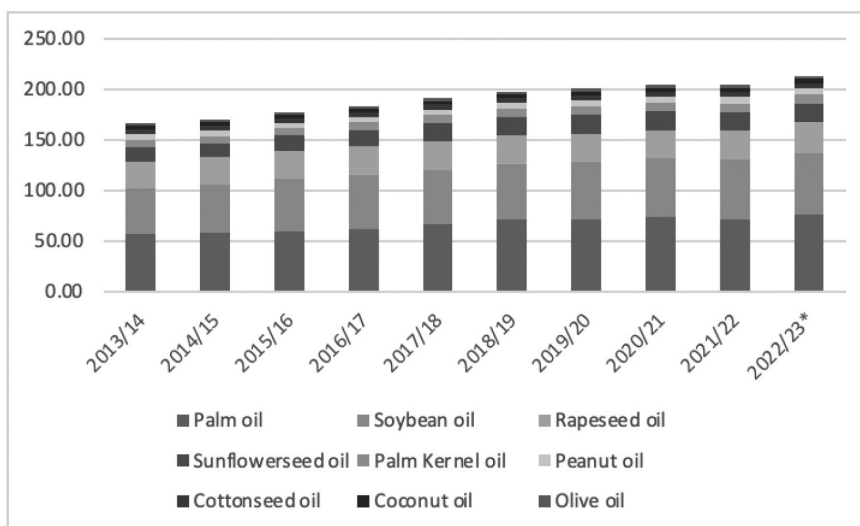


Figure 3. Global Vegetable Oil Consumption by Type of Vegetable Oil (million metric tonnes)

Source: Statista (2023)

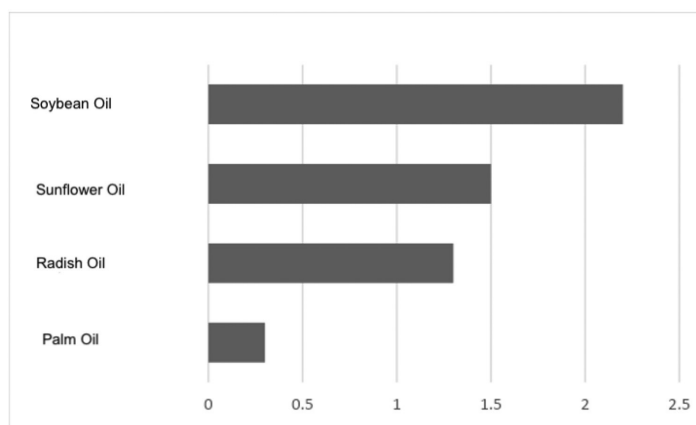


Figure 4. Area Required to Produce 1 Tonne of Oil

Source: Ministry of Industry (2021)

The growth of Indonesia's palm oil plantation sector has attracted academic attention to the economic aspects of palm oil plantations. Various studies have highlighted the importance of palm oil development for employment generation, poverty alleviation, and rural development (Rist et al. 2010; Zen et al. 2005). Meanwhile, other studies have examined the social and environmental impacts of palm oil expansion (Richter 2009; Colchester et al. 2006). Working conditions in palm oil plantations are one of the highlights of reports and academic studies on the social impacts of palm oil expansion (Assalam & Parsaoran 2018). One of them is the large number of plantation workers who are casual daily workers (*Buruh Harian Lepas, BHL*), who are predominantly women (Sinaga 2021; Muttaqien et al. 2021).

While the issue of vulnerable women workers in palm oil plantations is not new, there is relatively little literature focusing on care work in monoculture palm oil plantations. This article seeks to analyse care work in the monoculture palm oil plantation sector, particularly in relation to plantation maintenance work. Using the concept of social reproduction in the study of feminist political economy, this article understands care work in a broader context, particularly in the relationship between the productive and social reproduction domains. In the context of the ILO's 5Rs - Recognition, Reduction, Redistribution, Representation, and Reward - the analysis of plantation maintenance work carried out by women plantation workers is the first step in recognising the role of these workers in the social reproduction of palm oil plantations.

Based on an analysis of findings from case studies in four monoculture palm oil plantations in Sambas, West Kalimantan, this article argues that the involvement of women workers in palm oil plantations must be understood in terms of the relationship between social reproduction and labour processes in monoculture palm oil plantations that are influenced by palm oil competition in the global market. The participation of women workers in plantation maintenance work can be understood more broadly as care work in the context of plantation social reproduction.

This article has the following structure: The first part is the introduction. The second section presents the research methodology. The third section reviews the literature on women workers in palm oil plantations and its relationship to social reproduction. The fourth section explains the framework used in this article,

namely feminist political economy studies, in particular the concept of care work, and social reproduction. This section is followed by a brief overview of palm oil plantations in Sambas. Findings from the case study of palm oil plantations in Sambas, West Kalimantan, are discussed in the sixth section. In the seventh section, the author presents an analysis of the findings presented in the previous section. The article ends with conclusions and recommendations.

Research Methodology

The research methodology used in this study is qualitative research. Case studies were conducted on four monoculture palm oil plantations (PT A, PT B, PT C, and PT D) in Sambas District, West Kalimantan. Interviews and focus group discussions with 22 female maintenance workers were used as data collection techniques and were conducted in January and July 2023. Most of the female workers were between 30 and 50 years old, and one was an elderly female worker. They were mostly local residents with Sambas Malay ethnic background and a small number were descendants of transmigrants from Java Island. One female worker was a migrant worker from East Nusa Tenggara (NTT). The interview and focus group data were transcribed and analysed using qualitative content analysis. The interviews and focus group discussions were conducted as part of a larger research project on Just Transition in the Indonesian Palm Oil Industry. The palm oil plantations in the Sambas region of West Kalimantan were chosen because it was one of the organising areas of one of the plantation unions involved in the research project on Just Transition in the Palm Oil Industry.

This article aims to understand the relationship between the concept of social reproduction and the labour process in monoculture palm oil plantations. This article does not examine domestic maintenance work done by women at home, as this issue has been extensively covered in reports and studies on women workers in palm oil plantations. By focusing on women plantation maintenance workers, this article examines the relationship between social reproduction and plantation labour processes. The author uses case studies of monoculture palm oil plantations in Sambas, West Kalimantan. In the next two sections, the author explains the research methodology used and provides a brief profile of palm oil plantations in Sambas, West Kalimantan.

Women Workers and Social Reproduction in Indonesian Palm Oil Plantations

Various studies on the social impacts of the expansion of palm oil plantations in Indonesia show that palm oil plantations have become an important employment sector for Indonesians (Dib et al. 2018; Dharmawan et al. 2020). This is illustrated by the recruitment of women workers in Indonesian palm oil plantations. Women workers typically work in the maintenance section of the plantation. According to Yallita and Mardhiah (2023), this division of labour is influenced by occupational risks, psychological factors, and the stigma of women workers in plantations. Furthermore, although palm oil plantations provide employment for women, women workers in Indonesia tend to work as casual daily workers (BHL). Due to this tendency, accurate data on the number of women working in palm oil plantations is difficult to find. According to the Center for International Forestry Research (CIFOR 2017), there are approximately 1.5 million women workers in Indonesian palm oil plantations, both large and small. According to Sawit Watch (2019) there were 16.2 million people working in Indonesian palm oil plantations, with 4 million working directly, and the rest working indirectly. The latter includes female plantation workers. For this reason, women workers in palm oil plantations are often referred to as “hidden workers”. In addition to unpaid maintenance work, the term hidden workers is also used to refer to the status of women workers as casual workers. Casual women workers in palm oil plantations earn low wages and do not have access to health and safety insurance provided by the BPJS. The low wages associated with flexible work relations mean that women workers are paid according to the number of working days. In addition, women workers do not have access to leave regulated by Law No. 13/2003 on Manpower, such as menstrual leave, annual leave, and sick leave.

Literatures on women workers in palm oil plantations generally highlight the double burden of women workers (Eliza 2021; Fatchiya et al. 2022). While having to do work in the plantation, women workers also have to do household chores. In fact, women workers sometimes take on extra jobs on top of their work as plantation workers (Theresia & Wahyuni 2021). This is due to the low wages paid to women workers. This double or even triple burden means that female plantation workers work longer hours than male workers (Rowland et al. 2022).

In addition to the double burden of women workers, various studies that address the issue of gender and

palm oil plantations analyse the changes and dynamics of gender relations related to the expansion of palm oil plantations. In particular, this relates to the gendered impact of changes in land relations due to the expansion of palm oil plantations. Julia and White (2012) show how the articulation of local patriarchal systems with the expansion of palm oil plantations affects gendered experiences that are reflected in land relations, division of labour, and livelihoods. In particular, such changes in the gendered division of labour lead to women having to work as labourers in palm oil plantations, a phenomenon referred to as the feminisation of agricultural labour (Julia & White 2012).

Another issue arising from the expansion of palm oil plantations is the reduction of customary forests in Central Kalimantan. This has an impact on the gender relations of the Ngaju Dayak tenurial community, which is reflected in the dominance of men in the tenurial relations (Siscawati & Mahaningtyas 2012). This has resulted in women losing more access to land and livelihoods. Reduced access to livelihoods is also experienced by Modang Dayak women in East Kalimantan due to changes in gendered access to natural resources and customary benefits brought about by the expansion of palm oil plantations (Toumbourou & Dressler 2020).

While literatures on gender and plantations have highlighted the double burden of women’s work in plantations and the wider gender and livelihood aspects of changing tenure relations following the expansion of palm oil plantations, there are relatively few studies that focus on care work in monoculture palm oil plantations. In this study, care work is understood more broadly, in terms of social reproduction. In an effort to show and analyse the intertwining of production and reproduction in monoculture palm oil plantations, the next section outlines the framework underlying this paper, namely care work and social reproduction from a feminist political economy perspective.

Care Work and Social Reproduction in Feminist Political Economy Studies

Care work and social reproduction are two important concepts in feminist political economy studies. Feminist political economy studies emerged as a feminist critique of political economy studies and critical political economy studies, both of which ignore gender relations when analysing the relationship between the state and the market, especially in the global capitalist system (Bedford & Rai 2010). In feminist political economy studies, gender relations become an entry point for examining

the relationship between the state, the market, and the non-market, both in the contexts of production and social reproduction (Rao & Akram-Lodhi 2021). Various analyses from feminist political economy studies have similar views to feminist economic studies (Mezzadri et al. 2021). These include the concept of care work and the care economy. The care economy essentially refers to the economy associated with care work. This concept initially emerged as a way for feminist economists to address the economic value of care work, particularly in the formulation of relevant public policies, including pay equity, the valuation of non-market labour, and public support for parents (Folbre 1995). Nancy Folbre (2006) understands the economics of care in terms of care work that can be categorised based on the relationship of care work to the market, the characteristics of the work process, and the types of care recipients. In terms of the relationship between care work and the market, care work includes unpaid subsistence work, informal work, and paid care work. Each of these categories can be further subdivided into direct care work, which involves personal and emotional involvement, and indirect care work, which supports direct care work. In terms of work process characteristics, care work can refer to work that involves close personal or emotional interaction. In terms of the recipients of care work services, there are children, the elderly, the sick, the disabled, and oneself.

Nicola Yeates (2004) defines care work as activities or relationships that support the physical and emotional wellbeing of others who are unable or less able to undertake such activities. Both Folbre's conceptualisation and Yeates' definition suggest that care work does not only take place in the home. In line with this, Paula England (2005) argues that care work can be provided in the home or by the market for a fee. In relation to paid care work, the concept of care extractivism is known, which refers to the exploitation of workers and the depletion of resources in the health sector due to the impact of neoliberal policies (Wichterich 2019). This concept of care extractivism can be linked to the term corporate care (Nading 2020).

Based on the above, the concepts of care work and the care economy initially focused on the relationship between work and the household in an attempt to capture how care work affects the characteristics of work and employment relationships (Mezzadri et al. 2021, p. 1788). While feminist literatures on care work have contributed to thinking about how care work can be understood, it is important to reiterate that care work is a social construction and so the boundaries between

what is care work and what is not must continue to be problematised. Furthermore, the author understands care work in a broader context, that of social reproduction.

The concept of social reproduction provides a link between the production of goods and services and the production of life (Luxton 2006, p. 36). Feminist thinkers have developed the concept of social reproduction into social reproduction theory (Bhattacharya 2017). Social reproduction theory seeks to map the capitalist system as a social relation involving an integrated relationship between points of production and spaces of labour reproduction (Bhattacharya pp. 4 & 7). According to this theory, the space of labour reproduction does not take place only in the home, but must take into account wider social relations. Thus, the concept of social reproduction shows that feminist struggles are not limited to the balance between productive work and domestic work, but go beyond that to include struggles for decent housing, food security, jobs with a decent income, struggles for better public services, and so on (Fraser 2017, p. 35). Social reproduction can refer to three aspects: (1) the biological reproduction of human beings, including pregnancy and lactation; (2) the reproduction of labour, which includes not only subsistence work but also education and training; (3) the reproduction of social services and care needs, whether privatised within the family or outside the household, or a combination of both (Bakker & Gill 2003, p. 32). In addition, social reproduction includes the institutions, processes, and social relations associated with the formation and maintenance of communities that are the fulcrum of production and exchange (Bakker 1999). Social reproduction is also a productive concept in looking at the interconnections between everyday life and aspects of the wider global economy (Elias & Rai 2019). Using the concept of social reproduction, care work can be situated within a broader social landscape (Kofman 2012).

Using the concept of social reproduction as an analytical lens, the boundary between production and reproduction can be understood as a social construction. According to feminist thinkers, all work is productive (Federici 2012). Moreover, productive and reproductive work can be performed simultaneously, rather than alternatively or sequentially. This can be seen in the context of the agricultural and plantation sectors (Gore & LeBaron 2019). Subsistence work in the agricultural sector is generally considered to be reproductive work, which is included in the calculation of national economic growth. Compared to small-scale agriculture, the boundary between productive and reproductive labour is more

visible in large-scale agribusiness plantations. However, the boundaries remain relatively vague. Similarly, in the context of large-scale monoculture palm oil plantations, there is no separation between work and living space. Care work therefore needs to be understood in a broader sense.

In addition to the lack of separation between work and living space, which requires a broader understanding of maintenance work, maintenance in the context of monoculture palm oil plantations can also be linked to one of the plantation work activities. Work activities in monoculture palm oil plantations are generally divided into two categories: harvesting and maintenance. Harvesting is generally done by men, as it is perceived to require a stronger physique. Maintenance includes palm tree care from fertilisation, herbicide spraying to disc cleaning. This division of labour is gendered, resulting in women dominating maintenance work. As plantation maintenance workers, women workers tend to work as casual daily workers (BHL) because plantation maintenance is not considered to be the main activity in the plantation work process. This shows that the concept of social reproduction needs to be linked to the labour process in monoculture palm oil plantations. This is in line with the understanding in the concept of social reproduction that the boundaries between production and reproduction must be understood historically and involve the transformation of social processes, various mechanisms, and institutions on which society, production, and power depend (Bakker & Gill 2003). In addition, the labour process of production has political and ideological implications that affect the social system as a whole (Burawoy 1985).

Linking the concept of social reproduction to the labour process in monoculture palm oil plantations also helps to understand two things. First, an understanding of daily life in monoculture palm oil plantations can be gained if aspects of production and reproduction are understood as two integrated relationships. Second, linking the concept of social reproduction to the labour process can help to understand plantation maintenance work within the framework of the labour regime as maintenance work. The labour regime refers to the set of social relations and institutions that shape labour and influence exploitation at different scales and through different spheres within the global economy (Baglioni et al. 2022, p. 82). This definition highlights not only the social but also the environmental aspects of the labour regime (Sinha 2023). The plantation labour regime

cannot be dissociated from the growing concentration and power of large-scale agribusiness, particularly the trend towards large-scale monoculture plantations, followed by an emphasis on agricultural modernisation policies involving the use of intensive technologies, high-yield seeds, and agrochemicals such as fertilisers and pesticides. Agrochemicals contain toxins and plantation workers are exposed to these toxins. In relation to the intensive use of toxins in modern agriculture, environmental thinkers' critique of the rampant use of toxins in modern life emphasises that work is a reflection of toxic globalisation, that the working body not only becomes a mechanism of toxic globalisation, but also becomes a toxic world itself (Nading 2020). It is in this context that the term toxic care is introduced, which seeks to understand care in the context of the rampant use of toxins in everyday life.

Palm Oil Plantations in Sambas, West Kalimantan

Since 2007, Indonesia has been the world's largest producer of crude palm oil. In 2021, the area of palm oil plantations in West Kalimantan reached 1,829,533 hectares (Central Bureau of Statistics 2022). Figure 5 shows the contribution of West Kalimantan Province to national crude palm oil production. Meanwhile, the area of palm oil plantations in Sambas District, West Kalimantan, reached 81,743 hectares in 2022, up from 68,676 hectares in 2021 (West Kalimantan Central Bureau of Statistics 2023a).

In 2022, palm oil production from large-scale plantations in Sambas District reached 272,850 tonnes (West Kalimantan Central Bureau of Statistics 2023b). Various studies have highlighted landscape changes due to the expansion of palm oil plantations in Sambas District (Milieudedefensie 2018; Nurhidayah et al. 2015).

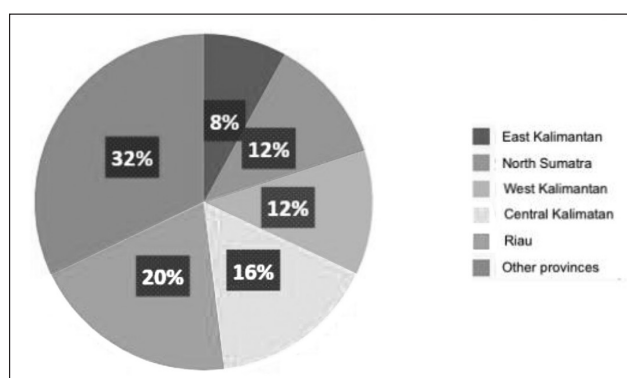


Figure 5. Crude Palm Oil Production by Province in 2021

Source: Central Bureau of Statistics 2022

The agricultural sector is the largest contributor to the economy of Sambas District, with palm oil as an increasingly important agricultural commodity alongside rice, vegetables, and rubber (Supriadi 2013). The important role of palm oil as an agricultural commodity in Sambas District has also affected the commodity production process, which also shows changes in the agricultural landscape due to the expansion of palm oil plantations (Morgan 2017). In addition, the expansion of palm oil plantations in Sambas District has been met with resistance from local communities, triggering land conflicts (de Vos 2016), including protests by local women (Morgan 2017). A study shows the gendered impacts of palm oil expansion in Sambas District (De Vos & Delabre 2018).

Plantation Maintenance Workers and Social Reproduction in Palm Oil Plantations

Women plantation maintenance workers at PT A, B, C and D perform plantation maintenance tasks such as fertilising and spraying pesticides. Female workers at PT A, B, and C have the status of casual daily workers (BHL). As a result of their status as casual daily workers, women workers do not have access to the labour rights set out in the Labour Law No. 13/2003, such as leave, including menstrual and maternity leave. In the context of the care economy, these rights are part of care policies and services. There is no recognition of the care needs of women workers.

One of the plantation maintenance workers at PT B explained how she had to work until she was eight months pregnant and then stop working until her baby was three months old (Mrs A 2023, interview 20 January). During the period of non-work, she was not paid by the company. In addition to the lack of access to leave, these plantation maintenance workers do not have access to insurance provided by the Social Security Agency for Employment (BPJS Ketenagakerjaan). Women workers are also not covered by *BPJS Kesehatan's* health insurance scheme. Women plantation maintenance workers with casual labour status also face difficulties in accessing personal protective equipment (PPE). At PT A, women plantation maintenance workers were not provided with PPE by the plantation company, so they had to buy their own. At PT B, PPE was provided by the company only once a year. According to focus group discussions with women workers at this PT (FGD 2023, 20 January), PPE is usually damaged after three months. Women plantation maintenance workers at PT C now do not use aprons, only masks and gloves when fertilising. PPE was provided

by the company in the past, but is no longer provided for efficiency reasons.

Women maintenance workers at PT D now have the status of permanent daily workers (*Buruh Harian Tetap, BHT*). The term BHT used by the company creates confusion about the working status of the women workers. According to the women workers, this status indicates their "permanent" status. However, women plantation maintenance workers at PT D are still paid on the basis of working days. As will be explained below, working days (*Hari Kerja, HK*) is a component that determines how much income women workers receive. However, unlike BHL, who are not paid on holidays, women workers with BHT status at PT D still receive HK on holidays. Based on interviews with women workers at PT D, the difference they feel after being appointed as "permanent" workers is the access they have to leave and BPJS rights. The rest, they are still paid according to the HK calculation. However, some workers admitted that they had not been able to access menstrual leave. Based on focus group discussions with women workers at PT D, there were no difficulties in accessing PPE. If PPE was damaged, women workers could ask the company (FGD 2023, 11 July).

In terms of wages, women plantation maintenance workers, both casual and permanent, are paid on the basis of HK. HK is a unit of working days with a certain nominal value set by the company. The nominal value is then multiplied by the number of HK a worker has in a month. The use of the HK as the basis for calculating the wages of women workers shows an emphasis on the aspect of labour productivity. Table 1 shows the amount of income received by women plantation maintenance workers and how it compares to the district minimum wage (*Upah Minimum Kabupaten, UMK*) in Sambas. Table 1 shows that the income of women plantation workers is still below the minimum wage. The calculation of income in Table 1 assumes that women workers work a 5-day week. Meanwhile, at the time of the interviews and focus group discussions with women plantation maintenance workers at PT C, the workers had just received information from the company that their working days had been reduced to 4 days a week due to declining production. This means that women workers are earning even less than calculated in Table 1. Women plantation maintenance workers at PT B said their wages are not enough to meet their daily needs. This inadequate livelihood shows that there is no recognition of the care needs of women workers.

Table 1. Comparison of HK Rates and Earnings of Women Plantation Maintenance Workers

	PT A	PT B	PT C	PT D
HK Rate	IDR 111,700	IDR 111,000	IDR 108,000	IDR 111,700
Total Income in a month*	IDR 2,234,000	IDR 2,220,000	IDR 2,160,000	IDR 2,234,000
Minimum wage of Sambas District in 2023	IDR 2,792,599.31			

Source: interview results processed by the author

Note*: The assumed number of HK owned by women palm oil maintenance workers is five days a week, so the total HK owned in a month is 20.

In terms of occupational health and safety (OHS), women plantation workers are exposed to toxins from chemicals in fertilisers and herbicides every time they carry out plantation maintenance. Access to PPE is therefore important for the health of women plantation maintenance workers. Based on the explanation in the first paragraph of this section, only PT D provides easy access to PPE. Meanwhile, in the other three plantations, where women workers are still casual daily workers (BHL), they do not have access to PPE. This means that women plantation maintenance workers are experiencing different effects of toxic exposure. Women fertiliser workers at PT A reported shortness of breath after work. One of the workers also showed blackened fingernails from fertilisation (Mrs W 2023, interview 19 January). In addition to shortness of breath, women spraying workers at PT B reported itchy skin. The same health effects were also experienced by women plantation maintenance workers at PT C. One of the women workers at this PT even reported a bleeding navel after spraying (Mrs L 2023, interview 20 January). Itchy skin was also reported by women plantation maintenance workers at PT D (FGD 2023, 13 July). Although the company provides access to PPE, health impacts are still being felt. The purpose of PPE is not to eliminate toxic exposure, but to minimise exposure. On the other hand, the use of PPE often makes it difficult for women workers to carry out their jobs. Wearing full PPE in the middle of a hot palm oil plantation can make it difficult to work in the plantation. Women workers are faced with a choice between protecting their health and meeting work targets.

In addition to exposure to chemical toxins, other health problems experienced by women plantation maintenance workers are related to repetitive work activities. One of the women plantation maintenance workers at PT A requested early retirement due to foot pain and found it difficult to work due to the illness (Mrs M 2023, interview 19 January). The palm oil plantations of PT A and PT B are located on peatland with a soil structure that is not as firm as normal soil, especially during the rainy season. This means that women workers have to use extra

energy walking and moving around the plantation area. In addition to foot pain, women plantation maintenance workers at PT D complained of back pain (FGD 2023, 11 July). Both the fertiliser workers and the sprayers have to carry heavy loads. Women workers who fertilise at PT D have to carry buckets of fertiliser weighing between 12.5 and 25 kilograms, repeatedly, 5 times a day. Meanwhile, women workers who spray at the same PT D have to carry 12-litre buckets repeatedly, with 12 to 13 buckets to be filled.

Despite these health and safety issues, not all plantations have clinics. Of the four monoculture palm oil plantations used as case studies for this research, only two plantations, PT A and PT D, have health clinics. However, neither PT A's nor PT B's clinic has a full range of medicines. PT B does not have a clinic on the farm. The reason is that it is under the same management and is not far from the plantation. PT B encourages the plantation workers to seek treatment at PT A's clinic. Instead of being treated at PT A's clinic, the plantation workers at PT B prefer to be treated outside. However, the workers have to get permission from the foreman. At PT C, the clinic is no longer provided by the company.

The responsibilities of women plantation maintenance workers in the social reproduction of the plantation include domestic work and the responsibility for meeting the family's food needs. Because they receive low wages, as shown in Table 1, women workers rely on other alternatives to meet the family's food needs, such as relying on plants and vegetables that grow around the plantation. While doing plantation maintenance work, women workers collect plants or vegetables that they come across to take home and cook. One of the women plantation maintenance workers at PT C revealed that selling food is one of the strategies to meet household needs (FGD 2023, 20 January). Meanwhile, selling cakes requires more capital, so this option is not the main choice for women workers. Some women plantation maintenance workers at PT D have food gardens in their yards. However, these workers face the possibility of the

company cutting down the plants in their food gardens. The rules on what plants are allowed change with each change of management.

Water is an important aspect of social reproduction in palm oil plantations. At PT A, the workers families' source of water for bathing and household hygiene comes from wells rather than from river water. In palm oil plantations, there are generally two types of water used for household purposes: water for bathing and hygiene, and water for drinking. Well or river water is the source of water used for bathing and household hygiene. Meanwhile, gallon water is used as a source of drinking water. Although they no longer rely on river water, workers at PT A, including women workers, are concerned about the plan to build a palm oil factory around the plantation, which will result in water pollution. Water availability is also important for women plantation maintenance workers who carry out spraying work. The women workers need water to mix the herbicide. In addition, female sprayers also use the water in the plantation's ditches to clean themselves after work while waiting to go home. Women plantation maintenance workers at PT B expressed how difficult it is to find water in the ditches during the dry season (FGD 2023, 20 January). Women plantation maintenance workers at PT C sometimes even have to ride a motorbike to find a ditch with water.

Access to land is central to the social reproduction of women plantation workers. Even before becoming plantation workers, access to land was a source of livelihood for women. Most of the plantation workers in PT A and PT B come from the community in the neighbouring village, Village A. The arrival of the two plantations in 2006 was initially met with resistance from the village community, who are Sambas Malay. One of the reasons was the unclear plasma scheme. Under the scheme offered to the people of Village A, they were to give up their land and then receive plantation land on a 70:30 basis.

According to the FGDs (2023), plantation workers do not understand the meaning of the 70:30 allocation and its implications. Plantation workers also had doubts about the financial structure of the plasma scheme, which raised the question of whether they will eventually receive the promised plantation land. Ultimately, according to the people of Village A, the plasma scheme only brought problems. One of the women plantation workers at PT A revealed that the plasma lands her family had received had just been planted with palm oil. This means that women workers have to work as plantation workers at PT A. PT C is located in Village C, which has a

history as a transmigration village. Since the start of PT C's plantation in 1990, there have been various problems, including conflicts over the plasma project with the Dayak Bekati indigenous community (Jiwan & Colchester 2020). The plantation workers at PT C are made up of different ethnic groups from the surrounding area, such as Sambas Malay, Javanese (second generation transmigrant communities) and migrant workers from other regions, such as East Nusa Tenggara (NTT). Meanwhile, plasma-related conflicts have also occurred at PT D. In 2012, PT D's replanting caused conflict because it overlapped with the surrounding community's land, which ended with the land being returned to the surrounding community (Tempo 2018). PT D's plantation workers are also from different ethnic groups, including Sambas Malay, Javanese (generations of transmigrant families) and Dayak.

Based on the characteristics of the workers in the four plantations, most of whom are local workers, it can be concluded that changes in land use due to the expansion of palm oil plantations have led to women working in the plantations. This change in access to land affects women's bargaining power. However, the women workers in this study are union members. Although most of them are casual workers, union membership can at least increase their bargaining power with the plantation companies.

Toxic Treatments

The description of the working conditions of women plantation workers in the previous section shows that most women plantation workers are employed under a flexible labour regime. Their status as casual workers allows the company to hire female workers in times of need. Female plantation maintenance workers at PT A revealed that when the pandemic hit, the company reduced their HK to two days a month for seven months. As described in the previous section, women plantation maintenance workers at PT C also experienced a reduction in their working days to 4 days a week due to declining production. The "no work no pay" flexible working arrangement gives the company the freedom to spend efficiently, especially on labour.

Regarding flexible work arrangements in monoculture palm oil plantations, companies generally use flexibility as an offer to capture the recruitment potential of women workers. Assuming that women workers are also responsible for household maintenance, flexible work arrangements allow women workers to balance productive economic work in the plantation with reproductive work in the household. There is also an

assumption that plantation maintenance, which is mostly done by women workers, is supporting work rather than the main work in monoculture palm oil plantations. This can be seen from the trend towards casualisation of plantation maintenance work and the efficiency of plantation companies, which tend to reduce the HK of casual workers.

In the context of the work process in monoculture plantations, it should be understood that the flexible work regime of plantation maintenance is generally carried out by women workers. The characteristics of monoculture plantations allow companies to make profits in a shorter period of time while minimising costs. The profits offered by monoculture plantations are achieved by focusing on plantation production and productivity. This is achieved through the use of chemical fertilisers and herbicides. The use of fertilisers and herbicides is a significant expense for the company as they are relatively expensive. Therefore, an alternative to reduce expenditure is to introduce flexible working arrangements. This labour arrangement allows the company to limit its expenses because it does not have to pay fixed salaries, severance pays, and pensions, and does not have to provide leave rights, health rights, and occupational safety. According to Tania Li (2017), flexible labour relations in palm oil plantations are one way to increase profits. In this way, palm oil production costs can be reduced to compete with other vegetable oil commodities in the global market. In the context of the global vegetable oil market, palm oil is considered to be the most efficient and competitive commodity. The efficiency and competitiveness of the palm oil commodity in this global competition depends on the expansion of palm oil plantations.

From the above explanation, plantation maintenance work in the context of monoculture palm oil plantations can be understood as an articulation between the competition for palm oil commodities in the global market and the social relations of society, namely relations based on a patriarchal system that makes women responsible for reproductive work. Plantation maintenance work under a flexible labour regime in palm oil plantations allows companies to take advantage of the supply of cheap labour, namely women workers. Historical literatures on labour regimes and gender in palm oil plantations show that the colonial aspect of the recruitment of women workers in palm oil plantations continues in the labour regime of contemporary palm oil plantations (Sinaga 2021). In contemporary plantation labour regimes, the household labour recruitment approach allows for an additional potential labour force,

namely women workers. In order to enable female workers to fulfil their dual roles, a flexible work regime is seen as the right choice. Thus, the recruitment of women plantation maintenance workers can be seen as both inclusionary and exclusionary. Inclusion in the sense that monoculture palm oil plantations provide employment for women workers. Exclusion in the sense that the status of women workers as casual daily workers limits their access to decent wages and labour rights.

The dynamics of social relations described in the previous paragraph cannot be separated from access to land as a source of livelihood. The expansion of palm oil plantations has reduced access to land. The plasma scheme, offered to increase community participation in the small-scale palm oil plantation sector, has in fact created problems. As described above, the four plantations that are the case studies of this article are facing land conflicts related to the plasma scheme. Restrictions on access to land due to conflicts over the plasma scheme can affect the labour regime in the plantation. As one of the plantation maintenance workers at PT A explained, she worked as a casual daily worker in the company because her family had just received plasma land that was not yet producing.

As mentioned above, the assumption that plantation maintenance is supporting work is the reason why the company has adopted a flexible plantation regime. In fact, plantation maintenance is carried out on a regular basis. As a result, female plantation maintenance workers can be employed as casual daily workers for many years. For example, women plantation maintenance workers at PT A have worked as casual daily workers since the company started operations in 2006.

Based on the FGDs, there are some plantation maintenance workers with casual status who have been appointed to the *SKU* because the previous appointment process was considered easier. However, the maintenance workforce is still dominated by casual daily workers. At PT C, women plantation maintenance workers have worked as casual daily workers for two to five years. At PTD, women plantation maintenance workers are appointed as BHT after working for 10 to 15 years. The view that plantation maintenance work is supporting work, and that women are better suited to do this supporting work, is partly influenced by social perceptions of a gendered society. Furthermore, in line with Burawoy's view (1985) that the labour process has political and ideological implications and that the plantation maintenance work carried out by women workers also affects the whole social system. This further illustrates how the productive aspect of labour

operates as well as the social reproduction of a particular social system.

In the previous section, it was explained that inclusion in palm oil plantations is understood in terms of providing plantation employment for women workers. On the other hand, women work in plantations to supplement family income. As the literatures on the gendered impacts of palm oil expansion show, women's reduced access to land, forests, and other livelihood resources results in women being forced to work as plantation workers. This means that women's participation in monoculture palm oil plantations is a livelihood strategy. In the gender dynamics constructed within the patriarchal system, this strategy is adopted by women workers based on the need to provide for the household. The need to provide for the household is a reflection of the need for care.

The role of women in social reproduction is thus understood not only in terms of women's care work in the households, but also in terms of the work of women plantation workers. Furthermore, plantation workers who perform their work at the risk of continuous exposure to chemical toxins over a long period of time can be understood as toxic care. This shows the relationship between social reproduction and monoculture palm oil plantations based on the paradigm of agricultural modernisation. As explained in section three, the paradigm of agrarian modernisation leads to the use of plantation chemicals, which, as it develops, becomes increasingly widespread along with the desire to increase plantation productivity and profits. Meanwhile, women's role in the social reproduction of the households influences their decision to participate in plantation work as a livelihood strategy.

As plantation maintenance workers, women workers perform maintenance work in two intertwined aspects. The first aspect relates to plantation maintenance work that contributes to the production, profits, and expansion of monoculture palm oil plantations. Reducing labour costs through the implementation of flexible plantation labour regimes not only improves the competitiveness of palm oil in the global market, but can also contribute to the expansion of monoculture palm oil plantations. The second aspect is that care work is understood as social reproduction of workers' households. By using the concept of social reproduction, a broader understanding of workers' household care work does not only occur within the home. When women workers collect plants and vegetables around the plantation as a source of food, this also reflects the workers' household care work. In addition, the first and second aspects are intertwined

and reflect contradictions in social reproduction. The first aspect shows the desire for profit, while the second aspect shows the desire for life-making (Bhattacharya 2017).

In the context of monoculture palm oil plantations, toxic maintenance can also reflect the transfer or externalisation of costs from plantation companies to women workers and the environment. Women plantation maintenance workers are responsible for performing unpaid reproductive work. This reproductive work enables the reproduction of labour in the workers' households. This reflects the externalisation of costs by the company. In addition, the use of toxic plantation chemicals has a negative impact on both the women workers and the environment around the plantation. Women maintenance workers at PT B have to use the plantation's ditch water, both as a mixture of herbicides and to clean their bodies. This is because the company does not provide water to mix with herbicides. This is a form of cost externalisation by the company. When cleaning their bodies with water after spraying, maintenance workers at PT B realised that they were "cleaning poison with poison" (Mrs A 2023, interview 20 January). A research report (Kinasih, forthcoming) on Occupational Health and Safety (OHS) in palm oil plantations shows how the long working hours of workers handling chemicals shows the integration of chemicals into the daily lives of workers ("living with poison"). Women plantation maintenance workers' limited access to PPE, work tools, transportation, leave rights, and OSH add to the list of costs that companies externalise. Water pollution from palm oil mill effluent also illustrates the externalisation of environmental costs by the company, which are then borne by plantation workers and surrounding communities.

Closing

Care work, which is at the heart of the care economy, needs to be understood in a broader context. The concept of social reproduction offers an approach that can help to understand the intertwining of productive and reproductive aspects. Using the concept of social reproduction as an analytical lens, the participation of women workers in plantation maintenance in monoculture palm oil plantations reveals the articulation of social relations between a society based on a patriarchal system and palm oil competition in the global vegetable oil market. The monocultural nature of plantations, which tends to reduce costs, runs up against unequal gender relations. This is reflected in the gender division of labour, which tends to place male workers in harvesting

and female workers in plantation maintenance. Palm oil plantation maintenance work is also seen as supporting work, which justifies the application of a flexible work regime for women plantation maintenance workers.

Apart from being perceived as supporting work, the application of a flexible labour regime in plantation maintenance is also designed to ensure that women workers fulfil their dual roles, namely their role in the productive work of the plantation and their role in the reproductive work of the workers' households. With reference to ILO Convention No. 156 on Workers with Family Responsibilities, women plantation workers have equal opportunities to participate in the economic activities of the plantation. However, the flexible nature of plantation maintenance work shows how women plantation workers are discriminated against. Because flexible plantation maintenance work makes it difficult for women workers to exercise their rights, including maternity rights. Thus, it is not in line with ILO Convention 183 on Maternity Protection.

From the perspective of women workers, participation in plantation maintenance is seen as a livelihood strategy. This is due to the role of women workers in the social reproduction of the households. Strategies to ensure the social reproduction of the households are adopted by women workers based on their aspirations to maintain the household. Thus, women's role in social reproduction is understood not only in terms of women's care work in the households, but also in terms of the productive economic work of women plantation workers, namely plantation care work. This shows the importance of women's role in social reproduction. However, the role of women in social reproduction has not yet been recognised. Women workers involved in plantation maintenance, where they risk continuous exposure to chemical toxins over long periods of time, can be understood as toxic maintenance.

This article is based on research that focuses on labour and gender issues in palm oil plantations. The issue of intersectionality, in terms of the intersection between aspects of labour, gender, and other social relations, is not discussed in this article. The author recommends research using an intersectionality approach on the economy of care in palm oil plantations. Furthermore, access to land is central to social reproduction in the context of palm oil plantations. This research is limited in its in-depth discussion of the relationship between land tenure and the plantation labour regime, particularly in terms of its gender dynamics. Therefore, the author recommends the need for studies that examine in depth the gender dynamics in the land and labour nexus in the

context of social reproduction in monoculture palm oil plantations. In addition, the issue of social reproduction can be an entry point for linking various social-ecological issues that go beyond care work in monoculture palm oil plantations. Making these connections is important not only for building cross-issue solidarity among different community organisations, including trade unions, but also for shaping the transformation of monoculture palm oil plantations from a social-ecological perspective (Pye 2021). Therefore, the author also suggests the need for research that seeks to understand how community social organisations, especially plantation unions, use the issue of social reproduction to build solidarity networks with various other social movements.

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