



# 11

## Sugarcane Industry Expansion and Changing Rural Labour Regimes in Mato Grosso do Sul (2000–2016)

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### 11.1 The Interrelations of Bioeconomy, Brazilian Sugarcane and Social Inequalities

The bioeconomy represents a future vision (Goven and Pavone 2015, p. 5), the actual realisation and societal consequences of which are difficult to predict. This research centres around bioethanol. The production and use of bioethanol precede the bioeconomy discourse and, therefore, have already been fully implemented. Agrofuels such as bioethanol are being integrated into bioeconomy agendas (Backhouse et al. 2017, pp. 23–26).

Brazil is the second most important producer of bioethanol globally and has a tradition of commercial-scale sugarcane-based bioethanol production dating back to the 1970s (Wilkinson and Herrera 2010, pp. 750–757). The promotion of agrofuels is an important part of the

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Brazilian bioeconomy.<sup>1</sup> The sugarcane sector started to expand around 2002 and was closely linked to the promotion of bioethanol production. This expansion dates back to a time in which bioeconomy was not discussed in Brazil. Nevertheless, it demonstrates what happens when the emergence and increased expansion of bioeconomy in Brazil include bioethanol as an important pillar.

Previous research has shown that the monocultural expansion of sugarcane can result in peasant displacement and conflicts over land, but it can also create employment opportunities (Borges et al. 1983, pp. 90–104). However, in this case, the expansion, which started around 2002, was accompanied by mechanisation of this area of the agricultural part of the sector, and, in the state of São Paulo, this led to reductions in the workforce (Brunner 2017, pp. 7–8). Hence, current research suggests looking at the interconnection of land *and* labour relations in order to understand the combined impact of geographical expansion and mechanisation. Against this background, the question arises as to how the expanding production of bioethanol—as an important pillar of the emerging (Brazilian) bioeconomy—affects existing social inequalities in labour and land relations.

This chapter applies a case study approach (Yin 2009). The selected case is sugarcane expansion between 2000 and 2016 in central southern parts of the Brazilian federal state of Mato Grosso do Sul, which demonstrates one of the most intensive dynamics of expansion in Brazil. The field research took place in April 2017, November and December 2017 and between April and June 2018. Open and semi-structured interviews, informal conversations and participatory observations were used, and a wide variety of people from civil society, academia, and the state and private sector were interviewed (see Lorenzen 2019).

The next section details the analytical framework. Section 11.3 describes the historical and recent dynamics of the Brazilian sugarcane sector and complements this with relevant global dynamics centring around green and sustainable development. Section 11.4 traces the

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<sup>1</sup>Brazil has not yet developed a bioeconomy strategy. The Ministry of Science, Technology, Innovation and Communication addresses the bioeconomy in its “National Strategic Plan 2016–2022” (MCTIC—Ministério da Ciência, Tecnologia, Inovação e Comunicações 2016, pp. 94–97).

changes in rural wage and subsistence work that has accompanied sugarcane expansion in the federal state of Mato Grosso do Sul. To close, Sect. 11.5 brings all the information together and assesses the changes in social inequalities by looking at rural labour regimes. Finally, some conclusions are drawn for bioeconomy policies.

## **11.2 Towards an Analytical Framework of Unequal Access to Labour and Land**

### **11.2.1 Social Inequalities as Asymmetrical Access to Labour and Land**

Focusing on the unequal access to land and labour of different social groups, I understand social inequalities to refer to the systematic asymmetrical and hierarchical access of groups to aspects such as economic goods (work, income) and natural resources (land) that leads to beneficial or disadvantageous living conditions (Solga et al. 2009, p. 15; Kreckel 2004, p. 17). In line with the Theory of Access, access is understood as “the ability to benefit from things” (Ribot and Peluso 2003, p. 153).

This study focuses mainly on the national state of Brazil and the local context. As such, it takes the federal level of Brazil and the state of Mato Grosso do Sul as its point of departure. The analysis unfolds from a historically informed perspective and moves to study how the expansion of ethanol affects social inequalities in terms of land and labour. This presupposes an account of the transnational context in which these relationships are embedded.

### **11.2.2 Labour Regimes as Combining Access to Labour and Land**

To conceptualise how land and labour relations interconnect, I draw on agrarian political economy and especially on its conception of rural labour regimes. Within this strand of thought, Henry Bernstein (2010, pp. 21–26) points out that the most distinctive feature of capitalism is

the social relation of exploitation in which capitalists own the means of production and labourers have to sell their labour power to obtain their subsistence. This basic understanding of capitalism has sometimes led to the idea that all peasants will eventually be dispossessed and proletarianised in capitalism. This idea underestimates the complexities of social relations of global capitalism. However, Bernstein argues further that “capital is capable of exploiting labour through a wide range of social arrangements in different historical circumstances” and that categories such as “landless labour” and “small peasants” are fluid and people move between those categories or can be categorised as both at the same time. Proletarians are not the only group to be exploited by capital and capitalism does not necessarily always result in the dispossession of small peasants (*ibid.*, pp. 33–34).

How then can we understand non-wage labour categories as part of capitalism? Proponents of the subsistence approach (von Werlhof et al. 1988) coined the term subsistence production for all work that is not wage labour. Subsistence production is understood as both the production of life and the production of means of subsistence. Thus defined, subsistence work also includes the activities of peasants (Mies 1988, p. 86). Although these activities have often been called pre-capitalist, materialist feminism as well as dependency theories and world system analysis have shown that non-wage work such as housework and small-scale agriculture have been produced or reconfigured by capitalism as a means of outsourcing the costs of social reproduction (Boatcă 2016, pp. 74–75; Bohrer 2018, p. 65; Federici 2012, p. 22; Mies 1988). In the field of subsistence production, my research focuses on the production of the means of subsistence, especially through non-wage agriculture, hunting and fishing.

The combination of access to different categories of rural labour and the varying combination of access to wage labour and access to land for subsistence production results in different labour regimes. The concept of the labour regime refers to “different methods of recruiting labour and their connections with how labour is organised in production (labour processes) and how it secures its subsistence” (Bernstein 2010, p. 53). While some analyses of labour regimes focus on the methods of recruiting labour (coercive/non-coercive) or on the details of how labour

is organised in production (see e.g. Brunner 2017; Li 2017), I focus on how different categories of labour are combined to secure subsistence. “Pure” labour regimes exist that only provide access to wage labour (proletarianisation) *or* access to land (peasant production). And there are “hybrid” forms such as semi-proletarianisation (Bernstein 2010, pp. 53–55). Semi-proletarianisation describes a mixed labour regime, where land access for subsistence activities is combined with access to wage work to secure livelihoods (Boatcă 2016, pp. 65–66). This approach of labour regimes to agrarian political economy serves to identify changes in the interdependency of land and labour relations. However, before these changes are assessed, the next chapter describes the recent changes that have occurred in the Brazilian sugarcane sector.

### 11.3 The Brazilian Sugarcane Sector and Its Recent Changes

Sugar was one of the first products exported by Brazil when it was a Portuguese colony (Baer 2014, p. 14). The use of sugarcane to produce ethanol for bioenergy is more recent. On a commercial scale, ethanol production started in 1975 with the implementation of the National Ethanol Programme *Proálcool*. As part of the Proálcool programme, the government subsidised the establishment of eight industrial distilleries in Mato Grosso do Sul (Missio and Vieira 2015, pp. 179–180; Domingues 2017, p. 76). However, Mato Grosso do Sul was yet to become an important bioethanol producer.

This started to change at the beginning of the new millennium when the dynamics of global land grabbing fostered investment in land. In Brazil, large-scale land acquisitions increased after 2002. The sugarcane sector was one of the most important sectors for these land deals (Borras et al. 2011, p. 17; Sauer and Leite 2011, p. 1). At the same time, national policies such as a blending quota, subsidised loans and tax benefits facilitated the resurgence of the crisis-ridden sugarcane sector in Brazil (Sant’Anna et al. 2016a, pp. 166–167; Wilkinson 2015, p. 3).

State support for the ethanol sector can be explained from the perspective of a global bioethanol market as this was driven by demands that

rose out of the Kyoto Protocol and COP21 (Wilkinson 2015, pp. 2–3). In 2007, the Brazilian government published a study indicating that Brazil could supply 5% of the world's consumption of car fuel (Defante et al. 2018, p. 126). Nevertheless, for Brazilian bioethanol to become “green”, it had to undergo change. The Brazilian government had to ensure that sugarcane production was “sustainable” enough to be viewed as an alternative energy-source for transportation worldwide. Therefore, it promoted zoning-projects, which led to the exclusion of sensitive and biodiversity-rich areas from land investments. Furthermore, the government and the sugarcane industry agreed on a protocol (*Protocolo Agroambiental*) that abolished the practice of burning sugarcane before harvesting. Although burning facilitates the harvest, it also releases large amounts of CO<sub>2</sub>. The solution, therefore, was to gradual mechanise the sugarcane harvest and to abandon the use of burning (Jesus and Torquato 2014; Wilkinson 2015, pp. 2–3).

The entanglement of global land grabbing dynamics and national policies led to a boom and an expansion of sugarcane in Brazil. The boom caused land prices to rise in the main area used for cultivation: the federal state of São Paulo. Investors left for neighbouring states such as Mato Grosso do Sul, where the number of production units rose from eight to 22 (Assunção et al. 2016, pp. 6–7).

In 2010 and 2011, when the global financial crises hit Brazil, credit programmes were cut and the unsustainably financed sugarcane sector partly collapsed. Production units closed or were bought by international investors, which concluded the process of internationalisation that had already begun (Wilkinson 2015, p. 3). In spite of the crisis, the area of land used for sugarcane and the production of sugarcane, sugar and ethanol continued to increase (see Observatório da Cana<sup>2</sup>; Lorenzen 2019, p. 19). Since the 2014/2015 harvest, the sugarcane sector has been slowly recovering.

The expansion and mechanisation of the Brazilian sugarcane sector were triggered by the interrelations of global and national dynamics. These dynamics had an important yet ambivalent impact on local land

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<sup>2</sup><https://observatoriodacana.com.br/historico-de-area-ibge.php?idMn=33&tipoHistorico=5>. Accessed 12 Nov 2020.

and labour relations in Mato Grosso do Sul, and these will be illustrated in the next section.

## 11.4 The Impact of the Expansion of the Sugarcane Industry on Access to Labour and Land

In the following, the changes in access to labour and land are described using the two social groups that were the most affected by the expansion and mechanisation of the sugarcane industry. These descriptions are brought together in Sect. 11.5 as part of the analysis of the associated labour regimes.

Peasants in agrarian reform settlements constitute the first group. There are two main types of peasants in Brazil: small-scale agriculturists who own property, and peasants who have obtained access to public land via the agrarian reform process (Damasceno et al. 2017, p. 18). The agrarian reform process in Brazil is aimed at expropriating private land that is no longer put to “productive”<sup>3</sup> use (Fernandes et al. 2010, p. 799). Expropriated land is then turned into agrarian reform settlements with smaller lots that are transferred to landless workers.<sup>4</sup>

The Guarani-Kaiowá Indigenous people constitute the second group. Mato Grosso do Sul is the Brazilian federal state with the second-largest Indigenous population: 3% of its population describes themselves as Indigenous people.<sup>5</sup> The Guarani-Kaiowá form the largest ethnic group

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<sup>3</sup>I use the term unproductive land in accordance with the INCRA (Instituto Nacional de Colonização e Reforma Agrária) definition: “The INCRA considers property (rural property) to be unproductive in cases where arable land is either totally or partially unused by its occupant or owner” (Author’s translation, INCRA. See, <http://www.incra.gov.br/pt/educacao/2-uncategorised/233-imovel-rural-improdutivo.html>. Accessed 12 Nov 2020.)

<sup>4</sup>INCRA, Obtenção de terras: see, <http://www.incra.gov.br/pt/obtencao-de-terras.html>. Accessed 13 Nov 2020. And Assentamentos: see, <http://www.incra.gov.br/pt/assentamentos.html>. Accessed 12 Nov 2020.

<sup>5</sup>FUNAI (Fundação Nacional do Índio): see, <http://funai.gov.br/index.php/comunicacao/noticias/1069-entre-1991-e-2010-populacao-indigena-se-expandiu-de-34-5-para-80-5-dos-municipios-do-pais>. Accessed 5 Sep 2018.

within this population.<sup>6</sup> The 1988 Brazilian Constitution recognises the right of Indigenous people to their traditional lands and obliges the government to demarcate these lands. Unfortunately, competing interests were already present by the time the government started demarcating Indigenous land. This resulted in uncertainty and conflict over land due to overlapping property, a situation that persists to this day (Damasceno et al. 2017, p. 18). The Guarani-Kaiowá in the central south of Mato Grosso do Sul mainly live in Indigenous reservations, on small demarcated Indigenous lands or on occupied land which is being reclaimed (*retomadas*). In the next section, I trace the changes in wage work in the sugarcane sector.

### 11.4.1 Wage Work: Mechanisation, Employment Creation and Unemployment

One major impact of the expansion of the sugarcane industry is the creation of employment prospects. Other rural industries in Mato Grosso do Sul such as cattle raising and soybean production are less labour intensive<sup>7</sup>; thus, the expansion of the sugarcane sector provided new job opportunities (Fig. 11.1). In 2016, the sugarcane sector in Mato Grosso do Sul employed 25,577 people in industry and agriculture, a figure that corresponded to 1.2% of all people in employable age (2,130,000 individuals, SEMAGRO 2018). After 2012, there was a drop in the number of people employed in this sector. This was partly due to the financial and economic crisis.

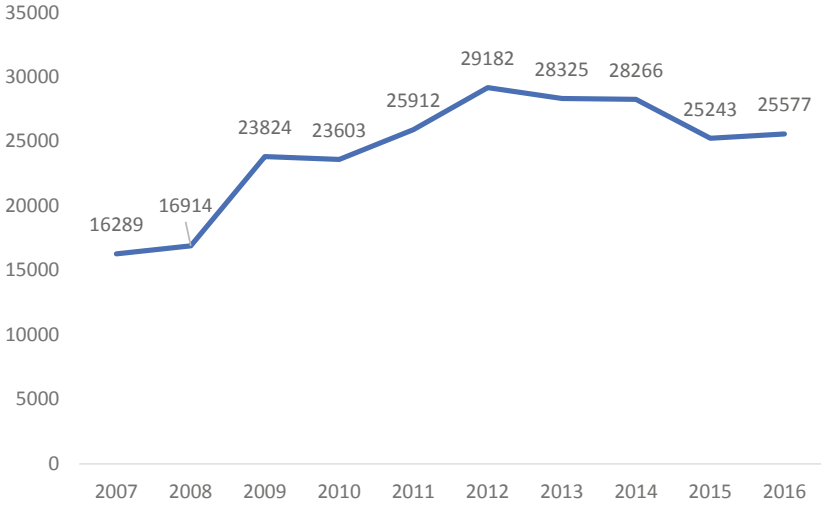
Figure 11.2 highlights another reason for the decline in the number of people employed in this sector. The figure shows the difference in the number of employees in agriculture (sugarcane cultivation and harvest) and industry (the production of sugar and ethanol). While the number of industrial workers increased until 2014 and then only declined slightly, the number of agricultural workers declined steadily. By 2012, most

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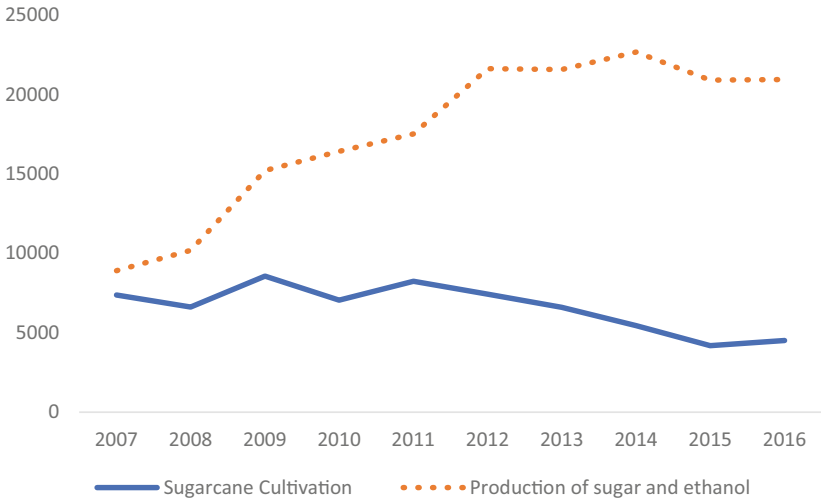
<sup>6</sup>Museu das Culturas Dom Bosco: see, <http://www.mcdb.org.br/materias.php?subcategoriald=23>. Accessed 5 Sept 2018.

<sup>7</sup>Big landowner who cultivates soybeans, Interview no. 1; university professor, Interview no. 2; person from an organic agriculture association, Interview no. 3.





**Fig. 11.1** Employees in the sugarcane sector in Mato Grosso do Sul, 2007–2016 (Source RAIS, organised by DIESSE)



**Fig. 11.2** Number of Employees in the sugarcane sector by area, Mato Grosso do Sul, 2007–2016 (Source RAIS, organised by DIESSE)

sugarcane harvesting and planting in Mato Grosso do Sul was mechanised (MPT, Interview no. 4). One harvesting machine is estimated to replace up to 100 workers (Abreu et al. 2009, p. 6). The Indigenous people who had worked mainly in agriculture were laid off or no longer hired.

During the implementation of the Proálcool programme, the Guarani-Kaiowá were the most important labour force and continued to be so until around 2012 (MPT, Interview no. 4). They also acted as a cheap source of labour, were not provided with formal contracts and the companies did not comply with basic labour rights. The working conditions were often slave-like as defined in the Brazilian criminal code, and the workers faced undignified conditions, excessive workloads, as well as forced and bonded labour (Pauletti 2014, pp. 53–59; Repórter Brasil 2017; de Rezende 2014, pp. 195–198). Working conditions started to improve, when a regional department of the Public Prosecution for Labour Rights (MPT) was founded. Fines were and continue to be imposed on companies that hold workers in such conditions (Pauletti 2014, pp. 39–42; de Rezende 2014, pp. 198–199).

However, profound improvements were only made to working conditions with the spread of mechanisation. The problems with the working conditions were primarily the inadequate board and lodging that hundreds of temporal Indigenous labourers faced. Recruitment and hiring policies changed with mechanisation. Instead of hiring hundreds of temporal labourers, which were housed on the edges of the sugarcane plantations for weeks or months, they permanently employed a smaller number of people who lived near the company as truck drivers and machine operators. This made board and lodging unnecessary. Additionally, the companies started to employ higher qualified personnel and were therefore willing to offer formal contracts, provide better wages and additional benefits.<sup>8</sup> The regional department of the Public Prosecution for Labour Rights (MPT) reports that the problems with slave-like labour in the sugarcane sector have declined tremendously (MPT, Interview no. 4).

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<sup>8</sup>These benefits and the better payment have been under attack since the labour reform in 2017, which means that working conditions have deteriorated since then (representative of a labour union, interview no. 5).

However, Indigenous people did not benefit from these improved working conditions since they mainly lost their access to wage labour in the sector. Instead, Indigenous people reported that they were never told why they were no longer being hired. Representatives of labour unions assumed that they were not qualified or did not have a sufficient level of education to work as a tractor or truck driver, machine operator or in the industrial sector (representative of a labour union, Interview no. 5; representative of a labour union, Interview no. 6). Furthermore, some Indigenous people suspected that as they had been involved in years of public prosecutions and attempts to enforce the law to achieve better working conditions, the companies were no longer willing to hire them.<sup>9</sup> Certainly, there is deeply rooted discrimination against Indigenous people in Brazil and one of the most common prejudices is the perception that they are lazy.<sup>10</sup>

While Indigenous people mostly lost their access to the sugarcane sector, new access to employment opportunities for peasants living on the agrarian reform settlements opened up in industry and mechanised agriculture. Landless workers who receive land through the agrarian reform process can theoretically access credit and technical assistance from the state to help build a house and for initial agricultural activities. However, credits are often paid late or not at all, technical assistance is unavailable or inadequate and the lack of infrastructure for the commercialisation of peasant products hampers the generation of income. Furthermore, the weather can lead to the loss of an entire season's harvest and therefore the loss of income. These are just some of the issues that drive (new) peasants into debt and indebted peasants no longer have access to credit from peasant credit programmes.<sup>11</sup>

Within the context of this lack of access to financial and adequate technical assistance, wage work in the sugarcane sector leads peasants

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<sup>9</sup>Indigenous people on a reservation, interviews no. 7 and 8; and on Indigenous land, interview no. 9.

<sup>10</sup>This was mentioned various times during interviews that I was not allowed to record, or in informal conversations.

<sup>11</sup>Peasants on an agrarian reform settlement, interviews no. 10, 11 and 12; a member of the landless movement MST, Interview no. 13; a representative of Agraer, Interview no. 14; a representative of a rural labour union, Interview no. 15.

to remain on their land and finance necessary investments. This model existed before the expansion of sugarcane. Supplementing the work on their own land with (seasonal) work on large estates or other activities has been common. Nevertheless, sugarcane expansion allowed for a larger mass of people to become temporary wage workers. Various peasants made statements that provided evidence of this. They worked in the sugarcane sector for a period of time until they had saved enough money to (re)start their lives as peasants. Peasants from different agrarian reform settlements described temporary wage work as a way of remaining on the land.<sup>12</sup> The next section presents the changes that have occurred in subsistence work.

#### 11.4.2 Subsistence Work: Land Prices and Access to Land

Land is the most important means of production in agricultural subsistence work. The expansion of the sugarcane industry had an impact on the availability, access and use of land due to increased land prices. Between 2002 and 2013, land prices in Mato Grosso do Sul increased by 586%, which was one of the highest increases in the country<sup>13</sup> (Sant'Anna et al. 2016b, p. 314). This surge in land prices can mostly be attributed to the expansion of the sugarcane sector. During the period which the prices rose to the greatest extent, the international commodity price for soybeans, the main agricultural product exported from Mato Grosso do Sul, was low<sup>14</sup>; therefore, the area planted with soybeans diminished between 2006 and 2012.<sup>15</sup>

The expansion of the sugarcane industry and the rising land prices occurred in an already conflictual context, where landless workers and Indigenous people had been (re)claiming land for decades (Brand et al.

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<sup>12</sup>Peasants on an agrarian reform settlement, Interviews no. 10, 11 and 12; group discussion with peasants from different agrarian reform settlements, Interview no. 16.

<sup>13</sup>Between 2000 and 2005, the price rose from 2689 R\$/ha to 4983 R\$/ha for agricultural land and from 1644 R\$/ha to 3220 R\$/ha for pastureland (Gasques et al. 2008, S. 9–10).

<sup>14</sup>Three big landowners, Interviews no. 17, 18 and 19; a representative of a municipal Secretariat for Economic Development, Interview no. 20.

<sup>15</sup>Semagro, BDEWeb: see, <http://bdeweb.semade.ms.gov.br/bdeweb/>. Accessed 12 Nov 2020.

2008; Almeida 2003). Whereas the agrarian reform process had led to some land redistribution and some land to be demarcated as Indigenous,<sup>16</sup> land concentration remained high. In 2006, the number of large agrarian establishments with over 100 hectares (ha) only amounted to one-third of all agricultural properties, but they occupy 97% of the agricultural land.<sup>17</sup>

In general, redistributive agrarian politics are less likely in situations with increased land prices (Borras et al. 2011, p. 37). The number of new agrarian reform settlements has been decreasing since 2005 and new settlements have not been established since 2013. Certainly, this dynamic is not caused exclusively by the sugarcane expansion, but by the nationwide advancement of an export-led agribusiness combined with the political abandonment of the peasants and agrarian reform (Robles 2018). However, sugarcane expansion is one more reason for competing claims over land and it is particularly responsibly for the rise in land prices. All of this has changed access to land.

Indigenous land faces an even worse situation. When an area is approved as Indigenous, the previous land title becomes invalid. This means that the landowners do not receive any compensation for the land they lose. However, they do receive compensation for the *benfeitorias*, the cost of acquisition, creation or improvement of an asset such as a house or stable. When land prices were low, the costs of the *benfeitorias* exceeded the prices of the land. Since the land prices have increased, it has become unprofitable for landowners to merely receive compensation for their *benfeitorias*, as these now only cover a fraction of the land value.<sup>18</sup>

Big landowners, who usually plant soybean or sugarcane or raise cattle, resist demarcation via juridical measures. As soon as the demarcation process starts, they file an objection (Public Prosecution, Interview no.

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<sup>16</sup>In demarcation processes, traditional Indigenous lands and their limits are supposed to be identified, declared, physically demarcated, homologated and registered. ISA (Instituto Socioambiental): see, <https://pib.socioambiental.org/en/Demarcation>. Accessed 29 Nov 2018.

<sup>17</sup>Own calculation based on Pavão (2005, p. 162) and Censos Agropecuários: see, [sidra.ibge.gov.br](http://sidra.ibge.gov.br). Accessed 13 May 2020.

<sup>18</sup>Interview with a big landowner who owns land that partly lies on identified Indigenous land, Interview no. 1 and with the public prosecutor MPF, Interview no. 21.

21). Landowners have even managed to have declarations of Indigenous land annulled. *Terras Indígenas* reports on their website that in 2015, 140 legal actions concerning Indigenous land demarcation in Mato Grosso do Sul went to the federal courts (Caliari 2016; Miotto 2018). The federal government demarcated the last Indigenous land in 2004.<sup>19</sup> Whereas the creation of new agrarian reform settlements was complicated for landless people/peasants, the Guarani-Kaiowá face the further problem that land that has been demarcated as Indigenous lands may be taken back. This demonstrates that the unequal access to land has not only been consolidated but exacerbated.

## 11.5 Discussion and Outlook: Labour Regimes in Sugarcane Industry Expansion

The main objective of this paper was to understand how the expanding production of biofuels as part of an emerging bioeconomy affect existing social inequalities in labour and land relations.

In Sects. 11.3 and 11.4, I demonstrated how the entanglements of global dynamics and national policies had an important influence on the local level. Without the dynamics of global land grabbing and the global “green development” discourse that arose in the wake of the Kyoto Protocol and COP21, the resurgence of the Brazilian sugarcane sector would have been difficult. The global green development discourse had an important impact on the mechanisation of the sugarcane harvest and attempts to reduce CO<sub>2</sub>. In turn, this had a profound influence on local labour relations. The dynamics of global land grabbing and the increasingly strong sugarcane sector led to an expansion of the sugarcane industry and a subsequent surge in land prices. The higher land prices led to a deterioration in the access of Indigenous people to land and made future agrarian reform processes more difficult. This shows how important it is to move beyond the national level and to consider

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<sup>19</sup>Terras Indígenas: see, <https://terrasindigenas.org.br/pt-br#pesquisa>. Accessed 25 Sept 2018.

global dynamics alongside national and local changes when examining social inequalities.

Section 11.4 demonstrated that the impact of sugarcane industry expansion differed depending on the social group in question. For the peasants in agrarian reform settlements, the change in the labour regime could best be described as an increased albeit temporal semi-proletarianisation. While the new work opportunities in the sugarcane sector provided broader access to wage labour and caused a wider semi-proletarianisation of the peasants, this process was not permanent. As soon as peasants had achieved a more stable income through their agriculture activities, they went back to being just peasants. Therefore, a process of re-peasantisation occurred in parallel to the process of semi-proletarianisation. This is why Bernstein (2010, pp. 33–34) describes the categories of “landless labour” and “small peasants” as fluid, because people move between these categories and occupy more than one at the same time. This also illustrates how peasants are able to benefit from their access to their land access simply through capital (wages), and this is also described by Ribot and Peluso (2003, pp. 160–171) in the *Theory of Access*.

In the case of the Guarani-Kaiowá, they were the principal labour force and, therefore, had access to wage labour before the mechanisation of the sugarcane industry. Even though the working conditions had often been slave-like, the sugarcane industry was one of the few possibilities that they had to secure subsistence (Abascal et al. 2016, p. 2), given that they had been denied access to their traditional land for decades (Brand et al. 2008). When the expansion and mechanisation occurred, they lost their access to wage work and therefore suffered a double exclusion: from land *and* wage labour. Malnutrition, high child mortality and suicide rates (Abascal et al. 2016, pp. 1–2) show that securing livelihoods became very difficult. This phenomenon has been described as “expulsion” by Saskia Sassen:

The past two decades have seen a sharp growth in the number of people, enterprises, and places expelled from the core social and economic orders of our time. [...] The notion of expulsion takes us beyond the more

familiar idea of growing inequality as a way of capturing the pathologies of today's global capitalism. (2014, p. 1)

Sassen describes this dynamic as part of the deepening of capitalist relations. People once crucial to the development of capitalism stop being of value to the larger system. Natural resources, in this case land in of e.g. Latin America, are now viewed as become more important than the people who live on those lands as workers or consumers (ibid., p. 10).

These conclusions must be borne in mind when discussing the potential effects of the emerging bioeconomy. Even though the transition away from fossil fuels towards renewable energies is important, the impact on land and labour relations have to be considered, as is exemplified by the case of the Brazilian biofuel sector. This is especially relevant when the implementation of the bioeconomy includes the expansion of land-based biomass. Expansion dynamics do not necessarily lead to peasant expropriation, but can hinder more equal land distribution policies and may even destroy the livelihoods of Indigenous populations. Although dynamics of expansion such as these may have a positive impact on employment, a closer look reveals that the most vulnerable people (e.g. unskilled labourers) do not benefit from increased mechanisation and technologization. When reflecting on bioeconomy policies, a greater effort must be undertaken to consider how to avoid reproducing existing social inequalities and negatively impacting the most vulnerable population groups, such as unskilled workers, peasants and Indigenous populations.

### List of Interviews quoted

To assure anonymity, names, gender, positions and detailed locations are omitted; in some cases, the name of the organisation is also withheld.

Interview no.	Institution/Organisation	Date and place
Interview no. 1	Big landowner	23/11/2017, Mato Grosso do Sul
Interview no. 2	University professor	20/11/2017, Mato Grosso do Sul
Interview no. 3	Person from an organic agriculture association	03/05/2018, Mato Grosso do Sul

(continued)



(continued)

Interview no.	Institution/Organisation	Date and place
Interview no. 4	Public Prosecution for Labour Rights (MPT)	13/06/2018, Mato Grosso do Sul
Interview no. 5	Representative of a labour union	09/05/2018, Mato Grosso do Sul
Interview no. 6	Representative of a labour union	20/06/2018, Mato Grosso do Sul
Interview no. 7	Indigenous person on a reservation	18/06/2018, Mato Grosso do Sul
Interview no. 8	Indigenous person on a reservation	18/06/2018, Mato Grosso do Sul
Interview no. 9	Indigenous person on Indigenous land	19/06/2018, Mato Grosso do Sul
Interview no. 10	Peasant on an agrarian reform settlement	16/06/2018, Mato Grosso do Sul
Interview no. 11	Peasant on an agrarian reform settlement	16/06/2018, Mato Grosso do Sul
Interview no. 12	Peasant on an agrarian reform settlement	16/06/2018, Mato Grosso do Sul
Interview no. 13	Member of the landless movement MST	22/11/2017, Mato Grosso do Sul
Interview no. 14	Representative of the agricultural development agency Agraer	10/11/2017, Mato Grosso do Sul
Interview no. 15	Representative of a rural labour union	16/11/2017, Mato Grosso do Sul
Interview no. 16	Group discussion with peasants from different agrarian reform settlements	20/04/2018, Mato Grosso do Sul
Interview no. 17	Big landowner	07/05/2018, Mato Grosso do Sul
Interview no. 18	Big landowner	07/05/2018, Mato Grosso do Sul
Interview no. 19	Representative of a rural union and big landowner	07/05/2018, Mato Grosso do Sul
Interview no. 20	Municipal Secretariat for Economic Development	07/05/2018, Mato Grosso do Sul
Interview no. 21	Public Prosecutor (MPF)	11/06/2018, Mato Grosso do Sul

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