

# IDS Bulletin

Transforming Development Knowledge

Volume 54 | Number 1 | February 2023

## **FRONTIER TERRITORIES: COUNTERING THE GREEN REVOLUTION LEGACY IN THE BRAZILIAN CERRADO**

Issue Editors Lidia Cabral, Sérgio Sauer and  
Alex Shankland



Notes on Contributors	iii
<b>Introduction: Reclaiming the Cerrado – A Territorial Account of a Disputed Frontier</b> Lídia Cabral, Sérgio Sauer and Alex Shankland	1
<b>Transformations of the Agricultural Frontier in Matopiba: From State Planning to the Financialisation of Land</b> Cássio Arruda Boechat, Fábio Teixeira Pitta, Lorena Izá Pereira and Carlos de Almeida Toledo	17
<b>Matopiba's Disputed Agricultural Frontier: Between Commodity Crops and Agrarian Reform</b> Estevan Coca, Gabriel Soyer and Ricardo Barbosa Jr	33
<b>Green Grabbing in the Matopiba Agricultural Frontier</b> Anderson Antonio Silva, Acácio Zuniga Leite, Luís Felipe Perdigão de Castro and Sérgio Sauer	57
<b>Brazilian Agricultural Frontier: Land Grabbing, Land Policy, and Conflicts</b> Matheus Sehn Korting, Débora Assumpção e Lima and José Sobreiro Filho	73
<b>Environmental Policy Reform and Water Grabbing in an Agricultural Frontier in the Brazilian Cerrado</b> Andréa Leme da Silva, Ludivine Eloy, Karla Rosane Aguiar Oliveira, Osmar Coelho Filho and Marcos Rogério Beltrão dos Santos	89
<b>Mapping Fire: The Case of Matopiba</b> Dernival Venâncio Ramos Júnior, Vinicius Gomes de Aguiar and Komali Kantamaneni	107
<b>Brazilian Civil Society and South–South Cooperation: Countering the Green Revolution from Abroad</b> Laura Trajber Waisbich and Lídia Cabral	127
<b>Glossary</b>	145

# Introduction: Reclaiming the Cerrado – A Territorial Account of a Disputed Frontier\*

Lídia Cabral,<sup>1</sup> Sérgio Sauer<sup>2</sup> and Alex Shankland<sup>3</sup>

**Abstract** As global agri-food systems come under increasing stress, debates on their future have become highly polarised, exposing fundamental differences in understandings and priorities: industrial production versus traditional rights; short-term yields versus longer-term sustainability; cheap versus healthy food. Brazil is at the core of these debates, with the Cerrado being centre stage since the soybean-powered Green Revolution. Accompanied by deforestation, soil degradation, and depletion of water resources, Brazil's agricultural production frontier has now moved northwards into the Matopiba region. This issue of the *IDS Bulletin* explores the ongoing territorial transformation, considering the violent logics of extraction in frontier zones, the grabbing of nature, and the dynamics of resistance in local and international spheres. Exposing both the material and discursive appropriation experienced by the Cerrado, this issue profiles it as a key site of multi-scalar injustices against people and nature that need to be addressed by efforts to secure more just and sustainable agri-food systems.

**Keywords** agri-food systems, territories, agricultural frontier, Green Revolution, Cerrado, Matopiba, Brazil.

## 1 Introduction

Globalised agri-food systems are under pressure. Extreme weather events, wars, geopolitical tensions, the Covid-19 pandemic, and fluctuations in fuel prices have all brought significant disruption to global supply chains in recent years. Agri-food systems are also under unprecedented scrutiny from consumers, scholars, and activists, as the industrialised food production that feeds these systems has been proven to be not only highly inequitable but also costly in climate and environmental terms (Patel 2013; Crippa *et al.* 2021; Borras Jr *et al.* 2022). Persistent Malthusian arguments about the inevitability of moving towards ever more globalised



systems to feed a growing population are increasingly challenged by movements that emphasise localising food and shortening food chains to build fairer and more sustainable systems (Dubois 2019; Watts, Ilbery and Maye 2005; Jarzębowski, Bourlakis and Bezat-Jarzębowska 2020). Brazil is at the centre of these debates, as a world leader in the production of a range of agri-food commodities in large-scale and highly mechanised farms, as well as a cradle of resistance movements advocating for land rights and food sovereignty. While most global attention has been paid to the Amazon region, this issue of the *IDS Bulletin* takes a close look at how these tensions are experienced in Brazil's most rapidly expanding food and commodity-producing frontier in the Cerrado region, a vast savannah zone in the centre of the country that has been profoundly transformed over the last half century (Sauer and Oliveira 2022).

Brazil is often portrayed as a success story of agricultural modernisation (Morris, Binswanger-Mkhize and Byerlee 2009). This story is invariably linked to the expansion of the production frontier and, specifically, the conversion of the Cerrado into industrial farmland. The Cerrado covers about 24 per cent of Brazil and is the site of a key agricultural frontier whose expansion is driven by intensive soybean and livestock production for export (Hershaw and Sauer 2022; Favareto et al. 2019).

Farming at scale in the Cerrado began in the 1970s, a time when this territory – already home to thousands of indigenous and traditional communities – was perceived as 'empty' and unproductive. 'Modernising' this region by implementing the Green Revolution package was central to the economic and political agenda of the military regime then in power in Brazil (Nehring 2022). In 1987, two scientists from the American Association for the Advancement of Science wrote:

Brazil has become more nearly self-sufficient in wheat production and an increasingly important exporter of soybeans. Further expansion in the growth of both temperate-zone and tropical crops is under way. The key to the change in Brazil's role is increased competence in agricultural research and exploitation of a huge region, the Campo Cerrado, which was considered of little value before the early 1970s. (Abelson and Rowe 1987: 1450)

The narrative of the 'miracle of the Cerrado' (*The Economist* 2010) praises the conversion of this territory into a zone of modern agriculture and emphasises the role played by science and technology, which is held to have enabled large-scale farmers to achieve high yields and become competitive in world markets, turning Brazil into a global leader in a range of agri-food commodities. The tropicalisation of soybean (until then a temperate-zone crop) became a symbol of the state-led scientific conquest of the Cerrado. The Brazilian Agricultural

Research Corporation (Embrapa), established at the time to lead the agricultural modernisation project, is widely regarded as the hero of this Brazilian Green Revolution (Cabral 2021; Nehring 2022). Although the conversion of the Cerrado was supported by massive investments in infrastructure and generous subsidies directed towards supporting large-scale intensive farming, the role of state support is underplayed by narratives that foreground science and entrepreneurship (Sauer and Oliveira 2022).

Particularly since the mid-1990s, the rise in crop yields, production levels, and export volumes has been unprecedented, helped by the increase in demand for soybeans from China (Hairong, Yiyuan and Bun 2016). However, the Cerrado 'miracle' has come at a high cost. Narratives praising the roles of technology, investment, and productivity tend to ignore the extent to which the agricultural model that was adopted deepened the existing historical trend towards exclusion and concentration in the distribution of land and wealth (Wolford 2021). Besides environmental impacts, the expansion of the frontier has exacerbated land inequality, poverty, and injustice (Favareto *et al.* 2019; Wolford 2021). Well-documented legacies of the 'miracle' include deforestation, greenhouse gas emissions, biodiversity loss, land degradation, and depletion of water resources (Françoso *et al.* 2015; Hunke *et al.* 2015; Klink and Machado 2005; Lopes *et al.* 2020; MMA and IBAMA 2011). These, in turn, have impacted agricultural yields and profitability (Flexor and Leite 2017).

The main driver of the transformation of land use in the Cerrado has been 'the continuous and accelerated expansion of agriculture, with the addition of an area of 102,603km<sup>2</sup> between 2000 and 2018' (IBGE 2020: 44). Growth of pasture areas stagnated after 2010, and declined after 2016, with land being used instead for grain crops, which grew 52.9 per cent in the same period. By 2018, the Cerrado accounted for 44.6 per cent of Brazil's agricultural land area (Sauer, forthcoming).

In recent years, global demand for agri-food commodities (coupled with soil exhaustion in longer-established agricultural areas) has pushed the industrial agricultural frontier further north, into a region known as 'Matopiba', the acronym for a group of four states: Maranhão, Tocantins, Piauí, and Bahia. A proposed delimitation of Matopiba covers the whole of Tocantins and sections of the other three states (Miranda, Magalhães and Carvalho 2014). Having formally defined the borders of the Matopiba region (which contains over 300 municipalities and covers an area of over 73 million hectares), the Brazilian government declared it an 'agribusiness zone', turning it into the world's last major agricultural frontier (Favareto *et al.* 2019). Though presented as a technical measure (Miranda *et al.* 2014), this delimitation was a deeply political decision that has been contested by scholars and social movements in Brazil and beyond (Calmon 2022; Hershaw and Sauer 2022). Conflicts and disputes

over land and other natural resources (such as water, wood, and minerals) are particularly intense in the Matopiba region, and have intensified alongside the growth of foreign and domestic capital investments (Flexor and Leite 2017; Hershaw and Sauer 2022).

This issue of the *IDS Bulletin* highlights the legacy of half a century of violence in the Cerrado, arguing that this legacy cannot be ignored in debates on the global agri-food systems to which the region is increasingly central. Its articles offer original research and new empirical material on the destructive footprint of an enduring Green Revolution and the battles that have engulfed people and nature in the Cerrado in general and its Matopiba frontier in particular. The collection casts a very different light on a region that has come to symbolise the soybean miracle and the accomplishments of the Green Revolution paradigm. In doing so, it seeks to reclaim the Cerrado as a patchwork of territories whose rich and diverse social and ecological fabrics need to be placed alongside those of other better-known and better-protected regions, such as the Amazon (Guéneau, Diniz and Passos 2019).

The articles in this *IDS Bulletin* are authored mainly by early career scholars from Brazilian and British universities who participated in a series of workshops on agri-food systems of the Cerrado held in December 2021. This series was funded by a Researcher Links Network Grant supported by the Newton Fund, the British Council, and the Brazilian Federal District Research Support Foundation (Fundação de Apoio à Pesquisa do Distrito Federal, FAPDF). Thus, this *IDS Bulletin* contributes to building the capacity of early career researchers while connecting Brazilian scholarship to international networks and audiences. It also helps to consolidate academic exchanges between UK and Brazilian scholars working on cutting-edge issues for the pursuit of food justice and sustainability.

Looking across the articles, three overarching themes emerge. The first concerns the logic of extraction in an agricultural frontier, examining both its Malthusian drive and its contradictions (see section 2 of this introduction). The second theme highlights the grabbing of natural resources in the name of sustainability (section 3). The third theme highlights conflicts and resistance movements, as struggles are fought out both locally and in international spaces (section 4). In the remainder of this introduction, we take each of these themes in turn, before concluding (section 5) with an agenda for research and action to reclaim the Cerrado as a globally important site for efforts to secure sustainability along with justice for nature and people alike.

## **2 Frontier logics and contradictions**

In this *IDS Bulletin*, we define an agricultural frontier as a zone of expansion of farming, typically involving land clearance and the removal of native vegetation to make way for crops or pastures. The concept refers to transformations in land use whose scope

cannot be reduced to the productive or economic spheres. Gould (2006: 396) defines agricultural frontiers as 'the outermost edge of human settlement'. Although they typically offer economic opportunities to those arriving to pursue agricultural activities, frontier territories have historically also been zones of exploitation, violence, and inequity.

Along with those of other globally important food-producing regions such as Russia (Kazmer 1977), agricultural or farming frontiers in the Americas – and particularly in the United States (US) and Canada – have long been studied as part of an effort to map changing landscapes and trace the encroachment of settled agriculture into remote unexploited lands (Galenson and Pope 1989; Judd 1984; Vanderhill 1962). Turner (1920) explored the significance of the US frontier, reinforcing the myth of the conquest of 'free lands' as the civilising process that forged the 'American man'. In the same vein, Webb (1964) described the 'great frontier' as the movement of civilisation towards the 'wilderness' and sparsely inhabited lands, promoting their development. Hewes (1973) analysed the lives of US 'suitcase farmers' who, in the first half of the twentieth century, lived at least one county away from where they cleared land and initiated cultivation with modern technologies, in parts of Kansas and Colorado. A recurrent theme in this literature is the emphasis on 'free lands', seen as 'empty spaces' whose status as either uninhabited or inhabited by 'primitive people' becomes the main justification for colonisation (Wolford 2021).

The agricultural frontier therefore needs to be understood in multiple dimensions (Hershaw and Sauer 2022): as a territory (the geographical dimension) affected by changes in land use resulting from the expansion of monocrops and livestock production (the economic-productive dimension), which comes under the control of external actors (the political dimension) whose economic practices cause degradation of natural resources (the environmental dimension), affecting local ways of life (the social and cultural dimension) (Sauer and Oliveira 2022).

In Brazil, the clearance of land for farming by outsiders dates back to colonial sugar and coffee plantations. For 400 years after the arrival of the Portuguese in 1500, plantations spread across the highest-potential lands throughout the country, but particularly along the Eastern seaboard, in areas that were relatively easy to access. A more extensive penetration of farming into the hinterlands started with the arrival of European migrants in the south of the country in the late nineteenth century, but it was in the 1930s that a more forceful incursion into the 'wilderness' of Central Brazil becomes noticeable, with the 'March to the West' policy of President Getúlio Vargas. This went alongside an intensification of migration to emerging urban centres, supplying cheap labour to the country's nascent industrial sector (Arbex Jr 2005).

The combination of Westward expansion with industrialisation established the foundations for the extensive modernisation of Brazilian agriculture that started in the 1960s, as discussed by Boechat *et al.* (this *IDS Bulletin*). The Cerrado subsequently became a key site for the development of Brazil's 'agrarian dualism', where some policies target small-scale farmers (often resettled peasants displaced from higher-potential agricultural areas by land consolidation) while others (supported by vastly greater levels of state funding) promote the expansion of large-scale farming and livestock-raising.

The article by Boechat *et al.* explores how the agricultural frontier in Brazil is conceived and how it has been historically constituted, since the times of the country's military dictatorship (1964–85). The authors argue that understandings of the frontier in those days were influenced by Malthusian concerns about feeding a growing population (Ehrlich 1968) and shaped by an agenda of state-led 'national integration' and industrialisation that neglected the population which already inhabited those areas. The authors go on to look at recent transnational real estate activities in the Matopiba frontier, documenting how the same patterns of territorial control persist today, albeit driven by different actors and logics. Brazilian agribusiness enterprises, in partnership with international capital, have created transnational agricultural real estate companies and acquired land in frontier areas, where financial speculation is disconnected from agri-food production and trading activities. Although the violence of expropriation and deforestation of the Cerrado persists, justified by a revamped Malthusianism, there are new financial mechanisms that shape the agricultural frontier and exert control over territory, driven by transnational financial groups. This reflects a global trend towards deepening the financialisation of land and of the food system more broadly.

The article by Coca, Soyer and Barbosa Jr (this *IDS Bulletin*) zooms in on trends in soybean and corn production across microregions of the Matopiba frontier and juxtaposes this with progress in the country's agrarian reform programme. The authors' analysis highlights the competing and conflicting agricultural development models at work in Brazil and illustrates how agrarian dualism manifests in this frontier zone. The authors show that while commodity crop production has increased in recent years, the agrarian reform programme has ground to a halt. New agrarian reform settlements are located in marginal lands with low agricultural potential, highlighting the inequities of land exploitation in the frontier. Despite Matopiba's status as the newest and largest agricultural frontier in the world, it – and the Cerrado more broadly – remains a territory of social and economic inequality. The advance of the frontier has deepened historical social inequities, intensified contradictions in policy, and increased environmental destruction.



### 3 Grabbing nature in nature's name

Analysis of the conversion of the Cerrado into an agricultural frontier provides one of the most recent chapters in a large body of scholarly work on land concentration, land and green grabbing, and dispossession in the Brazilian countryside (Favareto *et al.* 2019; Sauer, forthcoming). When Matopiba became a target for new investments after 2010, accelerated by state-led pushes to develop the region as a global agribusiness powerhouse in the context of an international rise in commodity prices, its attractiveness to agribusiness was enhanced by the lack of environmental protections and enforcement in the region (Flexor and Leite 2017; Hershaw and Sauer 2022). Investors attracted by these incentives, as well as by Matopiba's strategic location in relation to the northern port of São Luis and other major terminals for soybean exports, were entering a highly disputed landscape (Hershaw and Sauer 2022).

Agricultural frontier expansion and land concentration in the Cerrado have historically been favoured by land grabbing, particularly what is known in Brazil as *grilagem*: the illegal appropriation of public land using false or forged ownership documents (Silva and Sauer 2022). These long-standing patterns of illegal appropriation and concentration have worsened since 2016 (and particularly after 2019), when the government adopted new legal and administrative measures that have been a driving force for land grabbing and the commodification and privatisation of land and natural resources (Sauer, forthcoming).

This process has also seen an intensification of 'green grabbing' (*ibid.*). In addition to favouring 'environmental investments' based on 'narratives of sustainable development' (Borras Jr *et al.* 2022), Brazil's government has changed important legal frameworks for forestry and land legislation. Along with looser enforcement, the last decade has seen the introduction of more flexible environmental rules and laws. In addition to expanding land degradation, particularly deforestation in the Amazon and Cerrado regions, these legal changes have also favoured the appropriation of natural resources based on narratives of 'environmental protection' (*ibid.*). This process of green grabbing has centred on the appropriation of nature for speculation (non-productive gains) or for 'future productive exploitation', driving the expropriation of local communities (Sauer, forthcoming).

The article by A.A. Silva *et al.* (this *IDS Bulletin*) explores how environmental regulation can be an instrument of green grabbing, facilitating the appropriation not only of land but also of nature – including forests, minerals, and other natural resources. The authors examine the registries in the National System of Rural Environmental Cadastre (Sistema Nacional de Cadastro Ambiental Rural, SICAR, or just CAR) as part of an analysis of green grabbing in Matopiba. Due to weak land management and supervision, the CAR has enabled the appropriation of land

and other natural resources through the use of legal tools and 'environmental standards'. Sustainability arguments are deployed to grab nature in a process of green grabbing that the article situates in relation to Brazil's colonial heritage and the current situation of 'unequal ecological exchange' (p.58). It concludes that environmental preservation has been used as a smokescreen to hide a new land rush, enabled through green grabbing, that is underway in the Cerrado frontier.

The article by Korting, Lima and Sobreiro Filho (this *IDS Bulletin*) also engages with the CAR as an instrument for green grabbing. The authors argue that the registration process has unified agricultural productivity concerns with environmental protection goals and paved the way for investors to appropriate land and ecosystem services. They discuss how the Cerrado, which has less stringent land use restrictions than the Amazon under Brazilian environmental laws, emerges as a 'sacrifice zone', with the self-certification facility of the CAR system allowing farmers in transition zones like Matopiba to reclassify Amazonian land as Cerrado and thereby deforest a larger percentage of their holdings. Through the CAR, state regulation effectively enables land appropriation and green grabbing, while it creates obstacles for the struggles of socio-territorial movements advocating for land justice in a region where land conflicts have historically been marked by high levels of violence.

The complex ways in which environmental policy and regulation are entangled with green grabbing are also explored in the article by A.L. Silva *et al.* (this *IDS Bulletin*). The authors focus specifically on water grabbing in frontier areas of the state of Bahia. They document how environmental reform and deregulation by the state Institute for the Environment and Water Resources (Instituto do Meio Ambiente e Recursos Hídricos, INEMA) has facilitated deforestation and water grabbing for large-scale irrigation by industrial agriculture and has specifically favoured a new phase of soybean expansion. Through the concession of water rights, the alliance between the state and the private agro-exporting sector has enabled the latter to secure almost unrestricted access to surface water and groundwater in a region struggling with increasing water scarcity. The authors also explore the resistance strategies used by social movements against the hydrosocial power that is exercised by agro-industrial corporations, concluding that the experience of the region exposes the limits of participatory democracy in a neoliberal context that privileges agrarian extractivism.

The three articles aforementioned illustrate how the state has led processes of nature grabbing by using policy and regulatory frameworks to translate the sustainability agenda into actions that suit the interests of capital. However, this has not happened without contestation; conflict and resistance are also strong themes that emerge from the articles in this collection.

#### 4 Conflict and resistance

Land grabbing and the grabbing of nature more broadly are experienced in this territory as violent processes of dispossession that exacerbate inequities. Brazil has a long history of resistance and radical mobilisation against these territorial inequities, championed by many social movements for agrarian justice, of which the Landless Rural Workers Movement (Movimento dos Trabalhadores Rurais Sem Terra, MST), established in the 1980s, is the best known internationally. There are, however, several other agrarian and rural union movements – such as the National Coordination for the Articulation of Quilombos (Coordenação Nacional de Articulação de Quilombos, CONAQ) and the National Council of Traditional Peoples and Communities (Conselho Nacional de Povos e Comunidades Tradicionais, CNPCT) – which struggle for the land and territorial rights of peasants and traditional peoples such as *quilombolas* (people of African descent who trace their origins to communities established by escaped slaves) in the Cerrado.

The intensity of conflicts and violence is particularly strong in the frontier zone. In response, social movements seek ways to support their resistance struggles by connecting with scholar-activists to generate evidence about the scale of the violence, as well as to change the narrative about the 'Cerrado miracle' and the Green Revolution paradigm that underpins it. They also connect with international networks and policy processes as part of an effort to internationalise their struggle against dispossession and for their territorial rights (Sauer, forthcoming).

Documenting the results of one such international collaboration between scholars and communities, the article by Ramos Júnior, Aguiar and Kantamaneni (this *IDS Bulletin*) explores how fires have been a tool to advance the expansion of the frontier. Although fire has long been used by Cerrado communities as a traditional resource management strategy, it has recently become associated with environmental degradation and agribusiness expansion. The analysis focuses on the territories of black communities in Matopiba and shows how land conflict zones are shifting into the productive spaces of these communities, indicating a politicisation of these spaces that has implications for the regional agri-food system. Using satellite imagery and participatory methods, the authors worked with community members and activists to create an integrated map documenting the extent of fires in the area in order to help them protect their territories. This methodology can support the protection of land and communities in other areas by helping to gather evidence that can be used in court cases and whistleblowing.

Another facet of the internationalisation of struggles over the Cerrado has been the extent to which they have influenced debates on efforts to export Brazil's agricultural development experience to other parts of the global South, particularly Africa's

'Guinea Savannah' (Cabral *et al.* 2013; Shankland and Gonçalves 2016). The article by Trajber Waisbich and Cabral (this *IDS Bulletin*) explores contestation of the Green Revolution paradigm through a focus on the interaction and interdependence between civil society and the state in the context of South–South cooperation (SSC). They analyse changes and continuities in civil society engagement across two phases: an expansion phase during the Workers' Party (PT) era (2003–16) and a retraction phase that intensified after President Jair Bolsonaro took office in 2019. State extroversion during the PT era was accompanied by civil society activism which either sought participation in or vocally contested SSC, with a particular focus on initiatives that aimed to export Brazil's Green Revolution. During the current period, the government's de-prioritisation of the South–South agenda has been accompanied by very limited civil society activism. The authors discuss why this needs attention and the challenges that need to be considered to reinstate productive state–civil society dynamics if and when Brazil resumes its role as an exporter of development innovations and policies.

### 5 Reclaiming territory

The articles in this *IDS Bulletin* portray the Cerrado as a territory of martyrdom, not miracle (Sauer and Cabral 2022). Adding to abundant evidence about the environmental impact of half a century of exploitative modernisation, the seven articles foreground social inequities and political tensions along a moving frontier within this vast territory. Narratives about economic opportunities and social imperatives (such as feeding the world) continue to be replicated and to constitute imaginaries of the Cerrado, reflected in the formal demarcation of Matopiba by the Brazilian government, which has sought to brand this space as an industrial agricultural territory. Some have also argued that the Cerrado (and the Matopiba region in particular) is consolidating its position as a 'sacrifice zone' that feeds the world while avoiding the advance of the agricultural frontier further into the Amazon, a territory that is under closer scrutiny and subject to more stringent environmental regulation (Silva and Sauer 2022).

The appropriation of the Cerrado has been both material and discursive. Material appropriation has taken the form of land grabbing for real estate speculation (Boechat *et al.*, this *IDS Bulletin*) and the grabbing of water, forests, and other natural resources that goes in tandem with land enclosures (Korting *et al.* and A.L. Silva *et al.*, this *IDS Bulletin*). It has also manifested in agrarian reform settlements relegated to marginal lands (Coca *et al.*, this *IDS Bulletin*), and in the use of fire to advance the frontier (Ramos Júnior *et al.*, this *IDS Bulletin*).

Discursive appropriation has been carried out through the geographical demarcation and classification of Matopiba (Miranda *et al.* 2014).<sup>4</sup> It is visible in the politicisation of fire, shamelessly accusing traditional Cerrado communities of being

agents of deforestation (Ramos Júnior *et al.*, this *IDS Bulletin*), in the same terms that President Bolsonaro has used for indigenous and traditional peoples of the Amazon (Grilli 2020). Discursive appropriation has also taken place through the distortion of environmental regulation to enclose land and grab nature while invoking sustainability concerns (A.A. Silva *et al.* and Korting *et al.*, this *IDS Bulletin*). And it has been evident in the promotion of Brazil's Green Revolution model abroad through the channel of diplomacy and SSC (Trajber Waisbich and Cabral, this *IDS Bulletin*).

This collection also highlights forms of resistance to the enduring violence in the Cerrado, including those which connect communities and social movements on the ground with academic networks and international alliances. Some of the authors in this *IDS Bulletin* are hands-on scholar-activists, working with the peoples of the Cerrado to document and understand their experiences and supporting them in the struggle for their livelihoods, identities, and rights. They are connected through the Matopiba Observatory for Socio-environmental Conflicts, established in 2019 as a network that monitors conflict and violence suffered by communities, working alongside other initiatives to empower the peoples of the Cerrado and defend its ecosystems (Calmon 2022).

The Matopiba Observatory is assembling and advancing an understanding of this territory centred on the notion of 'sociobiodiversity' – the combination of environmental diversity with sociocultural diversity, reflecting ways of life that are interdependent with the nature of the Cerrado – seeking to reclaim the territory in all its natural and social diversity (Guéneau *et al.* 2019). This interpretation of sustainability is a far cry from the narrow views which focus on environmental management as a means to ensure continuous productivity and profitability. Instead, it is grounded in a more transformative understanding that sees environmental balance and social justice as co-constitutive and intertwined, aligned with authors such as Leach *et al.* (2018) who discuss the imperative of coupling equity with sustainability.

This *IDS Bulletin* argues that researchers and scholar-activists can contribute further to a more sustainable and equitable Cerrado by continuing to challenge the normalised portrayal of the region as the cradle of Brazil's modern agriculture and the country's breadbasket for agri-food commodities. This should include seeking to mobilise further support to local organisations, networks, and initiatives that are connected to communities whose livelihoods are compromised and whose rights are persistently violated, as well as developing research that explores the sociobiodiversity of the Cerrado and thereby assemble a more nuanced representation of this territory.

There is also scope for research that examines how inequities in the Cerrado are connected to inequities elsewhere, through

the industrialised food system that depletes ecosystems and marginalises the peoples of the Cerrado and of other global agricultural production frontiers while it expends vast quantities of food miles to feed poor consumers in other parts of Brazil and the world (Zachary 2004; Heal *et al.* 2020). This type of research can galvanise a broader set of actors internationally and help to profile and reclaim the Cerrado as a territory linked to multi-scalar injustices against people and nature. It can also demonstrate parallels and build alliances between the struggles of the victims of these injustices in Brazil and in other agricultural frontier territories across the world, as part of the global effort to secure a just and sustainable transformation of agri-food systems.

### Notes

- \* This *IDS Bulletin* was supported by the Newton Fund Researcher Links Workshops grant, ID 2019-RLWK11-10177. The grant was funded by the UK Department for Business, Energy and Industrial Strategy and the Fundação de Apoio a Pesquisa do Distrito Federal (FAPDF) in Brazil, and delivered by the British Council. Some material was developed under the project Green Revolutions in Brazil, China and India: Epic Narratives of the Past and Today's South-South Technology Transfers, funded by the UK Economic and Social Research Council (ID ES/R00658X/1). The opinions expressed are those of the authors and do not necessarily reflect the views or policies of IDS or the funders.
- 1 Lídia Cabral, Research Fellow, Institute of Development Studies, UK.
- 2 Sérgio Sauer, Professor and Coordinator of the Observatory for Socio-environmental Conflicts in Matopiba, University of Brasília, Brazil; Director, Terra de Direitos, Brazil; Researcher, CNPq, Brazil.
- 3 Alex Shankland, Research Fellow, Institute of Development Studies, UK.
- 4 See also **Matopiba GeoWeb website**.

### References

- Abelson, P.H. and Rowe, J.W. (1987) 'A New Agricultural Frontier', *Science* 235.4795: 1450–1
- Arbex Jr, J. (2005) '"Terra sem Povo", Crime sem Castigo: Pouco ou nada sabemos de concreto sobre a Amazônia', in M. Torres (ed.), *Amazônia revelada: os descaminhos ao longo da BR-163*, Brasília: CNPq
- Borras Jr, S.M. *et al.* (2022) '**Climate Change and Agrarian Struggles: An Invitation to Contribute to a JPS Forum**', *Journal of Peasant Studies* 49:1: 1–28 (accessed 13 October 2022)
- Cabral, L. (2021) '**Embrapa and the Construction of Scientific Heritage in Brazilian Agriculture: Sowing Memory**', *Development Policy Review* 39:5: 789–810 (accessed 13 October 2022)
- Cabral, L.; Shankland, A.; Favareto, A. and Costa Vaz, A. (2013) '**Brazil–Africa Agricultural Cooperation Encounters: Drivers,**

- Narratives and Imaginaries of Africa and Development'**, *IDS Bulletin* 44.4: 53–68, DOI: 10.1111/1759-5436.12042 (accessed 13 October 2022)
- Calmon, D. (2022) **'Shifting Frontiers: The Making of Matopiba in Brazil and Global Redirected Land Use and Control Change'**, *Journal of Peasant Studies* 49.2: 263–87 (accessed 13 October 2022)
- Crippa, M. et al. (2021) **'Food Systems Are Responsible for a Third of Global Anthropogenic GHG Emissions'**, *Nature Food* 2.3: 198–209 (accessed 13 October 2022)
- Dubois, A. (2019) **'Translocal Practices and Proximities in Short Quality Food Chains at the Periphery: The Case of North Swedish Farmers'**, *Agriculture and Human Values* 36.4: 763–78 (accessed 13 October 2022)
- Ehrlich, P. (1968) *The Population Bomb*, New York NY: Rivercity Press
- Favareto, A.; Nakagawa, L.; Pó, M.; Seifer, P. and Kleeb, S. (2019) *Entre chapadas e baixões do Matopiba: Dinâmicas territoriais e impactos socioeconômicos na fronteira da expansão agropecuária no Cerrado*, São Paulo: Editora Ilustre e Greenpeace
- Flexor, G. and Leite, S.P. (2017) **'Land Market and Land Grabbing in Brazil during the Commodity Boom of the 2000s'**, *Contexto Internacional* 39.2: 393–420 (accessed 13 October 2022)
- Françoso, R.D. et al. (2015) **'Habitat Loss and the Effectiveness of Protected Areas in the Cerrado Biodiversity Hotspot'**, *Natureza & Conservação* 13.1: 35–40 (accessed 13 October 2022)
- Galenson, D.W. and Pope, C.L. (1989) **'Economic and Geographic Mobility on the Farming Frontier: Evidence from Appanoose County, Iowa, 1850–1870'**, *Journal of Economic History* 49.3: 635–55 (accessed 13 October 2022)
- Gould, K.A. (2006) **'Land Regularization on Agricultural Frontiers: The Case of Northwestern Petén, Guatemala'**, *Land Use Policy* 23.4: 395–407 (accessed 13 October 2022)
- Grilli, M. (2020) ***Bolsonaro atribui queimadas na Amazônia a indígenas, caboclos e ribeirinhos***, *Globo Rural*, blog, 17 July (accessed 13 October 2022)
- Guéneau, S.; Diniz, J.D.A.S. and Passos, C. (2019) ***Alternativas para o Bioma Cerrado: Agroextrativismo e Uso Sustentável Da Sociobiodiversidade***, Brasília: Editora Mil Folhas (accessed 13 October 2022)
- Hairong, Y.; Yiyuan, C. and Bun, K.H. (2016) **'China's Soybean Crisis: The Logic of Modernization and its Discontents'**, *Journal of Peasant Studies* 43.2: 373–95 (accessed 13 October 2022)
- Heal, A. et al. (2020) **'Soya Linked to Fires and Deforestation in Brazil Feeds Chicken Sold on the British High Street'**, *Unearthed*, 25 November (accessed 13 October 2022)
- Hershaw, E. and Sauer, S. (2022) **'Land and Investment Dynamics Along Brazil's "Final" Frontier: The Financialization of the**

- Matopiba at a Political Crossroads', *Land Use Policy* (advance online publication)
- Hewes, L. (1973) *The Suitcase Farming Frontier: A Study in the Historical Geography of the Central Great Plains*, Lincoln NE: University of Nebraska Press
- Hunke, P.; Mueller, E.N.; Schröder, B. and Zeilhofer, P. (2015) 'The Brazilian Cerrado: Assessment of Water and Soil Degradation in Catchments under Intensive Agricultural Use', *Ecohydrology* 8.6: 1154–80 (accessed 13 October 2022)
- IBGE (2020) *Contas de ecossistemas: o uso da terra nos biomas brasileiros (2000–2018)*, Office of Natural Resources and Environmental Studies, Rio de Janeiro: Instituto Brasileiro de Geografia e Estatísticas (accessed 25 October 2022)
- Jarzębowski, S.; Bourlakis, M. and Bezat-Jarzębowska, A. (2020) 'Short Food Supply Chains (SFSC) as Local and Sustainable Systems', *Sustainability* 12.11: 4715 (accessed 25 October 2022)
- Judd, R.W. (1984) 'Lumbering and the Farming Frontier in Aroostook County, Maine, 1840–1880', *Journal of Forest History* 28.2: 56–67 (accessed 25 October 2022)
- Kazmer, D.R. (1977) 'Agricultural Development on the Frontier: The Case of Siberia Under Nicholas II', *American Economic Review* 67.1: 429–32
- Klink, C.A. and Machado, R.B. (2005) 'Conservation of the Brazilian Cerrado', *Conservation Biology* 19.3: 707–13
- Leach, M. et al. (2018) 'Equity and Sustainability in the Anthropocene: A Social–Ecological Systems Perspective on their Intertwined Futures', *Global Sustainability* 1: E13 (accessed 25 October 2022)
- Lopes, V.C.; Parente, L.L.; Baumann, L.R.F.; Miziara, F. and Ferreira, L.G. (2020) 'Land-Use Dynamics in a Brazilian Agricultural Frontier Region, 1985–2017', *Land Use Policy* 97 (September): 104740 (accessed 25 October 2022)
- Miranda, E.; Magalhães, L.A. and Carvalho, C.A. (2014) *Proposta de Delimitação Territorial do MATOPIBA*, Nota Técnica 1, Campinas: Embrapa (accessed 25 October 2022)
- MMA and IBAMA (2011) 'Monitoramento do desmatamento dos biomas brasileiros por satélite', Brasília: Ministério do Meio Ambiente and Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis
- Morris, M.; Binswanger-Mkhize, H.P. and Byerlee, D. (2009) *Awakening Africa's Sleeping Giant: Prospects for Commercial Agriculture in the Guinea Savannah Zone and Beyond*, Washington DC and Rome: World Bank and Food and Agriculture Organization of the United Nations (accessed 25 October 2022)
- Nehring, R. (2022) 'The Brazilian Green Revolution', *Political Geography* 95 (May): 102574 (accessed 25 October 2022)
- Patel, R. (2013) *Stuffed and Starved: From Farm to Fork. The Hidden Battle for the World Food System*, 2nd ed., London: Portobello Books



- Sauer, S. (forthcoming) 'Land and Nature Appropriation: Deforestation, Climate Change Narratives, and Social-Environmental Resistances in Brazil', Proceedings of the International Conference on Climate Change and Agrarian Justice, 26–29 September 2022, *Journal of Peasant Studies*, PLAAS, TNI and CASAS
- Sauer, S. and Cabral, L. (2022) '**Martyrdom of the Cerrado: An Agri-Food Territory in Need of Justice**', *IDS Policy Briefing* 189, Brighton: Institute of Development Studies, DOI: [10.19088/IDS.2022.010](https://doi.org/10.19088/IDS.2022.010) (accessed 25 October 2022)
- Sauer, S. and Oliveira, K.R.A. (2022) 'Extractivismo agrario en el Cerrado brasileño', in B.M. McKay, A. Alonso-Fradejas and A. Ezquerro-Cañete (eds), *Extractivismo agrario en América Latina*, Buenos Aires: Consejo Latinoamericano de Ciencias Sociales
- Shankland, A. and Gonçalves, E. (2016) 'Imagining Agricultural Development in South–South Cooperation: The Contestation and Transformation of ProSAVANA', *World Development* 81: 35–46
- Silva, P. and Sauer, S. (2022) 'Desmantelamento e desregulação de políticas ambientais e apropriação da terra e de bens naturais no Cerrado', *Raízes* (forthcoming)
- The Economist* (2010) '**Brazilian Agriculture: The Miracle of the Cerrado**', 26 August (accessed 25 October 2022)
- Turner, F.J. (1920) *The Frontier in American History*, New York NY: Holt
- Vanderhill, B.G. (1962) 'The Farming Frontier of Western Canada 1950–1960', *Journal of Geography* 61.1: 13–20
- Watts, D.C.H.; Illbery, B. and Maye, D. (2005) '**Making Reconnections in Agro-Food Geography: Alternative Systems of Food Provision**', *Progress in Human Geography* 29.1: 22–40 (accessed 25 October 2022)
- Webb, W.P. (1964) *The Great Frontier*, Austin TX: University of Texas Press
- Wolford, W. (2021) '**The Plantationocene: A Lusotropical Contribution to the Theory**', *Annals of the American Association of Geographers* 111.6: 1622–39 (accessed 25 October 2022)
- Zachary, G.P. (2004) '**Cheap Chickens: Feeding Africa's Poor**', *World Policy Journal* (Summer): 47–52 (accessed 25 October 2022)

This page is intentionally left blank