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# The Emergence of Alternative Sociotechnical Imaginaries in Argentina's Agricultural Sector: Lessons for Democracy and Sustainability

Melisa Deciancio · Karen M. Siegel

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**Abstract** The question of how various actors envision sustainability transitions and which visions are translated into policy agendas is an important aspect of the sustainability–democracy debate. Applying Jasanoff's concept of sociotechnical imaginaries, this paper examines how three alternative imaginaries of agricultural production—agroecology, organic production, and biodevelopment—have emerged in Argentina, as well as how they have established themselves economically and politically despite the dominance of the well-established soybean imaginary. Argentina's return to democracy in 1983 was crucial for the emergence of alternative imaginaries because it enabled a new kind of relationship between the state and civil society that opened participation channels for alternative visions. Reflecting patterns that are also relevant to other South American countries, our analysis of the Argentinean case draws attention to the role inequality plays at different levels and its importance as an area for further research on the democracy–sustainability nexus.

**Keywords** Development · Bioeconomy · Transition · Soybean · Agroecology · Biodevelopment

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## Das Entstehen alternativer soziotechnischer Vorstellungen im argentinischen Agrarsektor: Lehren für Demokratie und Nachhaltigkeit

**Zusammenfassung** Die Frage, wie sich verschiedene Akteure Nachhaltigkeitstransformationen vorstellen und welche Visionen in politische Agenden umgesetzt werden, ist ein wichtiger Aspekt der Nachhaltigkeits-Demokratie-Debatte. Anhand von Jasanoffs Konzept der „socio-technical imaginaries“ wird in diesem Beitrag untersucht, wie drei alternative Vorstellungen der landwirtschaftlichen Produktion, insbesondere Agrarökologie, Bioproduktion und Bioentwicklung („biodesarollo“), in Argentinien entstanden sind und sich trotz der Dominanz des Sojabohnenanbaus wirtschaftlich und politisch etabliert haben. Die Rückkehr zur Demokratie im Jahr 1983 war entscheidend für die Entstehung alternativer Vorstellungen, da sie eine neue Art von Beziehung zwischen Staat und Zivilgesellschaft ermöglichte und Partizipationskanäle für alternative Visionen öffnete. Unsere Analyse des argentinischen Falles spiegelt Muster wider, die auch für andere südamerikanische Länder relevant sind, und lenkt die Aufmerksamkeit auf die Rolle von Ungleichheiten auf verschiedenen Ebenen als wichtigen Bereich für zukünftige Forschung im Bereich Demokratie und Nachhaltigkeit.

**Schlüsselwörter** Entwicklung · Bioökonomie · Transformation · Soja · Agrarökologie · Bioentwicklung

### 1 Introduction

One of the central questions in the debate about the democracy–sustainability nexus is who should be making decisions (see the Introduction to this special issue). This article focuses on a related issue that has received less attention in the emerging literature on sustainability transitions: the questions of “Who gets to imagine the future?” and “Whose visions and actions count?” (Beck et al. 2021, p. 149). We use the concept of sociotechnical imaginaries (Jasanoff 2015) to examine how certain visions of the future are constructed and promoted over other possibilities. This is important because such imaginaries also inform policy agendas and are, therefore, closely related to the question of who decides. We put forward two theoretical assumptions. First, having a variety of sociotechnical imaginaries strengthens sustainability, and, second, democratic structures help support the emergence and consolidation of multiple imaginaries. We examine these assumptions in a qualitative analysis of the agricultural sector in Argentina.

In 2023, Argentina is celebrating the 40th anniversary of its return to democracy following a brutal military dictatorship. The democratic process that began in 1983 modified the country’s political, social, and economic structures, making the political participation of social actors and the emergence of alternative voices and imaginaries possible again. This is also important for agriculture and sustainability. Argentina’s agricultural sector is dominated by one primary crop, soybean. Indeed, soybean production has expanded exponentially since the 1990s, having been

promoted by domestic agrarian elites and transnational corporations and linked to a specific sociotechnical imaginary (Giraud and Grugel 2022, p. 2; Tittor 2021, p. 2). This situation has left little room for alternative visions of agricultural production to emerge (Siegel et al. 2022); however, it has not persisted unchallenged. In particular, the social and environmental impact of soybean production has provided grounds for questioning the sustainability of this form of agricultural production. The construction of soybean as the dominant imaginary for the development of the country (Giraud and Grugel 2022) and the criticisms of soybean production in terms of social and environmental sustainability (Arancibia 2013; Lapegna 2017; Teubal 2009) have been well documented, as has the political, economic, and discursive power of the international agribusiness sector that defends the dominance of soybean production and dwarfs the resources available to most civil society organisations, both in general and in Argentina specifically (Newell 2009a; Clapp and Fuchs 2009). However, alternative imaginaries of agricultural production are emerging at the margins of this dominant soybean imaginary despite having received much less attention. In this article, we focus on three alternative imaginaries: agroecology, organic production, and biodevelopment. Guided by our theoretical assumptions, our analysis of these three case studies focuses on two research questions. First, how have democratic structures helped support the emergence and consolidation of these alternative imaginaries? Second, what implications does this have for sustainability?

In the following section, we develop our core theoretical assumptions in more detail. In the subsequent sections, we portray how soybean production became the dominant imaginary in Argentina's agricultural production after the return to democracy and outline the qualitative methodological approach that we used. We then present the three case studies of agroecology, organic production, and biodevelopment. In the final section, we return to our two research questions to argue that the return to democracy allowed a new kind of relationship between the state and civil society and opened participation channels for alternative visions seeking to establish more sustainable methods of agricultural production than currently used in the dominant soybean imaginary. In the conclusion, we highlight how the Argentinean case reflects patterns that are also relevant for other South American countries. This South American perspective emphasises why the role of inequality at the domestic and international level is an important area for further research on the democracy–sustainability nexus.

## 2 Sociotechnical Imaginaries in the Democracy–Sustainability Nexus

In this section, we introduce the concept of sociotechnical imaginaries and lay out why this is important for research on sustainability. We then develop our core theoretical assumptions: first, that having a variety of sociotechnical imaginaries strengthens sustainability and, second, that democratic structures help support the emergence and consolidation of multiple imaginaries.

Sociotechnical imaginaries have been defined as “collectively held, institutionally stabilised, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through,

and supportive of, advances in science and technology” (Jasanoff 2015, p. 6). Such sociotechnical imaginaries are essential to the vision various actors have for a sustainable future, the potential transition to sustainability, and the role that technology should play in it. Nevertheless, it is important to note that sociotechnical imaginaries are not simply informed by available technical knowledge. Instead, they are socially constructed and embedded in power relations in which single individuals or groups seek to gain common acceptance and a shared belief in their vision of the future. Some of those imagined futures become dominant through the intervention of influential actors and institutions that put some imaginaries above others, exercising their privileged position of power in society and the policy debate (Jasanoff 2015). This is reflected at every level, from the national to the international. Depending on how imaginaries are governed, they may increase the power that metropolitan centres of science and technology have in relation to people at the periphery (Jasanoff 2014), ensuring that the alternative imaginaries that develop on the periphery receive less attention. Sociotechnical imaginaries are not just ideas; they also inform and justify policy agendas. They can be important in terms of promoting some methods for governing sustainability transitions over others and analysing “the conditions under which dominant imaginaries are challenged and opened up to change” (Beck et al. 2021, p. 148). The question of how new or alternative imaginaries establish themselves and interact with more dominant preexisting visions is, therefore, a crucial one.

We argue that having a variety of sociotechnical imaginaries is important for sustainability for several reasons. Sustainability is an immensely complex challenge, and it is clear that there is no one-size-fits-all solution to sustainability challenges in specific sectors or locations. Consequently, drawing on the ideas and perspectives of multiple actors from different angles is essential. Alternative sociotechnical imaginaries present different ideas about how the future “should look” and offer additional solutions to global challenges (Goulet 2020). Moreover, sustainability transitions are highly political and entail political and economic changes that may produce both winners and losers (Köhler et al. 2019). In the search for solutions to sustainability challenges, there is a risk that the imaginaries of powerful actors will capture political agendas (Smallman 2020). However, the aim of such dominant imaginaries may be geared more towards defending their own interests than achieving benefits in sustainability. Given this, it is also essential that multiple imaginaries provide different sustainability perspectives (Beck et al. 2021).

Democratic structures, in turn, can support the emergence and consolidation of multiple imaginaries. Different imaginaries of a sustainable future also reflect different interests. However, not all actors and interests are equally well resourced to promote their imaginary in this debate on what constitutes a sustainable future and the role technology should play in it. In particular, it can be difficult for newer and less well-resourced actors to get their imaginaries on the political agenda. Democratic structures are important in this regard because they provide space and support for those actors with fewer resources. It is also possible for different imaginaries to coexist, and this can go either way, producing either tension or productive relationships (Jasanoff 2015). In this situation, democratic structures can provide channels

for dialogue and mediation between different positions in order to foster a productive coexistence and the resolution of potential tensions.

### 3 Argentina's 40 Years of Democracy and the Imaginary of Soybean Production as the Foundation for Development

In Argentina, the consolidation of democracy took place at the same time as the development model based on commodity exports, which included soybean as a central agricultural commodity, was consolidated. With the support of an economically and politically powerful agribusiness sector, the “soybean imaginary” has become deeply embedded in the country. Nevertheless, socioenvironmental conflict and controversy over soybean production have persisted, highlighting the serious sustainability problems surrounding soybean production.

Unstable democratic systems were a reality in many Latin American countries in the last half of the 20th century. However, the timing and characteristics of the return to democracy varied among the countries. The democratic process that began in Argentina in 1983 put an end to a bloody dictatorship and started a new phase in the country's history. Since then, Argentina has maintained a stable democratic system and is ranked, 40 years later, number 50 in the Economist Democracy Index (The Economist Intelligence Unit 2022). Argentina is also considered an exemplary case for bringing the past heads of state—the *junta*—to trial for human rights violations and for, in 1984, creating the Truth Commission, which has become a globally influential source of high-level human rights innovation and protagonism (Sikkink 2008). The participation of social movements in the establishment of more democratic processes has also been a critical element of human rights activism in the country. They created space for social movements within the public debate in the following years and laid the foundation for the role they would play as national, social, and political actors. The transition to democracy, therefore, brought with it a process of strong political participation by political parties, unions, and social movements that have shaped the social and political landscape of the country.

However, at the same time as democracy was being consolidated in the 1990s, Argentina also went through a process of neoliberal restructuring that redefined the relationship between the state, the social movements, and all areas of social, political, and economic relations. In economic terms, an already established imaginary of commodity production gained more strength as the basis of the country's economic growth and development and expanded within the public and private sectors (Giraud and Grugel 2022). The market liberalisation and currency overvaluation of the 1990s enabled the technological transformation of the agricultural sector and access to imported agricultural supplies, leading to its exponential growth (Gras and Hernández 2014). This facilitated the increasing control of agribusiness corporations over agriculture, developing a “techno-productivist” discourse (Lapegna 2016b, p. 8) and establishing the idea that soybean production was the pathway to the country's economic growth.

The rise in demand for commodities from China experienced during the 2000s accelerated the change in the agrarian structure, prompting the intensification of agri-

cultural production and land use. Specifically, Argentina saw the implementation of new technologies, such as direct sowing techniques for oilseeds and the “technological package” (genetically modified organism seeds, fertilisers, and glyphosate) for soybean production, and the expansion of arable land, which prompted the high concentration of rent and capital accumulation in one sector (Cáceres and Gras 2020; Arceo 2016). After the 2001 economic crisis resulting from the neoliberal period eased, left-wing governments (2003–2015) maintained this development model and again made soy exports the basis of the economic recovery strategy and also relied on them for redistribution of wealth (Gras and Hernández 2014, p. 630).

The two decades between the mid-1990s and the mid-2010s showed the highest growth in the agricultural sector in Argentinean history. In this period, the sown area increased from 19.6 million hectares to 38.1 million (of which almost 80% is accounted for by the increase in soybean cultivation). Production increased from 40 million tons to 124.3 million tons, while yields increased from 2.0 to 3.3 tons per hectare (Arceo 2016). This exponential expansion in the soy sector supported the creation of an imaginary that put commodity production (and exports) at the centre of the country’s development model: an imaginary that transcended political ideologies and governments (Deciancio and Siegel 2022; Siegel 2016). It also supported the construction of a national identity centred on the pampas and rural areas, which excluded alternative, more sustainable, and more inclusive development imaginaries, marginalising rural and indigenous populations and overlooking the impact this had on the environment and communities (Giraud and Grugel 2022, p. 21). For example, this process was accompanied by changes in land use and the expansion of the agricultural frontier and raised many social and environmental concerns related to deforestation, the displacement of rural and indigenous populations, and health issues associated with the spraying of agrochemicals (Lapegna 2016a; Piquer-Rodríguez et al. 2018; Arancibia 2013; Siegel et al. 2022). Therefore, the sustainability of soybean production in Argentina has long been called into question. Although it is strongly supported by transnational corporations, political elites, and the mass media (Muzlera 2017; Rodríguez 2019), the dominant soybean imaginary has legitimised the exclusion of large population sectors, concealed the model’s environmental impacts, and secured itself a place on the policymaking agenda from which it can influence economic and political decisions and exclude other imaginaries (Giraud and Grugel 2022).

## 4 Methods

Nevertheless, alternative imaginaries of agricultural production are emerging on the margins of this dominant soybean imaginary. We have selected three such alternatives that have achieved a certain level of consolidation in political and economic terms: agroecology, organic production, and biodevelopment. As we show in the case studies presented below, agroecology and organic production have long histories in Argentina that are largely focused on family farming production, which has a significant impact on the local level and are the most important alternative production systems in urban markets and among consumers. In contrast, biodevelopment

is a new vision that is attempting to establish itself within another increasingly widespread imaginary, the bioeconomy. Biodevelopment aims to promote an approach to the transformation of biomass that is more inclusive and sustainable than the dominant agribusiness approach. Whereas various aspects of the dominant imaginary—that is, soybean production—have been researched quite extensively, much less is known about the emergence and consolidation of these alternative imaginaries of agricultural production in Argentina. In order to understand this process and examine the implications for the sustainability–democracy nexus, we focus on two research questions. First, how have democratic structures helped support the emergence and consolidation of these alternative imaginaries? Second, what implications does this emergence of alternative imaginaries have for sustainability?

The return of democracy in 1983 laid the foundation for important changes affecting several levels of the country's economic, social, and political life. We focus on the processes that were set in motion in the mid-1990s by the changes that occurred when organised civil society regained access to political participation. Fundamental changes were introduced into Argentina's economic and agricultural structures led by the neoliberal opening up and the modernisation of the agricultural sector. Various imaginaries with different views on how agricultural production should be developed, given it is a key aspect of the country's economy, then started to emerge, consolidate, and compete. We focused our analysis of each of the three alternative imaginaries of agricultural production presented here on the characterisation and foundations of the alternative imaginaries and their implications for sustainability, the actors involved in the diffusion of the imaginaries, the mechanisms by which the imaginaries gained visibility and recognition in the policies of the state's institutional structure, and each imaginary's relationship to the dominant imaginary.

Our research is based on three different data sources. First, we identified 24 key national and regional policy documents (see Annex), including laws, bills, strategic plans, official reports, and statistics related to the regulation and promotion of both the dominant imaginary and our three alternative imaginaries. We searched for the most important official documents published by the various state agencies in charge of the different agricultural systems, notably the Ministry (or Secretary) of Agriculture, Livestock and Fisheries, the National Bioeconomy Directorate, the National Agroecology Directorate, the Ministry of Science and Technology, and the National Institute of Agricultural Technology (INTA) between 1990 and 2022. We also included documents published by regional and international organisations that have been highly influential in Argentina, such as the United Nations (UN) Economic Commission for Latin America and the Caribbean, the UN Food and Agriculture Organisation, and the Interamerican Institute for Agricultural Cooperation (IICA). Using these documents, we identified the particularities and characteristics of the Argentinean case. For our analysis, we used the statistical data to evaluate the economic weight of each of the agricultural production systems and the public policy proposals that have been proposed in Argentina in order to develop an understanding of each policy's political priorities. We also examined the advantages and disadvantages, as presented in the documents, for the economic, social, and environmental dimensions of the various systems of agricultural production. In order to elaborate on the construction and emergence of each alternative imaginary and the process by

which they entered the state's institutional framework, we focused on a number of key themes, such as the trajectory of each imaginary and the way they were shaped, the identification of the actors involved and the driving groups, the public sector spaces to which the demands were channelled, the public–private dialogue spaces that emerged from that process, the policies that emerged from this dialogue, the public policies launched and implemented, and the ways that specific institutions were shaped. We also examined the information provided on institutional websites in order to identify plans and projects implemented in this period.

Second, the research draws on the analysis of semistructured interviews conducted online by the first author with 16 key stakeholders from the public sector, social movements, and research institutions in 2021 and 2022. Stakeholders were selected based on their involvement with the different agricultural imaginaries or agricultural governance more broadly. Initial contact was made by identifying key organisations working on these issues and then using a snowball sampling technique. All interviewees gave their consent to publish their names in the research conducted, and all interviews were professionally transcribed and verified by the interviewees. Among the interviewees, we included state representatives (past and present) from, for example, the Ministry of Agriculture, Livestock and Fisheries, the Ministry of Science and Technology, and INTA; consultants who participated in the construction of the policy documents at different stages; members of nongovernmental organisations (NGOs) and civil society organisations that promoted specific imaginaries and pushed for their regulation within the institutional framework of the state; and experts in the field from national universities. We asked the interviewees to comment on how they understood the different agricultural systems to relate to sustainability, the process by which the imaginary entered the structure of the state, and their impression of the actors who participated in the process. The interviews provided a central source used to triangulate and complement the document analysis, in particular, in order to enhance our understanding of the processes by which each imaginary emerged and established itself within state institutions. Whereas the documents mainly focused on formal aspects such as definitions, institutional frameworks, work plans, and strategies, the interviews provided insight into the internal processes through which the documents were agreed on and by whom.

Third, we also took into account the documents and official websites of the NGOs and local associations related to each form of agricultural production so as to include their perspective and approach to the imaginaries, their trajectories, the main actors involved, and their relationship with the state institutions. For further background information, we also followed the debate in specialised media (*Clarín Rural*, *La Nación*, *Bichos de Campo*, *Agrofy News*). This helped inform the content and questions of the interviews and the overall analysis.

## 5 Agroecology: From Grassroots Networks to the National Agroecology Office

The agroecology imaginary expanded in Argentina in the 1990s in response to the technification of agriculture, the expansion of industrial agriculture, and the

consolidation of agribusiness that is strongly related to the introduction of genetically modified seeds. Agroecology is part of a global movement that seeks to provide an alternative to industrial agriculture and agribusiness and is searching for ways to develop more sustainable food systems (Altieri and Nicholls 2020). As a practice, agroecology incorporates the ancestral techniques and knowledge of indigenous communities and farmers and is sensitive to their particular ways of relating to nature and ecosystems and managing common goods. Agroecology calls for a more sustainable food production and consumption vision while creating local, inclusive, and equitable food systems, delivering reasonable yields and providing ecosystem services (Altieri and Nicholls 2020). This imaginary is based on farmer-led “bottom-up” processes of experimentation, innovation, and dissemination and emphasises the importance of small-scale farmers and their capacity to produce in ecological ways, their low requirements for external input, and their ability to follow the seasons and maximise the nutritional quality and diversity of food (Goulet 2020).

In Argentina, an alliance between family agriculture and environmentalist organisations aiming to lead an alternative agricultural production model promoted agroecology among various small farmer networks. As a social movement, agroecology is a political act of resistance and offers an alternative policy that opposes the advance of agribusiness and industrial agriculture. It is understood as a way of life and is based on the right to food sovereignty (Perez and Gracia 2021). In this regard, it has been advocated for by strong transnational agrarian and food justice movements that reject the corporate-dominated global agrifood system (Mier y Terán Giménez Cacho et al. 2018). This imaginary is grounded in a critical view of Argentina's dominant agricultural model and its favouring of agribusiness over the environment and marginalised social groups (Sarandón and Marasas 2015). Its attempts to gain social and political relevance are constantly disputed as powerful discourses embedded in the idea that the country's development must be based on export-oriented commodity production, mainly of soybean, consider agroecology a marginal option in terms of profits and national growth. As one expert pointed out, agroecology is perceived as a subsistence economy with low territorial impact rather than a global or regional economic strategy that is a viable option for development (interview with a consultant from the Ministry of Science and Technology, 16 September 2021). However, some experts promoting the soybean imaginary have also highlighted the agroecological principles that could be used and incorporated into the agroindustry nonetheless (interview with a representative of IICA, 13 October 2021; interview with a representative of INTA, 20 September 2021). As a result, social movements have been concerned that there is a risk that agroecology may be co-opted by agrarian institutions, and this could limit its potential as a sociopolitical movement and reduce its role as both a science and a practice into another process of mercantilisation (Perez and Gracia 2021).

Networks of small-scale farmers, environmentalists, and scientists working at different levels of local, provincial, and national scope have promoted the agroecology imaginary as a productive system through various bottom-up initiatives (Baldini and Mendizábal 2019; Sarandón and Marasas 2015). One such group of actors includes social movements, civil society organisations, and NGOs that promote alternative agricultural movements. In 1992, this group came together as the Latin

American Agroecological Movement (*Movimiento Agroecológico Latinoamericano, MAELA*) in addition to the farmers' movement, which included the National Indigenous Farmers Movement (*Movimiento Nacional Campesino Indígena*), the Farmers Movement from Santiago del Estero (*Movimiento Campesino de Santiago del Estero*), and the Farmers Movement from Cordoba Provinces (*Movimiento Campesino de Córdoba*), among others, and other social movements such as the Union of Farmworkers (*Unión de Trabajadores de la Tierra* [UTT]) and the rural branch of the Movement of Excluded Workers (*Movimiento de Trabajadores Excluidos*). The second group of actors emerged from the scientific and academic fields and were concentrated within the University of Buenos Aires, the University of La Plata (in Buenos Aires province), and the University of Rosario (in Santa Fe province). Some scientists also gathered as the Argentine Agroecology Society and the National Network of Municipalities and Communities Promoting Agroecology.

These bottom-up initiatives, highly embedded in local communities and rural areas and promoted by grassroots movements across the country, have grown exponentially since the 1990s. They have promoted agroecology and spread this imaginary across various sectors and rural areas around the country by organising meetings, conferences, workshops, and training courses and by creating networks; this highlights this system's social and environmental benefits (interview with a representative of INTA, 20 September 2021). They have also established themselves within the state's administration in key areas related to the concerns and demands of their power base, permeating various state offices (Lapegna 2017). In this regard, although the state had a fundamental role in consolidating the soybean imaginary, more progressive governments (2003–2015 and 2019–2023) have simultaneously created programmes and public agencies that support and enable the development of alternative agricultural production systems such as family farming and agroecology. The recognition of this sector has facilitated its active role in the public debate (Lapegna 2017) and was fundamental to the transition to agroecology (Gras and Hernández 2021); thus, this recognition contributed to the consolidation of this imaginary in Argentina.

Through its deep embeddedness in rural areas and local communities, INTA was the first public institution to include agroecology as a method for connecting with family farmers. Within the institute, the Agroecology Network has promoted this agricultural production system through several initiatives and encouraged it on a larger scale by coordinating with other national programmes. The programme ProHuerta was the departure point for policies that aimed to train and promote more sustainable and inclusive methods of food production among small farmers across the country. INTA developed a fundamental role in rural areas across the country, supporting local communities and spreading agroecology across the country (Diaz 2015). More recently, many agroecological policies were launched during periods of progressive government thanks to the pressure from a vast network of actors including organised peasants, indigenous peoples, rural workers' unions, NGOs, academics, government sectors, and international partners (Giraldo and McCune 2019). Both activists and public officials understood the role social movements played in building a bridge between the state and "the people" (Lapegna 2017, pp. 314–315). As a result of this participatory process, in 2019 the National Agroecology Office

was created at the state level to make agroecology more visible and promote and protect agrifood systems based on agroecological principles across the country through various policies and a defined agroecology plan (DNAgr 2022). Actors such as the UTT also occupied a crucial office in the Central Market, the main distribution hub for food in the province of Buenos Aires.

As we have seen, the consolidation of the agroecology imaginary has not been undisputed. Social movements promoting it across the country gained social and political relevance and influence through democratic, participatory channels that allowed them to mobilise, interact with, and achieve a political voice in the public debate. At the same time, their recognition by state institutions gave this agricultural imaginary a boost, despite the dominance of the soy production model. The following case study presents a similar trend but with some important differences that distinguish it as a separate alternative imaginary.

## **6 Organic Production: A More Sustainable Agricultural Production System “for Export”**

Argentina is a leading country in the production and export of organic food. Closely related to agroecology and the search for more sustainable ways of agricultural production, organic production has also developed as an alternative agricultural imaginary in the country, with a more comprehensive approach to the relationship between humans and nature. Organic production is understood as “a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasises the use of management practices in preference to using off-farm inputs, considering that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials” (FAO 1999). One aspect that differentiates organic production from other alternative agricultural production systems is its history of regulation and the set of standards that farmers are required to follow and that consumers expect (Rigby and Cáceres 2001). Although organic production is not always certified, the identification of its products through certifications or labelling is a main feature of this imaginary. This is, in many ways, a highly consumer-driven model based on conscious decisions consumers make about their food and the way it is produced, processed, and handled. However, farmers looking to improve their family health, farm economies, and self-reliance have also developed alternative and more sustainable modes of production (Rodale Institute 2022). Organic farming has been identified conceptually and institutionally as the most developed alternative farming system available for a transition to sustainable agriculture and reduction of pesticide use (European Commission 2021).

Leading actors in Argentina's organic movement consider Argentina a pioneer in the promotion and dissemination of organic production. The relationship between consumers and the search for certified healthy and safe food is also associated with the social aspects of the production process that provide opportunities for local development and employment creation, in addition to concerns for the conservation

of biodiversity and animal well-being (interview with the founder and former head of the Argentine Organic Movement, 20 September 2021). In the beginning, organic production in Argentina emerged as a movement challenging the exponential increase of genetically modified soybean production. Proponents of organic production held a series of events and meetings both nationally and abroad, working with global networks, shaping the imaginary based on visions associated with its commercial, political, and legal dimensions (interview with the founder and former of the Argentine Organic Movement, 25 November 2022). The dissemination of these ideas through various networks contributed to the emergence of an imaginary in which the consciousness of sustainability and the inclusiveness of the productive process among both producers and consumers expanded as a bottom-up initiative, through informal and institutional channels, creating a different vision of food production.

Since the 1990s, Argentinean certifications have been recognised by the European Union (EU) as equivalent certifications for organic products and have, therefore, gained privileged access to the European market. The major organic exports are cereals, oilseeds, fruits, sugar cane, meat, organic wool, and processed organic products such as olive oil, wine, and honey. In addition, vegetables, fruits, juices, sugar cane, rice, polenta, and honey have been commercialised in the internal market (Fuchshofen et al. 2017). In 2009, Argentina was the second country in the world, after Australia, with the largest area dedicated to organic production at over 4.4 million hectares (4.2 million hectares dedicated to organic cattle and 232,000 hectares to organic vegetables; SENASA 2021). In 2020, 95% of Argentina's organic produce was exported; 50% of total exports were destined for the EU, and 37% went to the United States (SENASA 2021). The professionalisation of organic production also resulted in distribution networks to the internal market that were primarily motivated by consumers' demands for natural and environmentally friendly products. Small-scale producers started to offer their products to local businesses. The major supermarket chains started to stock them in response to the demand from an upper-middle-class niche of mainly urban consumers.

Although there are different coexisting views on how organic farming should be conceived and which dimensions should be the most important, the legal framework developed gave organic production a formal agenda and defined a set of rules and standards for producers to follow. The vision of organic production as the middle ground between radical visions (closer to agroecological ideas) and mainstream production systems (closer to agroindustry) has centred on the profitability of organic production, following its sustainability principles but without neglecting to also consider the production as an economic activity. The organic production imaginary expanded in this direction and found a comfortable place in between mainstream agriculture and agroecology by adding value to organically produced agriculture through certification and targeting high-income social sectors that are concerned about the quality of the food they consume. At the same time, as a highly export-oriented activity servicing an international consumer niche, organic producers depend heavily on the national and international certification agencies that are fundamental in legitimising their work.

As previously noted, this imaginary emerged as a vision seeking to contest the dominant soybean imaginary. Promoters of organic farming have criticised intensive

agriculture because of the loss of traditional organic seeds, the widespread use of agrochemicals, and the lack of connection with the cycles and seasons of the Earth and land (interview with the founder and former head of the Argentine Organic Movement, 20 September 2021). However, the poorer population's access to food has also become a central topic of the debate. While organic producers tend to focus on the sustainability of the production process, proponents of mainstream agricultural production have emphasised the need to make food accessible to everybody and, thus, the need to produce large quantities for low prices, which has created tension because of the high cost of organic products (interview with a consultant of the Ministry of Agriculture, 18 March 2018; interview with a representative of the Buenos Aires Stock Exchange, 2 December 2021). However, some actors in both systems, (moderate) organic producers and promoters of mainstream agriculture, have found possible synergies between the two approaches.

This imaginary has been driven primarily by national NGOs and collaborations of small producers. The Argentine Movement for Organic Production (MAPO), created in 1995, brought together small producers, consumers, and environmentalists to promote organic production in the country. The first association related to organic production, CENECO, was founded in the mid-1980s, albeit with very low levels of professionalisation. The sector did not truly start to professionalise until the 1990s, around the time when the first national certifications were established. The Argentine Institute for Plant Health and Quality and the National Animal Health Service (SENASA) set the regulations of the National Organic Products Control System (IICA et al. 2009), and the leading organic certifiers are currently Argencert S.A., Food Safety S.A., Letis S.A., and OIA SA.

This process provided the institutional basis for promoting and expanding organic agriculture in Argentina along with regulatory frameworks such as Law 25.127 on the ecological, biological, and organic production of agricultural and agroindustrial systems. This law enforces the dialogue between the state and MAPO and provides a space for public–private coordination at the Advisory Commission for Organic Production created in 1999 (interview with the founder and former head of the Argentine Organic Movement, 25 November 2022). Within this framework, the state launched the Agri-food and Agroindustry Strategic Plan for 2010–2020, which included a special section on organic production (MAGyP 2010). This commission brought together the various state and civil actors involved in organic production, including SENASA, INTA, INTI (National Institute of Industrial Technology), INASE (National Institute of Seeds), National and Provincial Ministries, IICA-CIAO (Inter-American Commission of Organic Agriculture), CFI (Federal Investment Council), provincial governments, universities, and the Argentine Agency of International Investment and Trade. Some private sector actors also participate, such as MAPO; various farmer, trader, and consumer NGOs; and the Argentine Chamber of Food and Organic Products Certifiers (MAGyP 2021). Policy strategies such as the recent strategic “Plan for Argentina’s Organic Production Sector 2030” (MAGyP 2021) also accompanied the launch of various state policies such as the Argentine Organic Seal (SAGyP 2022). The plan outlines the continuation of and further strategies related to previous public–private initiatives developed over the years.

In the case of organic production, this imaginary has also relied on bottom-up initiatives led by small farmers and producers who came together to form associations that pushed for a dialogue with the state advocating for the regulation of organic production and providing a forum for public–private exchanges that promoted the sector and contributed to its consolidation. Disputes with the dominant soybean imaginary exist both in theory and practice and primarily relate to the impact of industrial production methods on the environment. However, the two imaginaries have closer connections when it comes to the importance of profitability of the activities.

## 7 “Biodevelopment”: A New State-Led Approach Towards a Sustainable Agricultural Production System

The third alternative imaginary has emerged from more recent developments both within Argentina and internationally. In particular, the expansion of the concept of bioeconomy is considered a way to address climate change using biobased resources instead of fossil-based ones. In Argentina, the concept of the bioeconomy was initially adopted predominantly by the biotechnology and agribusiness sectors (Tittor 2021; Siegel et al. 2022). This approach to the bioeconomy is closely related to the “soybean imaginary” discussed above, which considers the agricultural sector to be the main driver of the country’s economic growth (Giraudó and Grugel 2022). As Tittor has shown, the private sector’s vision promotes “the development of homegrown technology to massify the use of genetically modified crops, to increase productivity and to add value in bio-based commodity chains (...) because that is where they make their profits” (Tittor 2021, p. 2). This approach to bioeconomy expanded within the public sector and resulted in the implementation of several policies seeking to promote and develop the bioeconomy in Argentina over the last two decades (Deciancio and Siegel 2022). However, this imaginary has also met the same criticisms as the soybean production with which it has frequently been associated. As one official from the Ministry of Science and Technology pointed out, the promotion and expansion of biotechnology and mainstream agriculture in the country ignored the democratic, participatory process. Many actors directly involved in agricultural activities and affected by the changes in the social and productive structures, such as small and medium-scale farmers, family farmers, and indigenous populations, were left out of the development process. In democratic terms, they were completely excluded from discussions about the bioeconomy and its impact (interview with an official from the Ministry of Science and Technology, 21 September 2021).

In response to this situation, a new imaginary has begun to emerge in recent years that is providing an alternative to the established and widespread Argentinean approach to bioeconomy: the concept of biodevelopment (*biodesarrollo* in Spanish). In contrast to agroecology and organic production, this imaginary is being constructed and promoted by the public sector, specifically at the National Bioeconomy Directorate, which was itself created in 2019. The idea of biodevelopment has emerged as an alternative approach to the bioeconomy, which is mainly associated with agribusiness, and is seeking a more inclusive and sustainable approach to

biobased production. The Director of Bioeconomy, Dalia Lewi, and her colleagues at the Directorate have promoted the idea of biodevelopment as bringing a broader perspective to the bioeconomy and highlighting issues that could lead to the development of communities in social and environmental terms (interview with the Director of Bioeconomy, 17 November 2022). The main aim of biodevelopment is to provide a different approach to the bioeconomy that focuses on opportunities to apply biotechnology in a way that adds value to agricultural waste at the point of origin in order to develop new products that can be added to the export basket (for example, bioinputs and bioplastics) and traded not just as commodities but as “specialities” (interview with the Director of Bioeconomy, 10 November 2021). In line with this aim, a central focus is on encouraging regional economies to develop more sustainable agricultural waste management, creating qualified employment and facilitating sustainable development. The idea is to go beyond the merely economic approach of generating revenue through the bioeconomy and focus on both the population's winners and losers (interview with the Director of Bioeconomy, 10 November 2021). This approach was evident in the initiative *Biodesarrollo Argentino* (Argentinean biodevelopment), which was launched in 2020 to support “biodevelopers” and their projects.<sup>1</sup>

The definition of biodevelopment was debated and agreed upon at the Bioeconomy Promotion Programme Advisory Commission, created in 2017. The commission brings together private and public actors for the promotion of the bioeconomy, such as agricultural producer associations, agricultural cooperatives, NGOs, provincial ministries of agriculture and their equivalents, municipalities, and all bodies and institutions linked to agroindustry (Ministerio de Agroindustria 2017). Some of the participating actors include the National Advisory Commission on Agricultural Biotechnology, the Advisory Committee on Agricultural Bioinputs, the National Advisory Commission on Biomaterials, and the Bioenergy Office, in addition to experts from the scientific sector. At the same time, civil society organisations have not explicitly been convened. At the Advisory Commission, these actors agreed on the importance of using biodevelopment as a starting point for the new Bioeconomy Strategic Plan (currently under deliberation) and defined four working areas: bioenergy, biotechnology, bioinputs, and biomaterials. In tandem with this process, the directorate launched the “Biodevelop Programme” to technically and financially assist local “biodevelopers” in advancing their innovations and the “Biodevelopment Tables” and to promote the link between farmers and innovators within specific production chains (in which one's waste can be the other's input; interview with the Director of Bioeconomy, 17 November 2022). In this instance, discourses taking place at the state level have led to the idea of promoting and installing an alternative imaginary within the national bioeconomy, a new imaginary that has a more sustainable and inclusive approach to local development. In this regard, the biodevelopment imaginary is being promoted within the bioeconomy imaginary and is seeking to reshape and redefine this concept so that it reflects a broader range of actors at different levels of power and economic development.

<sup>1</sup> <https://www.argentina.gob.ar/agricultura/alimentos-y-bioeconomia/mesas-de-innovacion-de-bioeconomia>

## 8 The Emergence and Consolidation of Alternative Agricultural Imaginaries and Their Implications for Sustainability

In this section, we return to our two research questions in order to examine how democratic structures have helped support the emergence and consolidation of these alternative imaginaries and the implications this has had for sustainability. The three case studies have shown that despite the dominance of the soybean imaginary, which is currently propped up by domestic elites and transnational agribusiness companies, alternative imaginaries of agricultural production systems have emerged and achieved a certain level of political and economic consolidation. The return to democracy in 1983 and the democratic structures that have developed since then were crucial to this development because they opened up the space for civil society and grassroots activities and enabled the integration of alternative perspectives into state structures. Before 1983, during Argentina's brutal military dictatorship, neither the grassroots activities nor diverse perspectives that could be perceived as challenging the dominant imaginary would have been allowed to permeate the structures of the state.

Thus, the democratic process in Argentina opened the door for social movements and civil society organisations to gather, gain strength, and enter the political debates from which they had been completely excluded during the dictatorship. Democracy enabled them to promote their agendas in the political sphere. This was also important in relation to agricultural and environmental concerns. Whereas rural movements were persecuted and their political participation frustrated during the dictatorship (Galafassi 2006; Calvo 2017), democracy brought back the possibility of open political involvement and participation, although not in a manner that is always easy and free of conflict (Giarracca 2003). Similarly, environmental organisations have benefitted from the return to democracy in Argentina and the broader region in terms of being able to meet and organise more freely without fearing suppression by government authorities. In addition, democratic governments created new environmental institutions and strengthened existing ones in the process of becoming more receptive to international environmental norms, so that, with democratisation, sustainability concerns gained more significance in political agendas (Siegel 2017, pp. 34–43; Hochstetler 2012). Such state institutions are also important because they have provided channels for interaction between the state and civil society in addition to opportunities to hold the state to account.

In the decades that followed, in particular under the left-wing governments, programmes and public agencies were created to support alternative agricultural production systems, such as family farming, giving this sector greater participation in public debates and setting a precedent for other emerging visions. Policy documents and strategic plans show that although there has been a tendency to prioritise the dominant imaginary, alternative visions have also been recognised as suitable agricultural systems for the country (Ghezzi et al. 2022; MAGyP 2010; ECLAC 2020). Social movements and alternative voices, therefore, managed to gain recognition in public policies that promoted their vision of the future. In particular, the inclusion and support of small farmers in state policies and programmes has opened the door for marginalised imaginaries to emerge and gain strength in the last two decades,

allowing other forms of agricultural production to develop, consolidate, and grow. Marginalised visions have thus been able to enter the public debate and bring alternative visions of the production process to bear on the dominant discourse, contesting its rationale, foundations, and negative impacts.

This interaction between social actors and the public sector has been essential in enabling these alternative imaginaries to grow, expand, and transform from grassroots movements into items on the public policy agenda, to their becoming part of the strategic policies designed to move the country towards more politically inclusive and socially and environmentally sustainable alternatives. The close interaction between these groups and various state agencies has enabled the diffusion of alternative imaginaries of agricultural production within government structures and allowed the dominant vision, which is highly concentrated in economic and political terms, and its negative effects to be called into question. Overall, the rise of democratic institutions has provided the opportunity to introduce other visions of the future into the policy agenda.

This has also had implications for sustainability. The dominant soybean imaginary has received serious and repeated criticism regarding sustainability and the social and environmental impact of its production practices. However, proponents of this imaginary have frequently sidelined such concerns. Significantly, the three alternative imaginaries examined herein all take the criticisms of the dominant soybean imaginary seriously and seek to address the major sustainability issues associated with the current agricultural production practises in Argentina. These alternative imaginaries have emerged in response to the dominant agribusiness-led imaginary's impact on rural economies, soil damage, displacement of rural populations, and dismantling of local support networks. As a result, opposing peasant organisations, environmental and feminist movements, political activists, and other civil society groups have called for the dissemination and establishment of alternative imaginaries that demand sustainability be built from below (Gras and Hernández 2021). The importance of these alternative imaginaries lies in getting alternative visions of agricultural production that seek to address Argentina's current widespread sustainability concerns onto political agendas. However, assessing the extent to which this has been successful with regard to specific sustainability concerns is beyond the scope of this article because it would require an interdisciplinary approach that takes into account the multitude of social, environmental, and economic aspects that make up the concept of sustainability.

Nevertheless, one argument that can be made here is that the three alternative imaginaries are more inclusive than the dominant soybean imaginary. Since the adoption of the 2030 Agenda and the Sustainable Development Goals, if not before, inclusiveness has become a key element of sustainability (Sénit et al. 2022; Siegel and Bastos Lima 2020). Our analysis clearly shows that the dominant soybean imaginary not only falls short in regard to this important element of sustainability, but it makes little effort to address the issue in any way. In contrast, the three alternative imaginaries presented here are more inclusive in that they reflect a much wider range of perspectives and actors, including grassroots groups, small-scale farmers, and various methods of agricultural production. Moreover, the alternative imaginaries also focus on the local impact of agricultural activities in terms of

employment, capabilities, traditional knowledge, and access to technology. Such socioecological approaches are less visible within the dominant agricultural models in Argentina, although they are important because of their local embeddedness and impact (Dürr and Sili 2022). This is also relevant economically because such actions support the diversification of the structures of agricultural production and less reliance on a small number of crops. Overall, the consolidation of alternative imaginaries is, therefore, important for sustainability because it helps prevent the capture of agricultural production and political agendas by one dominant imaginary with serious sustainability deficits.

## 9 Conclusions: The Democracy–Sustainability Nexus from a South American Perspective

In this final section, we recommend some directions for further research and seek to bring a broader South American perspective to the debate on the sustainability–democracy nexus. First, our analysis of agricultural production has shown how different imaginaries are evolving, competing with, and shaping political agendas in Argentina. As efforts to promote sustainability transitions accelerate, an important area of further research on the sustainability–democracy nexus will be to more comprehensively examine which sociotechnical imaginaries are gaining prominence and what the means and processes are through which they are doing so.

Second, our analysis demonstrates that inequalities at both the domestic and international levels are important elements in the sustainability–democracy nexus. The Argentinean case reflects some broader patterns that are relevant to other South American countries. In Argentina, as in other countries in the region, democratisation has not been able to foster significant changes in extractivist development strategies focused on the export of natural resources at significant social and environmental costs; as a result, the distribution of land and power remains highly unequal and concentrated in the hands of economic and political elites (Hochstetler 2012). During the 2000s, a wave of progressive governments came to power in many countries across South America, supported by social movements and with the promise of democratic innovation. Progressive governments have strengthened programmes designed to integrate small farmers into commodity export chains, sought to improve the working conditions of rural labourers, and provided social protection programmes. However, they have also continued to support mainstream agribusiness with a number of policies and measures (Vergara-Camus and Kay 2017; Deciancio and Siegel 2022; Lapegna 2017). This reliance on the extraction and export of natural resources, including agricultural commodities, is leading to serious socioenvironmental problems and is a major constraint in slowing the move towards more substantive democracies that are able to take different perspectives into account and give more citizens a say in major societal debates and key issues that directly affect their lives (Siegel 2016). While our analysis shows that democratic structures provide important support for the consolidation of alternative imaginaries, they have only mitigated inequalities to a certain extent; they have not yet reversed them. In-

deed, it remains to be seen whether the alternative imaginaries discussed here will be able to consolidate to the extent that such deep-rooted patterns will change.

Inequalities exist not only at the domestic level but also at the international level. In the Argentinean case, transnational corporations remain highly influential and, for the most part, uncritical of the dominant soybean imaginary (Newell 2009b). The inequalities at the international level related to trade, financing, and access to markets are, therefore, an important factor shaping the power relations around the promotion of different imaginaries. Simultaneously, corporate actors have also become highly influential in shaping the governance of the agrifood sector globally through private sustainability initiatives. Asymmetries in access and participation are limiting the opportunities that various social actors have to influence such private governance institutions (Fuchs et al. 2011). The role of inequalities at different levels, including the perspectives, experiences, and realities of countries in the global South, is, therefore, another important area for further research on the democracy–sustainability nexus.

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## References

- Altieri, Miguel A., and Clara I. Nicholls. 2020. Agroecology and the reconstruction of a post-COVID-19 agriculture. *Journal of Peasant Studies* 47(5):881–898. <https://doi.org/10.1080/03066150.2020.1782891>.
- Arancibia, Florencia. 2013. Challenging the bioeconomy: the dynamics of collective action in Argentina. *Technology in Society* 35(2):79–92. <https://doi.org/10.1016/j.techsoc.2013.01.008>.
- Arceo, Nicolás. 2016. Más de dos décadas de expansión de la producción cerealera y oleaginosa en la Argentina. *Realidad Económica* 305(305):64–91.
- Baldini, Carolina, and Agustina Mendizábal. 2019. Entre los commodities, el agronegocio y una población que demanda avanzar hacia la agroecología: pensar las políticas públicas agroecológicas en Argentina a partir de la reflexión sobre experiencias en Francia. *Cardinalis* 7(13–2° semestre):82–116.

- Beck, Silke, Sheila Jasanoff, Andy Stirling, and Christine Polzin. 2021. The governance of sociotechnical transformations to sustainability. *Current Opinion in Environmental Sustainability* 49:143–152.
- Cáceres, Daniel M., and Carla Gras. 2020. A tipping point for agricultural expansion? Technological changes and capital accumulation in Argentina's rural sector. *Journal of Agrarian Change* 20(1):79–97. <https://doi.org/10.1111/joac.12336>.
- Calvo, Claudia. 2017. Relatos de vida sobre la represión en territorios rurales del Noreste Argentino. *Ponta de Lança* 20(11):69–87.
- Clapp, Jennifer, and Doris Fuchs. 2009. Agrifood corporations, global governance, and sustainability: a framework for analysis. In *Corporate power in global agrifood governance*, ed. Jennifer Clapp, Doris Fuchs, 1–26. Cambridge: MIT Press.
- Deciancio, Melisa, and Karen M. Siegel. 2022. Creando condiciones para el desarrollo de la bioeconomía en Argentina: el papel de las políticas estatales en biotecnología y biocombustibles (1990–2022). *Revista Estado y Políticas Públicas* 19, 225–248.
- Díaz, Daniel Norberto. 2015. El ProHuerta en Haití. Cooperación Sur-Sur y Triangular en Seguridad y Soberanía Alimentaria. <https://inta.gob.ar/sites/default/files/inta-enhaiti.pdf>. Accessed 6 Dec 2022. Buenos Aires: Fundación ArgenINTA.
- DNAgr. 2022. *Guía de Agroecología para Municipios*. [https://magyp.gob.ar/sitio/areas/agroecologia/\\_pdf/GUIA\\_AGROECOLOGICA\\_MUNICIPIOS.pdf?115655](https://magyp.gob.ar/sitio/areas/agroecologia/_pdf/GUIA_AGROECOLOGICA_MUNICIPIOS.pdf?115655).
- Dürr, Jochen, and Marcelo Sili. 2022. New or traditional approaches in Argentina's bioeconomy? Biomass and biotechnology use, local embeddedness, and sustainability outcomes of bioeconomic ventures. *Sustainability* 14(21):14491. <https://doi.org/10.3390/su142114491>.
- ECLAC. 2020. *Building a new future: transformative recovery with equality and sustainability*. LC/SES, Vol. 38. Santiago de Chile: United Nations. <https://repositorio.cepal.org/handle/11362/46228>.
- European Commission. 2021. *Communication from the commission. Action plan for the development of organic production*. [https://eur-lex.europa.eu/resource.html?uri=cellar:13dc912c-a1a5-11eb-b85c-01aa75ed71a1.0003.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:13dc912c-a1a5-11eb-b85c-01aa75ed71a1.0003.02/DOC_1&format=PDF).
- FAO. 1999. Organic agriculture. <https://www.fao.org/3/X0075e/X0075e.htm>. Accessed 13 Oct 2022.
- Fuchs, Doris, Agni Kalfagianni, Jennifer Clapp, and Lawrence Busch. 2011. Introduction to symposium on private agrifood governance: values, shortcomings and strategies. *Agriculture and Human Values* 28(3):335–344. <https://doi.org/10.1007/s10460-011-9310-5>.
- Fuchshofen, Nicolas, Darya Hirsch, Lilian Irene Brodtmann, and Wiltrud Terlau. 2017. Importance of Organic Agriculture and Food in Argentina : An Explorative Analysis of the Domestic Situation and its Regional Context. In *System Dynamics and Innovation in Food Networks 2017*, 170–176. <https://doi.org/10.18461/pfsd.2017.1718>.
- Galafassi, Guido. 2006. Conflictos agrarios del Nordeste Argentino en la década de los setenta. *Perfiles Latinoamericanos* 28(28):159–183.
- Ghezzi, Piero, Juan Carlos Hallak, Ernesto Stein, and Lina Salazar. 2022. *Competir en la agroindustria*. <https://flagships.iadb.org/es/MicroReport/competir-en-la-agroindustria-estrategias-empresariales-politicas-para-desafios-siglo-XXI>.
- Giarracca, Norma. 2003. De las fincas y las casas a las rutas y las plazas: Las protestas y las organizaciones sociales en la Argentina de los mundos “rururbanos”. Una mirada desde América Latina. *Sociologías* 10:250–283. <https://doi.org/10.1590/S1517-45222003000200009>.
- Giraldo, Omar Felipe, and Nils McCune. 2019. Can the state take agroecology to scale? Public policy experiences in agroecological territorialization from Latin America. *Agroecology and Sustainable Food Systems* 43(7–8):785–809. <https://doi.org/10.1080/21683565.2019.1585402>.
- Giraud, Maria Eugenia, and Jean Grugel. 2022. Imaginaries of soy and the costs of commodity-led development: reflections from Argentina. *Development and Change* 53(4):796–826. <https://doi.org/10.1111/dech.12714>.
- Goulet, Frédéric. 2020. Family farming and the emergence of an alternative sociotechnical imaginary in Argentina. *Science, Technology and Society* 25(1):86–105. <https://doi.org/10.1177/0971721819889920>.
- Gras, Carla, and Valeria Hernández. 2014. Agribusiness and large-scale farming: capitalist globalisation in Argentine agriculture. *Canadian Journal of Development Studies* 35(3):339–357. <https://doi.org/10.1080/02255189.2014.933702>.
- Gras, Carla, and Valeria Hernández. 2021. Global agri-food chains in times of COVID-19: the state, agribusiness, and agroecology in Argentina. *Journal of Agrarian Change* 21(3):629–637. <https://doi.org/10.1111/joac.12418>.
- Hochstetler, Kathryn. 2012. Democracy and the environment in Latin America and Eastern Europe. In *Comparative environmental politics—theory, practice, and prospects*, ed. Paul F. Steinberg, Stacy D. VanDeveer. London: MIT Press.

- IICA, SENASA, and MAGyP. 2009. *La producción orgánica en la Argentina: compilación de experiencias institucionales y productivas*. Buenos Aires: IICA. <https://alimentosargentinos.magyp.gob.ar/contenido/valorAr/organicos/publicaciones/Contenidoiica.pdf>.
- Jasanoff, Sheila. 2014. Biotechnology and empire: the global power of seeds and science. *Global Power Shift* 104:201–225. [https://doi.org/10.1007/978-3-642-55007-2\\_10](https://doi.org/10.1007/978-3-642-55007-2_10).
- Jasanoff, Sheila. 2015. Future imperfect: science, technology, and the imaginations of modernity. In *Dreamscapes of modernity. Sociotechnical imaginaries and the fabrication of power*, ed. Sheila Jasanoff, Sang Hyun Kim, 1–33. Chicago, London: University of Chicago Press. [https://law.unimelb.edu.au/\\_data/assets/pdf\\_file/0009/3305673/1.-Jasanoff-and-Kim-2015-Dreamscapes-of-Modernity-Sociotechnical-Imaginari.pdf](https://law.unimelb.edu.au/_data/assets/pdf_file/0009/3305673/1.-Jasanoff-and-Kim-2015-Dreamscapes-of-Modernity-Sociotechnical-Imaginari.pdf).
- Köhler, Jonathan, Frank W. Geels, Florian Kern, Jochen Markard, Elsie Onsongo, Anna Wieczorek, Floortje Alkemade, Flor Avelino, Anna Bergek, Frank Boons, Lea Fünfschilling, David Hess, Georg Holtz, Sampsa Hyysalo, Kirsten Jenkins, Paula Kivimaa, Mari Martiskainen, Andrew McMeekin, Marie Susan Mühlemeier, Björn Nykvist, Bonno Pel, Rob Raven, Harald Rohrer, Björn Sandén, Johan Schot, Benjamin Sovacool, Bruno Turnheim, Dan Welch, and Peter Wells. 2019. An agenda for sustainability transitions research: state of the art and future directions. *Environmental Innovation and Societal Transitions* 31:1–32. <https://doi.org/10.1016/j.eist.2019.01.004>.
- Lapegna, Pablo. 2016a. Genetically modified soybeans, agrochemical exposure, and everyday forms of peasant collaboration in Argentina. *Journal of Peasant Studies* 43(2):517–536. <https://doi.org/10.1080/03066150.2015.1041519>.
- Lapegna, Pablo. 2016b. *Soybeans and power: genetically modified crops, Argentina environmental politics, and social movements in Argentina*. Oxford: Oxford University Press.
- Lapegna, Pablo. 2017. The political economy of the agro-export boom under the Kirchners: hegemony and passive revolution in Argentina. *Journal of Agrarian Change* 17(2):313–329. <https://doi.org/10.1111/joac.12205>.
- MAGyP. 2021. *Plan Estratégico Argentina Orgánica 2030*. Buenos Aires: MAGyP. [https://www.ciaorganico.net/documypublic/579\\_anexo\\_6239740\\_1.pdf](https://www.ciaorganico.net/documypublic/579_anexo_6239740_1.pdf).
- MAGyP. 2010. *Plan Estratégico Agroalimentario y agroindustrial participativo y federal 2010–2020*. [https://inta.gob.ar/sites/default/files/inta\\_000001-libro\\_pea\\_argentina\\_lider\\_agroalimentario.pdf](https://inta.gob.ar/sites/default/files/inta_000001-libro_pea_argentina_lider_agroalimentario.pdf).
- Mier y Terán Giménez Cacho, Mateo, Omar Felipe Giraldo, Miriam Aldasoro, Helda Morales, Bruce G. Ferguson, Peter Rosset, Ashlesha Khadse, and Carmen Campos. 2018. Bringing agroecology to scale: key drivers and emblematic cases. *Agroecology and Sustainable Food Systems* 42(6):637–665. <https://doi.org/10.1080/21683565.2018.1443313>.
- Ministerio de Agroindustria. 2017. Resolución 190-E/2017. <https://www.argentina.gob.ar/normativa/nacional/resolucion-190-2017-278205/texto>. Accessed 6 Dec 2022.
- Muzlar, José. 2017. Alentando el darwinismo social en el agrario argentino / Clarín Rural 2016. *Estudios Rurales* 7:75–106. Encouraging social Darwinism in the Argentine agrarian.
- Newell, Peter. 2009a. Bio-hegemony: the political economy of agricultural biotechnology in Argentina. *Journal of Latin American Studies* 41(1):27–57. <https://doi.org/10.1017/S0022216X08005105>.
- Newell, Peter. 2009b. Technology, food, power: governing GMOs in Argentina. In *Corporate power in global agrifood governance*, ed. Jennifer Clapp, Doris Fuchs, 1–22. Cambridge: MIT Press.
- Perez, Daiana, and María Amalia Gracia. 2021. Sentidos en disputa. El proceso de institucionalización de la agroecología en Argentina. *Revista Latinoamericana de Estudios Rurales* 6(12):1–29.
- Piquer-Rodríguez, M., V. Butsic, P. Gärtner, L. Macchi, M. Baumann, G. Gavier Pizarro, J.N. Volante, I.N. Gasparri, and T. Kuemmerle. 2018. Drivers of agricultural land-use change in the Argentine Pampas and Chaco regions. *Applied Geography* 91:111–122. <https://doi.org/10.1016/j.apgeog.2018.01.004>.
- Rigby, Dan, and Daniel M. Cáceres. 2001. Organic farming and the sustainability of agricultural systems. *Agricultural Systems* 68(1):21–40. [https://doi.org/10.1016/S0308-521X\(00\)00060-3](https://doi.org/10.1016/S0308-521X(00)00060-3).
- Rodale Institute. 2022. *Farming systems trial. 40-year report*. [https://rodaleinstitute.org/wp-content/uploads/FST\\_40YearReport\\_RodaleInstitute-1.pdf](https://rodaleinstitute.org/wp-content/uploads/FST_40YearReport_RodaleInstitute-1.pdf).
- Rodríguez, Roy. 2019. La construcción simbólica del productor rural de avanzada en Clarín Rural—1996–2008. FLACSO Argentina. <https://repositorio.flacsoandes.edu.ec/bitstream/10469/16446/2/TFLACSO-2019RR.pdf>. Accessed 8 May 2023.
- SAGyP. 2022. Alimentos Argentinos | Sello Orgánico Argentina Nueva herramienta para fortalecer la producción orgánica nacional. [www.alimentosargentinos.gob.ar/organicos](http://www.alimentosargentinos.gob.ar/organicos). Accessed 6 Dec 2022.
- Sarandón, Santiago, and Mariana Marasas. 2015. Breve historia de la agroecología en la Argentina: Orígenes, evolución y perspectivas futuras. *Agroecología* 10(2):93–102.

- SENASA. 2021. *Situación de la producción orgánica en la Argentina durante el año 2020*. [https://alimentosargentinos.magyp.gob.ar/HomeAlimentos/Organicos/documentos/Situacion\\_de\\_la\\_PO\\_en\\_la\\_Argentina\\_2020.pdf](https://alimentosargentinos.magyp.gob.ar/HomeAlimentos/Organicos/documentos/Situacion_de_la_PO_en_la_Argentina_2020.pdf).
- Sénit, Carole-Anne, Chukwumerije Okereke, Lorena Alcázar, Dan Banik, Mairon G. Bastos Lima, Frank Biermann, Rongdezayi Fambasayi, Ibrahima Hathie, Annica Kronsell, Hanna Leonardsson, Navam Niles, and Karen M. Siegel. 2022. Inclusiveness. In *The political impact of the sustainable development goals: transforming governance through global goals?*, ed. Frank Biermann, Thomas Hickmann, and Carole-Anne Sénit, 116–139. Cambridge: Cambridge University Press.
- Siegel, Karen M. 2016. Fulfilling promises of more substantive democracy? Post-neoliberalism and natural resource governance in South America. *Development and Change* 47(3):495–516. <https://doi.org/10.1111/dech.12234>.
- Siegel, Karen M. 2017. *Regional environmental cooperation in South America*. London: Palgrave Macmillan.
- Siegel, Karen M., and Mairon G. Bastos Lima. 2020. When international sustainability frameworks encounter domestic politics: the sustainable development goals and agri-food governance in South America. *World Development* 135(11):105053. <https://doi.org/10.1016/j.worlddev.2020.105053>.
- Siegel, Karen M., Melisa Deciancio, Daniel Kefeli, Guilherme Queiroz-Stein, and Thomas Dietz. 2022. Fostering transitions towards sustainability? The politics of bioeconomy development in Argentina, Uruguay, and Brazil. *Bulletin of Latin American Research* <https://doi.org/10.1111/blar.13353>.
- Sikkink, Kathryn. 2008. From pariah state to global protagonist: Argentina and the struggle for international human rights. *Latin American Politics and Society* 50(1):1–29. <https://doi.org/10.1111/j.1548-2456.2008.00002.x>.
- Smallman, Melanie. 2020. ‘Nothing to do with the science’: how an elite sociotechnical imaginary cements policy resistance to public perspectives on science and technology through the machinery of government. *Social Studies of Science* 50(4):589–608. <https://doi.org/10.1177/0306312719879768>.
- Teubal, Miguel. 2009. Expansión de la soja transgénica en la argentina. In *Promesas y peligros de la liberalización del comercio agrícola. Lecciones desde América Latina*, ed. Mamerto Pérez, Sergio Schlesinger, and Timothy A. Wise, 73–90. La Paz: Asociación de Instituciones de Promoción y Educación (AIPE). <https://www.bu.edu/eci/files/2019/06/PromesaPeligroBookJune09.pdf>.
- The Economist Intelligence Unit. 2022. *Democracy index 2021: the China challenge*. The Economist Intelligence Unit, Vol. 83.
- Tittor, Anne. 2021. The key role of the agribusiness and biotechnology sectors in constructing the economic imaginary of the bioeconomy in Argentina. *Journal of Environmental Policy & Planning* 23(2):213–226. <https://doi.org/10.1080/1523908X.2021.1893162>.
- Vergara-Camus, Leandro, and Cristóbal Kay. 2017. The agrarian political economy of left-wing governments in Latin America: agribusiness, peasants, and the limits of neo-developmentalism. *Journal of Agrarian Change* 17:415–437. <https://doi.org/10.1111/joac.12216>.