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Bilateral Relations on Pesticides – The Issue of Pesticides in the Agricultural Policy Dialogue Brazil-Germany (APD)

Levke Selma Seefeld *

University of Hamburg, Germany

*Autor correspondente. E-mail: levke.seefeld@gmail.com

Abstract

This article addresses how the issue of pesticides is tackled within the Agricultural Policy Dialogue Brazil-Germany (APD) with the participation of diverse stakeholders. The background of the study lies in the bilateral relations between the two countries, as well as the existing national tensions regarding the use and trade of pesticides. The qualitative, empirical assessment of the issue within the context of the APD involved analyzing publicly available written publications and video formats published by the APD between 2021 and 2024. Additionally, the authors and speakers were examined regarding the balanced participation of diverse interest groups. The findings show that the issue of pesticides has not been explicitly and comprehensively addressed in the APD so far but has only been touched upon, especially in the context of the bioeconomy, where biopesticides were presented as alternatives. However, a deeper engagement with the ecological and health impacts of pesticide use did not take place. The analysis suggests that greater transparency in topic selection and more targeted inclusion of various stakeholders could ensure a more balanced debate. Due to the high relevance as well as environmental and societal controversy surrounding pesticides, it is recommended that the APD integrates this topic more prominently into the dialogue. Besides that, concrete consequences and results of the dialogue could be better communicated to enhance legitimacy and trust. Future research can observe the further development of the APD and specifically investigate whether the new focal areas of agroecology and organic farming will lead to a deeper engagement with the pesticide issue.

Keywords: Agricultural Policy Dialogue Brazil-Germany (APD), Pesticides, Agroecology

1. Introduction: The Controversy of Pesticides in Brazilian-German Agricultural Relations

The use of pesticides [1] in agriculture is a controversial topic in the social, political and scientific debate. Proponents from industry and science emphasize the necessity and potential of pesticides for highly efficient production regarding feeding the growing world population (BASF 2025; Bayer, n.d. Nishimoto 2019; Washuck, Hanson, and Prosser 2022). This is countered by critics from civil society organizations and the scientific community pointing at the harmful effects on people and the environment (Belchior et al. 2017; Bombardi 2019; Mello et al. 2019) Numerous scientific studies emphasize the increasing pollution of water, air and soil as well as living organisms by pesticide residues, the negative effects on biodiversity and ecosystems including important pollinating insects as well as the burden on human health due to residues in food, in water or through direct contact during the application of pesticides(Athukorala et al. 2023; Elahi et al. 2019; Pelosi et al. 2021; Rani et al. 2021; Sharma et al. 2019; Sheahan, Barrett, and Goldvale 2017; Stoner and Eitzer 2013; Jawale, Rajput, and Ugale 2017; Kaur et al. 2019). Additionally, the issue of pesticides represents an environmental injustice, as the effects of pesticide use are outsourced and affect particularly disadvantaged and vulnerable population groups who are unable to effectively defend themselves (Bombardi and Changoe 2022; Donley et al. 2022; Flocks 2012; Faber 2020; Martin et al. 2024). As many pesticides are based on fossil raw materials, they are also drivers of climate change (Menegat, Ledo, and Tirado 2022; Martinelli and Sellare 2022).

Due to these impacts, the reduction, substitution or even a ban on pesticides are key components of a transition to a more sustainable agriculture. As Goulet, Aulagnier, and Fouilleux (2023) describe, there are two main alternatives in addition to reducing the use of pesticides, namely biological pesticides and the systematic redesign or reorganization of agroecosystems as in agroecology. Biopesticides as part of the bioeconomy are said to be less harmful to the environment and human health (Daraban, Hlihor, and Suteu 2023; Egbuna et al. 2020; Khursheed et al. 2022). However, there are already warnings against generalizations about the non-toxicity of these (Chavana and Joshi 2024). Besides that, the transition of the system is hampered by the dependence of agriculture on pesticides, the power and influence of the pesticide industry and existing lock-in effects (Cowan and Gunby 1996; Goulet, Aulagnier, and Fouilleux 2023; McHenry 2018; Shattuck 2021; Tosun, Lelieveldt, and Wing 2019; Vanloqueren and Baret 2009).

In Brazil and Germany, the controversy surrounding pesticides is manifesting itself both nationally and bilaterally. Internally, Brazil is experiencing a split between the powerful agricultural industry with increasing pesticide use and the countermovements from civil society such as agroecology (Bastos Lima 2021; Gaboardi, Candiotto, and Panis 2023). This also manifests itself in contradictory political programs

1. Pesticides are plant protection products that are used to control unwanted plants, fungi, insects, seeds or other organisms in order to protect the yield and quality of crops. They can be differentiated according to their area of action (e.g. herbicides, fungicides, insecticides) and their ingredients (biological, chemical or chemical-synthetic). In addition to repelling harmful organisms, pesticides also include growth regulators that influence the biological processes of plants (Bundesministerium für Ernährung und Landwirtschaft 2025).

and laws. In bilateral terms, Brazil rejects 'neo-colonialist' sustainability requirements on the part of Germany and the European Union (EU) as part of the planned Mercosur agreement (Palmieri et al. 2024), but at the same time strives to expand sales markets. President Luiz Inácio Lula da Silva has also criticized the sale of pesticides banned in the EU in Brazil and called for higher standards (BRASIL. Presidência da República 2024), yet there is already a lack of national majorities for stronger regulation of pesticide use.

Germany is facing a tension between, on the one hand, the requirements to reduce the use of pesticides, particularly from new EU sustainability projects and the demands of critical consumers, and, on the other hand, a powerful conventional agricultural sector with stagnating pesticide use. Additionally, Germany is influenced by the interests of a strong chemical industry (Palmieri et al. 2024), which comprises two of the four largest pesticide manufacturers worldwide that also export to Brazil, including products that are banned in the EU.

Due to the complexity and controversial nature of the topic, an open and equal dialogue between the affected stakeholders is crucial to finding viable solutions. The Brazil-Germany Agricultural Policy Dialogue (APD) is a bilateral cooperation instrument between the two countries for the exchange of technical, political and scientific experiences, perspectives and policies regarding the transformation towards a resilient and sustainable agricultural and food system. The aim is to contribute to the sustainable promotion of the right to food and climate protection, food systems, agroecology, family-run businesses and competitive agriculture (ADP 2024b). With the participation of political, economic, civil society and scientific actors, the countries want to strengthen the mutual understanding of national policies on agriculture and the environment as well as the exchange of knowledge in an open and objective dialogue.

Against this background, this article offers the first empirical analysis of the discussion of the pesticide issue in the APD. Based on the publicly accessible publications of the APD in written and video format, it is investigated whether and in which contexts the topic of pesticides is addressed and whether the claim of being a low-threshold exchange platform for various stakeholders is fulfilled. The corresponding research question is: "How is the issue of pesticides addressed in the APD Brazil-Germany?".

2. The Tensions Surrounding the Issue of Pesticides

2.1 Brazil: Between Industrial Agricultural Production and Agroecological Transition

Brazil is a significant agricultural power worldwide. While Brazilian agriculture itself accounted for around 6.2% of gross domestic product (GDP) in 2023 (IBGE 2024), the whole agricultural industry accounted for a total of 24% of GDP (CEPEA 2024). The share of agribusiness in Brazil's total exports was 49% in 2023 (MAPA 2024). The strength of the agricultural industry is also evident when compared internationally, as Brazil was once again one of the world's largest producers and exporters of various agricultural products such as sugar, coffee, orange juice, beef, chicken and pork, corn, soy and cotton (MAPA 2025a).

From a historical perspective, the export-oriented Brazilian agricultural model was introduced in the 1960s with the so-called Green Revolution. The modernization

of agriculture envisaged intensification and mechanization with the help of synthetic fertilizers, pesticides, heavy machinery and genetically modified seeds, which was implemented through agricultural research, technical assistance and subsidized loans for rural areas (Campagnolla and Macêdo 2022). This has led to a form of agriculture that ensures the efficient and profitable production of agricultural commodities and biofuels for export in monocultures with a high use of agricultural inputs.

Nowadays, the Brazilian government's focus is on the sustainable intensification of agriculture (Embrapa 2018). For example, with the so-called ABC+ Plan[2] as a successor to the previous ABC Plan of 2010-2020, the Brazilian Ministry of Agriculture (MAPA 2025b) is aiming for intensive, highly efficient and lower-carbon agriculture (MAPA 2023). Brazil's strength in the bioeconomy, both as a producer and consumer, also underlines the targeted sustainable intensification strategy (Martinelli and Sellare 2022; Sellare, Martinelli, and Börner 2023; Vargas et al. 2023).

The predominant production model is nevertheless heavily dependent on high pesticide use, which is also reflected in the data on pesticide use from (FAOSTAT 2024): Brazil has led the ranking of the world's largest pesticide users for several years. Between 2002 and 2022, annual pesticide consumption increased more than fivefold, from 146 thousand tons in 2002 to 801 thousand tons in 2022, with a particularly strong increase between 2017 and 2022 (+55 %). This strong growth over two decades was recorded for all main types of pesticides (herbicides: + 493 %; insecticides: + 335 %; fungicides and bactericides: + 825 %). The use in relation to agricultural value added also increased by 204 %. In 2022, total consumption was therefore more than 70 % higher than in the USA (2nd place), more than 170 % higher than in Indonesia (3rd place), more than 200 % higher than Argentina (4th place) and more than 250 % higher than in China (5th place). With 12.6 kg/ha (+390 % between 2002 and 2022), Brazil also exceeds other countries with high pesticide consumption such as the USA (3 kg/ha), Indonesia (6.5 kg/ha), Argentina (5.9 kg/ha) and China (1.8 kg/ha) in terms of use per cultivated area. In addition, total pesticide consumption in Brazil is likely to be even higher, as around 20 % of the pesticides used in Brazil are traded illegally and are not included in the official figures (Gaboardi, Candiotto, and Panis 2023).

In their analysis on pesticide use in Brazil, Gaboardi, Candiotto, and Panis (2023) emphasize that the number of new registrations is also on the rise. While an average of 122 new pesticides were registered each year between 2000 and 2015, this figure rose to 419 between 2016 and 2020. When considering the hazard classification by the Brazilian environmental authority IBAMA, a trend towards the use of products that are harmful to the environment and humans can be seen. The newly approved agents include active substances that are not approved in other countries such as in the EU and some of which have been classified as probably or possibly carcinogenic by the International Agency for Research on Cancer (IARC) of the World Health Organization (WHO) (Gaboardi, Candiotto, and Panis 2023). There is evidence that one person dies every two days from pesticide poisoning in Brazil, with one fifth of the victims being children and adolescents (Bombardi and Changoe 2022).

Gaboardi, Candiotto, and Panis (2023) also draw attention to the legal develop-

2. Sectoral Plan for Adaptation to Climate Change and Reduction of Carbon Emissions in Agriculture and Live-stock for Sustainable Development (2020-2030) - ABC+.

ments. In Brazil, the use of pesticides was regulated for a long time by Law 7.802 from 1989. However, the parliamentary agricultural front in Brazil, representing agribusiness in the political arena, has been strongly campaigning until recently for draft law 6.299 from 2002 to replace the previous law and relax many regulations. Among other things, it provides for the renaming of pesticides as plant protection products and environmental control products, which is intended to reduce their negative connotation. New active ingredients are to be approved by the new National Technical Commission for Plant Protection Products (CTNFito), whereby the environmental authority IBAMA and the health authority ANVISA will no longer be able to veto approval. Maximum deadlines for the approval process are also to be set and the extension of approval licenses to other crops is to be simplified in order to speed up the approval of products. In addition, the approval of potentially harmful active substances is to be further simplified. The power of the federal states and municipalities to act is to be restricted and regulation regarding the advertising of pesticides reduced.

The bill described above was approved by the Chamber of Deputies in 2022 and by the Senate in 2023 as Law 14.785/2023. At the end of 2023, President Luiz Inácio Lula da Silva submitted 14 vetoes, including against the restriction of the involvement of IBAMA and ANVISA in the approval process (Câmara dos Deputados 2023), but these were rejected by the National Congress in May 2024 (León 2024).

These developments demonstrate that the economic interests of agribusiness continue to be strongly prioritized, while impacts on people and the environment are neglected (Gaboardi, Candiotto, and Panis 2023; Porto et al. 2010a). Since the 1970s, counter-movements such as agroecology have been evolving in Brazil (**we**; Brandenburg 2002; Norgaard 1984), The agroecological ideas disseminated through conferences on alternative agriculture, initiatives such as a project on alternative technologies (IPEA 2017) and the association AS-PTA Agricultura Familiar e Agroecologia (AS-PTA 2010; Wezel et al. 2009).This led to the founding of the National Agroecology Conference (ENA) in 2002, from which the National Agroecology Association (ANA) emerged (ANA, n.d.). In 2004, the Brazilian Agroecology Association (ABA) was founded to contribute to the scientific perspective of agroecology (ABA, n.d.). In addition, civil society organizations have been involved in the topic of pesticide use, such as the Campanha Permanente Contra os Agrotóxicos e Pela Vida since 2011 (Contra os Agrotóxicos 2024).

With strong influence from the social movements, a number of political programs and laws to strengthen organic farming and agroecology were enacted, in particular, between 2003 and 2013. These include the Law on the Regulation of Organic Products (*Lei dos Orgânicos*; Law No. 10.831/2003) and the National Policy for Agroecology and Organic Production (*Politica Nacional de Agroecologia e Produção Orgânica* – Pnapo; Decree No. 7.794/2012) with the National Plan for Agroecology and Organic Production (*Plano Nacional de Agroecologia e Produção Orgânica* – Planapo). One of the objectives of Planapo between 2013 and 2015 was aimed at reducing the use of pesticides and resulted, among other things, in a proposal of the National Program for the Reduction of Pesticide Use (Pronara), which, despite efforts, was not ratified by the MAPA (Sambuichi et al. 2017).

As a counterpart to the draft law 6.299/2002 to strengthen the use of pesticides,

the draft law 6.670/2016 to establish a national policy to reduce the use of pesticides (Pnara) was also put forward. This is based on demands from civil society for an expansion of government investment in the development and use of alternatives to pesticides in order to produce healthy food and reduce the negative impact on the environment and human health (Gurgel, Guedes, and Friedrich 2021). The Pnara also aims to establish economic, financial and fiscal measures. These are intended to discourage the use of products with the greatest toxicological and ecotoxicological risks and hazards and to encourage organic and agroecological production systems (Brasil 2016). This is highly significant because, according to the Federal Court of Accounts(TCU), the Brazilian government promotes the use of pesticides through tax exemptions for the import, production and interstate commercialization of pesticides, among other measures (Gaboardi, Candiotto, and Panis 2023; TCU 2017). In addition, the Brazilian government is not providing sufficient funds for technical assistance to farmers, increasing dependency on pesticide manufacturers, who act in lieu of the state and offer technical assistance in connection with the sale of their products (TCU 2017).

After the impeachment of then President Dilma Rousseff in 2015 and under the transitional government of President Michel Temer and later President Jair Bolsonaro, there was a far-reaching dismantling of political programs and institutions for organic agriculture and agroecology, including the Ministry of Agricultural Development and Family Agriculture (MDA) (Delgado and Zimmermann 2022; Lourenço et al. 2022; Niederle et al. 2023). It was only under the incumbent president Luiz Inácio Lula da Silva that efforts to promote organic farming and agroecology were resumed and previously established programs and institutions were restored (BRASIL. Secretaria Geral da República 2023). In October 2024, the new Planapo 2024–2027 was finally published (BRASIL. Secretaria Geral da República 2024), after some delays due to vetoes by the MAPA against the Pronara it contained (Fernandes 2024; Walendorff 2024).The Planapo is within the responsibility of the reestablished MDA.

All in all, Brazil is thus facing a tension between two fronts. On the one hand, supported and represented in particular by the MAPA, are the political and economic intentions of medium- to large-sized agricultural companies, agrochemical manufacturers and other interested companies from the agri-food sector, as well as politicians financed by these groups (Bastos Lima 2021; Gaboardi, Candiotto, and Panis 2023). On the other hand, there are the interests and demands of other groups, including various scientific and civil society organizations, such as the Campanha Permanente Contra os Agrotóxicos e Pela Vida Contra os Agrotóxicos (2024) and Fiocruz (2024) or the Associação Brasileira de Agroecologia (Associação Brasileira de Agroecologia 2014), for environmental justice and agroecology, which are supported by the MDA. These conflicting interests have already resulted in contradictory political programs and laws on pesticide regulation, which now pose challenges for Brazilian politics in terms of fulfilling the plans and promises made therein.

2.2 Germany: Between sustainability goals and the chemical industry

In the EU, the Farm-to-Fork Strategy adopted by the European Commission in 2020 as part of the European Green Deal defined clear targets for reducing the use

of pesticides. Both the use and the risks of chemical pesticides are to be reduced by 50% by 2030. In addition, the use of more hazardous pesticides is to be reduced by a further 50% (EC 2020a).

In 2022, the European Commission accordingly presented a proposal to revise Directive 2009/128/EC (known as the Sustainable Use of Pesticides Directive, SUD). This new regulation, known as the Sustainable Use of Pesticides Regulation (SUR), aimed to support the goals of the Farm-to-Fork strategy by reducing pesticide use by 50 %. However, the proposal was rejected by the European Parliament in November 2023 and subsequently withdrawn by the European Commission in 2024 (EP, 2024). Non-governmental organizations criticized the decision and suspected influence by the chemical and agricultural lobby (Observatory 2023; Euractiv 2024; PAN Europe 2024). Such influence has also been identified by scientific studies (Goulet, Aulagnier, and Fouilleux 2023; McHenry 2018; Tosun, Lelieveldt, and Wing 2019).

Despite these developments, the European Commission continues to assume that the defined reduction targets can be achieved (EC 2024a). In July 2024, the Commission published data based on EUROSTAT statistics on pesticide sales. These show that a 46% reduction in pesticide use and a 25% reduction in the use of more hazardous pesticides was achieved in the EU between 2018 and 2022 (EC 2024a). The reduction was lower in Germany: Total consumption fell by 31% and the use of more hazardous pesticides by just 5% (EC 2024c). Data from FAOSTAT (2024), on the other hand, show that pesticide use in the EU has remained largely constant at around 350,000 tons per year since 2002. In 2022, a reduction to 321,000 tons was recorded, which corresponds to a decrease of 10% compared to the previous year. In Germany, however, pesticide use fell by just over 1% to around 48,000 tons in 2022. Compared to 2002, this still represents an increase of 40% over the period under review from 2002 to 2022.

The so-called "Pesticide Atlas 2022" (Heinrich-Böll-Stiftung et al. 2022) also points out the almost unchanged level of pesticide use in Germany. The report further criticizes the fact that an effective reduction policy and a reduction in dependency on chemical pesticides, as required by EU legislation, have not yet been pursued. The number of approved pesticide active ingredients remains practically unchanged. In general, politicians are criticized for not sufficiently promoting sustainable agriculture. This is due to a conflict of interest between the Ministry of Agriculture (BMEL), which primarily supports the interests of conventional agriculture, and the Ministry of the Environment, which is more strongly committed to organic farming (Radtke 2021).

Another relevant aspect is Germany's strong position in the chemical industry, which also produces agricultural chemicals. According to the Federal Ministry for Economic Affairs and Climate Protection (BMWK, n.d.), the chemical-pharmaceutical industry is Germany's third-largest industrial sector after automotive and mechanical engineering, with 2,100 companies and around 466,500 employees. In terms of turnover, Germany is the leader in the chemical-pharmaceutical industry in Europe and in third place worldwide behind China and the USA.

The global market for agrochemicals is highly consolidated: Four companies – Bayer, Syngenta (under ChemChina), Corteva (formerly DowDuPont) and BASF –

together control around 70 % of the market (Heinrich-Böll-Stiftung 2022; Nishimoto 2019). Bayer achieved the top position in 2021 with sales of almost USD 23 billion, followed by Syngenta (USD 16.7 billion), Corteva (USD 15.7 billion) and BASF (USD 9.3 billion) (Statista 2022). Bayer and BASF are German companies.

The agrochemical producers are, however, repeatedly criticized. This is based, among other things, on their political influence on important legislative processes through lobbying (Bombardi and Changoe 2022; Palmieri et al. 2024). Additionally, critics speak of a 'double standard' in the sale of pesticides. For example, various pesticides that are not approved in the EU due to negative effects on the environment and health are nevertheless sold in other countries (Luig et al. 2020; Porto et al. 2010b). Although the EU Chemicals Strategy published in 2020 provides for a ban on the export of hazardous chemicals banned in the EU (EC 2020b), no legislative measures have yet been taken (Palmieri et al. 2024).

The critique directed at agrochemical producers was also manifested in a complaint filed against Bayer in 2024 by six civil society organizations from South America and Germany with the German contact point of the Organization for Economic Cooperation and Development (OECD). The complaint is based on the negative impact of the agricultural model with genetically modified soy on the environment and human rights in Argentina, Brazil, Paraguay and Bolivia (ECCHR 2024). Bayer is accused of not adhering to the OECD Guidelines for Multinational Enterprises and of violating its due diligence obligations in the distribution of soybean seeds and toxic pesticides. According to the organizations, this leads to deforestation, land conflicts and health risks. They are therefore calling for the company to take responsibility and make amends. Bayer rejects the accusations and underlines its sustainability measures (Bayer 2024).

Overall, Germany is thus facing both internal challenges to implement the desired sustainability measures as well as further bilateral challenges due to converging interests regarding sustainability due diligence and economic growth through the industry strength.

3. Bilateral Cooperation: The Agricultural Policy Dialogue Brazil-Germany (APD)

As emphasized by the BMEL (2021) in its country report on Brazil, a bilateral cooperation on agricultural issues has existed between Brazil and Germany since the early 2000s. The German-Brazilian Working Initiative for Cooperation in Agribusiness and Innovation (AI) was established in 2003 to serve as a central platform for agricultural policy and economic exchange. The AI meets once a year on the fringes of the German-Brazilian Business Days and receives its mandate for three years from the German-Brazilian Joint Economic Commission. German business is represented in the AI by the Latin America Committee of German Business (LADW) as well as the Federation of German Industries (BDI) and coordinated by Jordi Tormo, who is also Vice President Business Management Industrial Formulators Europe at BASF. The Brazilian representative is Ingo Plöger, Vice President of the Brazilian Agribusiness Association (ABAG). On the political side, representatives of the BMEL and MAPA are involved in the AI (LADW 2023).

Another cooperation exists with regard to the bioeconomy between BMEL, MAPA, the German Federal Ministry of Education and Research and the Brazilian Ministry of Science. Furthermore, there are visits to important agricultural and food trade fairs, such as Anufood Brazil, Amuga, Agrishow, Expodireto, Expointer (BMEL 2021). The BMEL describes the contact between Brazil and Germany in the agricultural sector "as close and friendly due to the trips at management level, the repeated participation of the head of the Brazilian Ministry of Agriculture in the annual Berlin Agriculture Ministers' Conference, the Global Forum for Food and Agriculture (GFFA), and the participation in the meetings of the Agribusiness Initiative (repeatedly at state secretary level)" (BMEL 2021, translated to English).

In a project funded by the BMEL's Bilateral Cooperation Program (BKP), the German Cooperative and Raiffeisen Confederation cooperated with the Brazilian cooperative association OCB for over 10 years until 2020. Following an interim expansion of the project to include trilateral cooperation with Argentina, both the German-Brazilian and the German-Argentinean Agricultural Policy Dialogue were then launched in 2021 (BMEL 2021).

The Agricultural Policy Dialogue Brazil-Germany (APD) is intended to serve as an instrument of bilateral cooperation for a technical, political and scientific exchange of experiences, perspectives and policies with regard to the transformation towards a resilient and sustainable agricultural and food system. The activities are currently assigned to four different fields of action: Degraded Pasture Rehabilitation Program; Family Farming, Right to Food and Sustainable Food Systems; Agroecology, Organic Agriculture and Bioeconomy; and Deforestation-free Supply Chains and Traceability Systems (ADP 2024b). APD products include specific webinars for a specialized expert audience, public technical and agricultural policy events, studies, publications and specific technical and information trips to Germany. Overall, the aim is to promote an open and objective dialogue, with the platform offering low-threshold access to all relevant actors from politics, the agricultural sector, academia and civil society (ADP 2024b).

The project is based on a memorandum of understanding between MAPA, MDA and BMEL. According to the APD, these are confidential government documents and are therefore not publicly accessible. The APD falls under the BMEL's BKP, which is intended to contribute to SDG 17 (partnerships to achieve the goals) and aims to "strengthen agroecological, climate-friendly, local, equitable and participatory food production worldwide" (ADP 2024a, translated to English). It is emphasized that the instruments are based, among other things, on the principles of agroecology.

The first phase of the APD took place between April 2021 and June 2024 and was carried out by IAK Agrar Consulting GmbH. The main topics were agricultural finance, agricultural policy advice, bioeconomy, carbon farming and agricultural value chains. The budget amounted to EUR 1,445,120, with the BMEL funding the APD via the BKP (IAK 2024a).

The second phase of the APD began in July 2024 and is due to be completed in June 2027, again carried out by IAK Agrar Consulting GmbH. The defined focus areas are agricultural policy consulting, bioeconomy, food security, agricultural value chains, sustainable agriculture and organic farming. The budget was roughly doubled

to EUR 2,800,000 (IAK 2024b).

All in all, the APD is thus intended to promote bilateral cooperation on agricultural issues and serve as a platform for the exchange of technical, political and scientific perspectives, particularly in relation to sustainable agriculture and agroecology.

4. Empirical Analysis of Pesticide Discourse in the APD

The fundamental objective of this research is an empirical assessment of the way in which the issue of pesticides is addressed in the context of APD Brazil-Germany. In order to answer the corresponding research question "How is the issue of pesticides addressed in the APD Brazil-Germany?", a qualitative analysis of the publications within the framework of the APD was carried out. The data basis comprises publicly accessible APD publications in the period between 2021 and 2024 (see Table 1 and Table 2 in the appendix).

First, the analysis focused on the key topics selected by the APD and their connection to the pesticide issue. Written publications were then examined using keywords and MaxQDA software to determine the contexts in which pesticides were discussed. Relevant text passages were coded, manually checked and assigned to superordinate topics. In addition, content wise relevant video formats were sighted to examine the discussion of the pesticide topic. Finally, the actors involved in publications and webinars were identified and assigned to actor groups based on their descriptions and further research (see Table 3 in the appendix). This allowed an assessment of the extent to which APD offers an integrative platform and ensures a balanced ratio of opinions. The results of the analysis are presented below.

In the first phase of the APD, the focus topics were agricultural financing, agricultural policy advice, bioeconomy, carbon farming and agricultural value chains, according to the responsible IAK Consulting. In the second phase, the priority topics included agricultural policy advice, bioeconomy, food security, agricultural value chains, sustainable agriculture and organic farming. The focus topics are very broad, and the specific topic of pesticides is not explicitly addressed, but is linked to various of the focus topics. As already mentioned, bioeconomy involves among other things the development and production of biopesticides. Sustainable agriculture and organic farming also take clear positions on the issue of pesticides.

On the APD website, the publications as of January 2025 are categorized into three thematic groups: "Agroecology, organic farming and bioeconomy"; "Family farms, right to food and sustainable food systems"; "Deforestation-free supply chains and traceability". In the first phase of APD, 26 publications (twelve on "Agroecology, organic farming and bioeconomy"; five on "Family farms, the right to food and sustainable food systems"; nine on "Deforesta-tion-free supply chains and traceability") and 14 event recordings were made available on the website. At the beginning of the second phase, six publications (one on "Agroecology, organic farming and bioeconomy"; two on "Family farms, the right to food and sustainable food systems"; three on "Deforestation-free supply chains and traceability") were already published on the website.

Within the thematic groups, the focus has shifted somewhat when looking at the titles of the publications. In "Agroecology, organic farming and bioeconomy", some

publications on financial instruments and bioeconomy were published first. From 2023, but especially in 2024, publications on organic farming and agroecology were added. There was also a clear change in the area of "Family farms, the right to food and sustainable food systems". While only two publications on agricultural financing had appeared by the end of 2022, several publications were subsequently published advocating agroecology and a change in the Brazilian agricultural system. In the thematic group "Deforestation-free supply chains and traceability", the publications appear quite mixed overall.

The APD states in the publications that the studies were commissioned by the APD, but that responsibility for the content lies with the authors. The opinions contained therein are therefore not necessarily representative or supported by the APD. Overall, the studies have heterogeneous formats and contexts. For example, there are introductions to a selected topic and how it is dealt with in the respective country, concrete studies on specific sub-aspects published by the scientists or experts within the framework of the APD, collective commentaries on specific topics and short summaries. On the APD website, there is no transparent overview of how the topics and authors have been selected, what the assignments entail and what freedom the authors have. When asked by email, no more precise information was provided, but only that "the delimitation of the thematic scope of a publication is done by Terms of Reference" (translated to English)[3].

The analysis based on the selected keywords on pesticides provided further insights. Since deforestation-free agricultural supply chains were one of the focus topics of the first phase of the APD, a total of eleven of the publications can be assigned to this topic. The publications focused on European due diligence obligations, the implementation and impact of the European Deforestation Regulation (EUDR) and the affected supply chains such as beef or soy and their traceability. There were two relevant references for the keywords in one of the publications. Here, the partial substitution of chemical inputs with biological inputs was mentioned as a sustainability measure in an enumeration (Dias de Sá, König, and Søndergaard 2022a).

Another focus topic of the first phase of the APD was agricultural financing. Accordingly, seven publications were published on the topics of agricultural financing, carbon markets and payments for environmental services. There were few relevant references for the keywords. For example, the reduction of pesticide use was mentioned as a possible measure under the second pillar of the Common Agricultural Policy (CAP) in Europe (Andrae 2022; Hollenberg 2022). Another publication described a Bayer project that promotes low-carbon agriculture and lists the facilitation of the purchase of inputs (including pesticides) as a beneficial measure (Dias de Sá, König, and Søndergaard 2022b).

A further six publications were published on agricultural policy. This includes publications on the agricultural policies of Brazil and Germany and their sustainable orientation. In this topic, there were more relevant findings. The topic of pesticide reduction was addressed very comprehensively in a publication on the modeling

3. The quotation is used without a reference in the bibliography as it stems from an unpublished email received by the author. It is used on the assumption that it is public information from the APD that is not considered confidential.

of various scenarios as alternatives to the proposals of the Green Deal (Henning, Grunenberg, and Panknin 2023). In addition, different positions on the topic are compared and it is noted that agribusiness prefers a lower reduction in pesticide use, while other agricultural producers advocate a medium reduction and environmental and animal welfare organizations as well as the Green Party advocate strong reductions.

A publication on Brazilian agricultural policy highlights the cost pressure and environmental and health concerns regarding the intensive use of chemical, petroleum-based pesticides, which are a burden on small and medium-sized producers. Overall, it is described here that most of the pesticide use falls on the large producers in particular, while family farmers, indigenous and traditional groups or land reform settlers often use fewer pesticides, as access is also more difficult. However, agribusiness is also under pressure due to the negative externalities caused by pesticide use, among other things (Campos 2022). In another publication, bioinputs are mentioned as part of the ABC plan in Brazil (Kossatz Borba and Lima 2024). One publication also mentions the change in the use of inputs such as pesticides as part of the promotion of family farming and agroecology. In this respect, it is opposed to the agro-industrial food system with its intensive use of pesticides. The health effects of pesticide use are cited as one of the negative consequences of the prevailing agricultural model (Maluf and Burlandy 2024). Overall, it can be seen in this thematic group of publications that in particular more recent publications on the Brazilian context take a much more critical view of pesticide use in the Brazilian agricultural model.

Bioeconomy constituted a further focus topic in the first phase of APD, which is why a total of four publications on bioeconomy were published in Germany and Brazil (Martinelli and Sellare 2022; Moesenfechtel and Elze 2022; Sellare, Martinelli, and Börner 2023; Vargas et al. 2023) There were a particularly large number of relevant findings on this topic, as bio-based pesticides are being developed as alternatives to synthetic pesticides in the bioeconomy. In summary, the publications underline the advantages of biopesticides and Brazil's particular strength as a producer and consumer in this growth market. Initially developed in and for organic farming and agroecology, biopesticides have now also spread into the conventional agricultural model. Synthetic pesticides are dependent on fossil raw materials, which are associated with volatility and are also drivers of climate change. Biopesticides are therefore associated with various benefits, which also affect the environment, food quality and health. Nevertheless, the publications also point to the low market share of organic inputs in Brazil to date. This is due, among other things, to the lack of regulatory frameworks, a lack of knowledge, habitual consumers and, in some cases, little research into the real application contexts of organic inputs. Concerns regarding the safety and therefore necessary regulation of biopesticides are also mentioned.

Vargas et al. (2023) also explain the Brazilian legislation on pesticides and how this influences the growth of the bioeconomy. According to them, there are two contrasting regimes in pesticide regulation: the Pesticide Law, which controls and regulates, and the organic farming programs, which are more flexible and allow innovation towards substitutes. The Pesticides Act of 1989 is interpreted as considering pesticides to be highly hazardous and therefore their use should not be the norm, but should be subject to strong control, which would also be underpinned by

appropriate penalties, including imprisonment, for violations. The development of organic farming and agroecology is then described as an alternative and it is pointed out that instead of strong control with penalties, this relies more on the quality assurance of sustainable agriculture based on defined criteria, which are checked by its own certification controls. The organic inputs program from 2019 is then seen as an opportunity to overcome this dichotomy and create a common regime for all agricultural stakeholders. The focus should be on innovation and not restriction. Organic factories for the production of organic inputs on the farm are also mentioned, but the extent to which these should be more strongly controlled by the state is discussed. Two specific regulatory proposals (Bill No. 658/2021 and Bill No. 3668/2021) are then explained. The paper thus examines how current developments strike a balance between overregulation of biopesticide use, which would hinder innovation in the field of bioeconomy, and underregulation, which opens up risks for the environment and people. Taken together, the publications on the bioeconomy shed light on biopesticides alongside other products of the bioeconomy. They address benefits, market barriers and regulatory challenges.

The remaining four publications present agroecology in Brazil, organic farming in Germany and a case study of duckweed. Due to the principles of these farming methods, which include the reduction of synthetic inputs, there were some relevant findings. Agroecology is presented as a counter-movement to the Green Revolution and the intensive use of pesticides, and agroecological and organic farming practices are described. Reference is also made to the increasing demand for pesticide-free food by consumers (Araújo 2024a, 2024b). In organic farming in Germany, reference is made to the lack of organic pesticides for certain crops (Behr et al. 2023).

The analysis so far therefore shows that none of the publications addresses the topic of pesticides in the title and thus as the main emphasis. The keyword search revealed that the topic of pesticides is addressed in some publications. The focus here was on the discussion of the reduction targets of the Green Deal, the solution potential of biobased pesticides and, to a lesser extent, the idea of more sustainable agriculture in the form of agroecology and organic farming. It is noticeable that the negative effects and controversies surrounding pesticides, particularly on human health, were hardly discussed at all.

The published video formats include five webinars on agricultural financing and carbon markets, four webinars on deforestation-free supply chains, three webinars on the bioeconomy, one webinar on crises and challenges in global food production systems and one webinar on the European Green Deal. Some of the webinars are linked to a specific paper, such as in the case of the Green Deal. In contrast to the written publications, the topics of agroecology and organic farming were not covered in the webinars. Due to greater proximity to the pesticide issue, the webinars on the bioeconomy, the crises and challenges of food production and the European Green Deal were reviewed. Similar to the written publications, there is a focus on technical innovations and economic potential. The interests of disadvantaged population groups, ensuring a healthy national diet and agroecology are mentioned, but not discussed in depth.

Since the responsibility for the content of the publications lies with the authors

or speakers, their selection is of particular importance in order to ensure a balanced representation of heterogeneous opinions. When asked by email, the APD states that the speakers and authors of the publications "are chosen for their quality as expert references in the respective topic and write the texts in an independent, professional manner" (translated to English)[4].

The breakdown of the authors of the publications shows that a total of 60 different authors were involved. Twelve publications are individual works, eight publications were written by two authors, eleven by three to five authors and one publication by 14 authors. Many authors were only involved once, but only four people were involved more than twice. Fernanda Martinelli from the Center for Development Research (ZEF) at the University of Bonn, Germany, and Daniel Vargas from the Fundação Getulio Vargas (FGV) each contributed to three publications. Camila Dias de Sá from Insper Agro Global and Niels Søndergaard contributed to five and six publications respectively. The latter two have published on the topics of decarbonization/carbon markets, soy cultivation, beef production, deforestation-free supply chains and the European Deforestation Regulation (EUDR). Further research on Daniel Vargas, Camila Dias de Sá and Niels Søndergaard revealed a focus on agribusiness and the sector's sustainability initiatives. All in all, however, the research on the authors shows that they were comprehensibly selected according to their specific expertise.

The breakdown of panel participants in the publicly accessible event recordings shows that a total of 57 people took part in the 14 events. Due to the multiple participation of some actors, the total number of participations is 91 (see Table 3 in the appendix). Of these participations, 14 were attributable to two people from APD, who mainly acted as moderators. 20 participations were attributable to 14 political actors, mainly from the BMEL and MAPA. The MDA did not participate in any of the events, which may be explained by the fact that it was dissolved during President Jair Bolsonaro's presidential term. Industry and the financial sector count a total of 23 participations by 17 participants. These include representatives from the Brazilian Agribusiness Association (ABAG), the German Farmers' Association (DBV) and other industry associations or industry-related organizations. 23 participations from 14 researchers represent various universities and research institutes. Eight of these participations involved actors from policy-related research institutes (e.g., Fundação Getulio Vargas, Thünen Institute) and seven were from actors from business-related research institutes (e.g., INSPER Agro Global, Embrapa). Finally, eleven participations from ten actors belong to environmental organizations, in particular the Brazilian Coalition for Climate, Forests and Agriculture (seven participations). In summary, there was a dominance of political and economic actors, while civil society organizations were present overall, but recorded significantly fewer participations. The focus was on organizations that primarily address ecological issues.

4. The quotation is used without a reference in the bibliography as it stems from an unpublished email received by the author. It is used on the assumption that it is public information from the APD that is not considered confidential.

5. The Neglect of the Pesticide Issue in the APD: Causes and Implications

As outlined earlier, the issue of pesticides is of great controversy and significance in the national and bilateral policy field of the two countries. As an instrument of bilateral cooperation for a technical, political and scientific exchange of experiences, perspectives and policies with regard to the transformation towards a resilient and sustainable agricultural and food system, the APD therefore offers a suitable framework for debating the issue of pesticides bilaterally. In this way, needs and expectations can be weighed up in the envisaged open and objective dialogue with all relevant stakeholders from politics, the agricultural sector, science and civil society. Such a dialogue may also give a voice to groups that are often disadvantaged and neglected in national politics.

However, this empirical analysis shows that the topic of pesticides was not chosen by the BMEL, MAPA and MDA as a focus topic for the APD and that no publication or event deals with the topic separately and holistically, even among related topics. In various passages, the reduction of pesticide use is briefly mentioned as a possible sustainability measure and an aspect of agroecology. More recent APD publications on agricultural policy reveal a more critical perspective, examining the negative effects of high pesticide use at least marginally.

In the publications on the bioeconomy, the issue of pesticides is covered somewhat more, but the focus here remains on the economic opportunities and innovations, while a holistic, critical reflection on pesticides is largely absent. Even though one of the publications deals with pesticide regulation in Brazil, it is analyzed with regard to the conditions that promote or hinder the bioeconomy. The effectiveness of the regulation of conventional pesticides as well as existing weaknesses and controversies are not comprehensively examined.

This lack of consideration of the issue of pesticides in the APD may have various reasons. For instance, the prioritization and focus on other relevant topics, such as deforestation, may have led to the issue not being taken up as a specific topic. Greater transparency about the selection process for the priority topics could provide explanations that are not apparent on the basis of the information currently available on the APD.

It is also possible, however, that prevailing structures in the general political debate were reproduced. As described above, the agricultural policy debate is significantly influenced by the agricultural industry, like-minded state actors and chemical companies. These actors have considerable material and legal resources at their disposal and successfully portray agribusiness in the discourse as working in the national interest (Bastos Lima 2021). Due to a lack of transparency regarding the selection process for the focus topics, it cannot be ruled out that the BMEL, MAPA and MDA were influenced by the aforementioned actors when determining these focus topics. In addition, the MDA was dissolved at the beginning of the first phase of the APD, was only reestablished later and was therefore unable to participate fully. For the German part, only the BMEL, which primarily supports the interests of conventional agriculture, is represented. Sustainability interests in agriculture, which are more strongly represented by the German Ministry of the Environment (Radtke 2021), may therefore have received less consideration. Likewise, the insufficient participation

of other civil society actors could have led to the topic not being taken up. Greater transparency and, if not yet guaranteed, the participation of diverse interest groups in the definition of relevant topics could enable a balanced and comprehensible selection. This could, for example, be carried out in a similar way to a materiality analysis at companies, in which relevant stakeholders are asked about the materiality of various topics.

In order to meet its claim, it is crucial that the APD reports transparently on its processes. The selection of priorities should be as balanced as possible and cover economic, environmental and social topics. In addition, the APD could communicate more clearly what its concrete impacts are, i.e. what consequences the products, such as webinars and publications, have. Due to the limited transparency, it is not possible to assess the extent to which the commissioned studies and the exchange in the webinars have generated concrete results. In principle, the APD strives for the technical, political and scientific exchange of experiences, perspectives and policies with regard to the transformation towards a resilient and sustainable agricultural and food system. To ensure that the exchange is not merely symbolic and without concrete results, the APD should therefore embark on an ambitious, structured and targeted dialogue in order to jointly develop solutions. As the commissions of the studies prepared for the APD are not available to the public, it is not possible to assess the extent to which they are appropriately structured and targeted. Overall, there is only a limited recognizable structure between the various publications, so there may be potential to make the commissions more precise.

With regard to the selection of authors and speakers, the analysis has shown that the APD selected experts from academia and practice in a comprehensible manner. Due to a lack of transparency, it is not possible to conclusively assess the extent to which attention was paid to balancing the opinions of the stakeholders. A look at the speakers involved shows a certain dominance of political and economic actors, while civil society actors, especially those with a focus on social issues, are less strongly represented. Among the authors, a strong scientific foundation is noticeable overall. However, authors with more than two publications may have had a stronger influence in the debate, which is why this should be critically reflected upon. It is also interesting to note that in more recent publications in the Brazilian context, which appeared under President Luiz Inácio Lula da Silva, a different positioning in favor of agroecology and social issues can be seen. These opinions may have previously been silenced or at least not taken into account. A careful selection of and reflection on the choice of authors and speakers should therefore be ensured by the APD and communicated transparently. Public, transparent calls for participation or involvement could increase the participation of other actors.

6. Conclusion and Implications for the APD

This article fills an existing research gap by being the first to analyze the German-Brazilian APD in relation to the discussion of pesticides. The central research question was: "How is the issue of pesticides addressed in the APD Brazil-Germany?"

Summing up, the relevance of the pesticide issue is given through its complex and controversial nature. First, the scientific evidence demonstrates the severe conse-

quences that pesticides have on both the environment and human health, making this issue of critical importance in any dialogue focused on sustainability and public well-being. Second, the issue gains even more relevance due to the bilateral relationship between Brazil, the world's largest pesticide consumer, and Germany, a significant producer of these chemicals. The strong trade links between the two countries highlight the potential risks posed by the ongoing use and export of pesticides. Third, the relevance could further increase with the planned Mercosur agreement. This deal, once finalized, could reduce or eliminate trade tariffs, which would likely boost pesticide exports from Germany to Brazil (VCI 2024) and increase the import of pesticide-contaminated food to Germany, presenting additional risks to both countries (Palmieri et al. 2024). In December 2024, the EU and Mercosur agreed on an agreement, which is now being submitted to the Council and Parliament in the EU (EC 2024b).

However, the analysis has shown that, despite this relevance, the APD does not deal explicitly and comprehensively with the issue of pesticides, but only marginally. Possible reasons discussed for this are the prioritization of other topics or the dominance of certain interest groups. An effort to include various stakeholders can be recognized, but as the analysis shows, an even more balanced selection could be made. Addressing or not addressing the topic in a bilateral format such as the APD also has at least a symbolic meaning. A more balanced approach to the selection of publication topics, webinar themes, and the choice of authors and speakers as well as greater transparency would thus strengthen APD's credibility and legitimacy as an open and balanced dialogue process. The dialogue should be shaped not only by economic opportunities but also by social and environmental responsibilities.

Given the significant financial investments in the APD (over 4.2 million EUR in both periods), greater transparency regarding the results is needed. Concrete outcomes have not been sufficiently visible in APD's communication. Increased transparency in the APD process could help to better demonstrate the effectiveness of the dialogue and foster trust. If concrete results were not yet achieved, a more structured, ambitious, and targeted approach should be pursued in the APD.

The analysis is intentionally based exclusively on publicly accessible information. While this entails certain limitations, the lack of transparency of the APD is consciously addressed as part of the critical investigation. Future research could therefore conduct qualitative interviews with representatives or stakeholders of the APD to gain further insights. It also makes sense to continue observing the APD in the ongoing phase. With the new focus on agroecology and organic farming, a stronger examination of the issue of pesticides could emerge.

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Appendix

This appendix provides supplementary material that supports the analyses presented in the main text.

Table 1. APD publications: written format

Category of APD	Topic	Title	Authors	Pages	Date
Agroecology, organic agriculture and bioeconomy	Financial instruments	Payment for environmental services in Brazil	Erika Pinto; André Guimarães; Paulo Moutinho	25	Jun. 2022
Agroecology, organic agriculture and bioeconomy	Bioeconomy	Bioeconomy in Germany – Fundamentals, strategies and players	Urs Moesenfechtel; Sebastian Elze	64	Oct. 2022
Agroecology, organic agriculture and bioeconomy	Financial instruments	Payments for environmental services in Germany	Silvio Andrae	15	Oct. 2022
Agroecology, organic agriculture and bioeconomy	Bioeconomy	Bio-inputs for Sustainable Agriculture in South America	Fernanda S. Martinelli; Jorge Sellare	28	Nov. 2022
Agroecology, organic agriculture and bioeconomy	Financial instruments	Unlocking the Brazilian potential: the necessary incentives to engage farmers in decarbonization	Camila Dias de Sá; Claudia C. König; Niels Søndergaard	64	Nov. 2022
Agroecology, organic agriculture and bioeconomy	Financial instruments	The battle for “the green” in times of the carbon market	Daniel Vargas	52	Jan. 2023
Agroecology, organic agriculture and bioeconomy	Financial instruments	Payment for environmental services in Brazil – Recommendations for 2023	Erika Pinto; André Guimarães; Paulo Moutinho	32	Feb. 2023
Agroecology, organic agriculture and bioeconomy	Agricultural politics	An International Perspective on the Green Deal in EU Agriculture – Modeling economic and ecological impacts of F2F-Options in Non-EU countries with a special focus on Brazil	Christian Henning; Michael Grunenberg; Lea Panknin	97	May 2023
Agroecology, organic agriculture and bioeconomy	Agroecology / organic agriculture	Organic farming and the organic market in Germany	Hans-Christoph Behr; Diana Schaack; Christine Rampold; Thomas Els; Tim Boenigk	52	Aug. 2023

Category of APD	Topic	Title	Authors	Pages	Date
Agroecology, organic agriculture and bioeconomy	Bioeconomy	Bioeconomy can bring about the transformation of food systems – Opportunities and challenges	Jorge Sellare; Fernanda Martinelli; Jan Börner	22	Nov. 2023
Agroecology, organic agriculture and bioeconomy	Bioeconomy	Bio-inputs in Brazil	Daniel Vargas; Fernanda Valente; Cícero Lima; Sabrina Matos	49	Nov. 2023
Agroecology, organic agriculture and bioeconomy	Agroecology / organic agriculture	Agroecology in Brazil: Social, economic and ecological perspectives	Albano Araújo	92	Jun. 2024
Agroecology, organic agriculture and bioeconomy	Agroecology / organic agriculture	Economic aspects of agroecological production	Albano Araújo	71	Dec. 2024
Family farms, the right to food and sustainable food systems	Financial instruments	How agricultural financing works in Germany	Klaus Hollenberg	25	Oct. 2022
Family farms, the right to food and sustainable food systems	Financial instruments	Sustainability criteria and innovative approaches to agricultural finance	Silvio Andrae	37	Oct. 2022
Family farms, the right to food and sustainable food systems	Agricultural politics	Agricultural policy for a healthy, sustainable and inclusive diet	Arnoldo de Campos	33	Dec. 2022
Family farms, the right to food and sustainable food systems	Agricultural politics	Democracy in Brazil requires a new pact with the agri-food sector	Wellington Almeida	37	Oct. 2023
Family farms, the right to food and sustainable food systems	Peasant agriculture	The duckweed in the Brazilian Sertão	Gleice Mere; Magnus Möllgard; Ingo Melchers; Klaus Appenroth; K. Sowjanya Sree	70	May 2024
Family farms, the right to food and sustainable food systems	Agricultural politics	Shaping the transition of agricultural and food systems up to COP30	Sabrina K. Borba; Rodrigo C. A. Lima	30	Jul. 2024
Family farms, the right to food and sustainable food systems	Agricultural politics	Human right to food and food systems in Brazil	Renato S. Maluf; Luciene Burlandy	46	Dec. 2024

Category of APD	Topic	Title	Authors	Pages	Date
Deforestation-free supply chains and traceability	Agricultural politics	Agricultural development and agri-environmental measures – Analysis of the second pillar of the EU Common Agricultural Policy	Christine Wieck	24	Sep. 2022
Deforestation-free supply chains and traceability	Deforestation	Trends and attitudes towards meat consumption in Germany	Katharina Riehn	31	Oct. 2022
Deforestation-free supply chains and traceability	Deforestation	Soy expansion and emergent challenges for the sustainability governance between Europe and Brazil	Camila Dias de Sá; Claudia C. König; Niels Søndergaard	47	Dec. 2022
Deforestation-free supply chains and traceability	Deforestation	Animal Traceability in Brazil	Mauro J. C. Armelin; Natália T. B. R. Grossi; Cintia M. Cavalcanti; Pedro C. Burnier	43	Jun. 2023
Deforestation-free supply chains and traceability	Deforestation	The European Deforestation Regulation, EUDR	Niels Søndergaard; Camila Dias de Sá	41	Sep. 2023
Deforestation-free supply chains and traceability	Deforestation	Brazilian beef at a crossroads	Camila Dias de Sá; Niels Søndergaard	5	Sep. 2023
Deforestation-free supply chains and traceability	Deforestation	Opportunities for deforestation-free supply chains through producer-consumer country partnerships	Isabella Freire; Cecília K. Gonçalves; Paulien Denis; Carolle Alarcon	37	Jan. 2024
Deforestation-free supply chains and traceability	Deforestation	Implementation of the EU deforestation regulation in the Mercosur countries: Key results and further challenges	Prof. Dr. T. Dietz; Paulo M. Batistic	46	Apr. 2024
Deforestation-free supply chains and traceability	Deforestation	Due diligence in the crosshairs – Europe's quest for sustainability and the reality of implementation	Kristina Mensah	25	May 2024

Category of APD	Topic	Title	Authors	Pages	Date
Deforestation-free supply chains and traceability	Deforestation	The EU Deforestation Regulation (EUDR) in conflict with forest protection in Brazil	Jan Börner; Laila Berning; Daniel Braun; Thomas Dietz; Jochen Dürr; Fernanda Martinelli; Paulo M.-Batistic; Felipe Nunes; Gustavo M. Oliveira; Andrea Pacheco; Britaldo Soares-Filho; Metodi Sotirov; Daniel Vargas; Rafaella Ziegert	9	Jul. 2024
Deforestation-free supply chains and traceability	Deforestation	EUDR adjustment in Brazil	Camila Dias de Sá; Niels Søndergaard	30	Jul. 2024
Deforestation-free supply chains and traceability	Agricultural politics	Progress made by the Agriculture Working Group during Brazil's G20 presidency	Niels Søndergaard	33	Dec. 2024

Table 2. APD publications: video format

Title	Topic	Date
Bioeconomy in dialogue	Bioeconomy	Nov. 2021
Agricultural financing and sustainability in Germany and Brazil	Agricultural financing	Dec. 2021
Soy from Brazil in Germany	Supply chains	Dec. 2021
Bioeconomy in dialogue	Bioeconomy	Mar. 2022
Beef in Brazil	Supply chains	May 2022
Remunerating sustainability in agriculture?	Agricultural financing	Jun. 2022
Carbon Farming & Carbon Markets	Agricultural financing	Jun. 2022
Bio-Inputs for Sustainable Agriculture	Bioeconomy	Aug. 2022
Crisis and Challenges in Global Food Systems	Agricultural politics	Sep. 2022
Sustainability criteria in agricultural financing	Agricultural financing	Sep. 2022
Agriculture and carbon markets in Germany and Brazil	Agricultural financing	Oct. 2022
European Green Deal – Impacts on Agriculture in Europe and Brazil	Agricultural politics	Aug. 2023
EU Deforestation Regulation – Technical implementation issues using the example of the soy supply chain	Deforestation	Nov. 2023
European Deforestation Regulation (EUDR) – Challenges and Traceability Solutions	Deforestation	Feb. 2024

Table 3. Participation in webinar events

Category	Participations	Participants
APD	14	2
Politics	20	14
Industry and finances	23	17
Science	23	14
Environmental organizations	11	10
Total	91	57