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THE UK'S NEW DUE DILIGENCE ON FOREST RISK COMMODITIES AND ITS RELIANCE ON AMAZONIAN SOYBEANS

A NOVA DILIGÊNCIA DEVIDA BRITÂNICA PARA COMMODITIES QUE CONTENHAM RISCO DE DESMATAMENTO E A DEPENDÊNCIA DO REINO UNIDO DA SOJA AMAZÔNICA

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ABSTRACT
This article analyses how the United Kingdom's Due Diligence Regulations on Forest Risk Commodities (UKDR) relate to the bilateral soybean trade between Brazil and the UK. The findings suggest that Brazilian soybeans are one of the main targets of the UK's new legislation. The crossing of literature, NGO reports, trade data, and open governmental and institutional documents showed that the UK highly relies on soybeans from South America to fulfil its internal animal protein food industry, soybeans from Brazil are the second major case of the UK's 'imported deforestation'. Between 2020 and 2022, soybeans were also the second most exported product from Brazil to the UK, reinstating the Brazilian traditional place as an exporter of raw and essential commodities to developed countries. This article advocates that even though the new UKDR will affect Brazil disproportionally, compared to other agri-exporter countries, the legislation is not designed to challenge the soybeans economic model or deforestation on a broader aspect but to 'clean' UK's agricultural supply chain from illegal tropical forest deforestation. The article's findings show that in the last five years (2017 -2022), the annual percentage of Brazilian soybean exports from states that comprise the Amazon biome, in part or wholly, to the UK was above 70% every year, a trend that does not follow Brazilian general soybean exports, suggesting that the UK may be more exposed to deforestation than other importing countries.
Keywords: Due Diligence; Soybeans; Brazil; United Kingdom;

RESUMO
Este artigo analisa como a Regulamentação de Diligência Devida do Reino Unido para Commodities que contenham Risco de Desmatamento (UKDR) se relacionam com o comércio bilateral de soja entre o Brasil e o Reino Unido. Os resultados sugerem que a soja em grãos do Brasil é um dos principais alvos da nova legislação britânica. A literatura, relatórios de ONGs, dados de comércio e documentos governamentais e institucionais mostraram que o Reino Unido depende fortemente da soja da América do Sul para atender à sua indústria interna de alimentos de proteína animal, sendo a soja do Brasil o segundo principal caso de "desmatamento importado" do Reino Unido. Entre 2020 e 2022, a soja também foi o

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segundo produto mais exportado do Brasil para o Reino Unido, restabelecendo o lugar tradicional do Brasil como exportador de commodities primarias para países desenvolvidos. Este artigo defende que, embora a UKDR possa afetar o Brasil de forma desproporcional, em comparação com outros países exportadores de alimentos, a legislação não se destina a desafiar o modelo econômico da soja ou o desmatamento em um aspecto mais amplo, mas a "limpar" a cadeia de suprimentos agropecuária do Reino Unido do desmatamento ilegal em florestas tropicais. Os resultados do artigo mostram que, nos últimos cinco anos (2017-2022), a percentagem anual de exportações de soja do Brasil dos estados que compõem o bioma amazônico, total ou parcialmente, para o Reino Unido foi superior a 70% a cada ano, uma tendência que não segue as exportações gerais de soja do Brasil, sugerindo que o Reino Unido pode estar mais exposto ao desmatamento do que outros países importadores.
Palavras-chave: Diligência Devida; Soja; Brasil; Reino Unido;

INTRODUCTION

In 2021, the discussion requiring a due diligence system to trade commodities with the risk of deforestation took a broader dimension. As a result, three major world lead economies (the European Union, the United States of America and the United Kingdom) had legislation to stop products from deforestation areas from being commercialised in their internal markets proposed in its legislative institutions - so far, there is an Act approved in the United Kingdom, a regulation approved in the European Union and a bill being discussed by US parliament that predicts the implementation of due diligence measures in importing forest risk commodities.

These measures represent an entirely new challenge for Brazilian international relations and the economy, as Brazil is the most significant global producer of some commodities that contain the risk of deforestation - particularly soybean and cattle products. The European Union Due Diligence Regulation states seven commodities to be regulated by the EUDR (2023/1115) as 'relevant commodities', and according to the UK impact assessment for the secondary legislation regulating the United Kingdom Due Diligence Regulation (UKDR), there is a 'high degree of confidence' that the 'most damaging commodities' includes soya and cattle products (DEFRA, 2021).

In 2022, Brazil became the world's major exporter of Meat and edible meat offal (HS chapter 02) (ITC, 2023) and is currently the most significant global exporter of soybeans with a world market share that fluctuates around 45% to 50%. In the first half of 2023, soybeans ranked first in the list of exported Brazilian products to the UK, surpassing gold (ITC,2023). With an economy dependent on agricultural trade and the exports of these commodities growing yearly, the impact of the due diligence regulations on FRCs could be considerable to the Brazilian economy.

Overall data, literature, government, institutional information and reports suggest that the United Kingdom may rely highly on soybeans from the Amazon and Cerrado biomes, suffering from deforestation and land use change, located in the new Brazilian agricultural frontier. The legal analyses of the regulation suggest that this reliance on Amazon soybeans does not necessarily mean that most of the UK soybeans' Brazilian imports will be in breach of the new regulation. Instead, it shows that the

new regulation could be ineffective in fighting illegal deforestation and deforestation in general (legal or illegal); it is possible that the regulation could enable a case of 'greenwashing' or 'for show' only.

1 METHODOLOGY

Even though the Due Diligence regulations on Forest Risk Commodities are not an isolated phenomenon, the international environmental guideline chosen for a deeper analysis is the UK Environment Act 2021 in its schedule 17, 'Use of forest risk commodities in commercial activity'. Britain was chosen as it was the first big economy to implement Due Diligence Regulations on FRC and for its internal challenge in balancing food security with sustainability goals. This paper analyses the UK's reliance on Brazilian soybeans, suggesting that the new due diligence regulations were designed, among other objectives, to 'clean' the UK's supply chain from Brazilian soybeans contaminated with deforestation from the Amazon biome without menacing Britain's food security and trade.

The article innovates linking UK food security with Brazilian Amazon's soybean imports, as the oleaginous is essential for maintaining animal protein accessible in the country. While there is relevant literature on the EUDR and its making process, the UK's regulation case is less explored, especially when considering food security. This article collaborates with various studies, but mainly with food politics, to understand how a dietary model based on cheap animal protein affects international trade, deforestation and climate change.

The article utilises mixed-method research to integrate the studied object's qualitative (literature review and government documents) and quantitative (trade data) aspects. The trade data were sourced from ComexStat, the official Brazilian foreign trade information system and International Trade Centre (ITC). Both systems were used to access specific data from an integrated perspective, as they have different tools that are sometimes interchangeable.

Among other tools, data from ComexStat was essential to show a specific state of Brazil (federative unit) where a product was exported. Data on the port of expenditure was also relevant. This information allowed checking if a federative unit that comprises the Amazon biome exported soybeans to the UK. On the other hand, the ITC Trade Map system enabled the checking of information such as the global imports and exports of a determined commodity, the Brazilian exports share of the analysed product to the world and a specific country or bloc, among other relevant data.

The literature review was sourced mainly from ScienceDirect, Google Scholar and Scielo due to the research's interdisciplinary characteristics and the object's con-

temporary characteristics. As the Due Diligence regulations on FRCs are recent, these databases allow the finding of state-of-the-art and high-quality content in various disciplines. Scielo helped with Brazilian publications on Amazon and deforestation. Literature was central to interpreting the data on specific topics such as the soybeans trade, the soybeans complex, the conversion rate of vegetable protein to animal protein and others. Literature was essential to understanding the surge of due diligence regulations and the failure of multinational efforts to tackle climate change - among the literature are several NGO (Non-Governmental Organizations) reports.

The reports analysed were chosen with up-to-date, relevant, present-day information on the topics. The chosen reports are from NGOs known for their solid scientific approach and specialised knowledge of the studied field. Case studies on UK imported deforestation were essential to understand and compare data. Also, governmental and institutional documents were used to localise official policies and initiatives. For example, the UK government reports helped access information on topics such as food security status in the country. The Intergovernmental Panel on Climate Change (IPCC) sourced data on global warming and IPAM (Institute of Environmental Research in Amazonia) on the Brazilian general and agricultural carbon emissions.

The researcher's time frame ranges between 2020 and 2022. The year 2020 is important because of the Brexit 2016 referendum, in which the country left the union on the 31st of January 2020. After this date, the UK was considered a "third country" to the EU customs. It started implementing trade agreements, customs policies and other initiatives handed to the union. One of these initiatives was the voting of the Environment Act 2021, which sets the framework for the due diligence regulations. In this sense, the date range comprises a period of the UK's regaining its customs independence; it ends in 2022 because, when this article was written, the year 2023 was still in process.

When the article shows time frames beyond 2022 or before 2020, it merely illustrates some data tendencies or specific information. For example, from January 2023 to the end of June 2023, soybeans became the most exported Brazilian commodity to the UK, reinforcing the importance of this product to the bilateral trade between these countries. Another example is data from 2017 to 2022 showing the UK's import of soybeans from the Brazilian Amazonian states. In this sense, the broadening of the time range was to understand the trade tendencies before and after COVID-19 to check if the pandemic changed the trade tendencies due to possible disruptions that may have occurred.

2 LITERATURE

As stated previously, Brazil has become the world's foremost producer of soybeans in the last few years. This oleaginous is not indigenous to the Brazilian region; the country's history of how this crop achieved first place in exports relates to agricultural advancements often referred to as the 'green revolution'. Nehring (2022) discusses the 'Brazilian Green Revolution' demonstrating how Brazil managed to become a major agricultural producer in a few decades, stating: "Brazil's Green Revolution is defined by the alignment of interests and actions between U.S. and national actors in modernising Brazilian agriculture without restructuring the country's agrarian structure.[...]" (NEHRING, 2022) Governmental institutions such as Embrapa, State Universities and others played a central role in this modernisation. As reminded by Nehring, Embrapa labels itself as the "world's leader in tropical agricultural technology". (NEHRING, 2022). The state research company adapted soybeans to tropical climates, especially the Cerrado region. Soy expansion in Brazil results from a state strategy of supporting large-scale production while limiting agrarian reform (Nehring, 2022). The limitation of agrarian reform while incentivising monoculture is essential to understand that this 'green revolution' cannot be separated from the perpetration of social injustice, helping to develop a dietary model highly based on cheap animal protein in the developed countries (BORRAS, FRANCO, 2012). The Brazilian place as a commodity exporter is a political choice, as stated by Nehring (2022): "The formation of the Brazilian state in the 20th century was intimately linked to the expansion and modernization of agriculture [...]".

Also, the correlation between soy agricultural expansion in Brazil and deforestation is a well-debated academic topic. Domingues and Bermann (2012) demonstrate how soy expansion to the Amazon forest occurs with areas primarily cleared for cattle ranching and then converted to soybean plantations. Their finding links these soybean farms with previous deforestation, showing that cattle products and soy are related commodities in the Amazon deforestation process. Gutto, Ducati and Bartolotto (2017) found a correlation between soybean cropland expansion in Mato Grosso and the profit from this commercial activity between 2001 and 2013. Mato Grosso is the leading Brazilian soybean exporter to the UK and globally (ITC,2023).

A more recent report from Instituto Centro Vida (Valdiones et al. 2022) stated that 92% of deforestation in soy farms in the Mato Grosso state occurred illegally, without government authorisation. The study also found that a vast parcel of the deforestation is concentrated on a few large properties with more than 1.500 hectares. The report corroborated Rajão (2020) in its article "The Rotten Apples of Brazil's Agribusiness", where he states that a small percentage of properties in the Amazon and Cerrado biomes are responsible for the majority of the deforestation:

> "*Although most of Brazil's agricultural output is deforestation-free, we find that 2% of properties in the Amazon and Cerrado are responsible for 62% of all potentially illegal deforestation and that roughly 20% of soy exports and at least 17% of beef exports from both biomes to the EU may be contaminated with illegal deforestation"* (Rajão et al. 2020)

In this sense, it is possible to suggest that deforestation is linked to an economic model adopted by the Brazilian state that tends to benefit exporting agricultural commodities. A report from the United Nations Food and Agriculture Organization (FAO) states that 80% of deforestation in Brazil between 1990 and 2005 was associated with pasture conversion. In Feeding Frenzy: The New Politics of Food (2013), Paul McMahon shows that four-fifths of the world's oilseed trade is controlled by multinational companies. With 80% of the soybeans produced being used to feed animals (GALLOP, 2012), it is possible to conclude that the meat business is well structured in a global logistics architecture.

The soy-producing model in Brazil is directly related to exports. According to the Stockholm Environment Institute (SEI), in 2021, Brazil produced 135 million tonnes of soy and exported 105.5 million (78%) of it. Significant amounts of deforestation in Brazil are related to exports of agricultural products and answer to an economic model in which multinational grain companies and large industrial farms are the main actors.

Legislative proposals for the Due Diligence Regulations on Forest Risk Commodities surged in this context of general public pressure to stop the imports of deforestation-related commodities allied to the failure of private and multilateral initiatives on the topic, as discussed by Humphreys (2012). On another front, Van der Ven et al. (2018) studied the effectiveness of non-market-driven governance on the FRC supply chain. The study found that non-state market-driven governance did not effectively impact land conversion for agricultural use. Regulatory loopholes were one of the leading causes of the low efficiency of instruments such as eco-labels and certification systems. Different eco-labels and certification methods made it complicated to scrutinise how data was collected, what elements were considered to label a commodity as sustainable and other related issues. In Brazil, certifications are in place. Pro-Terra is one of the most known.

Literature has discussed the efficacy of the due diligence models that preceded the UKDR and the EUDR. The European Union Timber Regulation (EUTR) was innovative in implementing the need for due diligence to import legally harvested timber into the European Union. Comprehending this regulation's application is relevant to understanding the road to a broader due diligence system focused on FRCs. Dieguez and Sotirov (2021) analyse the interplay between private and public policies on the timber trade. The article studies the history of the Forest Stewardship Council (FSC)

and the EUTR, demonstrating the complex process of how these systems improved each other. The EUTR is one of the basis for the non-financial Due Diligence systems. Perceiving how it has developed over the years and its relation with private initiatives is crucial to comprehend how Due Diligence on FRCs is being designed.

Partiti (2021) contributes essential definitions of the Due Diligence process. Published in 2021, the general public proximity of the term deforestation was not yet well known. At the time, Partiti wrote about Non-Financial Due Diligence to differentiate it from the term due diligence *per se,* used in legal English when related to companies to check its financial health for a series of purposes, including acquisitions, mergers, etc. The article brings the EUTR when giving an example of non-financial Due Diligence. This contribution helps us understand the links between the EUTR and the Due Diligence regulation proposals in FRCs. This article brings a new contribution to understanding how commodity-driven deforestation in Brazil relates to food security in the UK.

3 DEFINITIONS: DUE DILIGENCE AND FOREST RISK COMMODITIES

As shown above, although broad Due Diligence Regulations on FRCs are more recent, the concept has been discussed in literature, reports and multilateral organisations. Even though this article's aim is not to investigate the history of this legal instrument, tracing some basic definitions of due diligence and forest risk commodities can be valuable in comprehending the environment in which the British due diligence regulation was created.

Due Diligence environment regulations are designed to refrain companies from trading commodities that could cause harm to the environment. The term Due Diligence comes from legal English and means taking reasonable steps to avoid committing a tort or offence (Oxford Dictionary, 2023). The Due Diligence Regulations on Forest Risk Commodities is the action taken by an importer to ensure that the products bought are unrelated to deforestation. In a broader spectrum, in its 'Guidelines for Multinational Enterprises', the Organisation for Economic Cooperation and Development (OECD, 2011) defines Due Diligence as "the processes through which enterprises can identify, prevent, mitigate and account for how they address their actual and potential adverse impacts".

In 2016, the OECD released guidance with FAO on responsible agricultural supply chains (OECD/FAO 2016); the guideline marked an essential step in applying the due diligence concept to agricultural supply chains. The document has a whole section describing a framework to apply the due diligence process to the agricultural sector; however, its proposal is from a more private perspective.

Global Canopy, an NGO that uses data to monitor and target market-related environmental harm, defined Forest Risk Commodities as "globally traded goods and raw materials that originate from tropical forest ecosystems, either directly from within forest areas or from areas previously under forest cover, whose extraction or production contributes significantly to global tropical deforestation and degradation" (Rautner et al., 2013). Since then, this definition has been used broadly in several reports. Although FRCs are generally related to agricultural products, mining can also be associated with deforestation. The NGO 'Global Forest Watch' affirms that 40% of deforestation worldwide is commodity-driven, including mining (Global Forest Watch, 2023).

4 THE UK'S AGRICULTURAL EMISSIONS AND ITS IMPORTED DEFORESTATION

According to the National Farmers Union (NFU) Conference in 2022, climate change is becoming a growing part of the national security agenda in the UK (NFU, 2022). The last United Kingdom Food Security Report identified climate change as one of the country's main risks to food security (Department for Environment, Food & Rural Affairs [DEFRA], 2021). The Third UK Climate Risk Change Assessment (CCRA3) Technical Report shows how climate volatility affects agriculture in the UK (UK Climate Risk, 2021). The policy discussion is about more than whether global warming will happen or not, but how it will impact the country. In the 2023 NFU Conference, the President of the Union, Minette Batters, addressed climate change as one of the main challenges for farmers in the country (NFU, 2023).

The impacts of global warming on agriculture will be broad. Global warming threatens food security, impacting yield productivity due to new challenges, from rainfall cycle changes to more crop susceptibility to plagues and diseases. This notion is evident in the UK government's agenda; reports from different governmental sectors address the need for net zero, and the country became the first major economy to pass a net-zero law aiming for 2050 (UK Gov, 2019). With Brexit, Defra is changing the EU Common Agricultural Policies (CAP) towards its ELMS (Environmental Land Management Schemes) to focus England's agricultural subsidies on sustainability. However, even if the UK manages to improve its agricultural practices, reducing carbon footprint from agriculture, 'imported deforestation' could be considered a form of carbon leakage in the sector, meaning that another country could be emitting CO2 on behalf of the UK.

The agricultural sector is a significant contributor to the UK's carbon emissions, accounting for around 10% of total emissions (Carbon Brief, 2021), which is considerable but way more minor when compared to the Brazilian emissions in the same

sector. According to the Institute for Environmental Research in the Amazon region (Instituto de Pesquisas Ambientais da Amazônia - IPAM), emissions from agriculture were 27% in 2021. However, if emissions from deforestation (46%) are added to the agriculture count, agriculture would account for 73% of Brazilian agricultural emissions (IPAM, 2021). A report from the Joint Nature Conservation Committee (2021) suggests that in 2017, the UK was responsible for (3,550 ha) of deforestation in Brazil, making the country the second most impacted by deforestation related to agricultural commodity trade with the UK, just after Indonesia (5,482 ha). Likewise, Soybeans are the second agricultural commodity most related to deforestation imported to the UK after palm oil (Croft et al., 2021).

The journal Nature Climate Change (ROE et al., 2019) stated that halting deforestation and restoring degraded land is "essential to limit global warming to 1.5°C". It is impossible to talk about net zero without global strategies to stop deforestation, as it is one of its key aspects, according to the Intergovernmental Panel on Climate Change (IPCC, 2018). An NGO, The Nature Conservancy study, found that the one-third emission reduction rate needed to reach net zero by 2050 could be achieved by restoring and protecting forests (Griscom et al., 2017).

A study from 2017 showed that tropical forests became a net carbon source, emitting more carbon than they capture (Baccini et al., 2017), with deforestation being responsible for something between 12 - 20% of general greenhouse gas emissions (Watson & Schalatek, 2020). Alongside fossil fuels, forests must be central to climate change discussions. Forest management impacts a range of topics, from food security to energy transition, national security, and pluvial cycles.

Brazil has a central role in this discussion since, as a country, it is the first soybean exporter and soybean meal (HS 2304) producer worldwide (ITC,2023). At the same time, Brazil comprises the most extensive tropical forest area on the planet, with one-third of the remaining tropical forest located in Brazil Butler (2020). The Brazilian tropical forest area is more than twice the Congo's Democratic Republic tropical forest area, the second country in the tropical forests ranking. In this sense, even though legislators can argue that the Due Diligence Regulations on Forest Risk Commodities are not targeting a specific country, Brazil will be one of the most affected by these initiatives. Unlike the U.S., China or Russia, which are also major agricultural producers but highly industrialised countries, Brazil has agriculture as the most critical contributor to its exports and an estimated 25% of its Gross Domestic Product (GDP) in 2022 (CEPEA,2023).

The discussion around global governance for forest protection is not new; the United Nations Forum on Forests (UNFF) was created as a resolution by the Economic and Social Council in 2000 as a space for international cooperation on forest

preservation (Resolution 2000/35). However, despite the UNFF efforts, deforestation remains one of the most significant environmental challenges to achieving net zero and stopping biodiversity loss. David Humphreys is very sceptical of the UNFF and other international institutions such as the World Trade Organization (WTO), international law and third-sector initiatives such as labelling and certification standards on stopping deforestation, considering that these initiatives failed in protecting forests (Humphreys, 2012).

5 UK'S FOOD SECURITY AND FOREST RISK COMMODITIES

Brazilian soybeans are essential for the UK poultry meat, dairy and eggs industry. Soya products are traded mainly in three different categories of commodities: soybean meal (HS 2304), soybean (HS 1201), and soybean oil (HS 1507). According to data from the ITC Trade Map, Brazil supplied nearly 60% of the soybeans imported to the UK and 11% of the soybean meal in 2022; this data does not consider the reexporting process, which can be relevant for the soybean meal as the Netherlands, a country that does not produce soya was the third biggest exporter to the UK of this product, just after Argentina and Brazil - the trade of soya beans oil from Brazil to the UK is irrelevant according to data found (ITC, 2023).

Data to analyse British reliance on soybean products can vary according to the methodology used. The difference between the two main products (Soybeans and Soybean meal) could explain this variation; however, regardless of the methodology utilised, the UK's high reliance on soya products from South America is evident. According to a SEI Policy Brief, the UK imports around 3 million tonnes of soya every year, with a 75% historic reliance in South America (Argentina, Brazil and Paraguay); from these 3 million tones, around 46% is canalised to the poultry industry, other 35,5% are related to the pork, dairy and eggs industry (West, 2021).

This study suggests soybeans are highly used as a more affordable animal protein. The Defra 2021 report on food security states that pig and poultry production greatly increased in the last 12 years; compared to 1984, the poultry production in the country doubled, from 60 million to 120 million animals in June 2020. The report suggests that this trend must be related to a higher demand for more affordable animal protein and poultry production efficiency (Defra, 2021). Poultry corresponds now to over half of the meat consumed in the UK (Countryside,2023). As shown above, the trend tends to go up as the country faces one of its worse inflation crises in decades, with food being one of the most impacted sectors (The Guardian, 2022). As a result, consumers are searching for cheaper proteins (The Grocer, 2022). Even with price rises, chicken is still the most affordable protein, as stated by the data analyst Glesni Philips when looking at the UK market: "All proteins are experiencing increases in

their average prices, but fish remains the most expensive protein, followed by lamb, and, despite one of the biggest price rises, chicken remains the cheapest protein." (The Grocer, 2022)

The UK's sustainability and food security equation can be challenging, as the industry that relies the most on soybeans produces more accessible protein products. In case of rising soybean prices or supply chain disruption, the poultry sector would be the most affected, especially in a Brazilian supply chain disruption, as soybeans from Brazil have a higher protein content. Other sectors, such as beef, dairy and sheep, would be less affected as the animals are not as sensitive to diet and nutritional changes and are less reliant on soya than the poultry sector (West, 2021).

Worldwide, the Imports of soybeans are mainly for animal feed. There is a growing discussion in the UK about pushing the government to approve insect animal proteins for the poultry and pig industries. The National UK Research and Innovation Agency (UKRI) published a roadmap for alternative proteins to be used in the country. One of the main focuses was the need to move away from soybean reliance in the feed sector; the alternative proposed was the black soldier fly larvae (Hermetia ilucens), which could be fed with retail industry waste. Although the discussion is happening, there are a lot of possible constraints, such as the mentioned complex regulatory challenges and the low price of soybeans, that make investments in the insect sector unattractive (Innovate UK, 2022).

Even though these new alternatives to soybeans are not viable in the short term, it shows government agencies' preoccupation with reducing the country's dependence on soya used as animal feed. In the UK Food Security report, one of the risk assessments states that the concentration of soya production in the Americas puts the supply chain at risk in case of climate adversities. Also, China's increasing demand for animal products, fed by soybeans, may make it difficult for the UK to access this market (DEFRA, 2021). A report from Mighty Earth (2020) stated that Cargill had 70% of the Brazilian soya beans market share in the UK; a more recent one, also from Mighty Earth (2023), stated that 75% of Cargill's Brazilian soybeans originate from the Santarem port located in the Amazon region.

Most of the soya traded becomes feed for the chicken industry. The joint venture Avara Foods was created by Cargill and Faccenda (Competition and Markets Authority [CMA], 2018), allying the livestock sector with the feed sector. According to a report from the Landworkers Alliance, Avara Foods processes 1in every five chickens in the UK weekly (Soy no more,2023). Cargill is a soy trader, while Faccenda is a poultry producer; both industries complement each other as poultry diets are composed of around 70% of soya meal and 30% corn, with a conversion rate of around 2,5 kg feed to 1 kg chicken protein in a window of 42 days (Macelline et al., 2021).

The close relationship between the poultry industry and soybeans from Brazil creates a complicated dilemma for the UK. Soybeans are essential to allow chicken production and keep protein affordable for a significant part of the food-insecure population struggling to manage the cost of living. A research briefing by the House of Commons shared a survey from the charity Food Foundation informing that over 17% of the households in the UK were food insecure in January 2023; the research briefing also shared data about the vast increase in food bank use (Devine-Francis et al. 2023). Poultry, especially chicken, plays a significant role in UK food security, allowing families to access cheaper animal proteins. Indirectly increases the need for soybeans and soy meal, linking food security in the UK with soybean imports and deforestation.

6 THE UK RELIANCE IN SOYBEANS FROM AMAZON

Between 2017 and 2022, an average of half of all the Brazilian soybeans exported to the UK every year came from Mato Grosso (ComexStat 2023). The state comprises the Cerrado and the Amazon biomes. According to Trase, in 2020, from a volume of over 473 thousand tons of soy (soybean and soy meal) exported to the UK, 250 thousand tons came from the Cerrado biome, 124 thousand tonnes from the Amazon, 89 thousand tons from an unknown biome and over 10 thousand tonnes from other biomes (Trase, 2023).

Even though this data shows that most of the soy (250k tons) came from the Cerrado, it is alarming to notice that in 2020, at least a quarter of the Brazilian soy exported to the UK 2020 was prevenient from the Amazon. Also, data from Comexstat of soybeans exports from Brazil to the UK demonstrates that over 70% of the oleaginous came from states that comprise the Amazon biome, in part or total (ComexStat,2023). This data suggests that the UK imports its Brazilian soya from Brazil's new agricultural frontier instead of traditional soy producer states that do not comprehend the Amazon biome, such as Rio Grande do Sul and Paraná.

Pereira (2019) presents the term MATOPIBA as a reference to one of the new agricultural frontiers in Brazil. The name is an acronym of the states that compose this frontier (Maranhão, Tocantins, Piauí and Bahia). Generally, MATOPIBA refers to the Cerrado area of these states, but Maranhão and Tocantins are also in the Amazon biome. Piauí and Bahia are not part of the 'legal Amazon' . Apart from MATOPIBA, another agricultural frontier is the Amazon biome in states such as Mato Grosso, Pará and Rondônia.

The British soybean imports from Brazil do not follow Brazilian world trend exports. From 2017 to 2022, apart from 2022, the states of Rio Grande do Sul and Paraná alternated the second and third positions in the Brazilian world soy exports,

with Mato Grosso leading the exports with a percentage that fluctuated between 20% and 30%. The Brazilian exports ranking also includes Goiás, Minas Gerais, São Paulo, Bahia, and Mato Grosso do Sul, which, apart from Bahia, are not considered to be in the Brazilian new agricultural frontier (ComexStat, 2023).

Compared to the UK, Brazilian world soybean exports are less concentrated in states that are part of the new agricultural frontier. In 2022, Britain imported 21% of its Brazilian soybeans from Rondônia, an Amazonian state located north of Mato Grosso, significantly increasing the state soybeans exports to the UK. This trend could continue in 2023, as at the end of July, Rondônia had exported 108 thousand tons of soybeans to Britain, a considerable amount, considering that in the whole of 2022, this amount was 135 thousand and was already significant. Between 2017 and 2022, traditional exporting states not in this agricultural frontier exported lower amounts of soybeans to the UK than the agricultural frontier states (ComexStat 2023).

This data cannot affirm that most UK soybeans come from illegal deforestation in Brazil. The fact that an agricultural commodity originated from an Amazonian or MATOPIBA state does not necessarily mean that this commodity came from a recently deforested area; however, the data suggests that UK imports have a higher chance of being exposed to deforestation than countries that rely on states like Rio Grande Sul, Paraná, Goiás and others. Also, the UK import patterns since 2017 suggest that the country could be stimulating an agricultural economic model in the Amazonian region and borders highly reliant on soybeans exports.

7 UK ENVIRONMENT ACT 2021 AND THE UKDR

The UK Environment Act. 2021 started to be drawn by Defra in early 2018. The idea was for the UK to create greener sustainability policies after Brexit. In May 2018, Defra launched a consultation on environmental principles and accountability for the environment (Defra, 2018). Before the bill was formally proposed, there were already massive expectations from NGOs and civil society for a mechanism to stop imported illegal deforestation in the Act. (The Guardian, 2021). In November 2020, Defra published the answers to its '*Consultation on the introduction of due diligence on forest risk commodities*' Defra (2020) and concluded that, overall, the respondents welcomed the initiative; in the consultation, the Department, among other questions, asked companies and respondents about the use of some critical commodities as soy, cattle, cocoa, rubber and palm oil. The environmental bill was long delayed, partly because of COVID-19, and on the 30 of January 2021, its first reading happened in the House of Commons. The bill became an Act, receiving Royal Assent in November 2021.

During its passage in the two houses of parliament, one of the vital discussions concerned designing and implementing a due diligence regulation mechanism for forest risk commodities. This article's objective is not to dwell on the legislative process that culminated in the due diligence regulation on FRCs. Still, it is important to note that crucial aspects of the regulation, such as the aim for illegal deforestation rather than all deforestation, were debated in the parliament, especially in the House of Lords (HOUSE OF LORDS, 2021)

In its schedule seventeen, the UK Environment Act. 2021 says that the Forest Risk Commodities will be defined on secondary legislation and gives a frame for what can be considered a commodity, stating that FRCs can only come from a plant, an animal or a living organism. This definition excludes the possibility of regulating minerals, such as gold or iron, as Forest Risk Commodities. Also, timber products cannot be defined by the secondary legislation as FRCs because they are already regulated by the EUTR, incorporated by the UK legislation after Brexit as the United Kingdom Timber Regulation (UKTR). The definition of forest used by the UK Environment Act. 2021 defines FAO and does not include 'other woodland' (FAO, 2020).

This definition of forest is essential to the discussion. According to the FAO definition, significant parts of the Cerrado and the Chaco are not forests. A study by Trase suggests that, by only using the FAO's strict definition of forests, three-quarters of the Cerrado and one-third of the Chaco will be left uncovered (The Greens/European Free Alliance [EFA] Group, 2022). Deforestation in the Amazon is not a simple equation: government, civil society, and NGOs have made important efforts to stop it, and a good example is the Soy Moratorium from 2006. Although a vital initiative, the moratorium led to the agricultural expansion to other biomes not covered by the initiative, like the Cerrado (Imaflora, 2016). The expansion went to other biomes and other countries, such as Paraguay and Bolivia, as demonstrated by Calmon (2020) demonstrated. A report by the Internationale Nederlanden Groep (ING) demonstrates that Paraguay had a tree cover loss of 25% and Uganda 23% between 2000 and 2020. Brazil, Indonesia and Malaysia are often the most reported deforesting countries in the media, and the Amazon biome is the one that brings more scrutiny. The definition of forest used by the UK seems to aim at the Amazon biome and not consider the impacts that this production model can have in other important biomes such as the Cerrado or the Chaco.

Another relevant aspect of the UK due diligence regulation is using illegal deforestation only as a target. Instead of focusing on all deforestation occurring after a certain deadline as stated by the EUDR (Regulation (EU) No 2023/1115) that sets the date cut-off date of 31 December 2020, the UKDR goes through the legality of deforestation, meaning that the focus of the regulation is to stop commodities from land that was illegally deforested according to the country of provenience.

In an open letter, Raoni Rajão and other deforestation experts showed their opinion on why a system that focuses on the legality of deforestation is inefficient (DOS REIS et al. 2021). Among the discussed reasons is that even though Brazil has advanced legislation against deforestation, it still allows the landowners to clear part of their property when there is no need for it, as the country has enough already deforested and degraded land that could be converted to agriculture. Also, the fact that the legislation exists does not mean that there is adequate enforcement. Rajão (2020) points out that around 20% of soy exported to the European Union can be 'contaminated' by deforestation.

In a nutshell, the UKDR uses a definition of forest that can leave behind relevant areas of essential biomes and goes for the legality of deforestation instead of setting a cut-off date. Secondary legislation will inform which commodities will be considered as FRCs. However, some of them, such as soy and palm oil, will almost certainly be in the regulation as they were one of the main reasons why the government proposed the regulation. It is important to note that embedded commodities will also be considered, meaning that all the products that use primary FRC commodities to be produced will be targeted; as an example, if Brazil exports chicken to the UK, and the animal was fed with a forest risk commodity, the company exporting the product could face legal action. The articles focus on soybeans instead of embedded commodities, relating that even though Brazilian chicken exports to the UK can be relevant, soybean exports are more relevant to the bilateral trade. For example, soybeans are tariff-free, while chicken meats are mainly exported using quotas.

FINAL CONSIDERATIONS

The use of soybeans to feed animals has been well explored in the specialised literature on the relationship between agricultural expansion and forest loss. Although these topics have been explored, many links are still missing in the equation between industrial agricultural production in Brazil and food security in developed countries. This article showed that the UK poultry industry is highly reliant on soybeans from South America; it also demonstrated that chicken is the most consumed animal protein in the country, with an increasing tendency for its consumption. Soybean plantations have been associated with deforestation in Brazil, with soy being the second major source of the UK's imported deforestation.

According to Defra's reports and open consultations, the new Due Diligence Regulation on Forest Risk Commodity is designed to focus on palm oil and soybeans, among other FRCs. The legal analysis of the regulation framework suggests that it is not designed to question a monoculture production expansion at the expense of forest loss but to 'legalise' or 'clean' imported deforestation, as the regulation uses a

definition of forest that does not cover full vulnerable ecosystems as the Chaco or the Cerrado, and also relies on the idea of 'legality' of the deforestation, according to the harvesting country, instead of a more reliable accountability system.

In other words, the UKDR seems to transfer the regulation responsibility to the sourcing country instead of creating a strong verification structure. The choice for a legality system instead of a cutting-off date for deforestation could have been designed to fit the WTO regulations, avoiding questions concerning trade barriers. The WTO aspect of the UKDR could be better explored in the literature as it opens an entirely new line of research; beyond the legal aspects, this article shows how important soy is for the UK food security and how important the Amazonian states are for the commercial trade between Brazil and the UK, raising the question if the UKDR is a 'green wash' strategy to maintain food security while promoting governmental initiatives to stop imported deforestation that are not practically efficient.

Although the article's goal is not to suggest potential scenarios for what may occur after the implementation of the regulation but rather to attempt to understand the relationship between the bilateral trade of soybeans and the UKDR, it is relevant to state that there could be a shift in the UK soybean importing patterns. It is possible that importing companies will prefer soybeans from regions that pose lower deforestation risks - according to the forest definition adopted by the regulation - as it does not include areas with a low-density canopy cover, such as part of the Cerrado, Chaco and Pampas regions. Meanwhile, this possible future scenario follows a rational line of thought. It is important to notice that data does not necessarily demonstrate a shift in importing soybeans patterns to reduce deforestation exposition risks; quite the contrary, the rising soybean exports from Rondônia to the UK demonstrate a higher reliance on the Amazon biome in the current and the last year (2022).

This article aims to bring attention to important correlations that the literature should explore better. New regulations do not necessarily mean progress in fighting deforestation and climate change - legal technicalities can make a huge difference when creating environmental regulations. Food Security in developed countries should also be better explored by the literature. The understanding that a need for cheap fast food in developed countries changed agricultural dynamics is well debated by authors such as Saturnino Borras and Jennifer Franco (2012). Still, the correlation between food poverty in rich countries and food poverty in exporting countries based on a cheap meat consumption model could be better explored.

Even though the discussion on dietary changes to reduce the reliance on animal protein is quite relevant. It could represent a consistent advancement in reducing environmental impacts by reducing the amount of land use needed for food production (Poore and Nemecek 2018). It is hard to understand why meat consumption is still so popular. The change for a more flexible, vegetarian or vegan diet is a challenge to

be addressed. There are many tabus around the topic, especially when considering public policies.

Food politics are essential in fighting climate change and biodiversity loss. Any solutions for this issue must consider rethinking an agricultural production model that privileges a specific diet highly reliant on monocultures. Understanding that deforestation and food production are transversal topics that influence how we eat, think about the countryside and make political choices is fundamental.

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