

## Extended Abstract

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<b>Poster Title</b>	Do Pasto ao Prato: A citizen science initiative to (m)app the supply chain of cattle products within Brazil
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<b>Abstract</b>	<i>200 words max</i>
<p>Supply chains are the lifeblood of the global economy, though their complexity masks the origin and impact of products from downstream buyers and consumers. Here, we present a new citizen science initiative which seeks to improve transparency in the cattle supply chain in Brazil. The Brazilian cattle sector is the single largest driver of deforestation across the tropics and is dogged by several socio-environmental issues, not least the use of forced labor and variable food safety. With more than 1000 downloads since launching in August 2021, the ‘do Pasto ao Prato’ app (English translation: ‘from Pasture to Plate’) links sanitary inspection labels on beef products with detailed supply chain and geographic data to reveal the origin and sustainability risks associated with each product. By recording the shop’s location, users of the app contribute to a participatory initiative to improve transparency in the cattle sector. The data generated by the app can be used to: [i] radically improve our understanding of how products with high socio-environmental impact propagate throughout the economy, [ii] incentivise companies across the cattle sector to adopt and implement CSR practices, and [iii] empower consumers, enabling ‘ethical consumerism’ by putting sustainability information into shoppers’ hands.</p>	
<b>Keywords</b>	Citizen science, deforestation, CSR
<b>JEL Code</b>	<b>Q560</b> Environment and Development; Environment and Trade; Sustainability; Environmental Accounts and Accounting;
<b>Introduction</b>	<i>100 – 250 words</i>
<p>Incentives matter. Global supply chains, as they currently operate, create little incentive for sustainable production and consumption. Modern supply chains move products around the world with remarkable efficiency, but are opaque. As products pass among a variety of processors, traders, logistics companies, and retailers on their journey from producers to consumers, often the only information that is retained is the price. This provides a strong incentive to each actor in the supply chain to keep prices low, at the expense of other measures of sustainability and societal wellbeing. Without taking additional steps for traceability, certification, or auditing, downstream companies and consumers do not know where the goods they buy come from, how they are made, and what the impacts of their production are.</p>	

<b>Methodology</b>	<b>100 – 250 words</b>
<p>In this study, we present the ‘do Pasto ao Prato’ app (<a href="http://www.dopastoaoprato.com.br/">www.dopastoaoprato.com.br/</a>) - a citizen science effort to improve transparency in the Brazilian cattle supply chain.</p> <p>The app builds on [i] the system of sanitary inspection labels present on meat products in Brazil and [ii] detailed supply chain mapping (zu Ermgassen et al., 2020) to provide Brazilian consumers with information about the origin and impact of beef products. Specifically, when users enter a product code into the app, it reveals the deforestation and fires occurring in the supply-zone from which each slaughterhouse purchases cattle, the fines paid by the slaughterhouse for sanitary failings and animal welfare infringements, and the occurrence of slave labor among the properties which supplied cattle to the slaughterhouse. By recording the shop’s location, users of the app contribute to a participatory initiative to improve transparency in cattle supply chains.</p> <p>Reference:</p> <p>zu Ermgassen E.K.H.J., Godar, J., Gardner, T., Lathuillière, M.J., Löfgren, P., Vasconcelos, A., Meyfroidt, P. The origin, supply chain, and deforestation risk of Brazil’s beef exports <i>PNAS</i>. Vol 115:50, 31770–31779.  <a href="https://doi.org/10.1073/pnas.2003270117">https://doi.org/10.1073/pnas.2003270117</a></p>	
<b>Results</b>	<b>100 – 250 words</b>
<p>As of January 4th, 2022, the do Pasto ao Prato app was downloaded 1132 times with 297 users scanning 625 products in supermarkets across 24 states. Below we highlight three insights from these initial data.</p> <p>First, the Brazilian domestic market for cattle products is well integrated, with meat products moving large distances from slaughter to sale.</p> <p>Second, leading supermarket brands, such as Carrefour and Pão de Açúcar, which have high profile Corporate Social Responsibility (CSR) efforts related to the cattle sector, do not source from slaughterhouses with better sustainability rankings - as calculated from their deforestation, fire, forced labour, and sanitary performance scores in the app.</p> <p>Third, meat from slaughterhouses without CSR policies is sold across the country. More than one third of the meat registered in the app which originates from slaughterhouses in the Legal Amazon region comes from companies without sustainable procurement policies. We trace this meat to retail stores spanning from Acre to Tocantins.</p>	

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**Discussion and Conclusion****100 – 250 words**

We present a citizen science approach to collecting data on corporate supply chains. The data presented, which link retailers to their suppliers, are a prerequisite for evaluating the effectiveness of CSR efforts made by retail companies. Assessment of initial data reveals that companies with advanced CSR policies do not avoid buying from slaughterhouses with low sustainability rankings.

The app is also a tool which seeks to harness the market's power to drive sustainability, by allowing consumers to make purchasing decisions based on sustainability information. Currently, more than one third of meat from the Legal Amazon is commercialised by meatpackers without sustainable procurement policies. By bringing this information to light, the app increases incentive for meatpackers to adopt CSR policies.

In addition to evaluating and incentivising CSR efforts by companies, the data generated by the app can be used to better understand how food products flow throughout a domestic economy, for example in evaluating the 'food footprint' of different cities in Brazil. While the field of urban metabolism has for several decades studied the flow of materials into urban areas (and the consequent 'environmental footprint' of their consumption), few studies focus on cities in Latin America, a key research gap filled by this work.