

PARAGUAY			
Indicators	Relevant Commodity	Description	Source
<b>Agricultural indicators</b>			
Production of soy (t)	Soy	Soy production per department in tonnes (metric tons), from agricultural surveys.	Paraguayan Ministry of Agriculture (MAG), Department of Statistics (DCEA), Paraguay ( <a href="http://www.mag.gov.py/index.php/institucion/dependencias/sintesis-estadistica">http://www.mag.gov.py/index.php/institucion/dependencias/sintesis-estadistica</a> ).
Soy yield (t/ha)	Soy	Average departmental soy yield per year in tonnes per hectare.	Paraguayan Ministry of Agriculture (MAG), Department of Statistics (DCEA), Paraguay ( <a href="http://www.mag.gov.py/index.php/institucion/dependencias/sintesis-estadistica">http://www.mag.gov.py/index.php/institucion/dependencias/sintesis-estadistica</a> ).
Pasture area (ha)	Beef	Area (hectares) of land used as pasture per department.	Pasture area for the Chaco provided by Humboldt University of Berlin (HBU).
<b>Environmental indicators</b>			
Territorial deforestation (ha)	All	Total deforestation per department for a given year (hectares) in the Dry Chaco, Humid Chaco, and Alto Paraná Atlantic forests. Data for 2017-2018 only covers the Dry and Humid Chaco.	WWF-Paraguay ( <a href="http://www.wwf.org.py/que_hacemos/sig2/monitoreo_satelital_de_la_deforestacion/">http://www.wwf.org.py/que_hacemos/sig2/monitoreo_satelital_de_la_deforestacion/</a> ).  Deforestation maps in the Chaco derived from land use maps provided by Humboldt University of Berlin (HBU).
Soy deforestation (ha)	Soy	Total area of deforestation (in hectares) per department that will become soy over the next five-year period. Calculated by comparing per-pixel annual deforestation and soy crop maps. Historical conversion factors of natural vegetation into soy are used to estimate soy deforestation in the last 5 years of the available time series.	Soy crop area for South America provided by the University of Maryland GLAD team ( <a href="https://glad.umd.edu/">https://glad.umd.edu/</a> ).  Territorial deforestation (see above).
Soy deforestation risk (ha)	Soy	Soy deforestation risk (hectares) is the deforestation for soy that is allocated to the actors along the supply chain in proportion to the volume of soy that they export from a given department, relative to the total production of soy (by all producers) in the same department. Deforestation risk for a given year of export is based on deforestation for soy that occurred in the previous five years, during which time the soy that is being exported was planted and harvested.	Soy crop area for South America provided by the University of Maryland GLAD team ( <a href="https://glad.umd.edu/">https://glad.umd.edu/</a> ).  Territorial deforestation data (see above).

Pasture deforestation (ha)	Beef	Total area of deforestation (in hectares) per department that will become pasture over the next five-year period. Calculated by comparing per-pixel annual deforestation and pasture maps. Historical conversion factors of natural vegetation into pasture are used to estimate pasture deforestation in the last 5 years of the available time series.	Pasture area for the Chaco provided by Humboldt University of Berlin (HBU).  Territorial deforestation data (see above).
Cattle deforestation per tonne (ha per tonne of carcass)	Beef	Total area of departmental deforestation for cattle divided by the department cattle production. Deforestation for cattle is obtained by estimating deforestation for pasture in the previous five-year period before summing over a five-year cattle life cycle (i.e. 2013-2017 for exports in 2017). Cattle production per department (tonnes of carcass and offal per year) is calculated by multiplying the number of cattle per department by the state-specific slaughter rates and carcass weights.	Pasture area for the Chaco provided by Humboldt University of Berlin (HBU).  Production data: Paraguayan Ministry of Agriculture (MAG), Department of Statistics (DCEA), Paraguay ( <a href="http://www.mag.gov.py/index.php/institucion/dependencias/sintesis-estadistica">http://www.mag.gov.py/index.php/institucion/dependencias/sintesis-estadistica</a> ).  FAO. (2018). Technical Conversion Factors for Agricultural Commodities ( <a href="http://www.fao.org/fileadmin/templates/ess/documents/methodology/tcf.pdf">www.fao.org/fileadmin/templates/ess/documents/methodology/tcf.pdf</a> ).
Cattle deforestation risk (ha/year)	Beef	Cattle deforestation risk (hectares) is the cattle deforestation that is allocated to the actors along the supply chain in proportion to the volume of beef that they export from a given department, relative to the total production of beef (by all producers) in the same department.	Pasture area for the Chaco provided by Humboldt University of Berlin (HBU).  Territorial deforestation data (see above).  Production data (see above)
Land based CO <sub>2</sub> emissions (t CO <sub>2</sub> /year)	Beef	Carbon dioxide emissions (tonnes of CO <sub>2</sub> per year) attributable to territorial deforestation, including from above and below-ground biomass and litter. Available only for the Chaco.	Baumann et al. (2017) ( <a href="https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.13521">https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.13521</a> ).  Territorial deforestation (see above).
CO <sub>2</sub> emissions from pasture deforestation (t CO <sub>2</sub> / year)	Beef	Carbon dioxide emissions (tonnes of CO <sub>2</sub> emissions per year) attributable to pasture deforestation, considering a five-year period (see above), including from above-ground and below-ground biomass and litter. Available only for the Chaco.	Baumann et al. (2017) ( <a href="https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.13521">https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.13521</a> ).  Pasture deforestation (see above).

CO <sub>2</sub> emissions per tonne from cattle deforestation (t CO <sub>2</sub> per tonne carcass)	Beef	Carbon dioxide emissions from cattle deforestation per tonne (tonnes of CO <sub>2</sub> per year), divided by department cattle production. Carbon emissions include above-ground and below-ground biomass and litter. Available only for the Chaco.	Baumann et al. (2017) ( <a href="https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.13521">https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.13521</a> ).  Cattle deforestation per tonne (see above).
CO <sub>2</sub> emissions risk from cattle deforestation (t CO <sub>2</sub> /year)	Beef	Carbon dioxide emissions (tonnes of CO <sub>2</sub> per year) linked to cattle exports for a company or a department. As for deforestation, emissions are allocated to the companies along the supply chain in proportion to the volume of cattle products that they export from a given department, relative to cattle production (by all actors) in the same department.	Baumann et al. (2017) ( <a href="https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.13521">https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.13521</a> ).  Cattle deforestation risk (see above).
<b>Actor commitments</b>			
Forest 500 score		Score for companies' deforestation commitments according to Global Canopy's Forest 500 assessments (2018).	Global Canopy's Forest 500 score ( <a href="http://forest500.org/">http://forest500.org/</a> ).
Zero-deforestation commitment		Commitments traders have made to zero-deforestation across their global supply chains.	Commitments made public on company websites and data collated by the Forest 500 (forest500.org).
Soy traded under zero-deforestation commitment (%)		Percentage of the exported soy that is exported by a trader with a zero-deforestation commitment, including traders with commitments to zero deforestation across their global supply chains.	Calculated from the zero deforestation commitments in the soy supply chain and data collated by the Forest 500 ( <a href="http://forest500.org/">http://forest500.org/</a> ).
<b>Contextual layers</b>			
Biomes		Boundaries of the five ecoregions in Paraguay.	The Nature Conservancy ( <a href="http://maps.tnc.org/gis_data.html">http://maps.tnc.org/gis_data.html</a> ).
Indigenous territories		Indigenous territories in Paraguay. Does not include uncontacted tribes.	Federación por la Autodeterminación de los Pueblos Indígenas (FAPI) ( <a href="https://www.tierrasindigenas.org/Mapa">https://www.tierrasindigenas.org/Mapa</a> ).
Protected areas		Areas with restricted human use, as designated by the Paraguayan government.	Paraguayan Ministry of the Environment and Sustainable Development (MADES) ( <a href="http://201.217.59.143:8065/visor.asp/">http://201.217.59.143:8065/visor.asp/</a> ).
Deforestation polygons		Deforested areas in the Dry Chaco, Humid Chaco and Alto Paraná Atlantic forests. Data for 2017 only covers the Dry and Humid Chaco biome.	WWF-Paraguay ( <a href="http://www.wwf.org.py/que_hacemos/sig2/monitoreo_satelital_de_la_deforestacion/">http://www.wwf.org.py/que_hacemos/sig2/monitoreo_satelital_de_la_deforestacion/</a> ).
Geocodes		Spatial codes given to departments, in the format PY-XX.	Dirección General de Estadística, Encuestas y Censos (DGEEC) department boundaries (2017) ( <a href="https://www.dgeec.gov.py/">https://www.dgeec.gov.py/</a> ).

