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Soy Sustainability – Focus on Brazil, Argentina and Paraguay

Transparency Update : Sourcing Profile and Deforestation/Conversion Risks

Complementing LDC's Sustainability Report

Updated November 2020

SINCE 1851

Soy Sustainability Workstreams - *Transformational Focus*

Impact *(Policy implementation)*

- **3rd party monitoring** of all purchases checking for conversion/deforestation and legal compliance – Brazil ✓
- **Certification programs** ✓ *(see LDC Sustainability Reports for breakdown)*
- **Verified "D-FREE meal" program** (Argentina) ✓ Brazil ●
- **RTRS chain of custody** – Brazil, Argentina, Paraguay ✓
- **Published traceability to farm & Risk analysis –** Brazil, Argentina, Paraguay ✓ Uruguay ●

- **Signatory of Soy Moratorium and Pará Green Protocol** ✓
- **Soft Commodity Forum (SCF) workstreams**
  Traceability reporting ✓
  Solidaridad, PCI – Landscape projects with producers ●
- **Long-term preferential financing in Brazil –** structure & pilot in place ●
- **TNC/LDC project in the Gran Chaco** ●
- **Commitment to sector solutions** – TFA secondment-2020 ✓

In progress ● *In place* ✓

Transformation *(Outcome across industry)*

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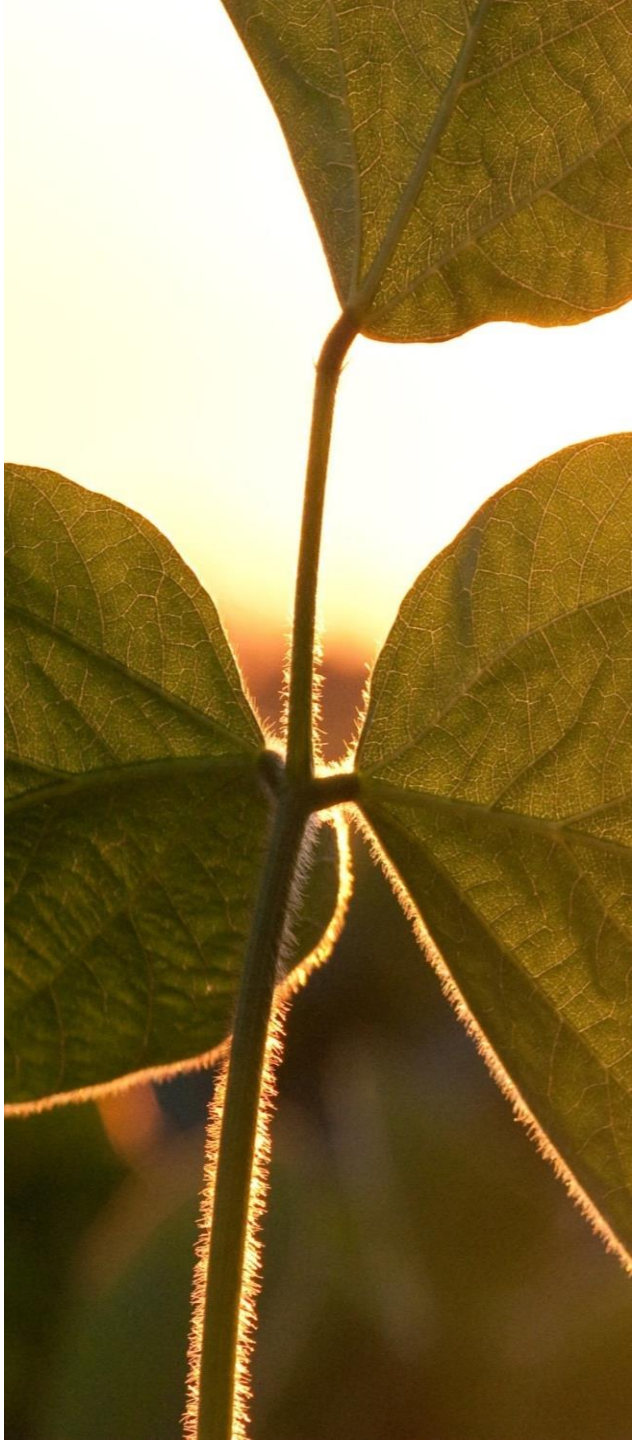
Brazil

Sourcing Profile and

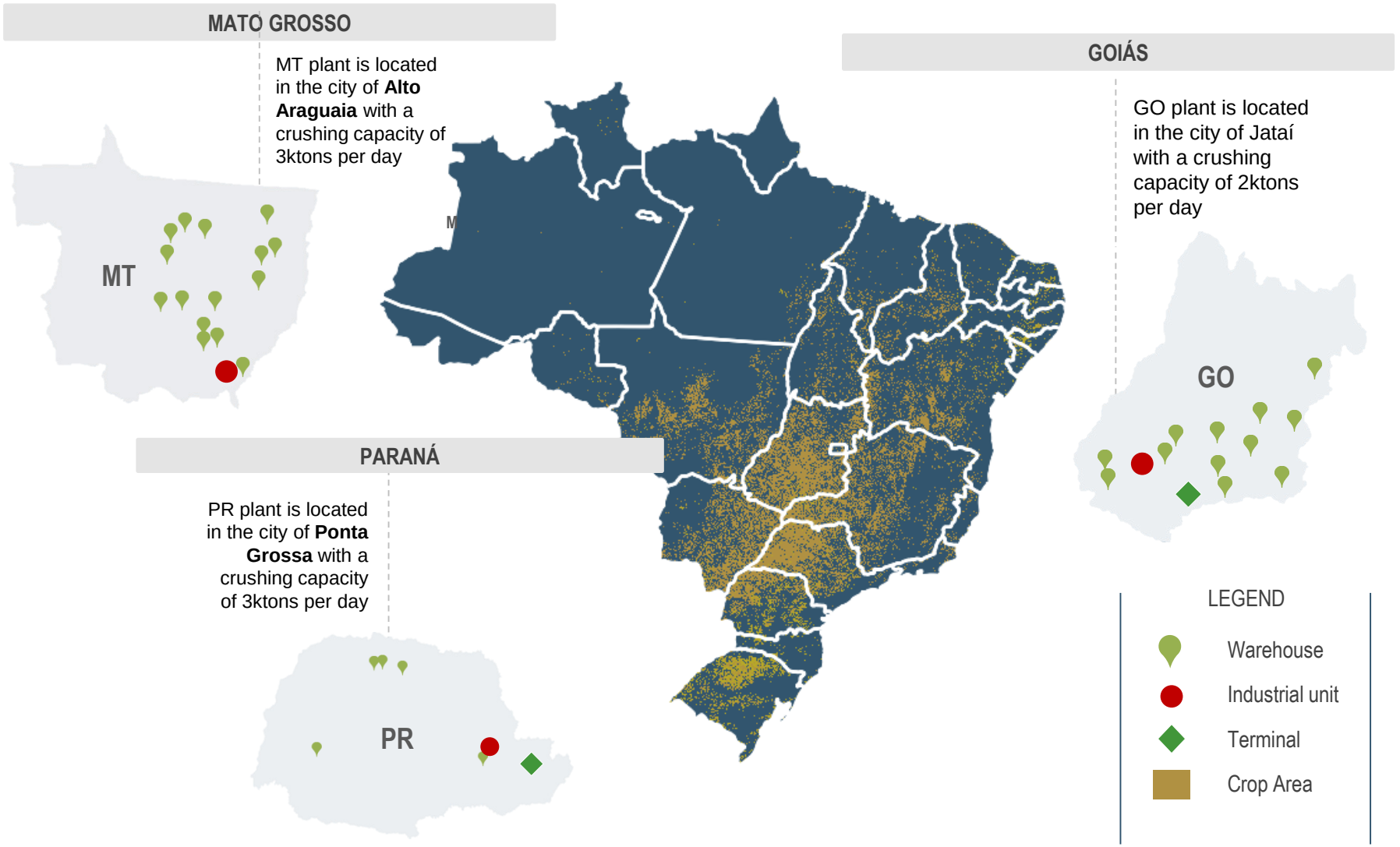
Deforestation/Conversion Risks

Updated November 2020



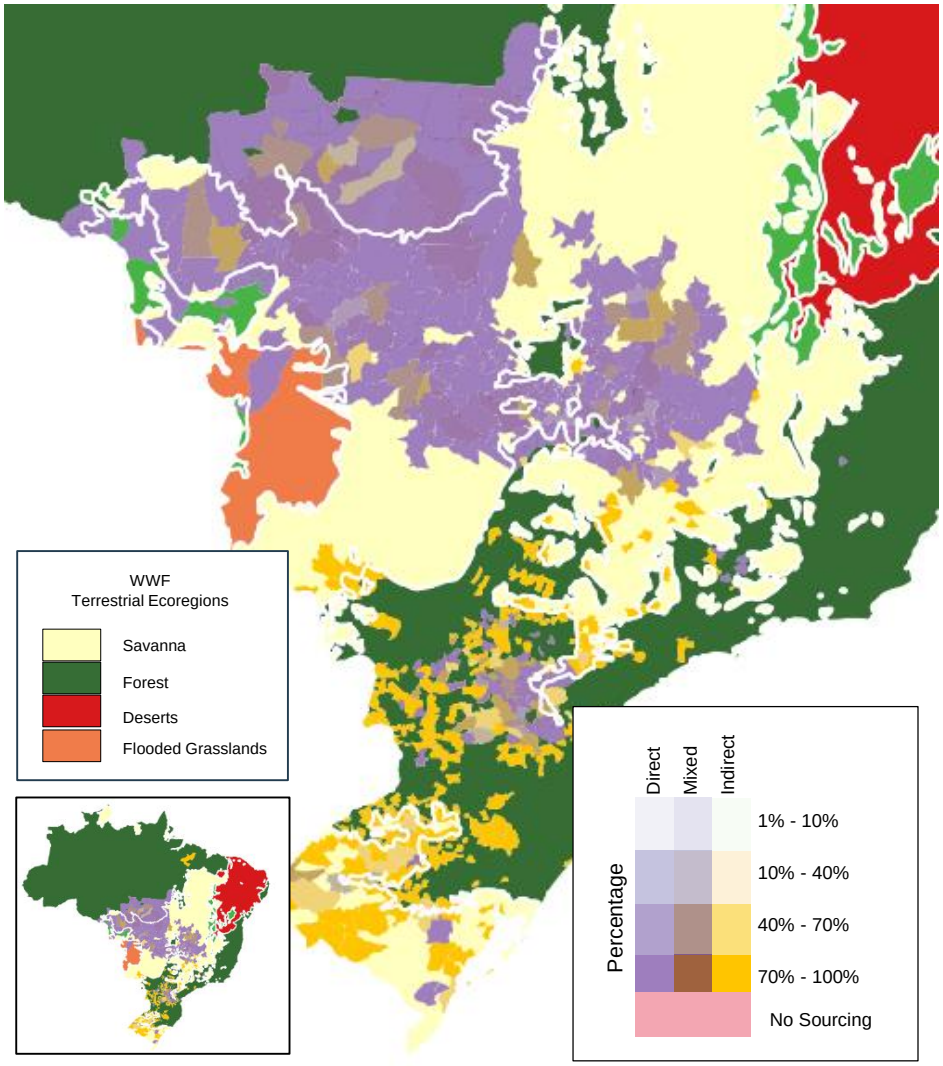
LDC Brazil Crushing Plants

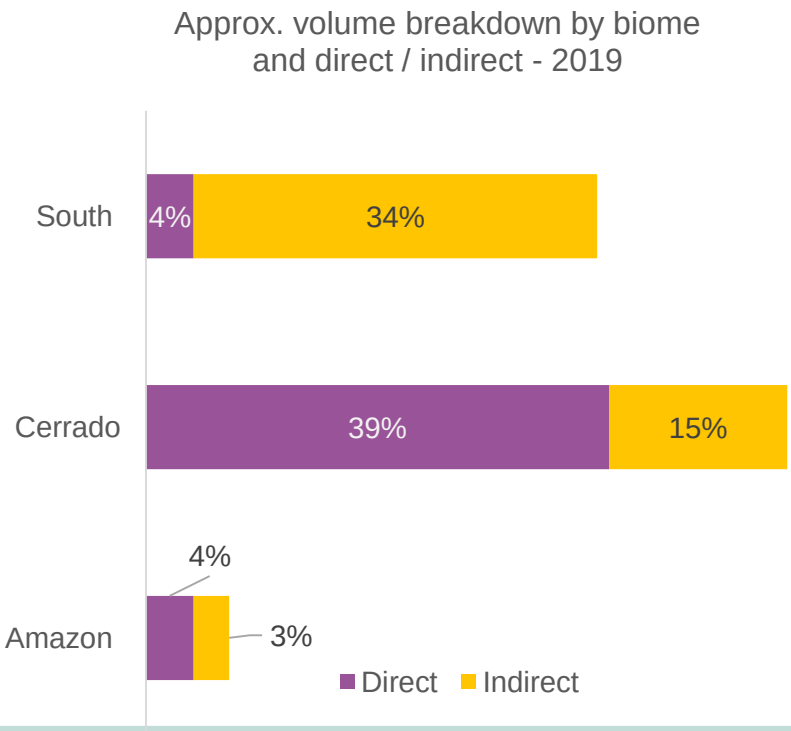
Warehouses and crushing plants are located in the main soybean productive areas, outside the main conversion frontiers



LDC Brazil - *Approx.* Volume Breakdown by Biome and Direct/ Indirect of Total Origination

Sourcing in the Cerrado is largely "direct"; in the "consolidated south", sourcing is primarily through local cooperatives



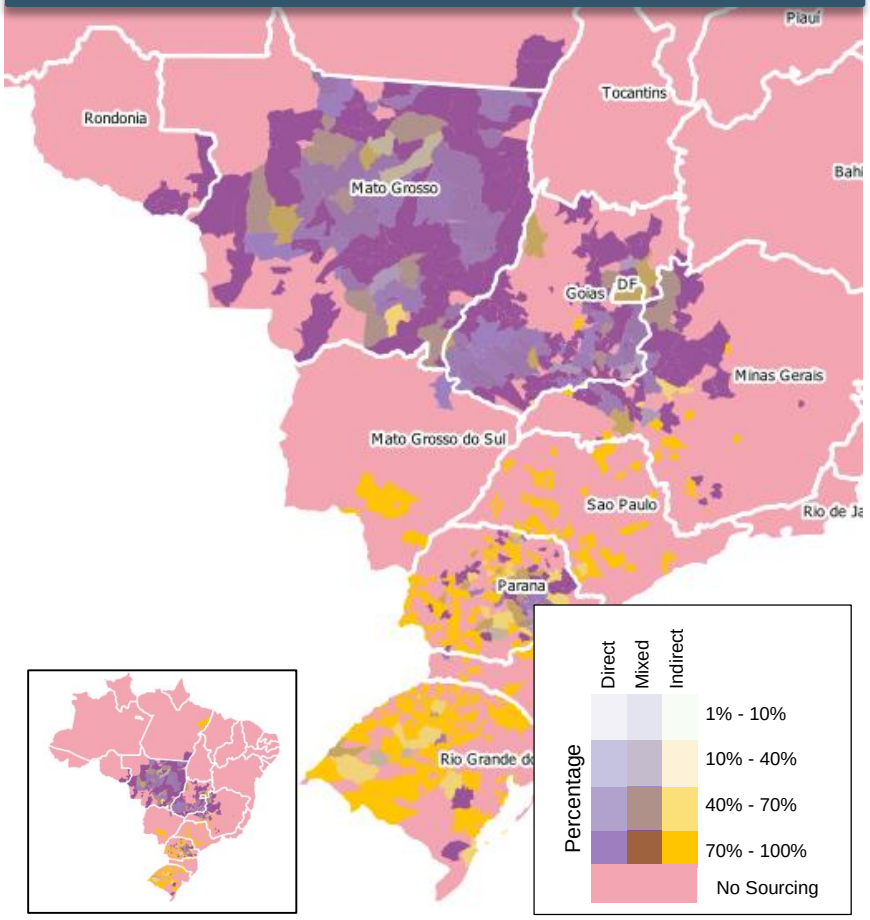


- Direct: soy sourced directly from a farmer
- Indirect: soy sourced from aggregators, cooperatives, and other third parties
- Sourcing in south is largely through local cooperatives (where traceability to farmer is possible)
- Sourcing from the Amazon biome is monitored under the Soy Moratorium
- *Soft Commodities Forum* definition of the Cerrado includes municipalities mainly/completely in the Cerrado, for which LDC sourcing volume is 27%

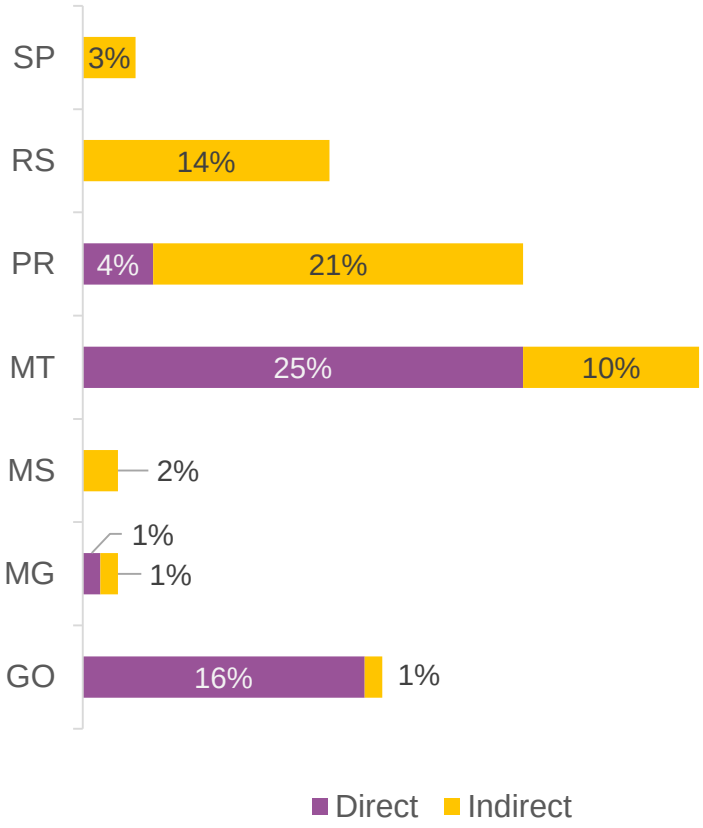
LDC Brazil - *Approx.* volume breakdown, direct and indirect

Direct sourcing concentrated in states of Goias (GO) and Mato Grosso (MT)
Southern "consolidated" states where there is significantly reduced conversion risk e.g. Parana (PR), Rio Grande do Sul (RS), source largely through cooperatives (and traceability to farmer is possible)

TYPE OF PURCHASES BY MUNICIPALITY

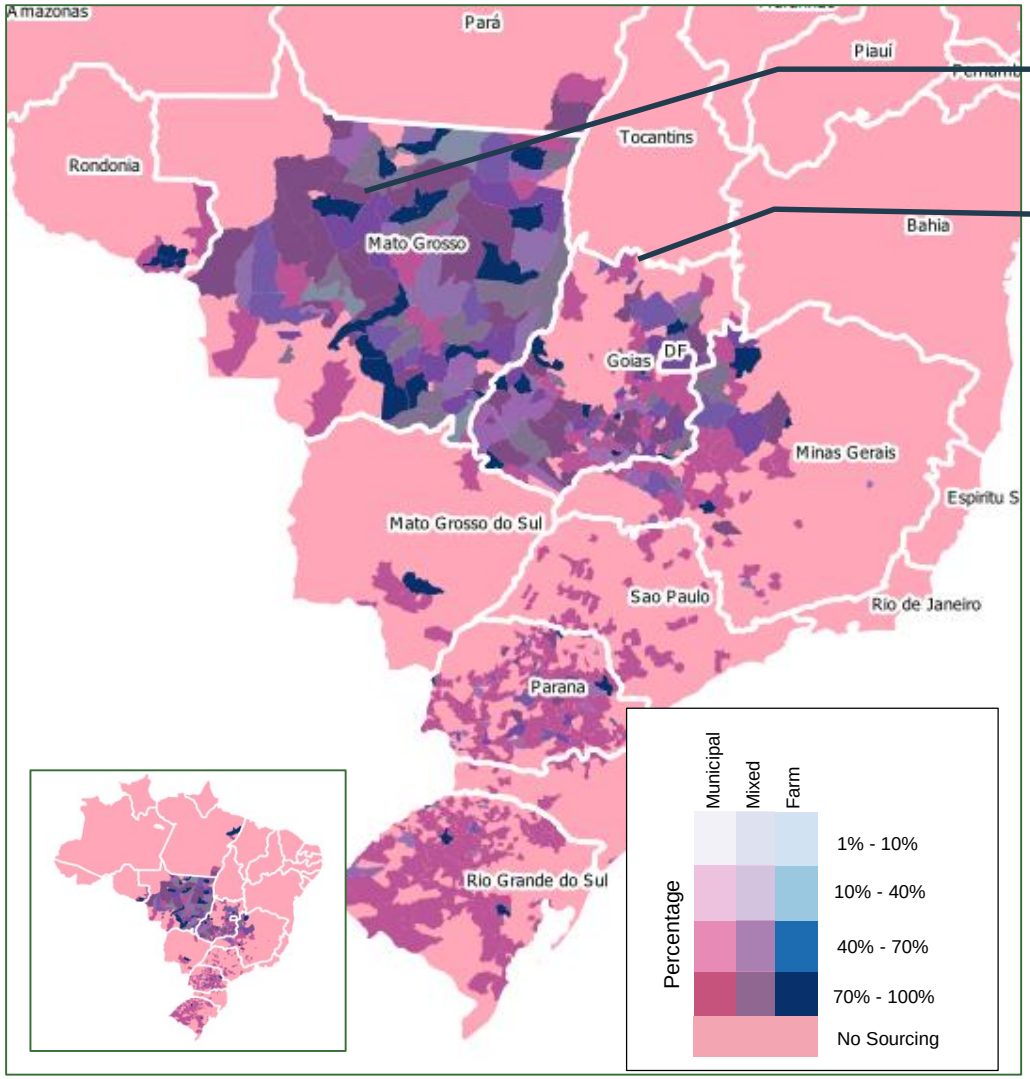


Approx. volume breakdown by state, direct and indirect - 2019



Traceability data for all purchases by municipality – as of end November 2020

Traceability to farm : areas of higher risk have been prioritized for gathering farm-level traceability



From what LDC sources in MT, 77% of direct purchases are traceable to farm

From what LDC sources in GO, 65% of volumes are traceable to farm

<u>Traceability to Farm and/or Municipality</u>:

- LDC has **0.8% volume being sourced in the 25 high priority municipalities** in the Cerrado (*Soft Commodity Forum* definition), with **0.2% volume sourced from these municipalities out of total Brazil volume**
- For this sourcing in high priority municipalities, LDC has 100% polygon level traceability to farm for municipalities
- Throughout Brazil, LDC currently has **70% traceability to farm for all direct purchases** and traceability to municipality for the remainder
- LDC had set the objective of reaching 50% traceability to farm in 2020 for direct purchases, so this target has been met.

LDC spatial monitoring in Brazil –*updated Nov 2020*

- LDC research team spatially monitors all sourcing with traceability to farm (polygon and GPS points, where a buffer was applied **)
- This monitoring area covers an area of **11.5 million hectares**, based on data gathered by the origination teams in the field
- PRODES Cerrado and PRODES Amazon are used to monitor all land use conversion; a series of reference dates are applied to identify when clearance has taken place.
  - Over the **10-year period 2010-2019**, **a cumulative amount of 2.6%** out of a total 11.4 million hectares under surveillance have undergone land-use change, not necessarily for soy.
  - In **2019**, satellite monitoring found land use change in approximately **0.1%** of areas where LDC currently has direct traceability to farm. It is not yet clear if the clearance was soy-driven or not.
- Among the 25 municipalities identified by the *Soft Commodities Forum* as higher priority, LDC is present in two (in Mato Grosso), with **100% traceability to farm at a polygon level.**
  - One farm lost c. 400ha of native vegetation in 2019. It has been monitored for embargos on IBAMA and has no restrictions. Soy has not been established as yet. Further investigation and engagement will be carried out at the next planting season.
  - No other farm supplying LDC in these priority municipalities cleared land in 2019.
  - From our analysis so far, **> 99% of the LDC sourcing from the two priority municipalities, where there is 100% traceability, were deforestation-free**.

**Based on July-July monitoring, to accommodate seasonal cloud cover/weather so as to allow more accurate monitoring*

*** Based on a 95% confidence of the size of CARs/farm size for the respective municipality/state*

**** This report does not include any soy volumes sourced by ALZ Grãos, in which LDC has a minority stake*

3rd party service provider: Monitoring

In addition to the LDC research team monitoring, LDC also works with a 3rd party service provider to monitor soy sourcing, at a farmer and group level, before the point of purchase. Checks are made in relation to:

- CAR (Land Registry)
  - Legal Reserve
  - APP (protected areas including riparian zones, slopes etc).
- Environmental compliance with :
    - Conservation areas
    - Indigenous lands
    - Quilombolas protection
    - Ecological corridors
- Supplementary compliance in accordance with:
    - IBAMA
    - Soy Moratorium
    - Pará Protocol
- Tools used:
    - PRODES
    - LDI Pará
    - Georeferencing tools - IBAMA
    - Proprietary analysis and alerts including Fire and infringement of legal reserve
    - Ground truthing and on-site visits as necessary

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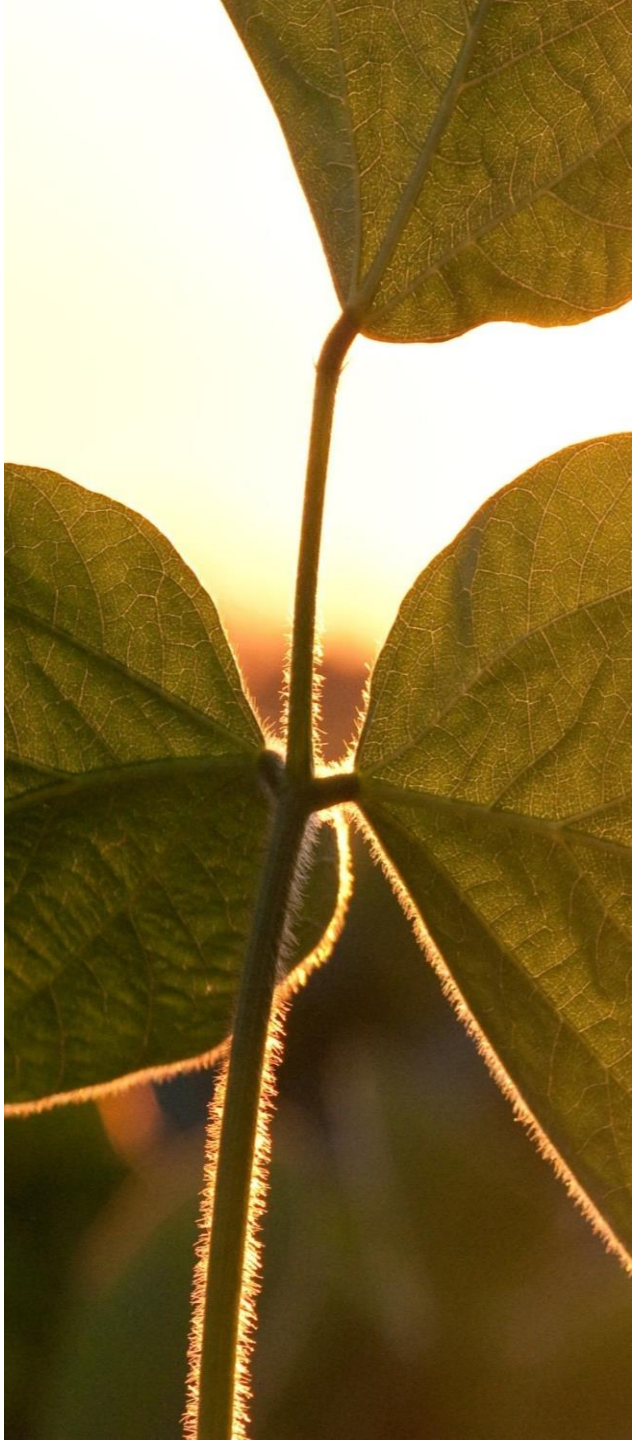
Argentina

Sourcing Profile and

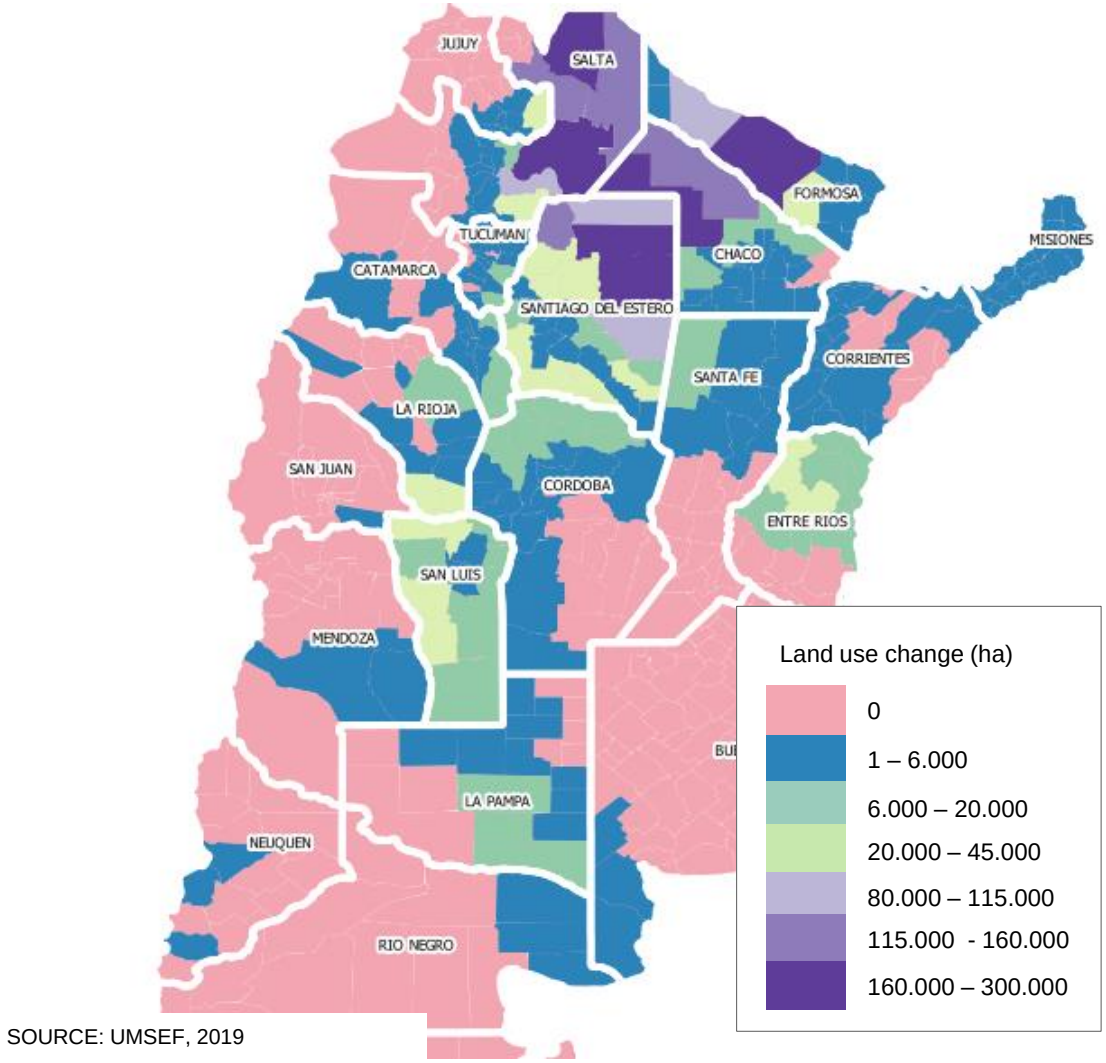
Deforestation/Conversion Risks

June 2020



Argentina – analysis of deforestation risks

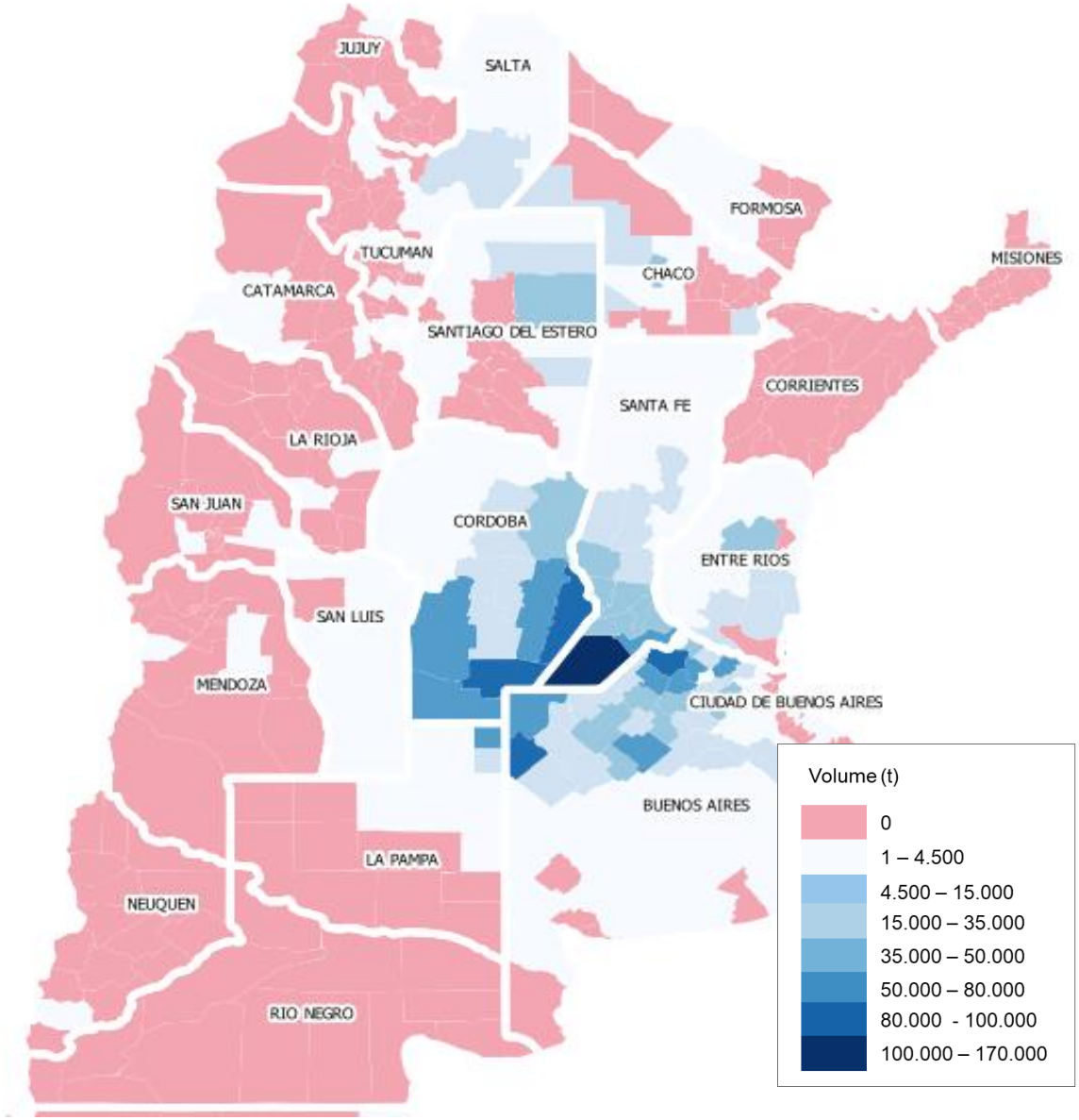
Summary of the methodology LDC Research adopted for analyzing deforestation risks



SOURCE: UMSEF, 2019

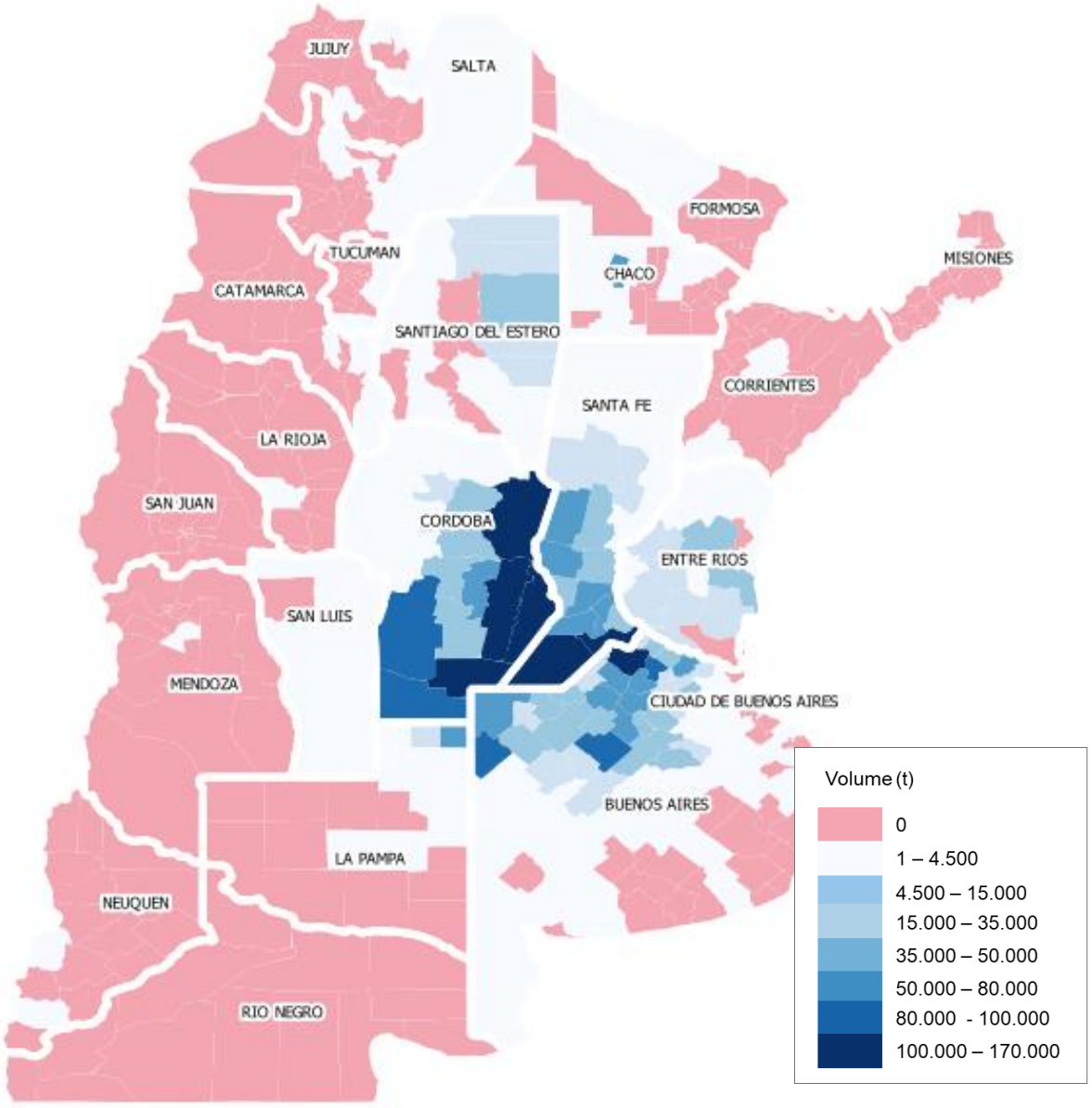
- Based on the “First National Inventory of Native Forest” (PINBN). The clasification takes in to account FAO’s FRA 2000. The document is published by Argentina’s UMSEF (Unidad de Manejo del Sistema de Evaluación Forestal).
- The satellite images for the study are from the LANSAT 7 satellite, which has a resolution of 30m.
- The map adds forest land and other native vegetation:
  - Forest land: tree cover over 20% with trees that exceed 7m
  - Native vegetation: Tree cover of up to 5% with shrubs with a minimum height of 0.5m.
- The analysis is from 2007 to 2018. Land use conversion is categorized by department.
- This analysis does not differentiate between legal and illegal deforestation. All land use change/conversion is captured.

LDC Argentina origination – 2018/2019



LDC Argentina's 2018/2019 origination is largely in areas of no / very low deforestation.

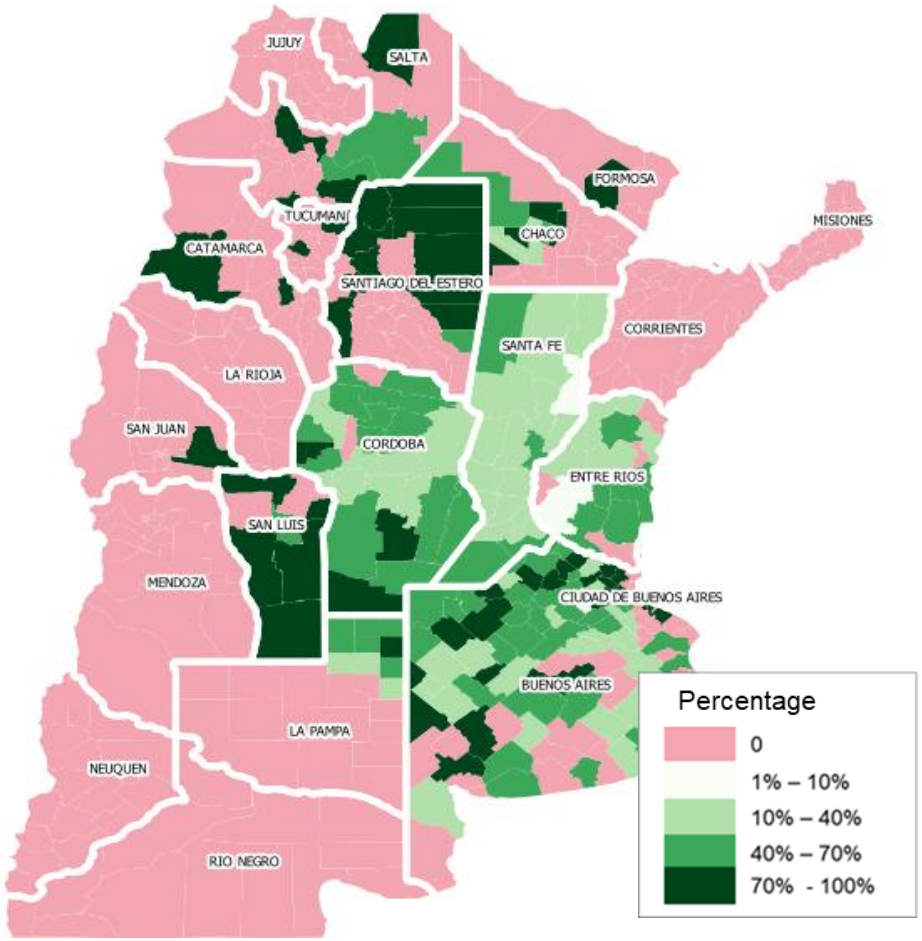
LDC Argentina origination – 2019/2020



LDC Argentina's 2019/2020 origination is largely in areas of no / very low deforestation.

LDC Argentina Certification program – 2018/2019

Volumes of certified volumes originated, as a percentage of total LDC Argentina origination

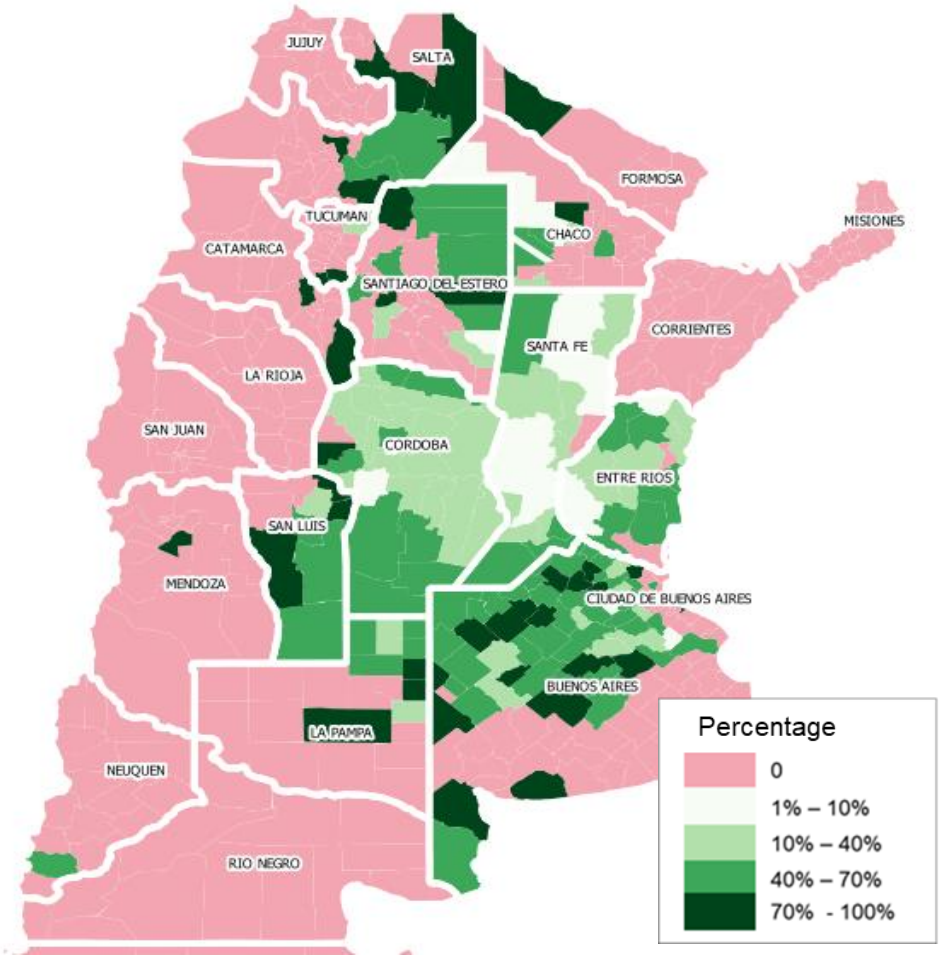


LDC Argentina's 2018/2019 certified volumes are mapped by department.

These certified volumes (2BSvs/ISCC) have full traceability to farm with verified zero-deforestation (based on a cut-off date of January 1, 2008).

LDC Argentina Certification program – 2019/2020

Volumes of certified volumes originated, as a percentage of total LDC Argentina origination

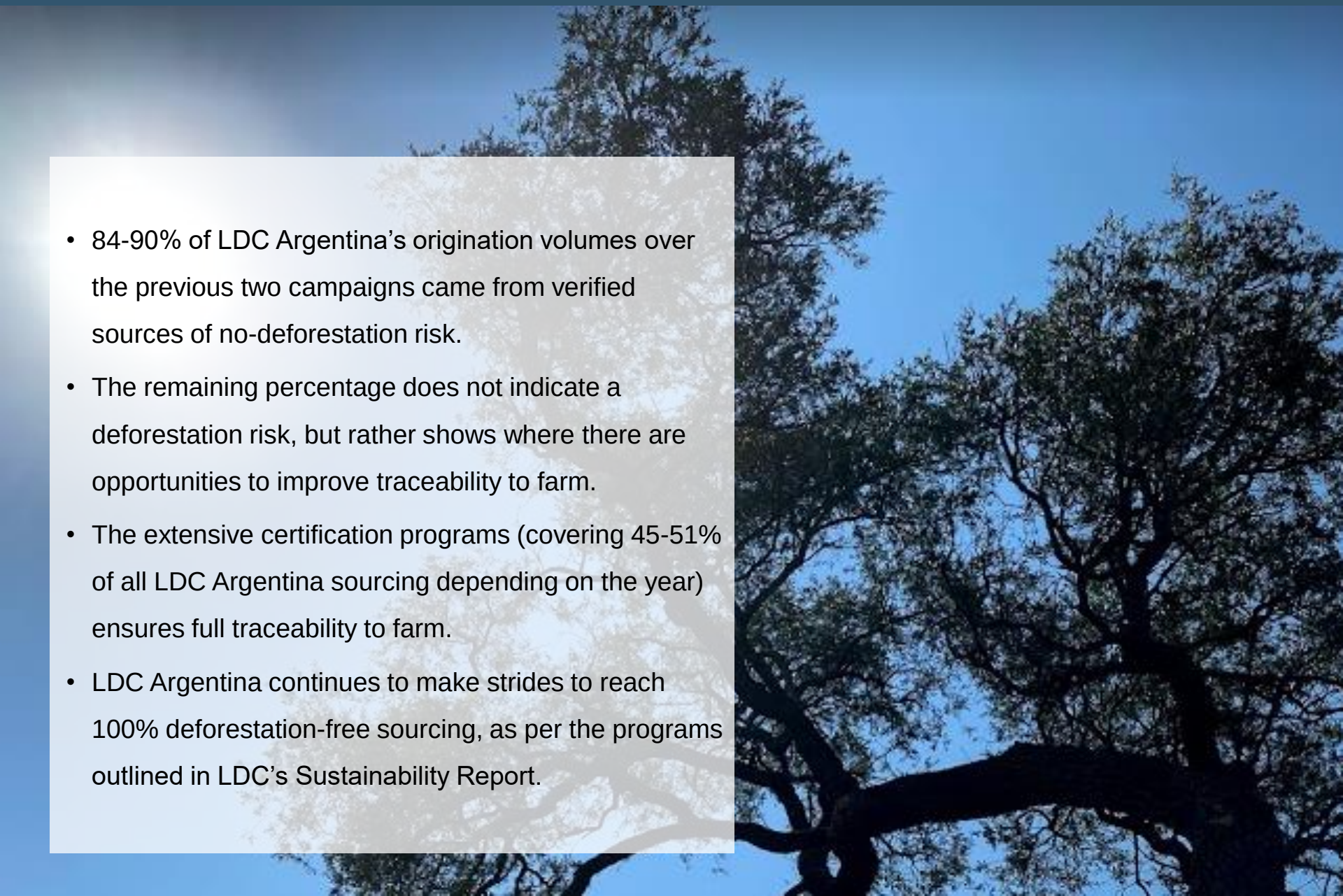


LDC Argentina's 2019 / 2020 certified volumes are mapped by department.

These certified volumes (2BSvs/ISCC) have full traceability to farm with verified zero-deforestation (based on a cut-off date of January 1, 2008).

LDC sources a high percentage of certified volumes from areas with a higher deforestation-risk.

Summary



- 84-90% of LDC Argentina's origination volumes over the previous two campaigns came from verified sources of no-deforestation risk.
- The remaining percentage does not indicate a deforestation risk, but rather shows where there are opportunities to improve traceability to farm.
- The extensive certification programs (covering 45-51% of all LDC Argentina sourcing depending on the year) ensures full traceability to farm.
- LDC Argentina continues to make strides to reach 100% deforestation-free sourcing, as per the programs outlined in LDC's Sustainability Report.

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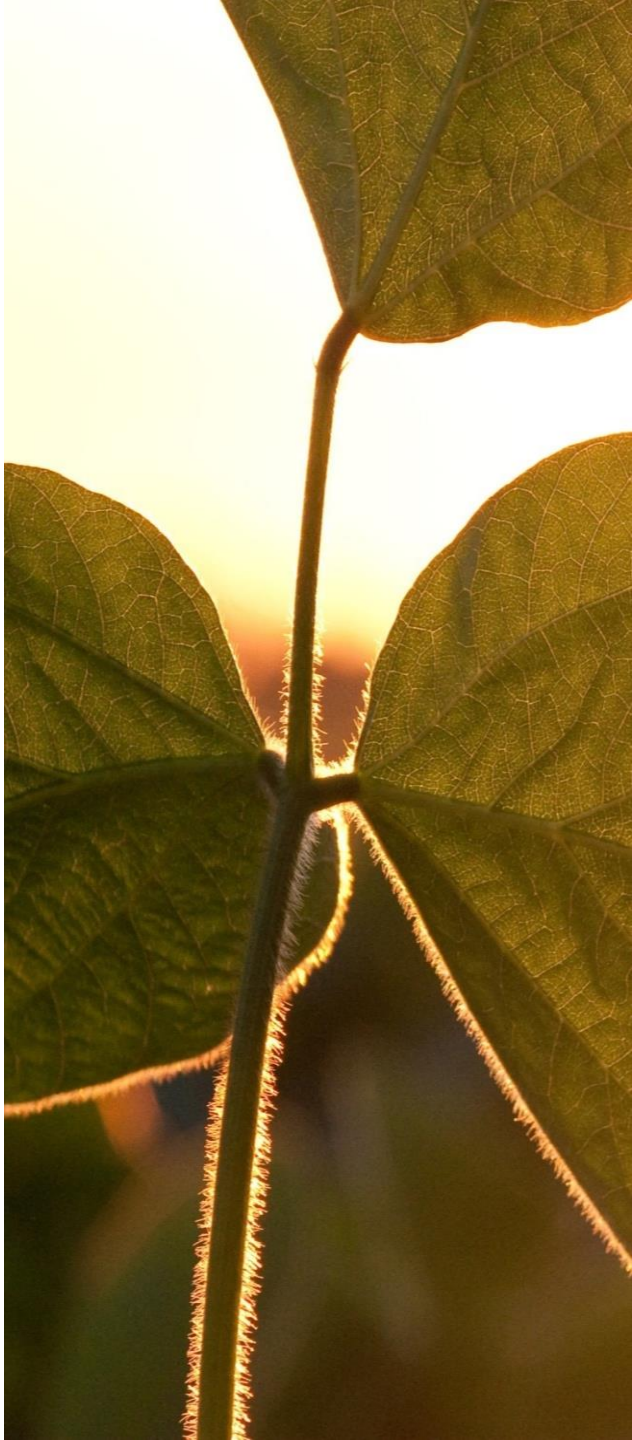
Paraguay

Sourcing Profile and

Deforestation/Conversion Risks

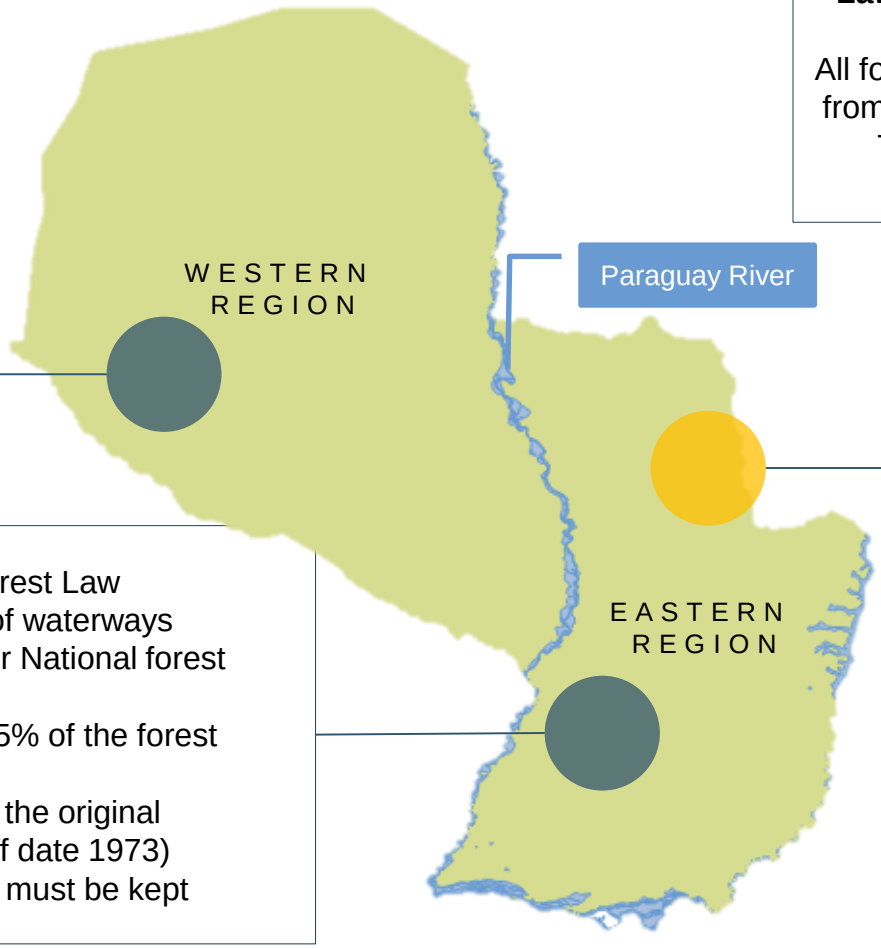
November 2020



Paraguayan Environmental Law

The Paraguay River divides the country into two: the Western and Eastern regions each have contrasting ecological and demographic profiles. 98% of the population and soybean production are in the Eastern region. Each region has their own Environmental Legal framework

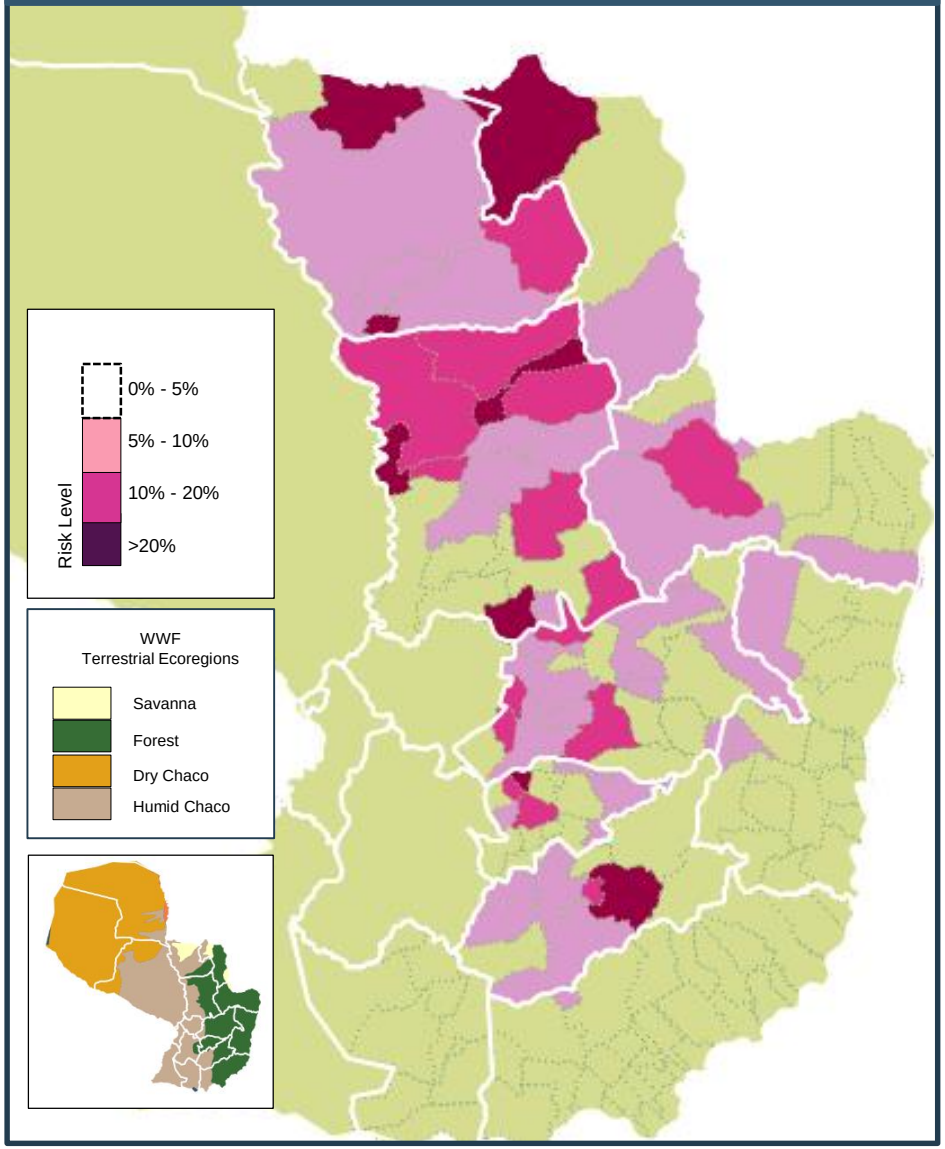
Law 2.524/04 – "Zero Deforestation Law"
All forest conversion is considered illegal from 2004 (except for selective logging)
The law is ratified every 2 years



- **Law 422/73** - National Forest Law
- **Law 424/11 -** Protection of waterways
- Decreed 175/18: Rules for National forest law
  - In areas > 20ha, 45% of the forest must be kept.
  - Otherwise: 25% of the original forest cover (cut off date 1973) and riparian zones must be kept forested

Paraguay Landscape Assessment: Eastern Region

MUNICIPALITY RISK ASSEMENT 2004



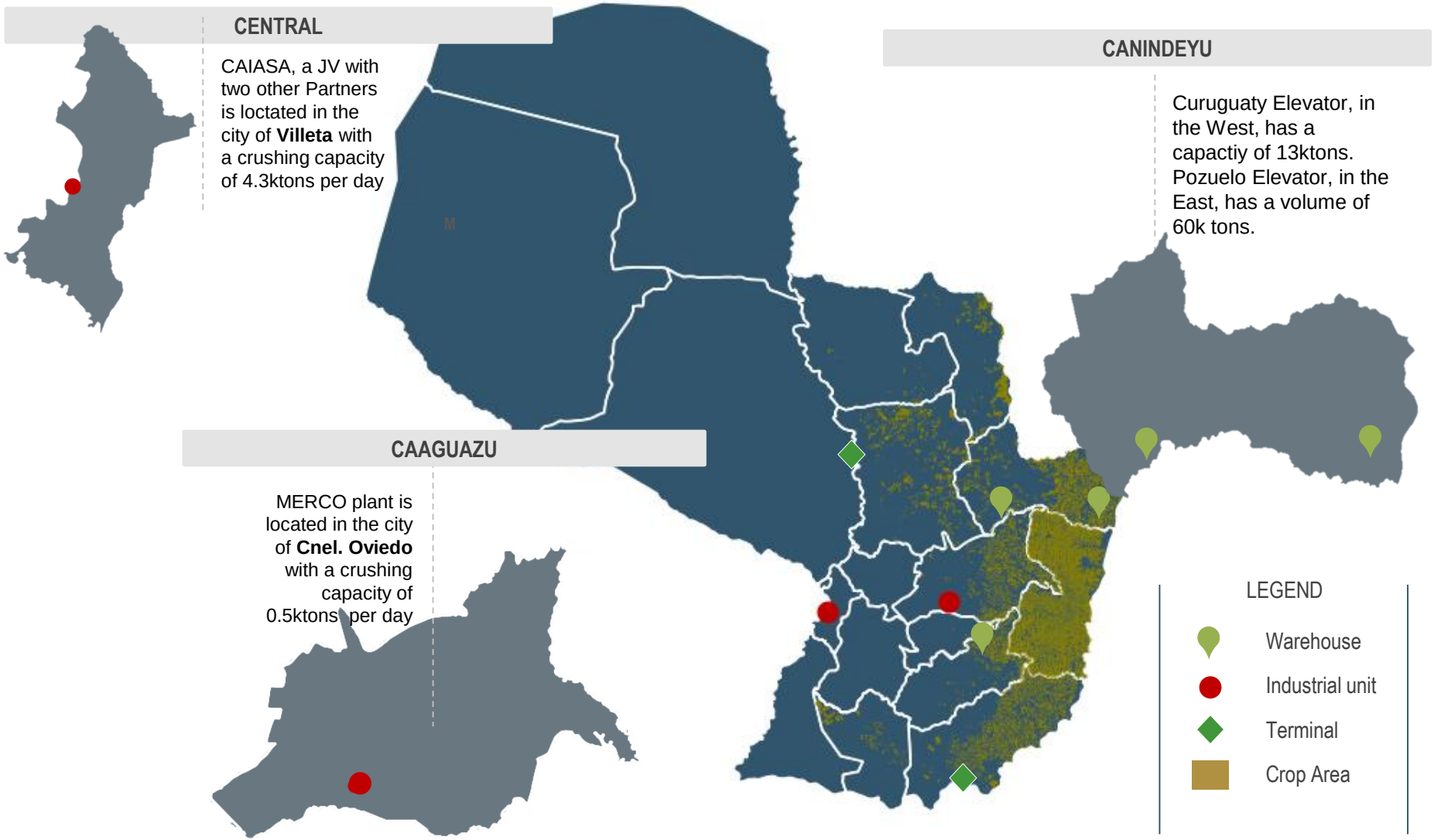
- LDC measured the impact of soybean production by intersecting two layers: Global Forest Change (Hansen, 2019) and Rapid expansion of human impact on natural land in South America since 1985 (Hansen, 2018). Using Google Earth Engine Platform we could quantify the Crop Area that had been planted over deforested areas since 2004. The table below shows the aggregate by Department.

Departament	Crop area (000 ha)	Crops planted over deforested areas (000 ha)	%
Alto Parana	722	36	5%
Amambay	130	11	8%
Caaguazu	308	35	11%
Caazapa	140	14	10%
Canindeyu	507	49	10%
Concepcion	22	4	19%
Guaira	14	1	11%
Itapua	473	12	2%
Misiones	72	1	2%
San Pedro	272	57	21%
Total	**2659**	**220**	**8%**

92% Of the areas currently use for soybean production are deforestation-free since 2004.

LDC Paraguay Assets

LDC warehouses and crushing plants are located in the main soybean productive areas and are outside the main deforestation frontier, the Paraguayan Chaco



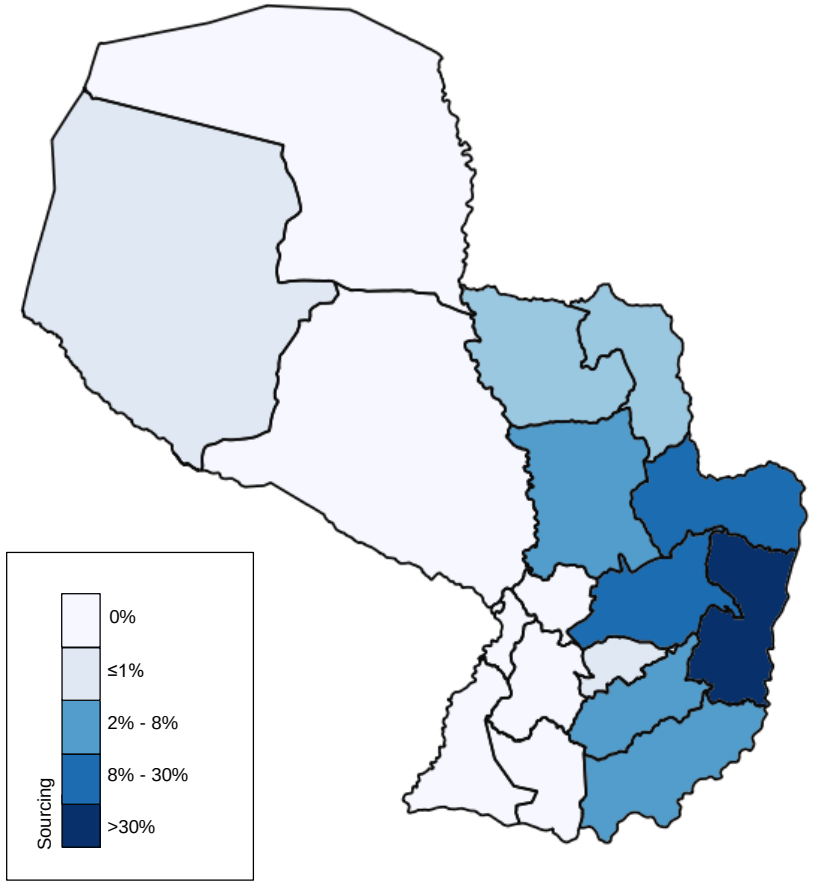
LDC Paraguay - By Department

Traceability is challenging, due to differing standards of administrative and legal requirements, compared to that in neighbouring countries. Nevertheless, LDC is finding reliable ways to define traceability and risk.

- We add farm and municipality sourcing data to that of department information
- When traceability to municipality is not available, we use the department associated with the client's main area of production

DEPARTAMENT	2019 SOURCING
ALTO PARANA	31.6%
CANINDEYU	21.7%
CAAGUAZU	15.6%
ITAPUA	19.1%
CAAZAPA	6.2%
SAN PEDRO	5.4%
OTHERS ≤1%	0.5%

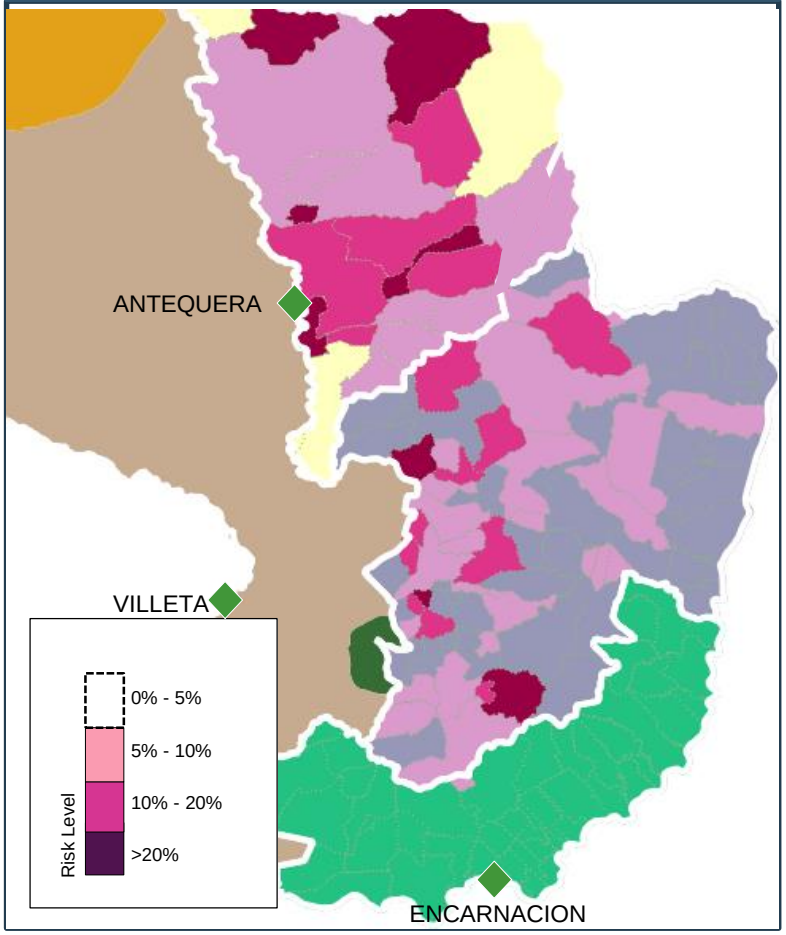
LDC SOURCING BY DEPARTMENT



LDC Paraguay - By Port 2019

LDC sourcing in Paraguay can be divided in to three according to the respective export exit ports. Most of our sourcing comes from the departments in the center.

LAND USE BY CHANGE BY ARC



Arc	Agriculture Area (000 ha)	Agriculture Over Land Use Change (000 ha)	%
Center	1533	149	10%
North	333	53	16%
South	793	18	2%
Total	**2659**	**220**	**8%**

LDC Sourcing by Port Arc and the city

4%	North (ANTEQUERA)
74%	Center (VILLETA)
22%	South (ENCARNACION)

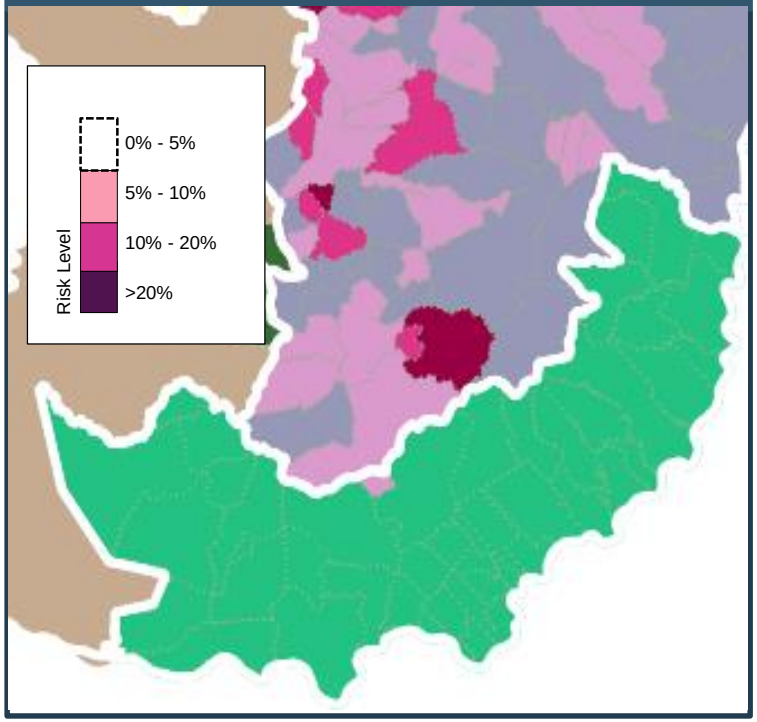
Categorization of Risk (1)

We define risk according to the following categories: Low, High and Low Risk. The definition of Low Risk is as follows:

LOW RISK criteria:

- *Municipalities with less than 5% land converted from forest since 2004.*
- *Where the farmer had provided us with their exact polygon.*
- *Where we have the silos GPS point in a low deforestation municipality*

LAND USE BY CHANGE BY ARC



- 22% of our origination exit from the south port. Only 2% of the soybean area was forest before 2004.
  - 16% of the purchases in the south had a GPS point in low risk municipalities
- 16% comes from direct suppliers that shared their polygon voluntarily
- 37% of the origination comes from indirect suppliers with GPS points on municipalities that had less 5% land use change.

TOTAL LOW RISK	75%

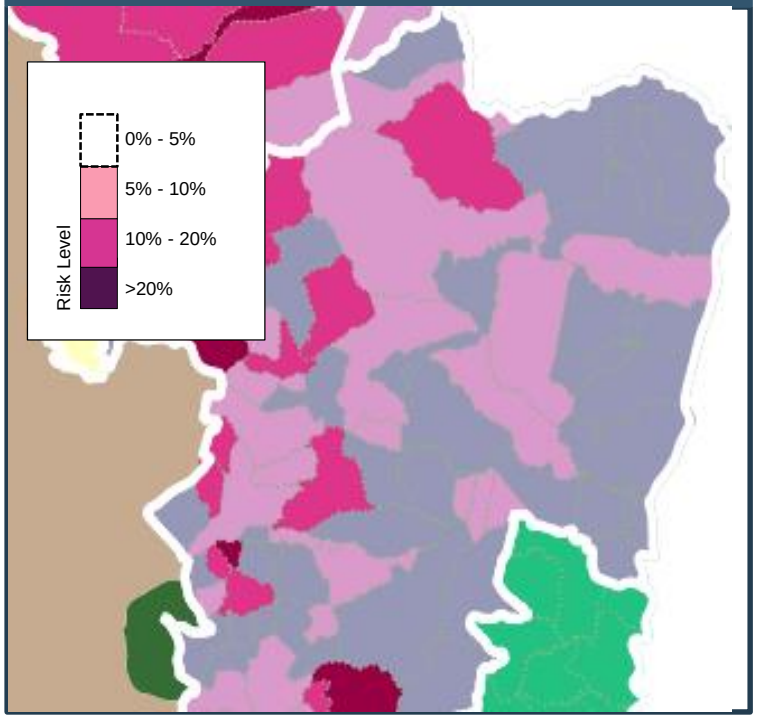
Categorization of Risk (2)

We define risk according to the following categories: Low, High and Low Risk. The definition of Medium Risk is as follows:

MEDIUM RISK criteria:

- *Municipalities that had from 5 to 20% of their surface converted from forest since 2004.*
- *Direct or Indirect Purchases that had came from the Villeta/Asuncion ports unless a GPS point or polygon enables more accurate monitoring.*

LAND USE BY CHANGE BY ARC



- 2% of our purchases comes from municipalities that had from 5-20% land conversion since 2004.
- 22% of the origination comes from indirect suppliers that deliver their beans to the center ports. These suppliers do not have an established first gathering point but logistics means that sourcing is known to be from the center region

TOTAL MEDIUM RISK	24%

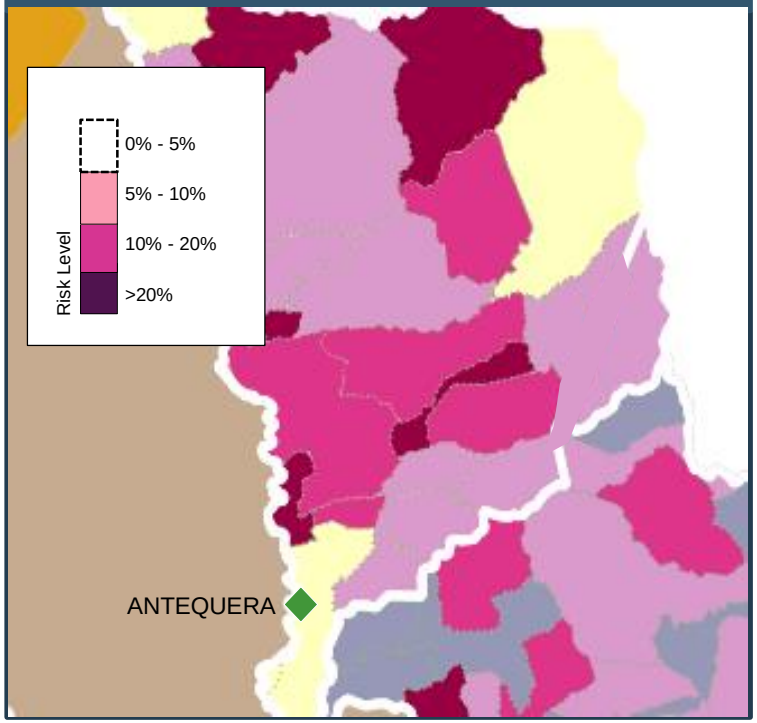
Categorization of Risk (3)

We define risk according to the following categories: Low, High and Low Risk. The definition of HIgh Risk is as follows:

HIGH RISK criteria

- *High Risk areas are municipalities that have more than 20% of their surface converted from forest since 2004.*
- *Direct or Indirect purchases that comes out from a northern port unless a GPS point of polygon enables more accurate monitoring.*

LAND USE BY CHANGE BY ARC



- 4% of our origination comes from the northern ports where most of this high risk municipalities are from.
  - 2% of the northern purchases comes from direct suppliers that have provided their polygon
  - 1% of the origination comes from indirect suppliers with GPS points
  - 1% comes from indirect suppliers where the sourcing origin can not be confirmed.

TOTAL HIGH RISK	1%

LDC Origination Breakdown (Definitions).

Channel

Indirect: Source from Coops or Third-party Elevators

Direct: Source directly from farm.

Geography

Center: Port of exit Villeta. Includes the departments of Caazapa, Caaguazu, Canindeyu, Sothern San Pedro and Northen Alto Parana

South: Port of Exit Trociuk; includes the deparments of Misiones, Itapua and sothern Alto Parana.

North: Port of Exit Antequera,; includes the departaments of Concepcion, Misiones, Northen San Pedro.

Degree of Traceability

Arc: By knowing the port of exit, we know the origin of the soybeans from country level to department level.

Municipality: Each gathering point of our clients is mapped and assigned a level of risk regarding their location.

Farm: all farms have polygons

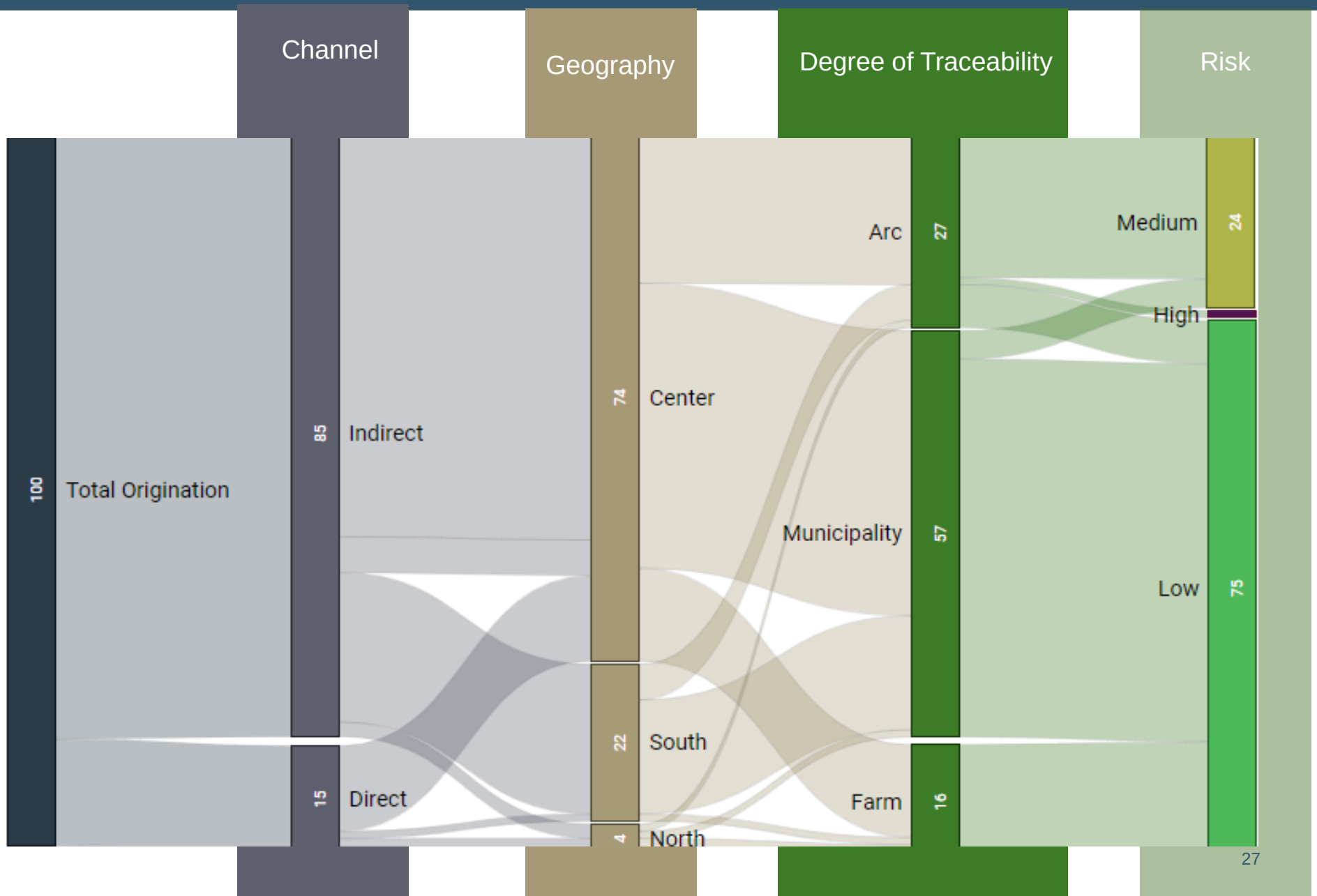
Risk

High Risk: Zones with more than 20% of deforestation area

Medium Risk: Zones between 5-20% of deforestation area

Low Risk: Zones with less than 5% of deforestation area

LDC Origination Breakdown (in Percentage).



Conclusions

LOW RISK

75%

MEDIUM RISK

24%

HIGH RISK

1%

- LDC spatially-monitors all areas where LDC has traceability to farm
- We mapped 57% of our sourcing by municipality, using the location of third party elevators.
  - Paraguay has decreased its crop expansion over deforestation
    - 92% of all crop production is in areas deforested which have not been deforested since 2004
  - Currently, most land conversion happens in the Chaco region, where soybean is production is currently minimal
    - LDC buys less than 1% of sourcing from this area, and where it does, it has traceability to farm. The sourcing area has been in agricultural production since 2016.
  - Most of our Traceability arcs (Ports of exit) are medium risk: sourcing is from municipalities that have not exceeded a 10% threshold in land use change.
  - **Only 1% of LDC sourcing comes from high risk areas, mostly from the north region where around 16% of its area has been converted.**