Supplementary Materials: Land-use change in PLUC projections

Projected changes in land use were taken from previous studies [6,54] investigating the potential land-use changes following scenarios of demand for ethanol in Brazil. This study compares land use in 2012 to land use in 2030 for a reference and an ethanol scenario. Land use in 2012 and 2030 (for both scenarios) is provided in Figure S1, as well as the changes between 2012 and 2030 (for both scenarios) and the difference between the two scenarios in 2030. Tables S1 and S2 show the area of sugarcane expansion and other land-use changes between 2012 and 2030 in the reference scenario and in the ethanol scenario respectively. The area of sugarcane expansion between 2012 and 2030 is larger than the difference in demand for sugarcane cultivation area because in the and-use projections, some of the original sugarcane area in 2012 is lost and established elsewhere.

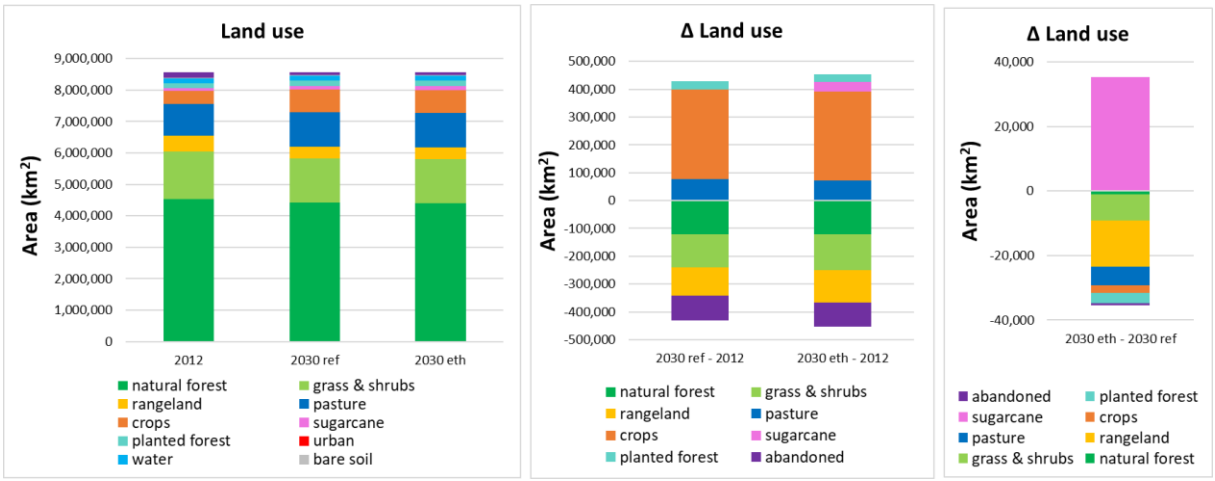

Figure S1. Area (km²) of projected land use and land-use changes in PLUC projections. (A) land use in 2012 and 2030 for the reference scenario (ref) and 2030 for the ethanol scenario (eth); (B) land-use change between 2012 and 2030 for the reference scenario (ref) and the ethanol scenario (eth); (C) difference in land use in 2030 between the ethanol scenario (eth) and the reference (ref).

Table S1. Sugarcane expansion and other land-use transitions between 2012 and 2030 in the reference scenario.

Ecoregion	Other land-use change (km²)	Sugarcane expansion (km²)	Sugarcane expansion (% of total land-use change)
Amazon	97,200	75	0.08
Caatinga	55,225	0	0
Cerrado	197,175	12,225	5.84
Atlantic Forest	64,750	7,225	10.04
Pantanal	57,950	0	0
Pampas	14,125	0	0
Total	487,950	19,525	3.86

Table S2: Sugarcane expansion and other land-use transitions between 2012 and 2030 in the ethanol scenario.

Ecoregion	Other land-use change (km²)	Sugarcane expansion (km²)	Sugarcane expansion (% of total land-use change)
Amazon	97,975	250	0.25
Caatinga	54,775	50	0.09
Cerrado	196,425	28,950	12.85

Atlantic Forest	59,575	20,600	25.69
Pantanal	67,225	25	0.04
Pampas	13,500	0	0
Total	489,475	49,875	9.25

Supplementary Materials: Reclassification of Globcover land cover categories to PLUC land use categories

We aggregated some land-use categories from the original land-use projections [6,9] in order to align them better with the Globcover land-use categories on which the habitat suitability data was based. We defined 'forest' as including both 'plantation forest' and 'natural forest', 'grass' as both 'rangeland' and 'pasture', 'shrub' as 'grass & shrubs' and 'abandoned land & bare soil' as both 'bare soil' and 'abandoned'.

The Globcover v2.3 land cover map [51], on which the habitat suitability maps of the Global Mammal Assessment [34] were based, was reclassified in order to align it to the PCRaster Land Use Change (PLUC) land use projections [6,9]. Globcover land cover categories contain composite land cover categories, representing a mosaic of several land covers. The reclassification of Globcover natural land cover types is consistent with reclassification of the GMA [34]. The reclassification of Globcover to PLUC classification consisted of the following steps:

1. Globcover land cover categories were translated to PLUC land use categories using Table S3
2. Globcover land cover categories containing multiple land cover types including cropland:

- If the majority of the land cover was cropland (50% or more), the land use type was considered to be cropland (see Table S3)
- If the majority of the land cover was natural vegetation (50% or more), the land use type was considered to be natural vegetation, to be further reclassified as described below (also see Table S3)

3. Globcover land cover categories containing multiple natural land cover types were further divided by overlaying them with a reclassified map of Brazilian biomes, adapted from the WWF terrestrial biome map [65] and a land cover map for the Cerrado [66]. The Biomes and Cerrado maps were classified to the land use types '*forest*', '*shrubs*' and '*grass*' as follows:

- Classes are considered *forest* if Cerrado (described as 'floresta', 'reflorestamento' or 'savanna florestada') or Biome (description includes 'forest' or 'mangrove') map describe as forest type.
- Classes are considered *shrubs* if Biome (caatinga, restinga, savanna) and Cerrado (savanna arborizada, savanna parquet, formaloes pioneiras, vegetacao secundaria) describe it as shrubland.
- A cell is considered *grass* if Cerrado (savanna gramineo-lenhosa) and Biome (Pantanal) map describe as grassland type.
- The Cerrado land use map was considered dominant over the Biome map, because it had higher spatial detail. This means that when a cell was considered *shrubs* in the Biome map and *grass* in the Cerrado map, it was reclassified as *grass*.

4. Globcover does not separate between sugarcane and other crops, all cropland is classified as cropland. *Sugarcane* was categorized in this study as being classified as both cropland in Globcover (as reclassified using Table S3) and sugarcane in the 2012 PLUC land use map.
5. *Cropland* is categorized in this study as both cropland in Globcover (as classified using Table S3) and any land use but sugarcane in the PLUC 2012 map.

Table S3: Reclassification of Globcover land cover classes to PLUC land use projections. Composite land cover classes in Globcover that were translated to several PLUC land use classes were further separated using Figure S2.

	forest	**urban**	**water**	**shrubs**	**grass**	**crop**	**sugarcane**	**abandoned land & bare soil**
Closed to open (> 15%) broadleaved evergreen or semi-deciduous forest (> 5 m)	x							
Closed to open (> 15%) (broadleaved or needleleaved, evergreen or deciduous) shrubland (< 5 m)				x				
Mosaic cropland (50–70%) / vegetation (grassland/shrubland/forest) (20–50%)						x	x	
Closed (> 40%) broadleaved deciduous forest (> 5 m)	x							
Closed to open (> 15%) herbaceous vegetation (grassland, savannas or lichens/mosses)				x	x			
Mosaic vegetation (grassland/shrubland/forest) (50–70%) / cropland (20–50%)	x			x	x			
Closed to open (> 15%) broadleaved forest regularly flooded (semi-permanently or temporarily)—Fresh or brackish water	x							
Rainfed croplands						x	x	
Closed to open (> 15%) grassland or woody vegetation on regularly flooded or waterlogged soil—Fresh, brackish or saline water	x			x	x			
Mosaic forest or shrubland (50–70%) / grassland (20-50%)	x			x	x			
Water bodies			x					
Sparse (< 15%) vegetation					x			
Bare areas								x
Open (15–40%) broadleaved deciduous forest/woodland (> 5 m)	x							
Mosaic grassland (50–70%) / forest or shrubland (20–50%)	x			x	x			
Permanent snow and ice								x
Artificial surfaces and associated areas (Urban areas > 50%)		x						
Closed (> 40%) broadleaved forest or shrubland permanently flooded—Saline or brackish water	x			x				

Supplementary Materials: Window sizes

The spatial neighbourhood analysis used to calculate species richness index makes use of four different window sizes to calculate average potential species richness based on land-use type. These window sizes were 15, 85 and 395 km, and finally a map average of all of Brazil. Window sizes were chosen so that 75% of all cells falls within the smallest window, while another 10% fall into the second and third largest windows (Table S4). Another 5% of cells is assigned the average for all of Brazil. Larger window sizes were applied particularly in the Cerrado region and the 'arc of deforestation', the area at the edges of the Amazon rainforest (Figure S2). For all land use types but shrubs and abandoned land & bare soil, species richness index for most cells is calculated using the 15 km sized window (Table S4). For abandoned land & bare soil and shrubs, larger window sizes were necessary. This may indicate that the land use classification for these land-use types in Globcover and PLUC did not align completely.

Table S4. Area (km²) and percentage of cells (%) using the window sizes 15, 85, 395 and for the whole of Brazil in the spatial neighbourhood analysis, per land use type and for the total map.

Window size	**15 km**		**85 km**		**395 km**		**Whole Brazil**	
Land-use type	Km²	%	Km²	%	Km²	%	Km²	%
Urban	4,425	75	700	12	550	9	225	4
Water	139,850	86	1,275	13	1,275	1	0	0
Forest	4,471,650	96	4,525	4	4,525	0	0	0
Shrubs	186,325	12	744,250	16	744,250	49	332,825	22
Grass	377,275	93	600	7	600	0	0	0
Crop	1,144,525	75	35,975	23	35,975	2	0	0
Sugarcane	95,125	96	75	4	75	0	250	0
Abandoned land & bare soil	4,425	2	68,800	10	68,800	35	101,825	52
Total	6,423,600	75	855,600	10	856,050	10	435,125	5

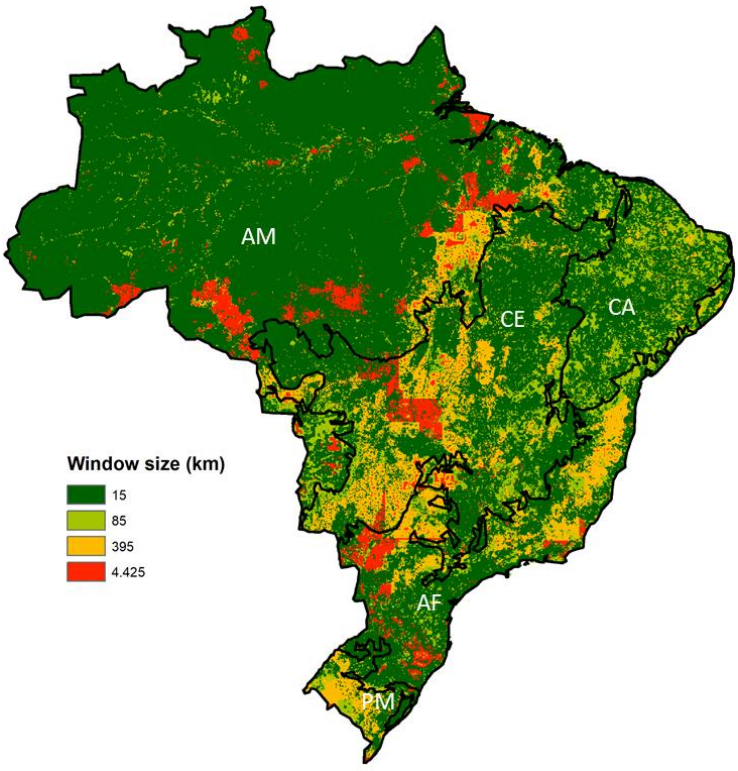

Figure S2. Window size (in km) applied in the calculation of SRI in 2012 in the spatial analysis. Black lines show biome boundaries, abbreviations show biome names; AM = Amazon, CA = Caatinga, CE = Cerrado, PN = Pantanal, AF = Atlantic Forest, PM = Pampas.

Supplementary Materials: Species richness maps 2012

Threatened species richness index in 2012 ranged from 0 to 14 (Figure S3a). Endemic species richness index ranged from 0 to 9 (Figure S3b). Range-restricted species richness index ranged from 0 to 9 (Figure S3c).

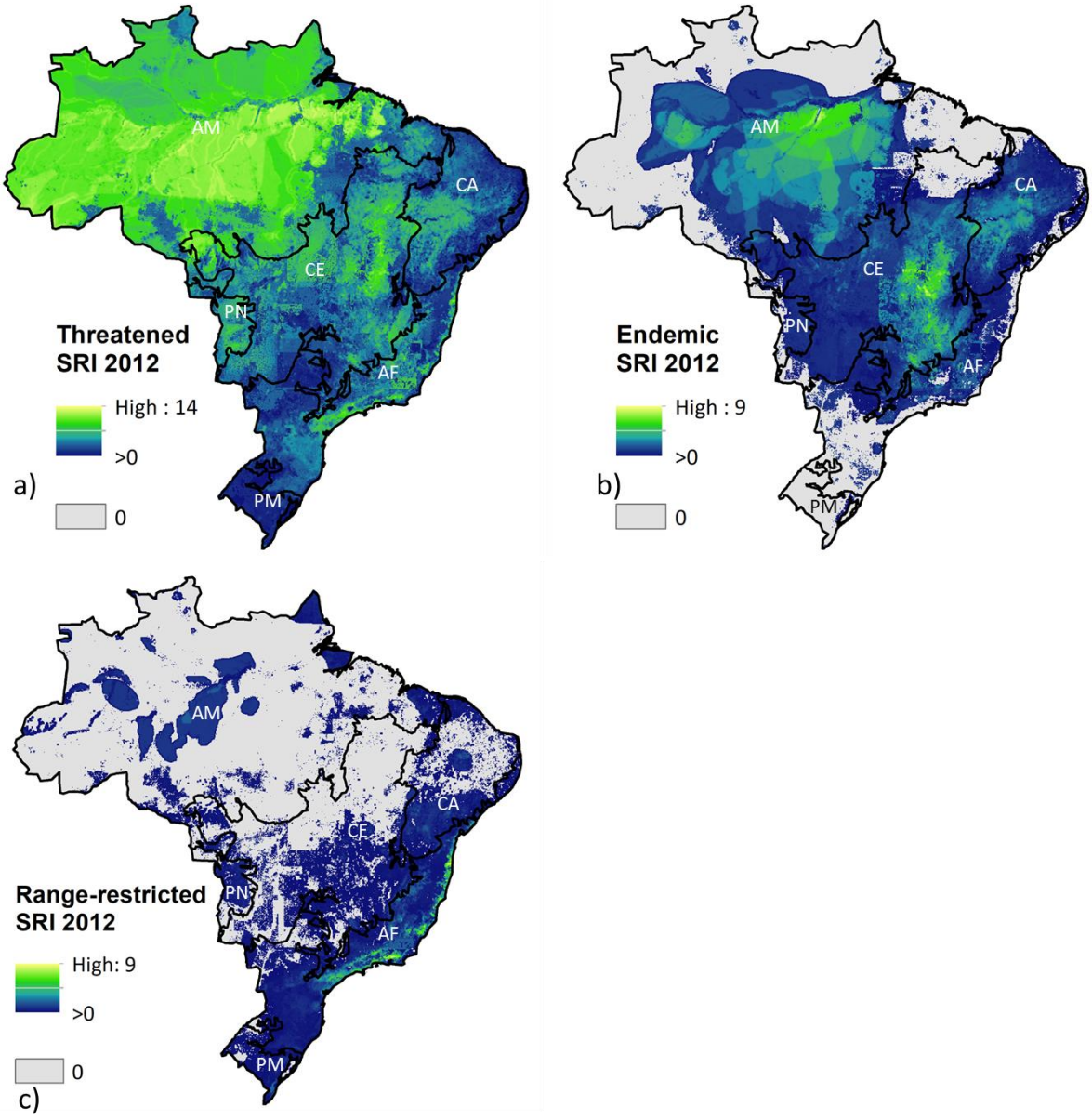

Figure S3. Species richness index in 2012 for threatened (a), endemic (b) and range-restricted (c) species in Brazil. Black lines show biome boundaries, abbreviations show biome names; AM = Amazon, CA = Caatinga, CE = Cerrado, PN = Pantanal, AF = Atlantic Forest, PM = Pampas.

Supplementary Materials: Land-use change resulting in changes in species richness index

The projected changes in land use are translated into changes in species richness index. Figure S4 show the range and mean total SRI value per ecoregion and per land-use type for grassland, cropland and sugarcane. Table S5 and 6 provide summary statistics of the type of aggregated land-

use transitions and their combined species richness changes. Table S5 shows the added SRI losses of all land-use transitions that consist of loss of forest, loss of shrubland, loss of grassland, and all remaining land-use transitions. It also provides the percentage in total SRI losses that each land-use transition categories represents. Table S6 shows the same information, but for transitions into sugarcane, cropland, grassland and other land-use types. Table S7 provides the average SRI change per land-use transition per ecoregion between 2012 and 2030 (in the reference scenario). Table S8 provides the same information for differences in land-use in 2030 between the reference and the ethanol scenario.

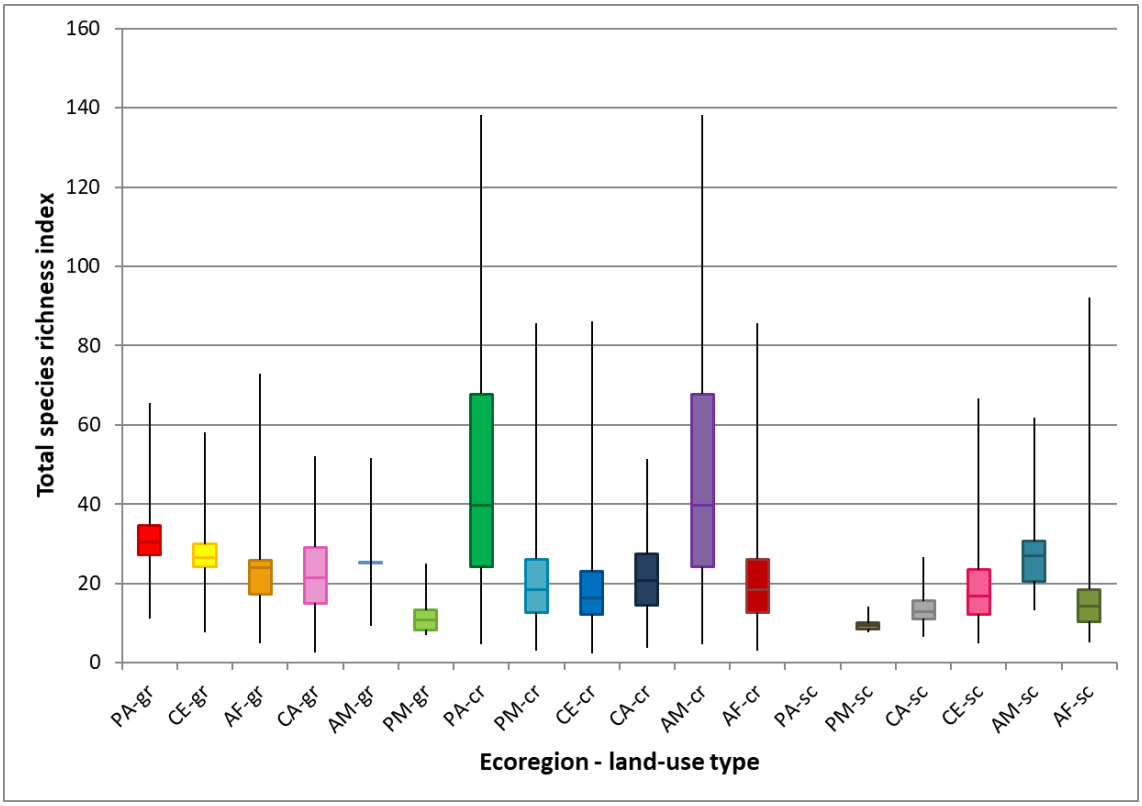

Figure S4. Species richness index (SRI) per ecoregion and land-use type in Brazil for 2012. The ecoregions are described in the figure as follows; PA = Pantanal, CE = Cerrado, AF = Atlantic Forest, CA = Caatinga, AM = Amazon, PM = Pampas. The land-use types are described in the Figure as follows; gr = grassland, cr = cropland, sc = sugarcane. Boxplots show median values (middle horizontal bar) and first (upper limit) and third quartile (lower limit) values, while vertical lines indicate maximum and minimum values.

Table S5. Summary of the area of difference in land use between the ethanol and the reference scenario and the total SRI losses represented by each category.

Loss of:	Area (km2)	% area	Total SRI loss	% SRI loss
Forest	8,450	16.1	-4689.4	27.3
Shrubs	19,800	37.8	-6312.3	36.8
Grass	10,900	20.8	-2660.2	15.5
Other	13,225	25.3	-3493.9	20.4
Total	52,375	100.0	-17155.8	100.0

Table S6. Summary of the area of difference in land use between the ethanol and the reference scenario and the total SRI losses represented by each category.

Gains of:	Area (km2)	% area	Total SRI loss	% SRI loss
Sugarcane	20,100	38.4	−3950.0	23.0
Crops	17,575	33.6	−6081.3	35.4
Grass	2,800	5.3	−2358.3	13.7
Other	11,900	22.7	−4766.2	27.8
Total	52,375	100.0	−17155.8	100.0

Table S7. Area (in km²) per land-use transition, provided as land use in 2012 and land use in 2030 for the reference scenario, average change in species richness index (SRI) and standard deviation (st. d.) of species richness index.

Biome	Land-use 2012	Land use reference 2030	Area (km²)	Average ΔSRI	St. d.
Amazon	forest	grass	30,200	−66.2	28.6
	forest	bare soil	25	−45.0	0.0
	shrubs	grass	12,250	−19.2	16.3
	forest	cropland	19,425	−15.5	18.6
	cropland	grass	250	−8.8	9.7
	grass	bare soil	925	−6.0	6.3
	shrubs	forest	325	−5.1	7.9
	shrubs	cropland	4,125	−3.3	14.9
	grass	forest	275	−1.0	5.6
	sugarcane	grass	325	0.9	11.5
	sugarcane	bare soil	25	3.5	0.0
	cropland	forest	25	3.6	0.0
	grass	cropland	1,925	4.4	11.0
	bare soil	grass	2,925	4.7	2.8
	grass	sugarcane	75	6.7	8.5
	sugarcane	cropland	100	14.7	39.1
	bare soil	cropland	24,075	14.7	30.7
Caatinga	forest	bare soil	1,925	−7.4	9.9
	shrubs	cropland	12,575	−4.7	5.9
	grass	bare soil	1,725	−4.2	9.1
	bare soil	grass	650	−4.1	5.4
	shrubs	grass	675	−4.0	5.7
	forest	cropland	9,100	−3.4	8.4
	grass	forest	125	−1.8	2.6
	grass	cropland	1,250	−1.1	6.4
	cropland	grass	25	−0.8	0.0
	bare soil	cropland	15,325	−0.4	9.6
	shrubs	forest	7,000	0.7	5.9
	forest	grass	350	2.9	7.7
	sugarcane	cropland	175	3.5	3.3
	sugarcane	bare soil	725	5.1	6.2
	cropland	forest	3,475	8.9	7.4
	bare soil	forest	125	19.5	8.3
Cerrado	grass	sugarcane	425	−10.8	3.7

	forest	bare soil	150	−8.7	17.2
	forest	sugarcane	250	−8.1	15.2
	bare soil	forest	350	−5.9	12.1
	grass	bare soil	2,275	−4.8	10.9
	forest	cropland	31,175	−4.7	11.0
	grass	forest	825	−3.5	10.9
	bare soil	cropland	35,925	−3.4	10.8
	shrubs	sugarcane	400	−2.3	4.1
	shrubs	cropland	39,925	−1.9	8.3
	grass	cropland	53,450	−1.8	9.8
	shrubs	forest	6,025	−0.3	8.4
	sugarcane	cropland	2,425	0.0	4.5
	forest	grass	8,175	1.9	12.6
	sugarcane	bare soil	1,050	2.4	9.0
	bare soil	grass	1,200	3.6	5.3
	bare soil	sugarcane	150	6.6	10.7
	shrubs	grass	12,400	8.2	8.8
	cropland	forest	225	8.5	13.2
	sugarcane	grass	575	15.6	6.2
	cropland	grass	1,025	17.5	4.7
	cropland	sugarcane	11,000	42.0	0.7
	forest	bare soil	700	−20.3	18.4
	forest	cropland	350	−7.6	10.5
	grass	cropland	10,475	−7.5	16.5
	forest	grass	5,675	−6.4	16.3
	bare soil	sugarcane	500	−6.4	5.3
	grass	bare soil	7,925	−5.2	18.1
	shrubs	cropland	500	−4.6	6.2
	grass	sugarcane	975	−3.7	4.8
	shrubs	sugarcane	1,075	−1.4	4.6
	shrubs	forest	1,300	−0.6	9.2
	sugarcane	cropland	3,775	−0.5	5.0
Atlantic Forest	forest	sugarcane	150	0.3	5.3
	sugarcane	forest	50	0.4	0.2
	bare soil	cropland	12,250	2.3	16.2
	bare soil	grass	1,250	2.6	11.4
	sugarcane	bare soil	7,325	3.7	9.1
	bare soil	forest	150	4.7	11.2
	sugarcane	grass	1,200	5.7	9.2
	shrubs	grass	8,325	7.6	15.9
	cropland	grass	2,550	8.5	11.1
	grass	forest	725	11.1	10.9
	cropland	forest	225	12.3	10.6
	cropland	sugarcane	4,525	21.1	2.7
	grass	bare soil	300	−16.4	6.8
Pantanal	forest	grass	350	−10.2	13.2
	shrubs	grass	200	−5.2	8.4

	forest	cropland	6,700	−3.1	8.7
	shrubs	cropland	10,075	−0.7	7.8
	grass	cropland	29,500	0.5	8.3
	bare soil	cropland	10,825	10.1	7.5
	forest	bare soil	125	−9.3	6.4
	grass	cropland	100	−5.2	1.4
	cropland	grass	50	−2.7	1.6
	grass	bare soil	575	−0.5	6.8
	forest	grass	375	−0.2	1.6
	sugarcane	cropland	300	−0.1	2.9
Pampas	grass	forest	1,800	0.3	5.2
	cropland	forest	125	1.4	2.8
	bare soil	cropland	7,625	1.6	5.2
	shrubs	forest	1,500	1.9	5.1
	shrubs	grass	1,275	3.6	5.3
	bare soil	grass	175	7.2	4.3
	bare soil	forest	100	17.3	1.7

Table S8. Area (in km²) per land-use transition, provided as land use in 2030 for the reference scenario and for the ethanol scenario, average change in species richness index (SRI) and standard deviation (st. d.) of species richness index.

Biome	**Land-use reference 2030**	**Land-use ethanol 2030**	**Area (km²)**	**Average ΔSRI**	**St. d.**
	forest	grass	575	−59.1	22.4
	crop	sugarcane	200	−31.3	39.7
	shrubs	grass	625	−16.0	10.4
	forest	crops	1,775	−14.1	15.7
	shrubs	crops	175	−5.2	11.7
	grass	crops	200	−2.8	11.4
Amazon	crop	shrubs	150	−2.1	5.8
	forest	shrubs	25	6.1	0.0
	grass	shrubs	350	6.1	19.5
	crop	grass	175	12.7	2.0
	crop	forest	1,100	16.8	13.8
	bare soil	crops	950	35.2	17.2
	grass	forest	1,550	47.7	23.0
	forest	grass	225	−28.0	4.8
	grass	shrubs	1,150	−18.7	24.9
	forest	bare soil	50	−9.0	14.6
	crop	bare soil	1,375	−7.9	14.6
	grass	bare soil	1,850	−6.2	14.0
Atlantic Forest	grass	crops	2,400	−4.6	15.6
	bare soil	sugarcane	3,175	−4.6	9.4
	forest	sugarcane	750	−4.2	5.5
	bare soil	grass	400	−3.8	22.6
	forest	crops	25	−3.4	0.0

	grass	sugarcane	1,900	−2.0	3.5
	shrubs	sugarcane	4,700	−1.6	6.0
	shrubs	forest	50	−0.9	1.1
	bare soil	crops	475	1.2	7.6
	forest	shrubs	325	1.4	8.7
	crop	sugarcane	6,200	1.9	4.6
	sugarcane	shrubs	100	2.6	1.2
	crop	shrubs	325	4.0	5.9
	sugarcane	crops	75	4.9	5.0
	grass	forest	700	5.8	12.1
	sugarcane	bare soil	100	8.5	4.2
	crop	forest	275	8.6	11.1
	bare soil	forest	500	20.2	17.1
	crop	grass	275	20.5	24.5
	shrubs	grass	450	21.2	26.6
	bare soil	sugarcane	200	−9.3	4.4
	forest	bare soil	275	−8.4	11.2
	bare soil	grass	150	−6.6	2.3
	shrubs	grass	75	−3.3	2.3
	grass	forest	125	−2.4	3.0
	grass	crops	275	−2.1	3.6
	grass	bare soil	375	−2.0	9.1
	forest	crops	825	−2.0	7.8
	bare soil	crops	100	−1.4	8.2
Caatinga	shrubs	crops	1,225	−0.4	6.8
	shrubs	forest	75	−0.2	0.6
	crop	forest	600	−0.2	8.8
	crop	bare soil	1,075	0.1	7.9
	crop	shrubs	200	0.2	3.9
	forest	shrubs	775	0.3	5.9
	forest	grass	75	0.3	2.0
	grass	shrubs	125	5.8	7.2
	crop	sugarcane	25	9.8	0.0
	bare soil	forest	100	18.8	1.9
	forest	bare soil	75	−19.2	4.8
	grass	bare soil	1,000	−12.9	6.3
	forest	crops	2,750	−6.9	10.1
	crop	bare soil	225	−6.6	8.7
	grass	shrubs	850	−6.3	7.6
	shrubs	crops	3,625	−3.9	8.4
Cerrado	grass	crops	2,975	−2.8	9.6
	grass	forest	475	−2.6	10.5
	forest	sugarcane	775	−1.6	6.9
	grass	sugarcane	475	−0.8	11.2
	sugarcane	bare soil	50	−0.8	9.4
	shrubs	forest	50	−0.6	0.1
	shrubs	sugarcane	3,150	−0.4	7.8

	bare soil	sugarcane	675	−0.1	8.4
	crop	sugarcane	13,400	0.2	5.4
	crop	shrubs	2,550	0.8	6.5
	forest	shrubs	700	0.9	5.2
	sugarcane	shrubs	25	2.1	0.0
	crop	forest	1,550	3.8	8.6
	crop	grass	375	4.1	8.3
	bare soil	crops	375	5.3	9.4
	shrubs	grass	175	6.1	6.3
	forest	grass	100	6.6	3.9
	bare soil	grass	50	7.3	1.1
	bare soil	forest	100	14.0	18.9
	sugarcane	forest	25	51.1	0.0
	bare soil	crops	325	-5.3	8.7
	grass	bare soil	475	-3.8	6.1
	grass	crops	75	-3.1	3.3
	crop	forest	25	-2.5	0.0
	grass	shrubs	550	-2.1	5.1
	forest	grass	575	-0.8	2.7
Pampas	crop	sugarcane	25	0.5	0.0
	shrubs	forest	25	0.7	0.0
	shrubs	grass	100	0.9	1.9
	grass	forest	125	2.3	4.9
	bare soil	grass	50	3.1	5.5
	forest	shrubs	75	3.3	2.6
	bare soil	forest	125	9.3	6.4
	grass	bare soil	525	-9.5	3.9
	crop	sugarcane	25	-8.8	0.0
	forest	crops	1,425	-5.0	8.1
	shrubs	crops	2,300	-2.8	5.4
	grass	shrubs	25	-0.1	0.0
	crop	bare soil	50	0.4	5.6
Pantanal	crop	grass	450	0.7	10.7
	crop	forest	375	1.0	8.2
	grass	crops	6,450	1.2	7.4
	crop	shrubs	350	1.6	5.7
	bare soil	crops	200	9.6	5.4
	bare soil	grass	75	17.1	6.4

Supplementary Materials: Species list

We selected all mammal species whose potential habitat overlapped partly or entirely with Brazil, this was the case for 610 species. Threatened mammal species were defined as Critically Endangered, Endangered or Vulnerable in the IUCN Red List of Threatened Species (IUCN, 2019) or the Brazilian National List of Threatened Fauna Species (Lista Nacional Ofical de Espécies da Fauna Ameaçadas de Extinção (ICMBio, 2014)). Endemic species were defined as having 100% of potential habitat within Brazil, in line with previous research (Jenkins et al., 2015). Restricted range species were identified as species whose total area of potential habitat was smaller or equal to 50,000 km^2, in

accordance to earlier studies (EKEN et al., 2004; Rodrigues et al., 2004; Stattersfield, Crosby, Long, & Wege, 1998). All species included in the analysis are listed in Table S9.

Table S9. Species name, reference model number, and their status as threatened, endemic or range-restricted.

Model number	Species name	Threatened	Endemic	Range-restricted
16	*Abrawayaomys ruschii*			x
699	*Cuniculus paca*			
726	*Akodon azarae*			
730	*Akodon cursor*			
738	*Deltamys kempi*			x
742	*Akodon lindberghi*		x	x
750	*Thaptomys nigrita*			
755	*Akodon sanctipaulensis*		x	x
756	*Akodon serrensis*			
765	*Necromys urichi*			
918	*Alouatta ululata*	x		x
922	*Alouatta juara*			
1137	*Ametrida centurio*			
1565	*Anoura caudifer*			
1568	*Anoura latidens*			
2055	*Arctocephalus australis*			
2121	*Artibeus amplus*			
2122	*Artibeus anderseni*			
2124	*Artibeus cinereus*			
2125	*Artibeus concolor*			
2126	*Artibeus fimbriatus*			
2128	*Artibeus glaucus*			
2129	*Artibeus gnomus*			
2130	*Enchisthenes hartii*			
2137	*Artibeus obscurus*			
2138	*Artibeus phaeotis*			
2139	*Artibeus planirostris*			
2276	*Ateles belzebuth*	x		
2282	*Ateles marginatus*	x	x	
2283	*Ateles paniscus*	x		
2610	*Bassaricyon beddardi*			
2802	*Bibimys labiosus*			
2827	*Blarinomys breviceps*			
2828	*Blastocerus dichotomus*	x		
2859	*Necromys lasiurus*			
2993	*Brachyteles arachnoides*	x		x
2994	*Brachyteles hypoxanthus*	x		x
3036	*Bradypus torquatus*	x		x
3037	*Bradypus tridactylus*			
3038	*Bradypus variegatus*			
3414	*Cabassous tatouay*			
3415	*Cabassous unicinctus*			
3416	*Cacajao calvus*	x		x
3417	*Cacajao melanocephalus*			
3549	*Callicebus dubius*			
3555	*Callicebus personatus*	x		x

3564	*Callimico goeldii*	x		
3570	*Callithrix aurita*	x		x
3571	*Callithrix flaviceps*	x	x	x
3572	*Callithrix geoffroyi*			x
3575	*Callithrix kuhlii*			x
3611	*Calomys callosus*			
3612	*Calomys hummelincki*			
3613	*Calomys laucha*			
3617	*Calomys tener*			
3648	*Caluromys lanatus*			
3649	*Caluromys philander*			
3651	*Caluromysiops irrupta*	x		
3903	*Carollia brevicauda*			
3904	*Carollia castanea*			
3905	*Carollia perspicillata*			
3921	*Carterodon sulcidens*		x	
4064	*Cavia aperea*			
4065	*Cavia fulgida*			
4066	*Cavia magna*			x
4074	*Cebus xanthosternos*	x		x
4112	*Centronycteris maximiliani*			
4248	*Cerdocyon thous*			
4366	*Chaetomys subspinosus*	x		x
4368	*Chaetophractus vellerosus*			
4369	*Chaetophractus villosus*			
4664	*Chiroderma doriae*			
4666	*Chiroderma salvini*			
4667	*Chiroderma trinitatum*			
4668	*Chiroderma villosum*			
4671	*Chironectes minimus*			
4685	*Chiropotes albinasus*	x		
4772	*Choeroniscus godmani*			
4774	*Choeroniscus minor*			
4777	*Choloepus didactylus*			
4778	*Choloepus hoffmanni*			
4811	*Chrotopterus auritus*			
4819	*Chrysocyon brachyurus*	x		
4988	*Clyomys bishopi*			
4989	*Clyomys laticeps*			
5083	*Coendou bicolor*			
5084	*Coendou nycthemera*			
5085	*Coendou prehensilis*			
5798	*Ctenomys boliviensis*			x
5800	*Ctenomys brasiliensis*			
5815	*Ctenomys minutus*	x		x
5820	*Ctenomys perrensi*			x
5829	*Ctenomys torquatus*			
6019	*Cyclopes didactylus*			
6206	*Cyttarops alecto*			
6220	*Dactylomys boliviensis*			
6221	*Dactylomys dactylinus*			
6277	*Dasyprocta punctata*			

6278	*Dasyprocta azarae*			
6280	*Dasyprocta cristata*			
6281	*Dasyprocta fuliginosa*			
6284	*Dasyprocta leporina*			
6286	*Dasyprocta prymnolopha*			
6288	*Dasypus hybridus*			
6289	*Dasypus kappleri*			
6293	*Dasypus septemcinctus*			
6329	*Delomys dorsalis*			
6330	*Delomys sublineatus*			x
6520	*Diaemus youngi*			
6561	*Diclidurus albus*			
6562	*Diclidurus ingens*			
6563	*Diclidurus isabellus*			
6564	*Diclidurus scutatus*			
6608	*Dinomys branickii*	x		
6924	*Atelocynus microtis*	x		
6926	*Pseudalopex vetulus*	x	x	
6928	*Pseudalopex gymnocercus*			
6977	*Phyllomys blainvillii*		x	x
6978	*Phyllomys brasiliensis*	x	x	x
6979	*Echimys chrysurus*			
6980	*Phyllomys dasythrix*			x
6981	*Toromys grandis*			
6982	*Phyllomys lamarum*			x
6983	*Makalata macrura*			
6984	*Phyllomys nigrispinus*			x
6985	*Callistomys pictus*	x		x
6989	*Phyllomys thomasi*	x		x
6990	*Phyllomys unicolor*	x	x	x
7916	*Eptesicus brasiliensis*			
7922	*Eptesicus diminutus*			
7928	*Eptesicus fuscus*			
8241	*Eumops auripendulus*			
8242	*Eumops bonariensis*			
8243	*Eumops dabbenei*			
8244	*Eumops glaucinus*			
8245	*Eumops hansae*			
8246	*Eumops maurus*			
8306	*Euphractus sexcinctus*			
8418	*Euryzygomatomys spinosus*			
8771	*Furipterus horrens*	x		
8823	*Galea flavidens*		x	
8825	*Galea spixii*			
9245	*Glironia venusta*			
9273	*Glossophaga commissarisi*			
9275	*Glossophaga longirostris*			
9417	*Gracilinanus agilis*			
9419	*Gracilinanus emiliae*			
9421	*Gracilinanus microtarsus*			
9422	*Hyladelphys kalinowskii*			
9467	*Graomys griseoflavus*			

10200	*Histiotus alienus*		x	x
10202	*Histiotus montanus*			
10203	*Histiotus velatus*			
10217	*Holochilus brasiliensis*			
10219	*Lundomys molitor*			x
10220	*Holochilus sciureus*			
10300	*Hydrochoerus hydrochaeris*			
10831	*Inia geoffrensis*	x		
10878	*Isothrix bistriata*			
10879	*Isothrix pagurus*		x	
10957	*Kannabateomys amblyonyx*			
10988	*Kerodon rupestris*	x		
11061	*Kunsia tomentosus*			x
11170	*Lagostomus maximus*			
11175	*Lagothrix lagotricha*	x		
11349	*Lasiurus ebenus*		x	x
11351	*Lasiurus egregius*			
11503	*Leontopithecus caissara*	x		x
11505	*Leontopithecus chrysopygus*	x	x	x
11506	*Leontopithecus rosalia*	x		x
11509	*Leopardus pardalis*			
11510	*Leopardus tigrinus*	x		
11966	*Lichonycteris obscura*			
12078	*Lionycteris spurrelli*			
12263	*Lonchophylla bokermanni*			
12264	*Lonchophylla dekeyseri*	x	x	x
12267	*Lonchophylla mordax*			
12269	*Lonchophylla thomasi*			
12270	*Lonchorhina aurita*	x		
12272	*Lonchorhina marinkellei*	x		
12273	*Lonchorhina orinocensis*	x		
12274	*Lonchothrix emiliae*		x	
12615	*Macrophyllum macrophyllum*			
12814	*Marmosa lepida*			
12822	*Marmosops incanus*			
12824	*Marmosops parvidens*			
13233	*Makalata didelphoides*			
13234	*Mesomys hispidus*			
13237	*Mesomys stimulax*			
13240	*Mesophylla macconnelli*			
13297	*Micoureus constantiae*			
13375	*Glyphonycteris behnii*	x		
13376	*Lampronycteris brachyotis*			
13377	*Glyphonycteris daviesi*			
13378	*Micronycteris hirsuta*			
13379	*Micronycteris megalotis*			
13380	*Micronycteris minuta*			
13381	*Trinycteris nicefori*			
13382	*Neonycteris pusilla*	x		x
13383	*Micronycteris schmidtorum*			
13384	*Glyphonycteris sylvestris*			
13410	*Microsciurus flaviventer*			

13559	*Mimon bennettii*			
13560	*Mimon crenulatum*			
13637	*Cynomops abrasus*			
13639	*Cynomops greenhalli*			
13640	*Molossops mattogrossensis*			x
13641	*Molossops neglectus*			
13642	*Cynomops planirostris*			
13643	*Molossops temminckii*			
13646	*Molossus currentium*			
13647	*Molossus coibensis*			
13649	*Molossus pretiosus*			
13692	*Monodelphis americana*			
13693	*Monodelphis dimidiata*			
13694	*Monodelphis emiliae*			
13695	*Monodelphis iheringi*			
13696	*Monodelphis kunsi*			
13697	*Monodelphis maraxina*			x
13699	*Monodelphis rubida*		x	
13700	*Monodelphis scalops*			
13701	*Monodelphis sorex*			
13702	*Monodelphis theresa*			x
13703	*Monodelphis unistriata*			x
14025	*Mustela africana*			
14085	*Myocastor coypus*			
14100	*Myoprocta acouchy*			
14140	*Myotis albescens*			
14170	*Myotis keaysi*			
14174	*Myotis levis*			
14185	*Myotis nigricans*			
14187	*Myotis oxyotus*			
14195	*Myotis riparius*			
14197	*Myotis ruber*			
14204	*Myotis simus*			
14224	*Myrmecophaga tridactyla*	x		
14386	*Neacomys guianae*			
14388	*Neacomys spinosus*			
14474	*Nectomys rattus*			
14475	*Nectomys squamipes*			
14742	*Neusticomys oyapocki*			x
14829	*Noctilio albiventris*			
15131	*Oecomys bicolor*			
15132	*Oecomys cleberi*		x	x
15133	*Oecomys concolor*			
15135	*Oecomys mamorae*			
15136	*Oecomys paricola*			
15138	*Oecomys rex*			
15139	*Oecomys roberti*			
15140	*Oecomys rutilus*			
15141	*Oecomys speciosus*			
15142	*Oecomys superans*			
15143	*Oecomys trinitatis*			
15243	*Oligoryzomys chacoensis*			

15244	*Oligoryzomys delticola*			
15246	*Oligoryzomys eliurus*			
15247	*Oligoryzomys flavescens*			
15248	*Oligoryzomys fulvescens*			
15252	*Oligoryzomys microtis*			
15253	*Oligoryzomys nigripes*			
15309	*Leopardus colocolo*	x		
15310	*Leopardus geoffroyi*	x		
15602	*Euryoryzomys lamia*	x	x	x
15605	*Euryoryzomys macconnelli*			
15607	*Euryoryzomys nitidus*			
15608	*Hylaeamys oniscus*	x		x
15614	*Cerradomys subflavus*			x
15617	*Hylaeamys yunganus*			
15783	*Oxymycterus angularis*			
15784	*Oxymycterus delator*			x
15785	*Oxymycterus hispidus*			
15787	*Brucepattersonius iheringi*			
15788	*Oxymycterus inca*			
15789	*Oxymycterus nasutus*			x
15791	*Oxymycterus roberti*		x	x
15792	*Oxymycterus rufus*			
15803	*Ozotoceros bezoarticus*	x		
16707	*Peropteryx kappleri*			
16708	*Peropteryx leucoptera*			
16709	*Peropteryx macrotis*			
16799	*Phaenomys ferrugineus*	x		x
17168	*Phylloderma stenops*			
17216	*Phyllostomus discolor*			
17217	*Phyllostomus elongatus*			
17218	*Phyllostomus hastatus*			
17219	*Phyllostomus latifolius*			
17565	*Platyrrhinus lineatus*			
17566	*Platyrrhinus aurarius*			
17567	*Platyrrhinus brachycephalus*			
17570	*Platyrrhinus helleri*			
17571	*Platyrrhinus infuscus*			
17572	*Platyrrhinus recifinus*			
17831	*Podoxymys roraimae*	x		x
17978	*Pontoporia blainvillei*	x		x
18144	*Priodontes maximus*	x		
18272	*Trinomys albispinus*			x
18275	*Proechimys brevicauda*			
18277	*Proechimys guyannensis*			
18279	*Proechimys cuvieri*			
18281	*Trinomys dimidiatus*			x
18282	*Proechimys goeldii*			
18287	*Proechimys hoplomyoides*			
18288	*Trinomys iheringi*			
18289	*Proechimys longicaudatus*			
18292	*Trinomys myosuros*			
18294	*Proechimys roberti*			

18296	*Proechimys quadruplicatus*			
18298	*Trinomys setosus*		x	x
18299	*Proechimys simonsi*			
18300	*Proechimys steerei*			
18340	*Promops centralis*			
18341	*Promops nasutus*			
18598	*Pseudoryzomys simplex*			
18705	*Pteronotus davyi*			
18706	*Pteronotus gymnonotus*			
18708	*Pteronotus parnellii*			
18709	*Pteronotus personatus*			
18711	*Pteronura brasiliensis*	x		
18945	*Pygoderma bilabiatum*			
19454	*Rhagomys rufescens*			x
19592	*Rhinophylla fischerae*			
19593	*Rhinophylla pumilio*			
19610	*Rhipidomys leucodactylus*			
19611	*Rhipidomys macconnelli*			
19612	*Rhipidomys mastacalis*			
19613	*Rhipidomys nitela*			
19618	*Rhipidomys wetzeli*			x
19714	*Rhynchonycteris naso*			
19804	*Saccopteryx bilineata*			
19805	*Saccopteryx canescens*			
19806	*Saccopteryx gymnura*			
19807	*Saccopteryx leptura*			
19839	*Saimiri vanzolinii*	x	x	x
19945	*Scapteromys tumidus*			
19997	*Sciurillus pusillus*			
20003	*Sciurus aestuans*			
20009	*Sciurus gilvigularis*			
20012	*Sciurus ignitus*			
20013	*Sciurus igniventris*			
20018	*Sciurus pucheranii*			
20022	*Sciurus spadiceus*			
20033	*Scleronycteris ega*			
20037	*Scolomys ucayalensis*			x
20210	*Sigmodon alstoni*			
20468	*Speothos venaticus*	x		
20599	*Sphaeronycteris toxophyllum*			
20630	*Sphiggurus spinosus*			
20631	*Sphiggurus insidiosus*			
20634	*Sphiggurus villosus*			
20954	*Sturnira ludovici*			
20956	*Sturnira magna*			
20960	*Sturnira tildae*			
21350	*Tamandua tetradactyla*			
21474	*Tapirus terrestris*	x		
21694	*Thalpomys cerradensis*	x	x	
21695	*Thalpomys lasiotis*	x	x	
21839	*Thrichomys apereoides*			
21867	*Thylamys macrurus*	x		x

21877	*Thyroptera discifera*			
21878	*Thyroptera lavali*			x
21879	*Thyroptera tricolor*			
21974	*Tolypeutes matacus*			
21975	*Tolypeutes tricinctus*	x		
21983	*Tonatia bidens*			
21984	*Lophostoma brasiliense*			
21985	*Lophostoma carrikeri*			
21987	*Lophostoma schulzi*			
21988	*Lophostoma silvicolum*			
22029	*Trachops cirrhosus*			
22102	*Trichechus inunguis*	x		
22782	*Uroderma bilobatum*			
22783	*Uroderma magnirostrum*			
22837	*Vampyressa bidens*			
22838	*Vampyressa brocki*			
22841	*Vampyressa pusilla*			
22842	*Vampyrodes caraccioli*			
22843	*Vampyrum spectrum*			
23076	*Wiedomys pyrrhorhinos*			
23077	*Wilfredomys oenax*	x		x
23078	*Juliomys pictipes*			
23321	*Zygodontomys brevicauda*			
29402	*Euryoryzomys emmonsae*		x	
29403	*Hylaeamys megacephalus*			
29404	*Hylaeamys laticeps*			x
29405	*Euryoryzomys russatus*			
29418	*Oligoryzomys stramineus*			
29463	*Proechimys echinothrix*		x	
29464	*Proechimys kulinae*			
29465	*Proechimys pattoni*			
29466	*Proechimys gardneri*			
29606	*Histiotus humboldti*			
29607	*Lasiurus atratus*			
29619	*Mazama americana*			
29620	*Mazama gouazoubira*			
29621	*Mazama nana*	x		
39910	*Mico chrysoleucus*		x	x
39911	*Mico intermedius*		x	
39912	*Mico leucippe*	x	x	x
39913	*Mico nigriceps*		x	x
39914	*Mico marcai*		x	x
39916	*Alouatta guariba*	x		
39925	*Lagothrix cana*	x		
39927	*Lagothrix poeppigii*	x		
39929	*Callicebus barbarabrownae*	x	x	x
39930	*Callicebus melanochir*	x		x
39943	*Callicebus nigrifrons*			
39945	*Saguinus nigricollis*			
39947	*Saguinus fuscicollis*			
39948	*Saguinus imperator*			
39949	*Cebus apella*			

39950	*Cebus albifrons*			
39954	*Callicebus coimbrai*	x		x
39956	*Chiropotes satanas*	x		
39957	*Alouatta belzebul*	x		
39985	*			
40019	*Cebus kaapori*	x		
40021	*Cebus olivaceus*			
40027	*Lonchorhina inusitata*			
40028	*Micronycteris brosseti*			
40029	*Micronycteris sanborni*		x	x
40489	*Didelphis albiventris*			
40500	*Didelphis aurita*			
40501	*Didelphis marsupialis*			
40503	*Lutreolina crassicaudata*			
40505	*Marmosa murina*			
40508	*Marmosops noctivagus*			
40509	*Metachirus nudicaudatus*			
40510	*Micoureus demerarae*			
40511	*Micoureus regina*			
40513	*Monodelphis brevicaudata*			
40514	*Monodelphis domestica*			
40515	*Philander andersoni*			
40516	*Philander opossum*			
40520	*Thylamys velutinus*	x	x	
40642	*Alouatta macconnelli*			
40643	*Leontopithecus chrysomelas*	x		x
40644	*Saguinus bicolor*	x	x	x
41023	*Mazama bororo*	x		
41298	*Sylvilagus brasiliensis*			
41518	*Callithrix jacchus*			
41519	*Callithrix penicillata*		x	
41520	*Mico argentatus*		x	
41521	*Mico humeralifer*		x	
41523	*Saguinus inustus*			
41524	*Saguinus labiatus*			
41525	*Saguinus midas*			
41526	*Saguinus mystax*			
41527	*Cormura brevirostris*			
41530	*Tonatia saurophila*			
41535	*Cebuella pygmaea*			
41536	*Saimiri boliviensis*			
41537	*Saimiri sciureus*			
41538	*Saimiri ustus*			
41539	*Aotus azarae*			
41540	*Aotus nancymaae*			
41542	*Aotus nigriceps*			
41543	*Aotus trivirgatus*			
41544	*Aotus vociferans*			
41545	*Alouatta caraya*			
41546	*Alouatta sara*			
41547	*Ateles chamek*	x		
41548	*Callicebus donacophilus*			

41549	*Callicebus pallescens*			
41551	*Callicebus cupreus*			
41552	*Callicebus caligatus*		x	
41555	*Callicebus stephennashi*		x	x
41556	*Callicebus moloch*		x	
41557	*Callicebus cinerascens*		x	
41558	*Callicebus brunneus*			
41559	*Callicebus hoffmannsi*		x	
41560	*Callicebus baptista*		x	x
41561	*Callicebus bernhardi*		x	
41562	*Callicebus torquatus*			
41563	*Callicebus lugens*			
41564	*Callicebus lucifer*			
41565	*Callicebus purinus*		x	
41566	*Callicebus regulus*			
41567	*Pithecia albicans*	x	x	
41568	*Pithecia irrorata*			
41569	*Pithecia pithecia*			
41580	*Mico acariensis*		x	x
41582	*Mico manicorensis*		x	x
41583	*Mico mauesi*		x	x
41584	*Callibella humilis*	x	x	x
41630	*Conepatus chinga*			
41633	*Conepatus semistriatus*			
41639	*Galictis cuja*			
41640	*Galictis vittata*			
41665	*Otaria byronia*			
41678	*Bassaricyon alleni*			
41679	*Potos flavus*			
41684	*Nasua nasua*			
41685	*Procyon cancrivorus*			
41778	*Tayassu pecari*	x		
42691	*Mico emiliae*		x	
42692	*Mico saterei*		x	x
42694	*Saguinus niger*	x		
42695	*Saguinus martinsi*		x	x
42696	*Cebus macrocephalus*			
42697	*Cebus robustus*	x		x
43891	*Chiropotes chiropotes*			
43892	*Chiropotes utahickae*	x	x	
43912	*Alouatta discolor*	x	x	
43929	*Alouatta seniculus*			
135161	*Sooretamys angouya*			
135429	*Saguinus melanoleucus*			
136195	*Rhipidomys emiliae*			
136197	*Akodon montensis*			
136198	*Brucepattersonius paradisus*			x
136202	*Philander mondolfii*			
136205	*Oxymycterus amazonicus*		x	
136220	*Rhogeessa hussoni*			
136221	*Trinomys gratiosus*		x	x
136222	*Kerodon acrobata*	x	x	x

136236	*Neusticomys ferreirai*		x	x
136241	*Monodelphis umbristriata*	x	x	
136245	*Thrichomys pachyurus*			
136253	*Cebus flavius*	x		x
136260	*Akodon mystax*	x	x	x
136274	*Phyllomys mantiqueirensis*	x	x	x
136276	*Cerradomys maracajuensis*			
136278	*Marmosops paulensis*	x		x
136283	*Hylaeamys acritus*			
136284	*Mesomys occultus*		x	x
136294	*Mico melanurus*			
136296	*Marmosops bishopi*			
136305	*Trinomys mirapitanga*	x	x	x
136307	*Monodelphis glirina*			
136314	*Rhogeessa io*			
136321	*Xeronycteris vieirai*	x	x	
136332	*Alouatta nigerrima*		x	
136336	*Oligoryzomys moojeni*		x	
136338	*Delomys collinus*		x	x
136346	*Cebus libidinosus*			
136350	*Centronycteris centralis*			
136352	*Neacomys paracou*			
136355	*Thrichomys inermis*		x	
136357	*Rhipidomys cariri*	x	x	x
136358	*Oecomys catherinae*			
136366	*Cebus cay*	x		
136368	*Cerradomys scotti*			
136371	*Brucepattersonius griserufescens*		x	x
136375	*Philander frenatus*			
136400	*Phyllomys lundi*	x	x	x
136407	*Trinomys eliasi*	x		x
136414	*Trinomys yonenagae*	x	x	x
136419	*Cacajao ayresi*	x	x	x
136422	*Rhipidomys macrurus*			
136424	*Micronycteris microtis*			
136425	*Oligoryzomys rupestris*	x	x	x
136436	*Juscelinomys guaporensis*			x
136442	*Brucepattersonius soricinus*			x
136448	*Natalus espiritosantensis*	x		
136457	*Brucepattersonius misionensis*			x
136464	*Ctenomys flamarioni*	x		x
136468	*Microakodontomys transitorius*	x	x	x
136483	*Akodon paranaensis*			
136492	*Trinomys paratus*		x	x
136494	*Sturnira oporaphilum*			
136501	*Philander mcilhennyi*			
136511	*Cerradomys marinhus*		x	x
136518	*Sphiggurus roosmalenorum*			
136529	*Hylaeamys perenensis*			
136543	*Trinomys moojeni*	x	x	x
136545	*Cryptonanus agricolai*		x	
136563	*Juliomys rimofrons*	x	x	x

136567	*Ctenomys lami*	x	x	x
136570	*Neacomys minutus*			
136573	*Marmosops pinheiroi*			
136583	*Reithrodon typicus*			
136592	*Didelphis imperfecta*			
136594	*Thyroptera devivoi*			
136605	*Cynomops paranus*			
136613	*Oxymycterus quaestor*			
136624	*Oecomys auyantepui*			
136640	*Cacajao hosomi*	x		
136652	*Echimys vieirai*		x	
136653	*Thylamys karimii*	x	x	
136655	*Neacomys musseri*			
136663	*Myoprocta pratti*			
136671	*Vampyressa thyone*			
136672	*Brucepattersonius igniventris*		x	x
136679	*Calomys tocantinsi*		x	
136682	*Phyllomys kerri*			x
136689	*Calomys expulsus*		x	
136693	*Akodon reigi*			x
136704	*Phyllomys medius*			
136705	*Cryptonanus guahybae*		x	x
136708	*Mazama nemorivaga*			
136717	*Cebus nigritus*			
136725	*Oxymycterus caparoae*		x	x
136727	*Neacomys dubosti*			
136728	*Oligoryzomys fornesi*			
136738	*Sphiggurus melanurus*			
136740	*Pecari maximus*			
136745	*Wiedomys cerradensis*		x	x
136751	*Isothrix negrensis*		x	
136756	*Nectomys apicalis*			
136759	*Rhipidomys gardneri*			
136787	*Alouatta puruensis*			
136794	*		x	x
136801	*Phyllomys pattoni*			x
136804	*Mico rondoni*	x		
136809	*Eumops trumbulli*			
136813	*Oxymycterus dasytrichus*			
136825	*Eumops patagonicus*			
136830	*Marmosops neblina*			x
136842	*Marmosops ocellatus*			
136844	*Micoureus paraguayanus*			
136845	*Cryptonanus chacoensis*			

* Species codes (model number) in Table S9 link to species names on the IUCN Red List website [37]. For two species, species names were no longer accessible on the website. This could be due to the fact that phylogenetic classification of the species changed; they were for example split or merged, and their species code changed as a result. For these two species therefore, we do not have species names but have used their range data in our analysis.

Supplementary Materials: Changes in species richness between 2012 and 2030 in the reference scenario

We compared species richness index in 2012 and in 2030 between for the reference scenario to assess the species richness index impact of land-use change due to drivers other than increased ethanol demand. Here we show the difference for threatened species (A5a), endemic species (A5b) and range-restricted species (A5c).

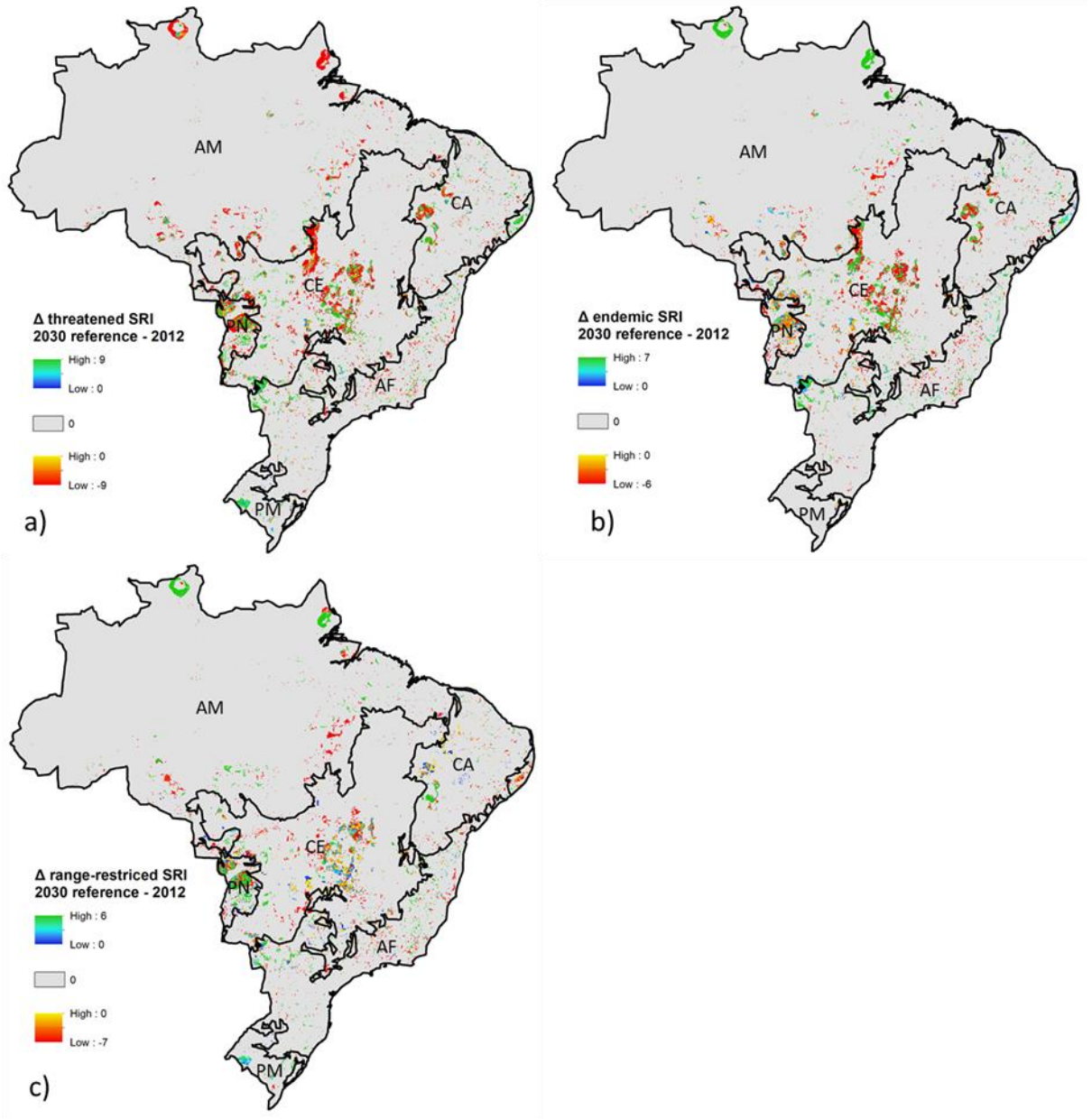

Figure S5. Difference in species richness index in 2012 and 2030 for the reference scenario for a) threatened mammal species, b) endemic mammal species, and c) range-restricted mammal species. Black lines show biome boundaries, abbreviations show biome names; AM = Amazon, CA = Caatinga, CE = Cerrado, PN = Pantanal, AF = Atlantic Forest, PM = Pampas.

Supplementary Materials: Difference in species richness index between 2030 ethanol scenario and reference

We compared species richness index in 2030 between the ethanol and the reference scenario to assess the difference in species richness index due to increased ethanol demand. Here we show the difference for threatened species (A6a), endemic species (A6b) and range-restricted species (A6c).

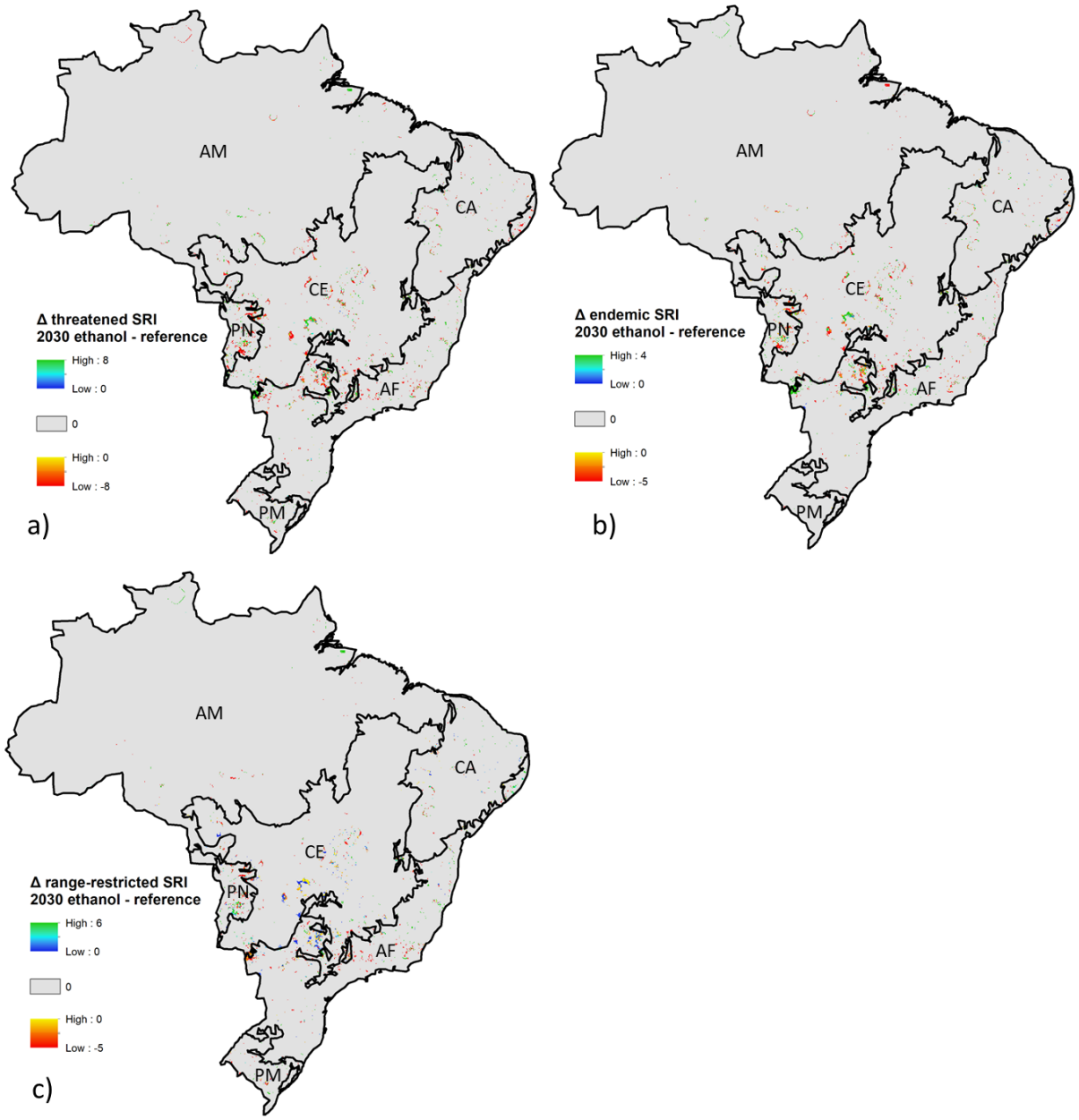

Figure S6. Difference in species richness index in 2030 between the ethanol and the reference scenario for a) threatened mammal species, b) endemic mammal species, and c) range-restricted mammal species. Black lines show biome boundaries, abbreviations show biome names; AM = Amazon, CA = Caatinga, CE = Cerrado, PN = Pantanal, AF = Atlantic Forest, PM = Pampas.

Supplementary Materials Following Verstegen et al. [54], direct land-use change (dLUC) between the ethanol and the reference scenario in 2030 was defined as a change from rangeland, planted forest, crops, planted pasture, natural forest, grass & shrubs, bare soil or abandoned land to sugarcane. Indirect land-use change (iLUC) was defined as a change from natural forest, grass & shrubs, bare soil or abandoned land to planted pasture, crops, rangeland or planted forest. Figure S7 provides a map with the locations of dLUC and iLUC. Table S10 provides the area of direct and indirect land use change per impact intensity category and per biome.

Table S10. Area (in km²) of changes in total SRI in different regions and different impact categories caused by direct (dLUC) and by indirect (iLUC) LUC.

egion	0–25%		25–50%		50–100%		> 100%		0--25%		-25--50%		-50--100%		>-100%	
	dLUC	iLUC	dLUC	iLUC	dLUC	iLUC	dLUC	iLUC	dLUC	iLUC	dLUC	iLUC	dLUC	iLUC	dLUC	iLU
nazon	25	0	50	800	50	800	25	850	25	350	0	125	25	0	0	85
atinga	75	0	75	0	0	325	50	1,150	0	450	0	300	0	125	50	25
errado	100	0	725	325	2,800	1,850	5,175	2,400	4,300	1,675	2,175	525	2,350	350	375	50
tic Forest	375	125	1,025	125	2,925	325	6,500	225	3,150	375	1,625	250	1,325	400	200	17
ntanal	0	0	0	25	0	625	25	2,200	0	725	0	200	0	100	0	0
mpas	0	0	25	175	0	50	0	100	25	25	0	100	0	200	0	0

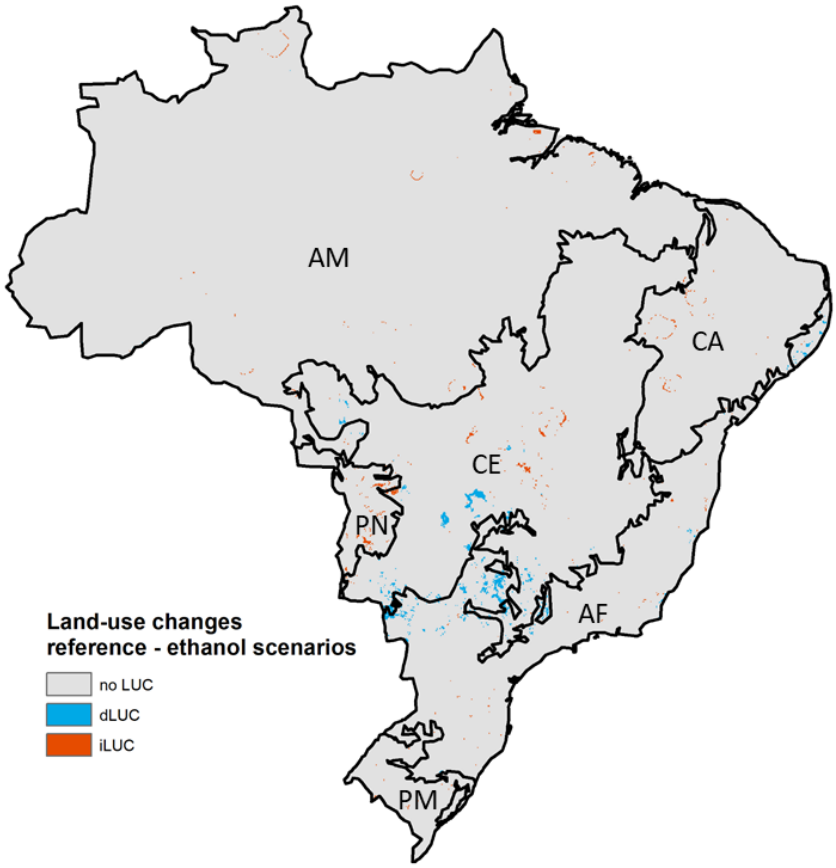

Figure S7. Location of direct (dLUC) and indirect (iLUC) land use changes between the reference and ethanol scenario in 2030. Black lines show biome boundaries, abbreviations show biome names; AM = Amazon, CA = Caatinga, CE = Cerrado, PN = Pantanal, AF = Atlantic Forest, PM = Pampas.