Water use in rainfed agriculture

(2013-2017)

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IBGE

BRAZIL IN NUMBERS

Hydrographic Regions of Brazil

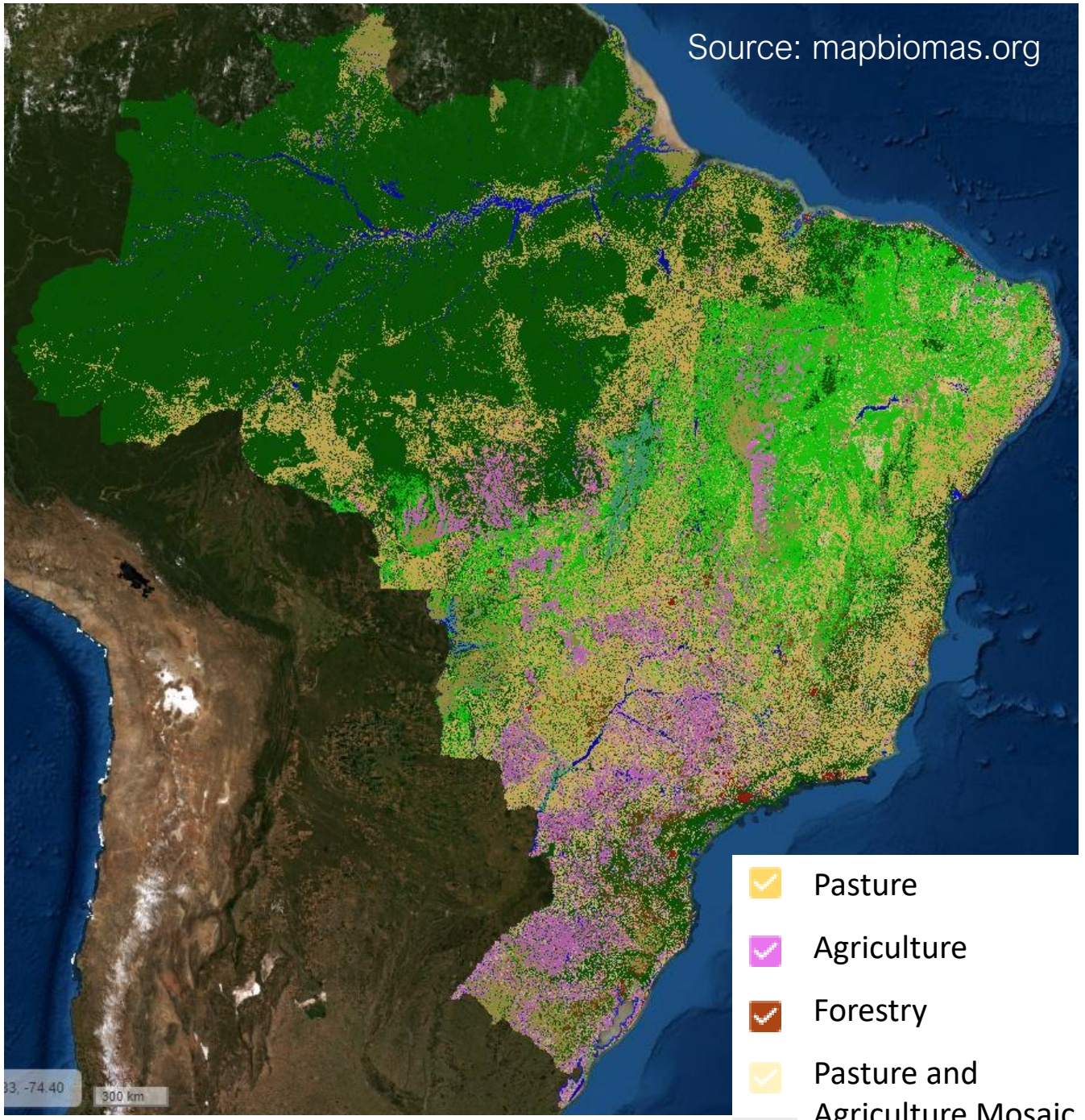
5th	largest country in the world (area of 8,514,876 km² - 3,287,594 sq mi)
213	million inhabitants (IBGE, 2021)
5,570	cities located in **26** States and **1** Federal District
12th	largest economy in the World and **1st** in South America (GDP US$ 1,42 trillion, 2020)
≈12%	of the Planet´s fresh water is in Brazil
83	boundary and transboundary rivers

Context

Brazilian Agriculture

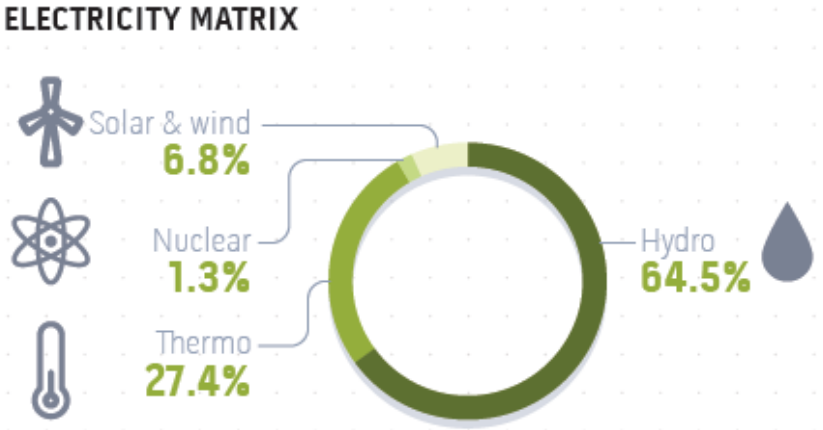
- Harvested area: 83.4 million ha (2020)
- 9 crops > 1 million ha:
  - Soy: 45% | Corn: 22% | Sugarcane: 12%
  - 2-3% each: Beans, Wheat, Coffee, Rice, Cotton, Manioc
- Second crop is usual: as Corn (14.5 million ha)

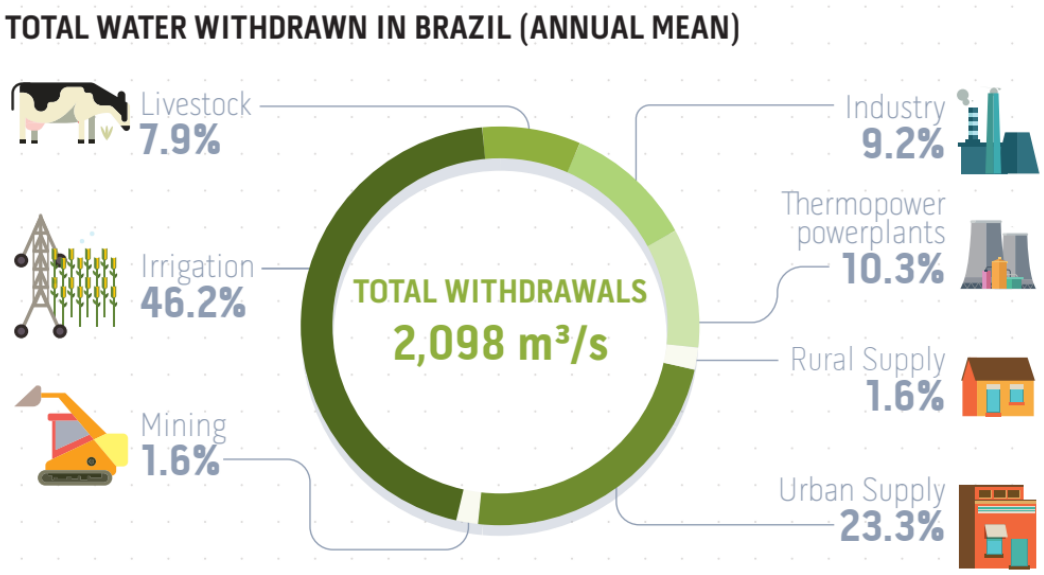
IBGE



Context

Water uses increases
ANA monitors water use in Brazil





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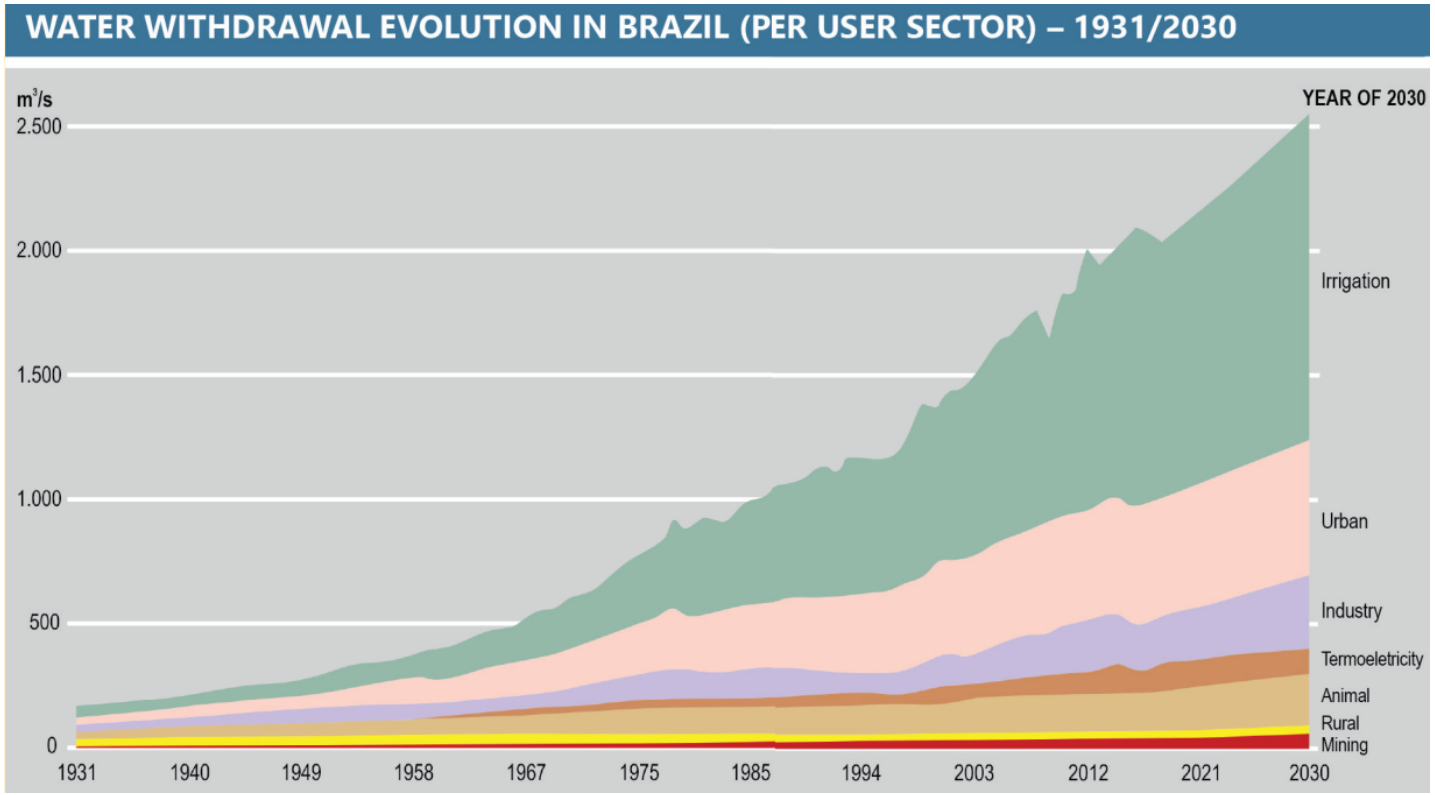

Context

Irrigated Agriculture

- Growing at 200,000 hectares/year (+ 2 trillion liters of water consumption/year)
- Actual areas: 5.3 million ha (irrigated) + 2,9 million ha (sugarcane fertigation = reuse from industrial processes)
- Potential of 55 Mha (total) or 13 Mha (effective)

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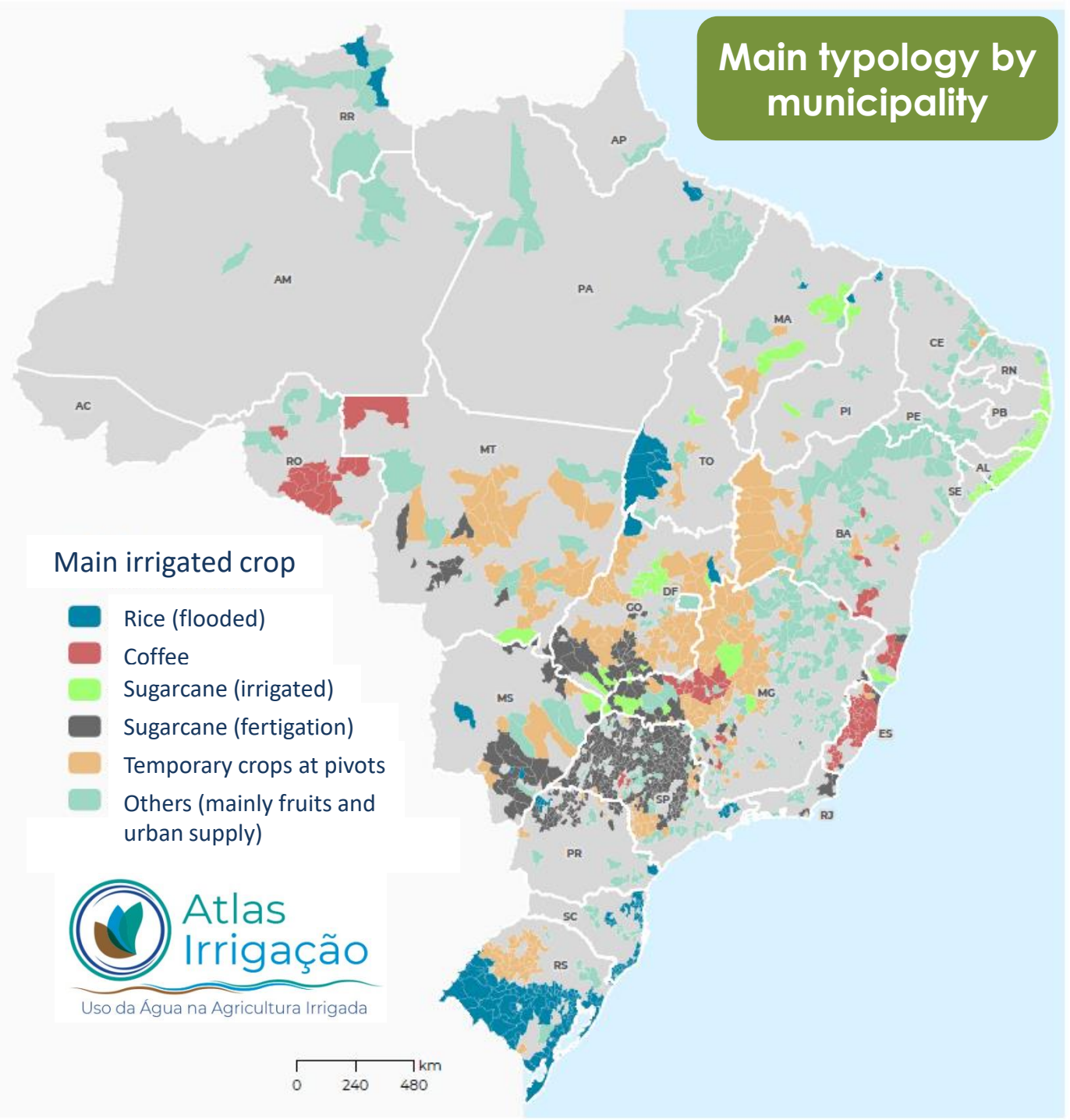
http://atlasirrigacao.ana.gov.br



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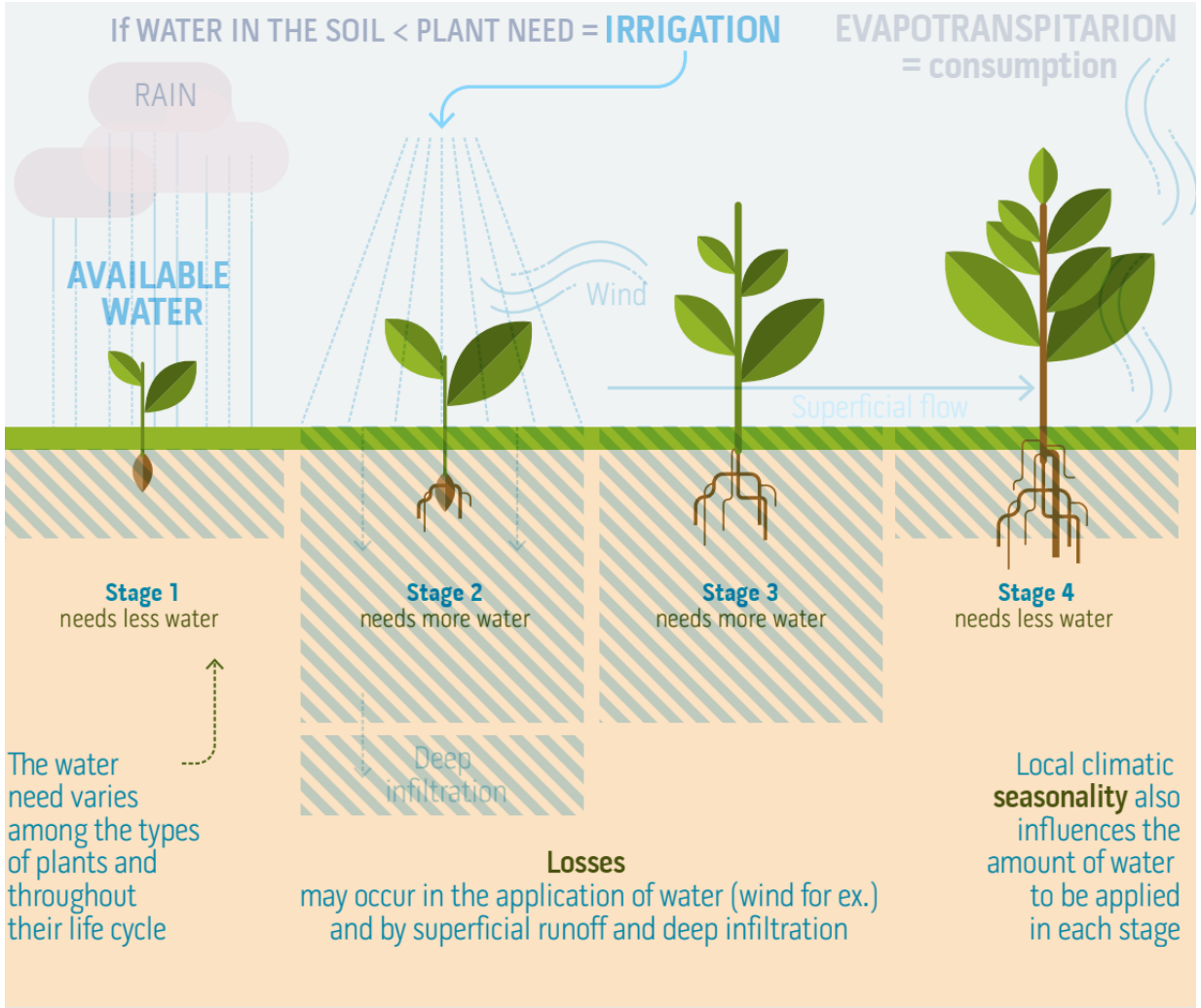
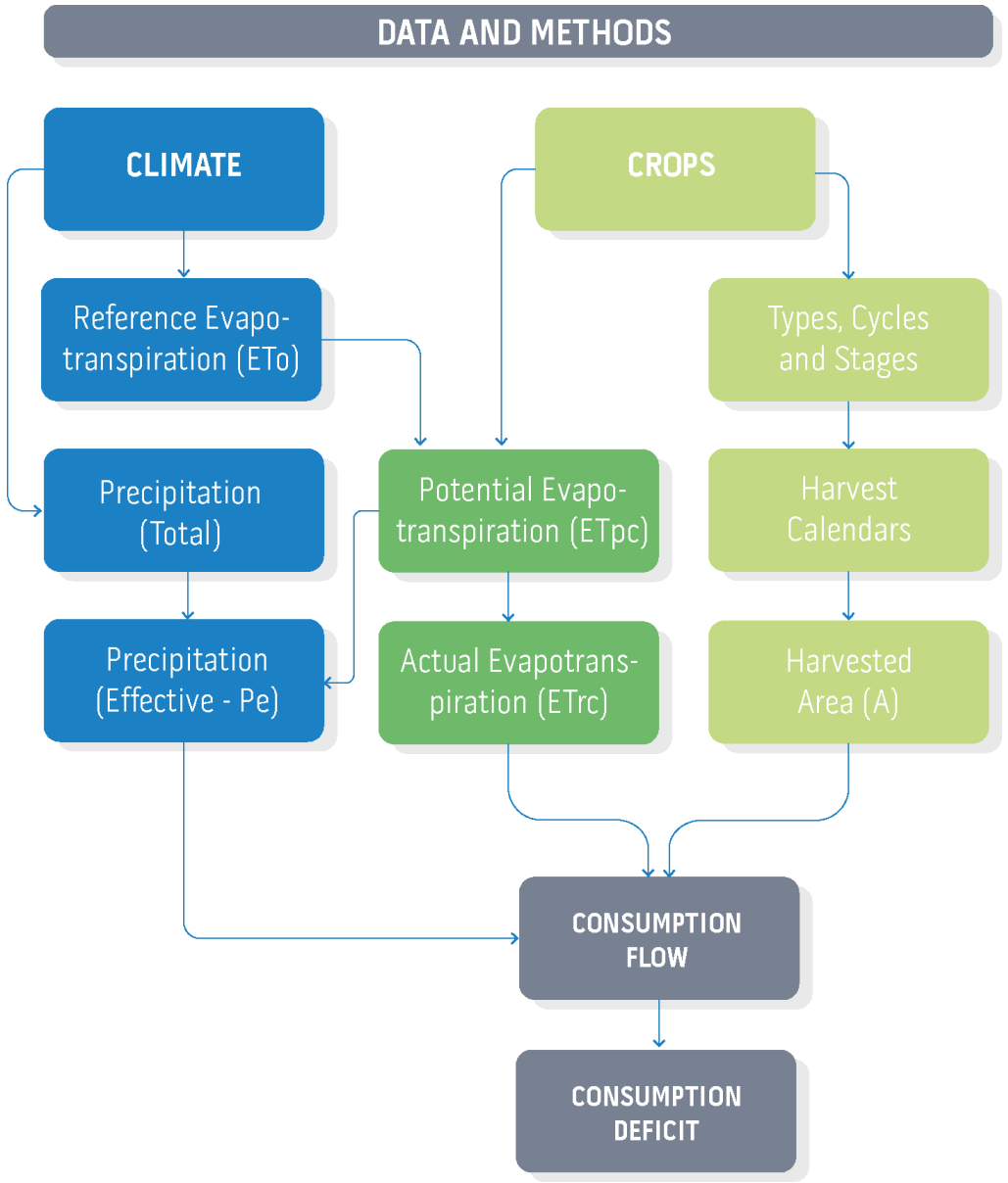


Figure 32 - Flow chart for the Estimate of Flows Demanded by Irrigation.

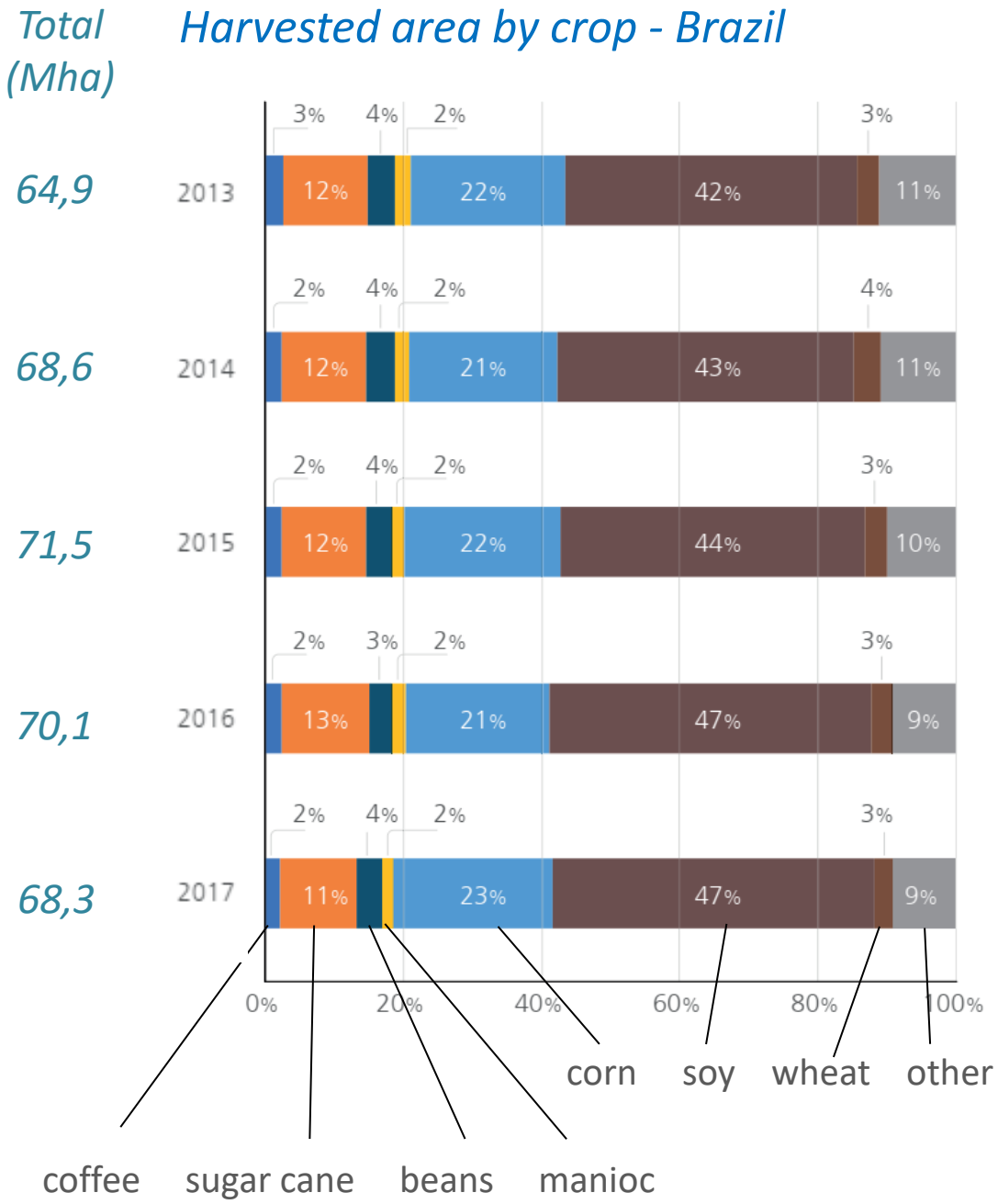
Source: ANA (2017).



Results

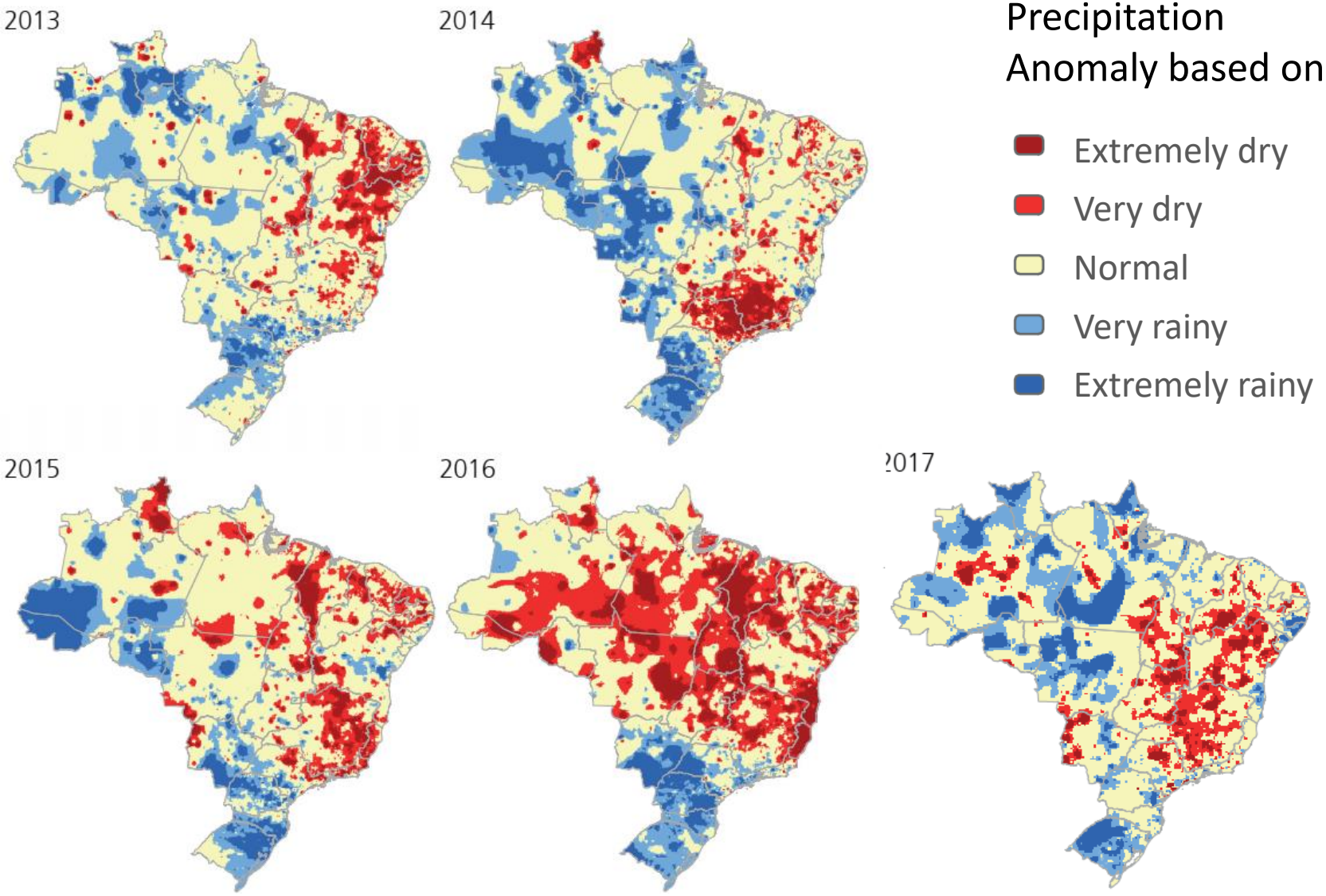
Rainfed Agriculture

- Analysis and disaggregation of IBGE agricultural research microdata
- The Systematic Survey of Agricultural Production (LSPA) is an IBGE survey that monitors crops from the intention phase to harvest, since the 1970s
- As a result, we obtained the harvested areas from rainfed agriculture (by month, crop, and municipality - 2013-2017)



Results

Challenging Years for Rainfed Agriculture



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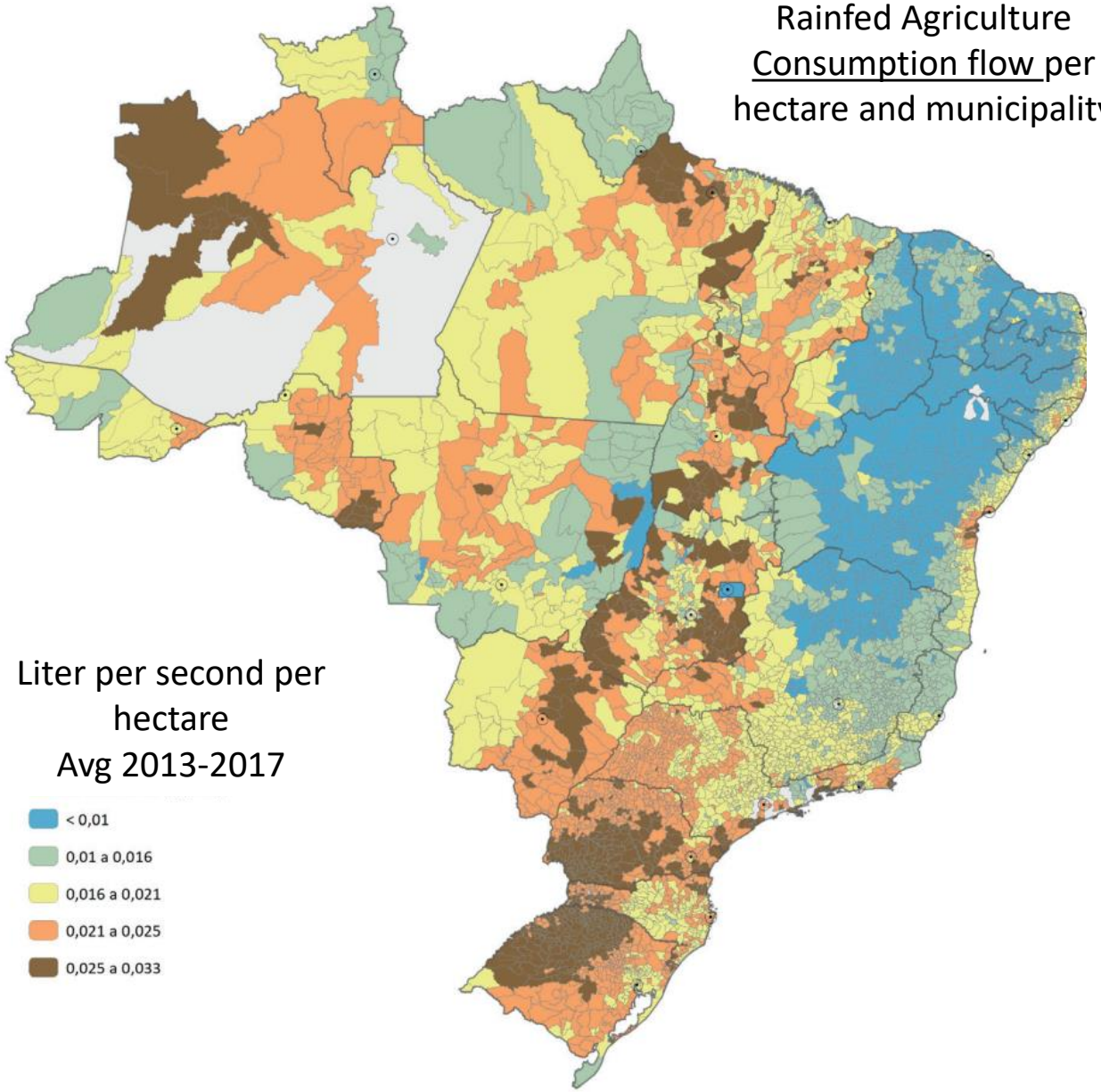
Results

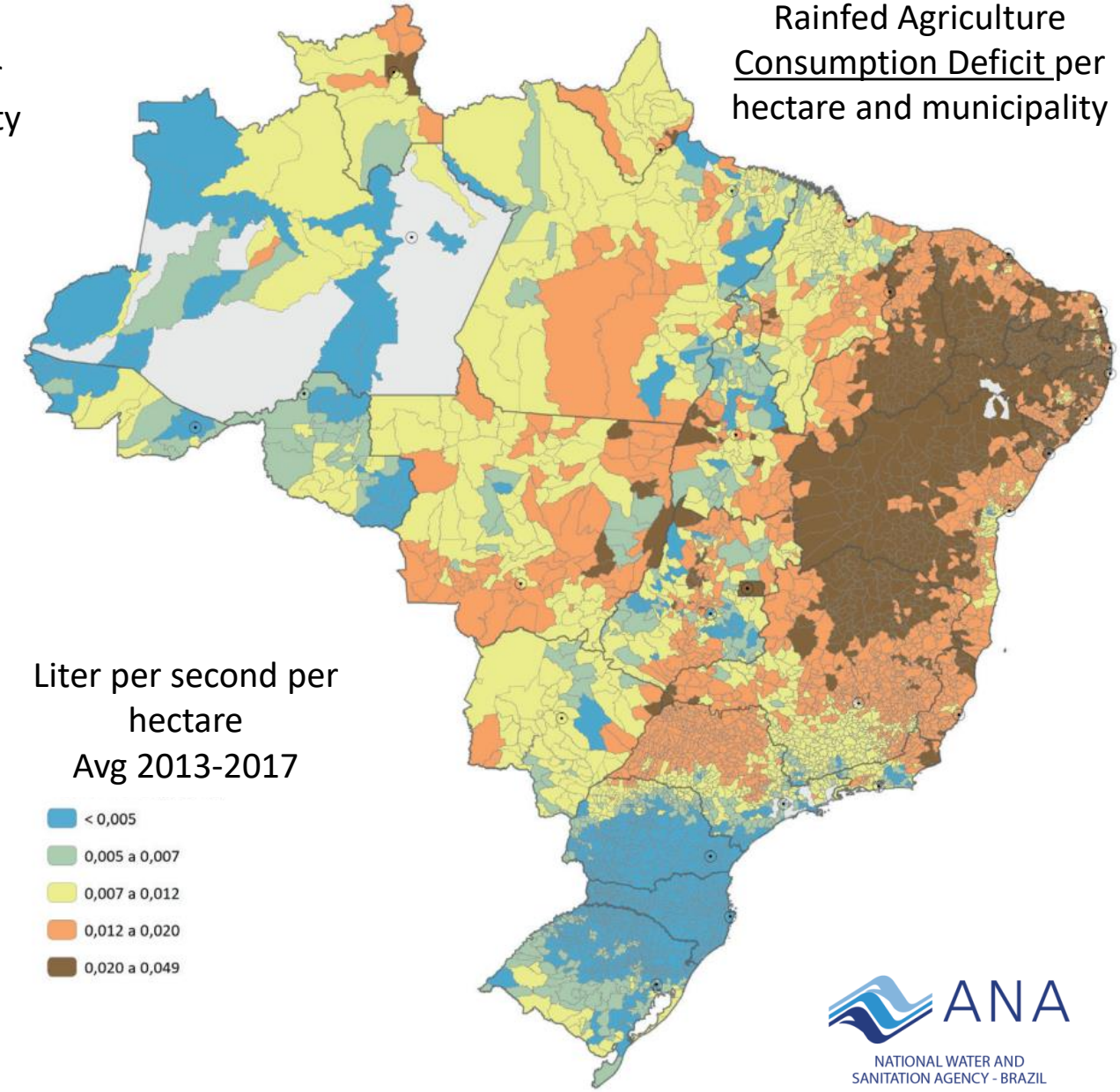
Rainfed Agriculture
Consumption flow per hectare and municipality



Liter per second per hectare
Avg 2013-2017

- < 0,01
- 0,01 a 0,016
- 0,016 a 0,021
- 0,021 a 0,025
- 0,025 a 0,033

Rainfed Agriculture
Consumption Deficit per hectare and municipality



Liter per second per hectare
Avg 2013-2017

- < 0,005
- 0,005 a 0,007
- 0,007 a 0,012
- 0,012 a 0,020
- 0,020 a 0,049

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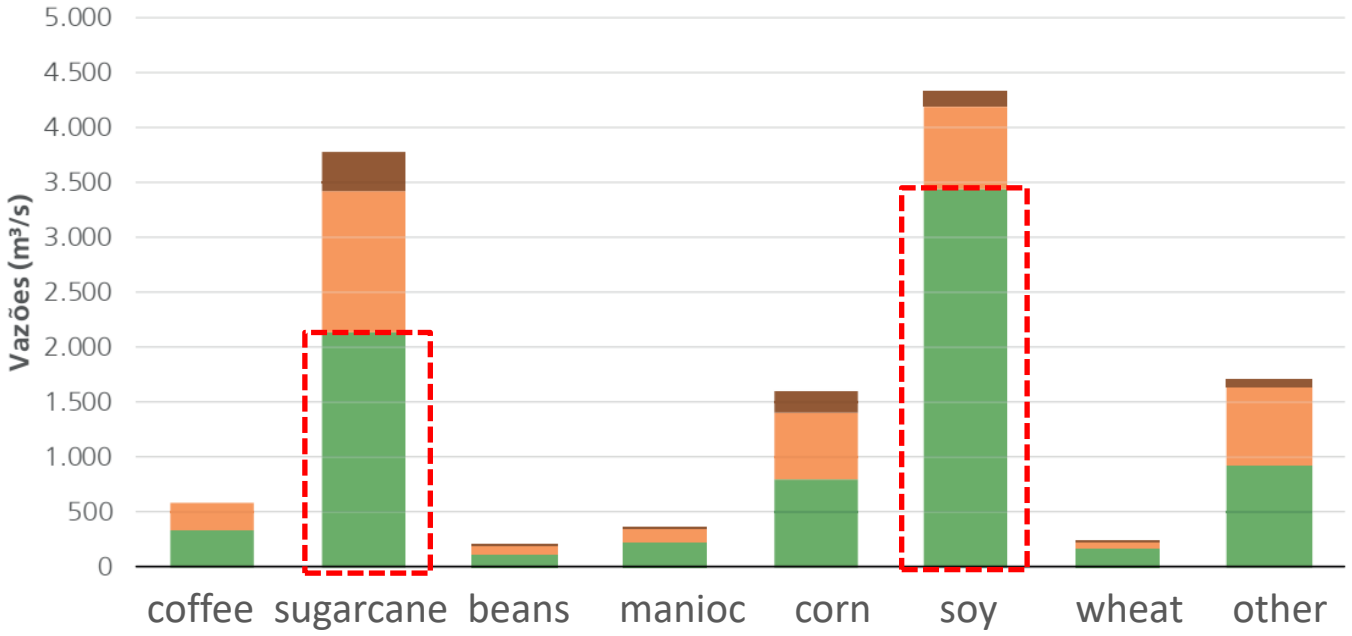
Results

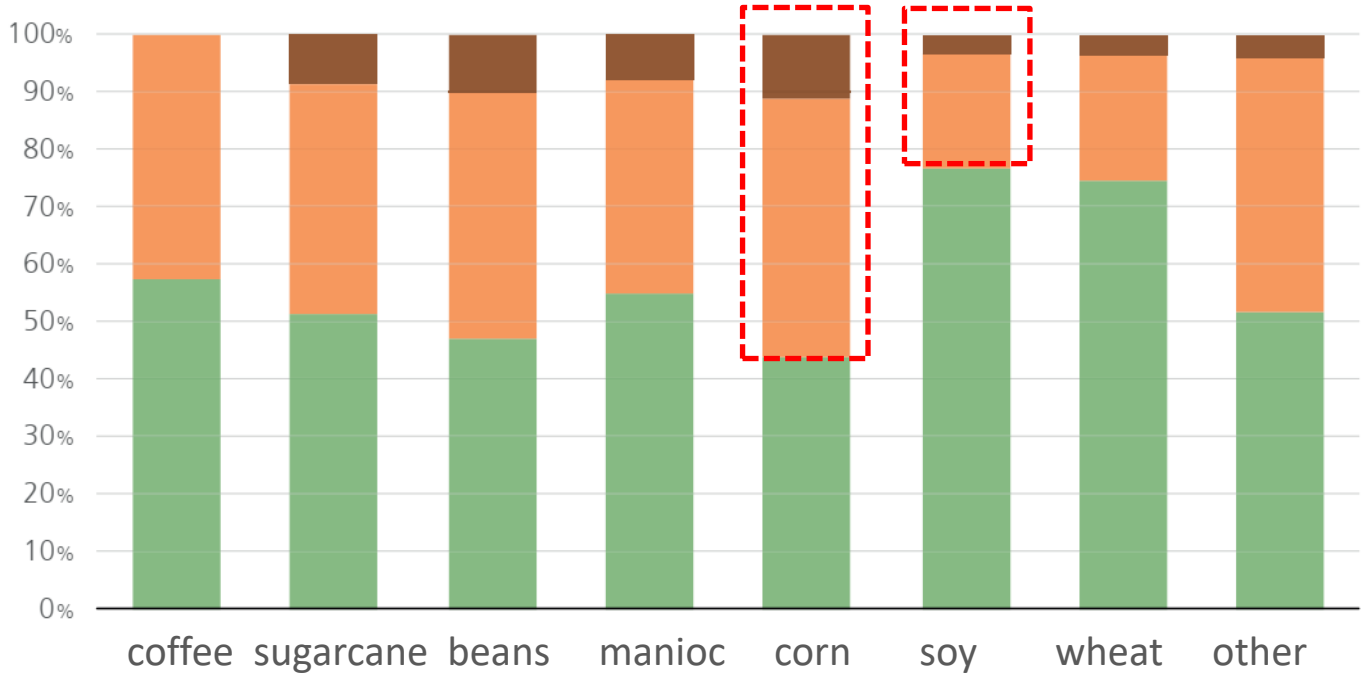
WATER USE & DEFICIT/SHORTAGE
(annual avg 2013-2017)

- Consumption
- Deficit – Effect
- Deficit – Close to harvest

Water use statistics are very different from other agricultural indicators due to the length of cycles for each crop, the usual planting period, the regions where they occur and climate variability.

Ex.: Sugarcane: 12% in area and 26% in consumption | Corn: 23% vs. 11%





Results

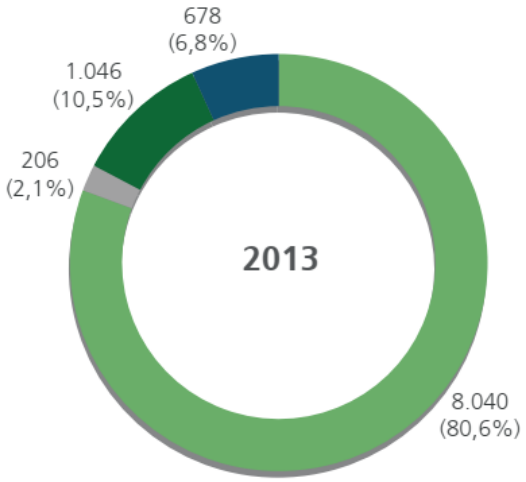
Summary of water consumption by rainfed and irrigated agriculture in Brazil (m^3/s) - 2013-2017

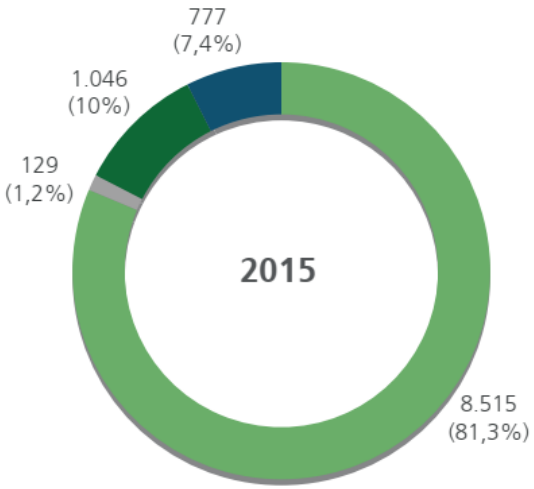
GREEN WATER

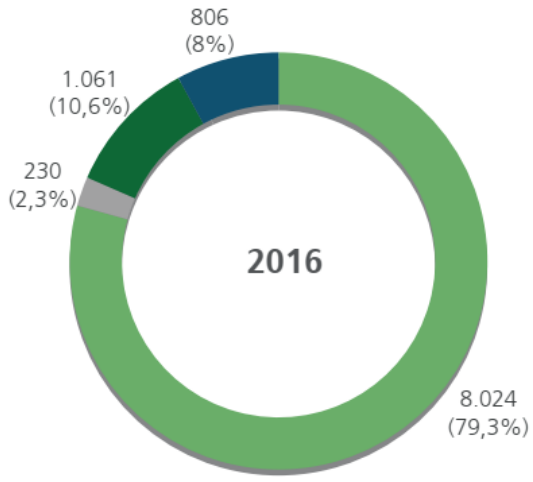
- Rainfed – Harvested areas
- Rainfed – Not harvested
- Irrigated (green consumption)

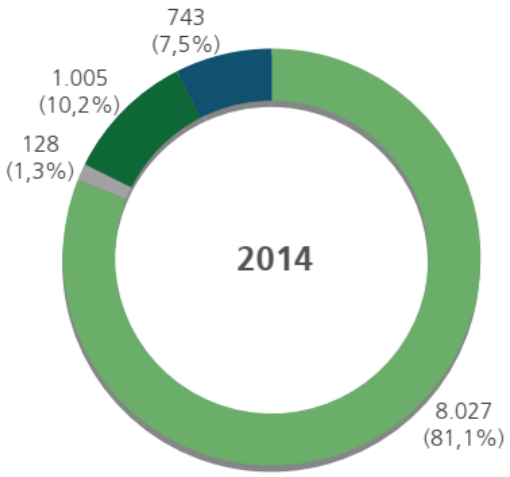
BLUE WATER

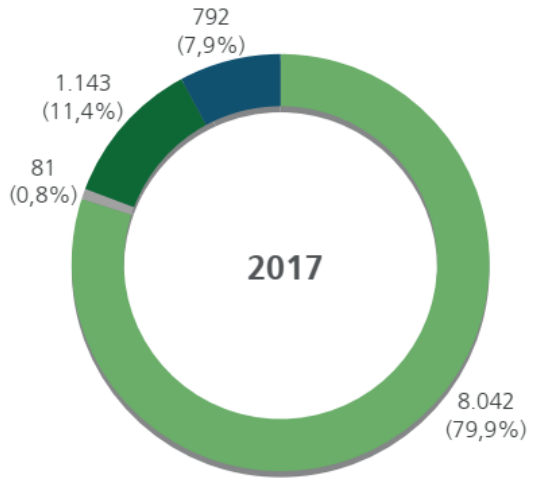
- Irrigated (blue consumption)











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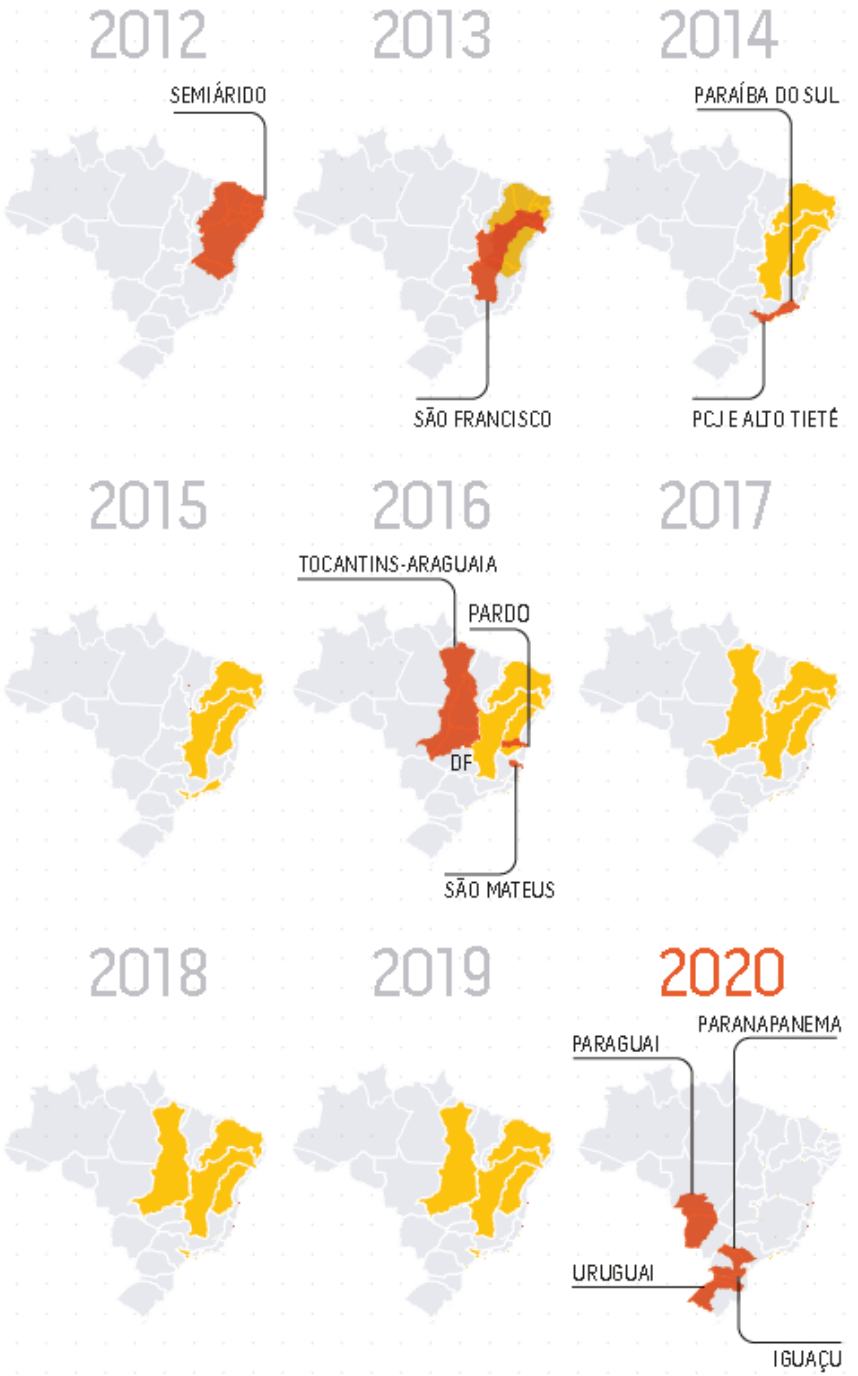
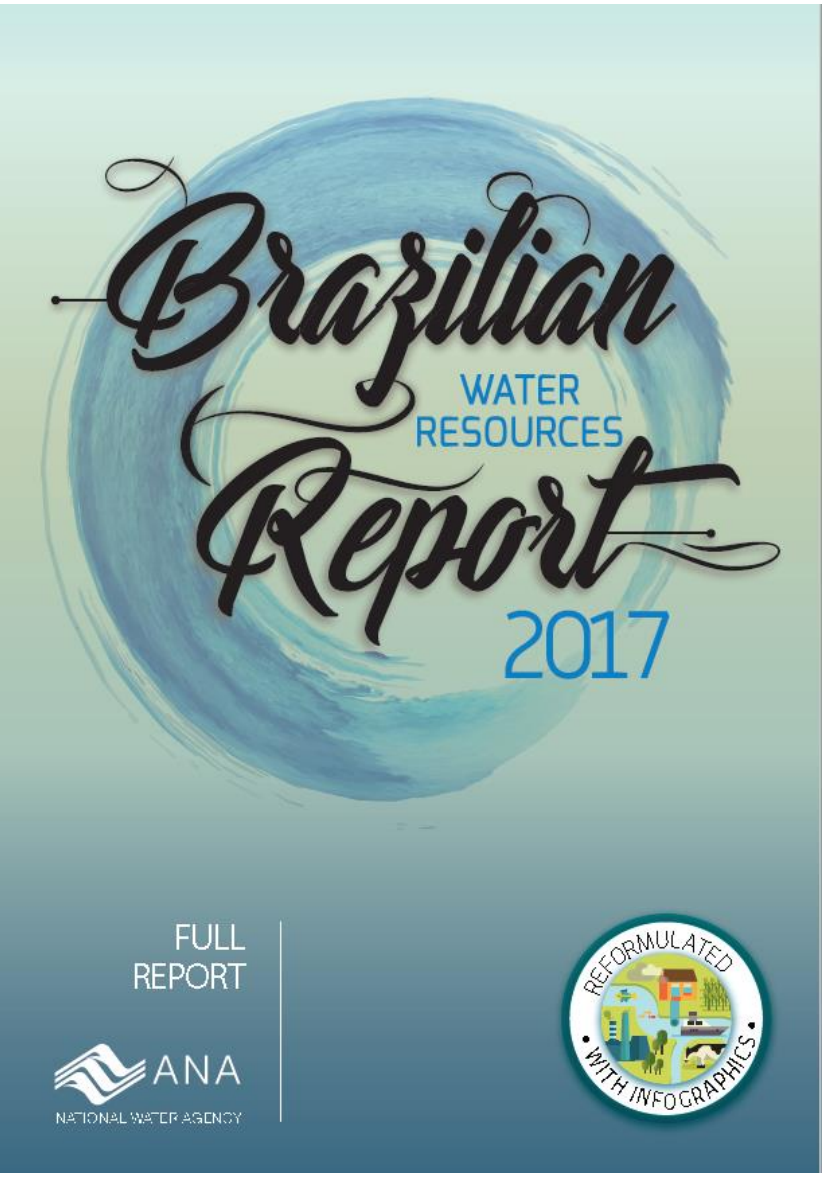
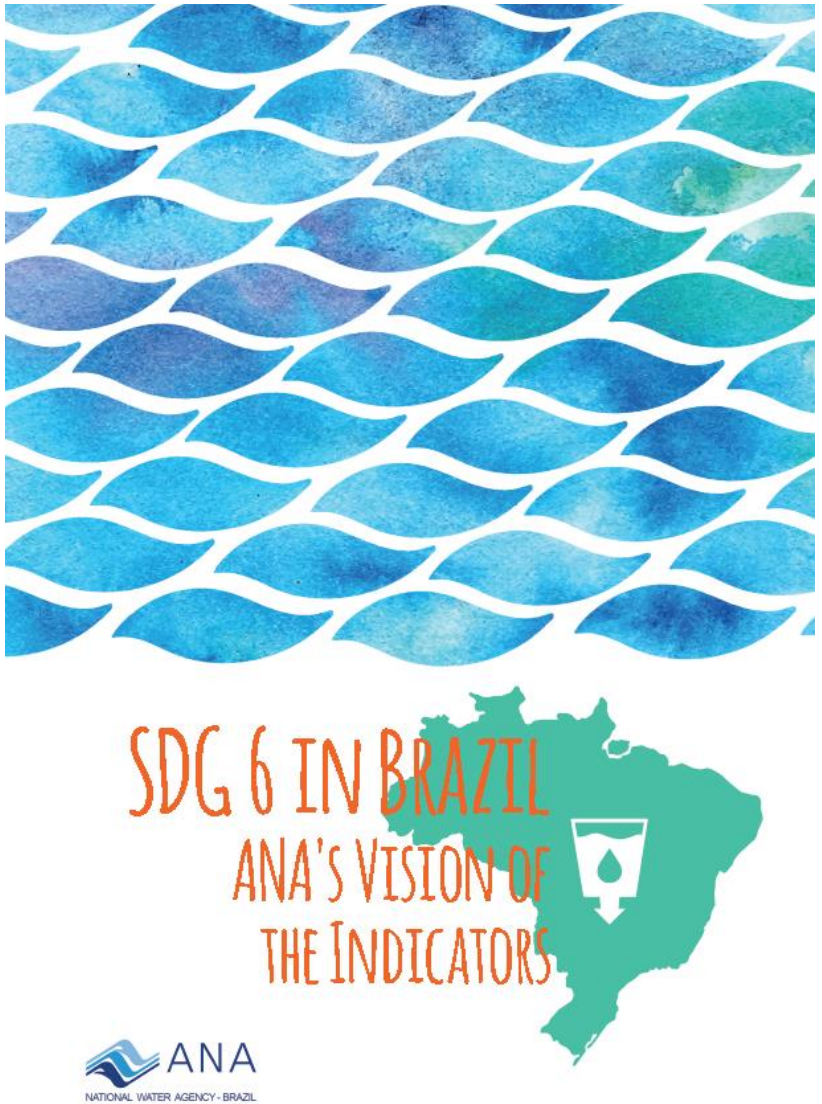
Water Crisis due to many aspects and reasons, including climate events

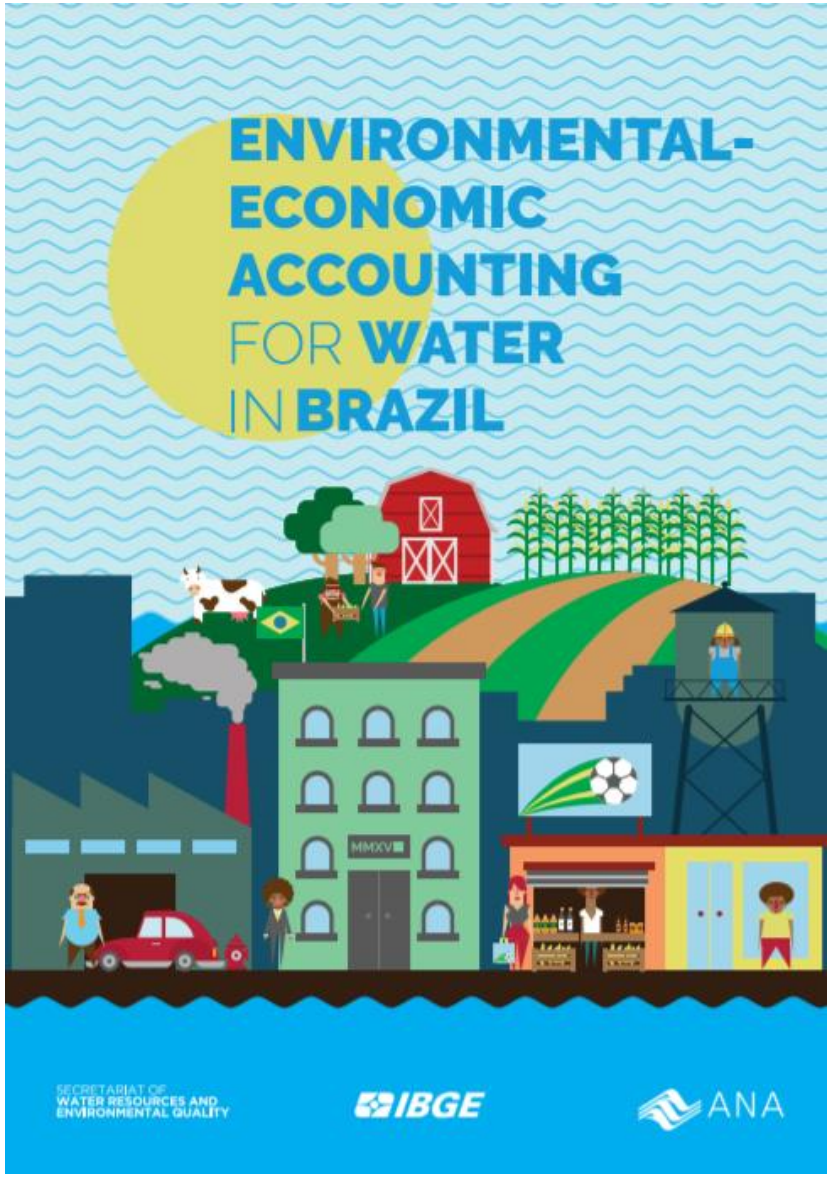
Basins/areas under water crisis (national scale)



Other documents available in English:







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Thanks!

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