# Environmental-Economic Accounts for Water: Brazil 2013-2017

EEA-W

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Instituto Brasileiro de Geografia e Estatística IBGE

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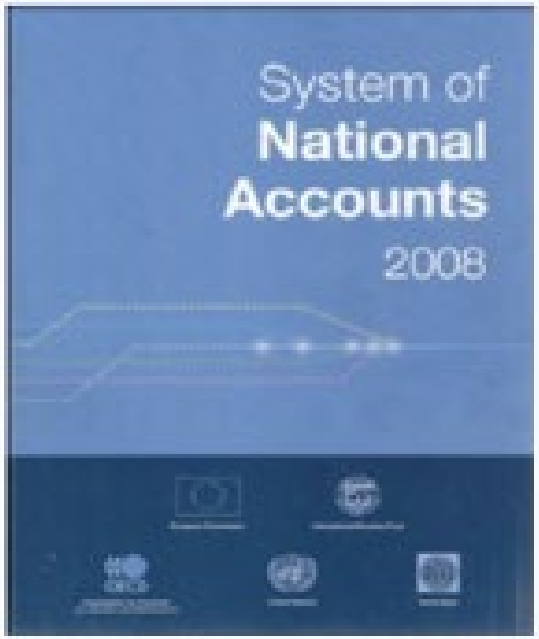
# Environmental-Economic Accounts for Water in Brazil (EEA-W)

- The indicators presented provide a conceptual framework for the organization of hydrological and economic information that allows describing the interaction between the economy and the environment, analyzing the contribution of water to the production processes of economic activities and to the demand of Households, as well as the impact of economic activities on water resources. Thus, the construction of the EEA-W is important for water management, allowing to account for, identify, and monitor the withdrawal, supply, use and return of water by economic agents, as well as serving as an analysis tool for policies regarding the rational use of water resources.

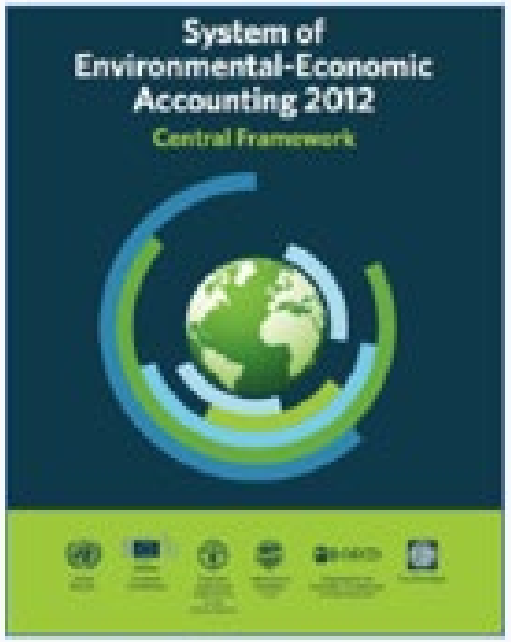
- As water is a key component of the economic development, it is necessary to adopt policies to integrate the sectoral planning with the management of water resources, incorporating economic, social and hydrological information for the sustainable management of the natural resources. Aiming at organizing this information, the United Nations Statistics Division (UNSD) developed the System of environmental-economic accounting for water (SEEA-Water) manual, whose guidelines allow a systematic and periodic assessment of key indicators concerning the integration of the physical and monetary water data.

- The development of the EEA-W is the result of the joint efforts of technicians of the Brazilian Institute of Geography and Statistics and the National Water Agency.

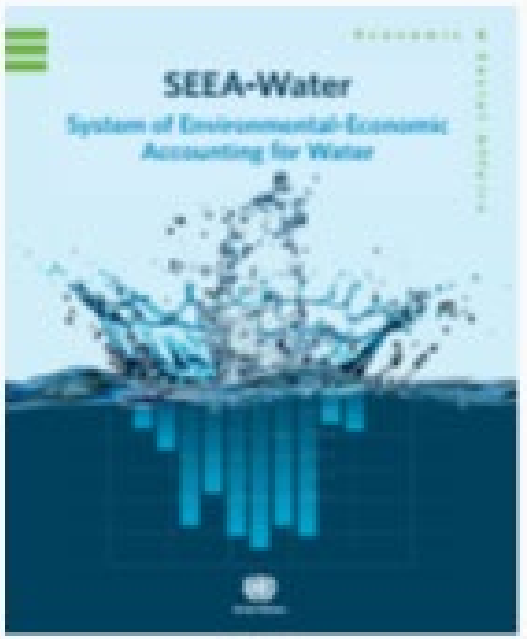
# Main guidelines: SNA, SEEA-CF and SEEA-Water




SNA, 2008

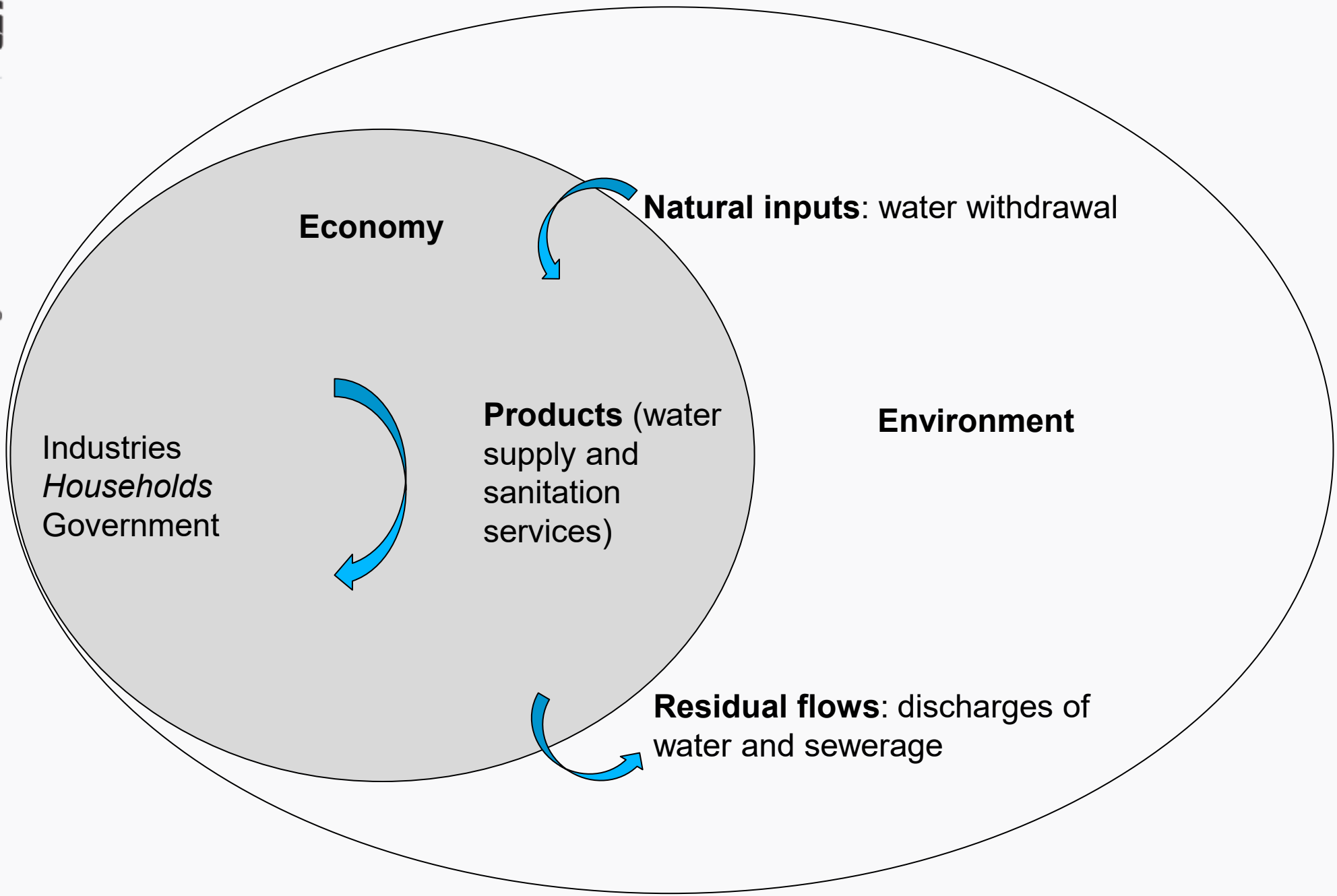



SEEA Central Framework, 2012




SEEA Water, 2012

# Interactions between the economy and the environment



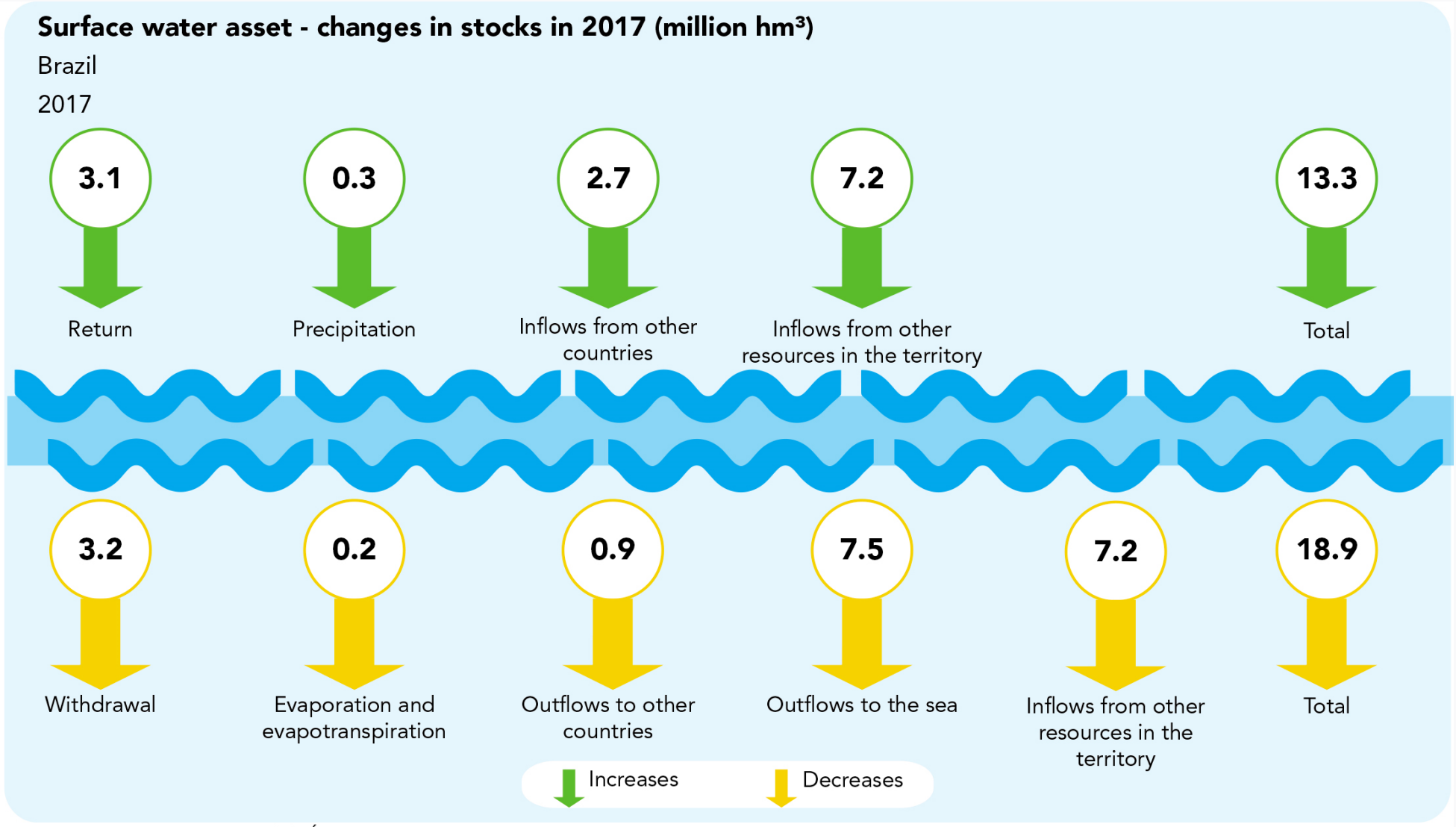
# Environmental-Economic Accounts for Water - EEA-W

- Asset Accounts: measure stocks at the beginning and the end of the accounting period and record the changes in the stocks that occur during the period. They describe all increases and decreases of the stock due to natural causes, such as precipitation, evapotranspiration, inflows and outflows, and human activities, such as abstraction and returns.
  - These accounts are particularly useful because they link water abstraction and return to the availability of water in the environment, thus enabling the measurement of the pressure on physical water induced by the economy.

- Physical Supply and Use Tables (Physical SUTs): provide information on the volumes of water and on the flows:
  - From the environment to the economy (abstractions);
  - Within the economy;
  - From the economy back into the environment (returns).

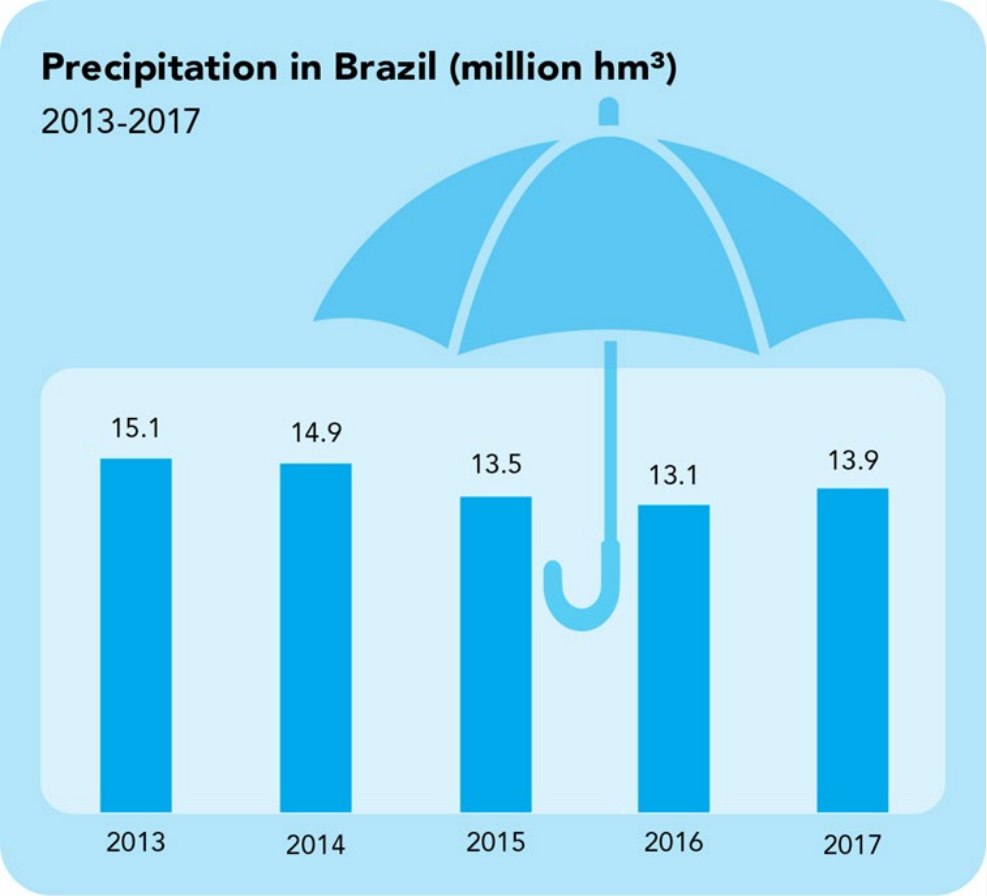
- Hybrid Supply and Use Tables (Hybrid SUTs): aligns physical information recorded in the physical supply and use tables with the monetary supply and use tables of the SNA. They combine hydrological end economic information in a set of tables that describes the interactions between the economy and the environment. In these accounts, physical quantities can be compared with matching economic flows, for example, linking the volumes of water used with monetary information on the production process, such as value added, and deriving indicators of water efficiency.

# EEA-W: Asset Accounts data

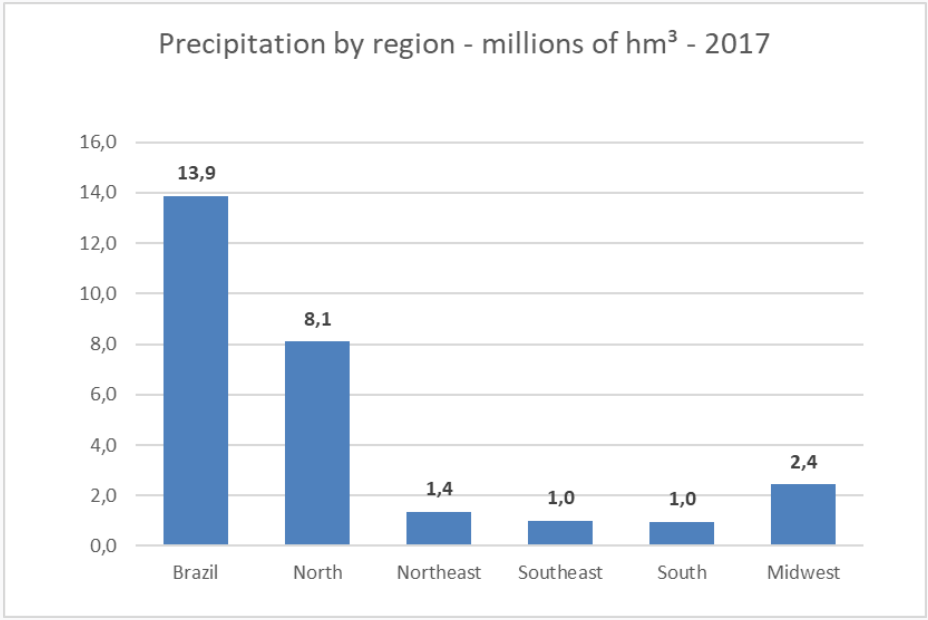



Sources: 1. IBGE. 2. Agência Nacional de Águas - ANA.

# EEA-W: Asset Accounts data




Sources: 1. IBGE. 2. Agência Nacional de Águas - ANA.



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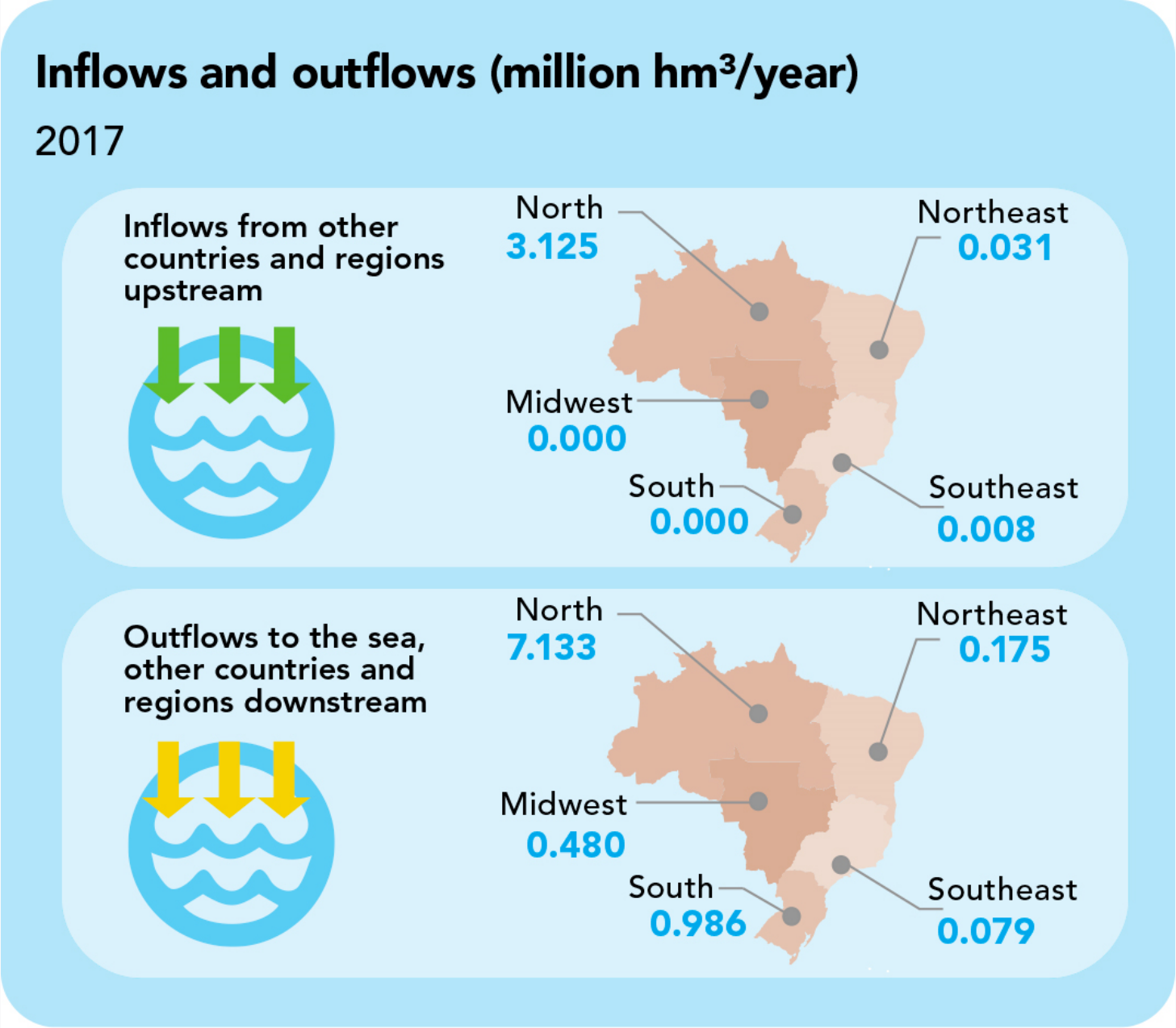
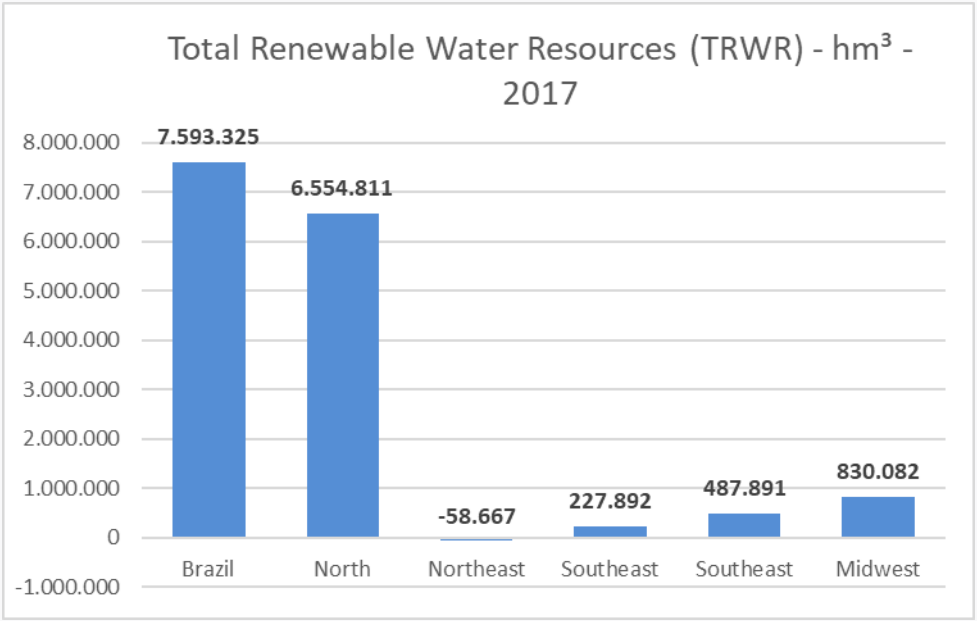
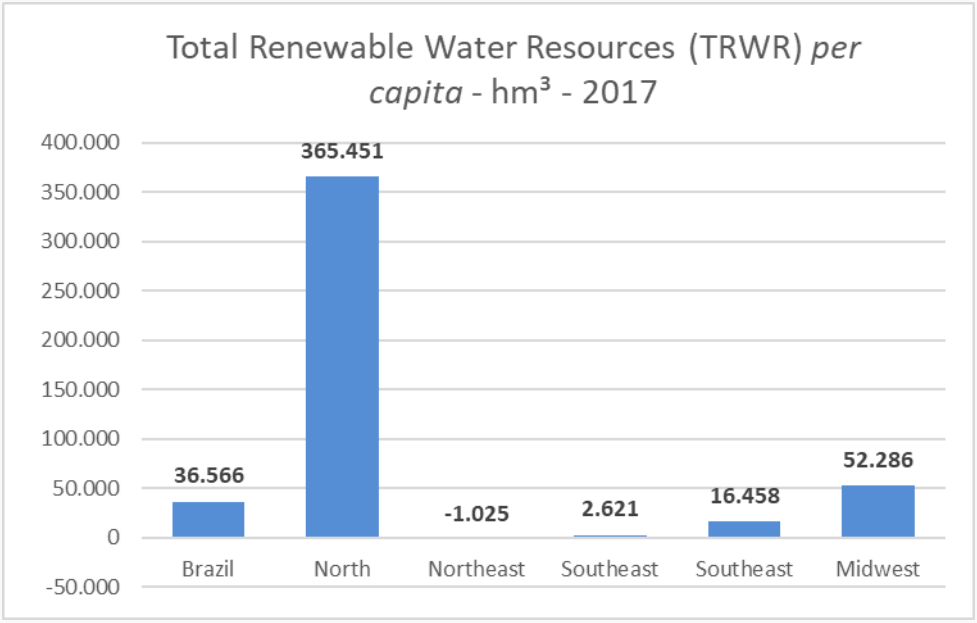
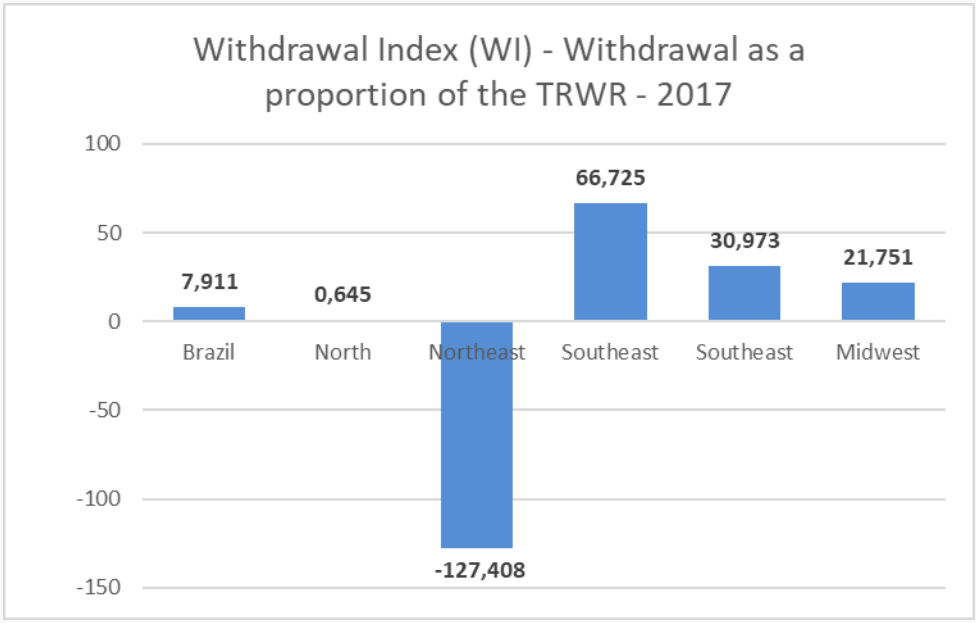



Sources: 1. IBGE. 2. Agência Nacional de Águas - ANA.

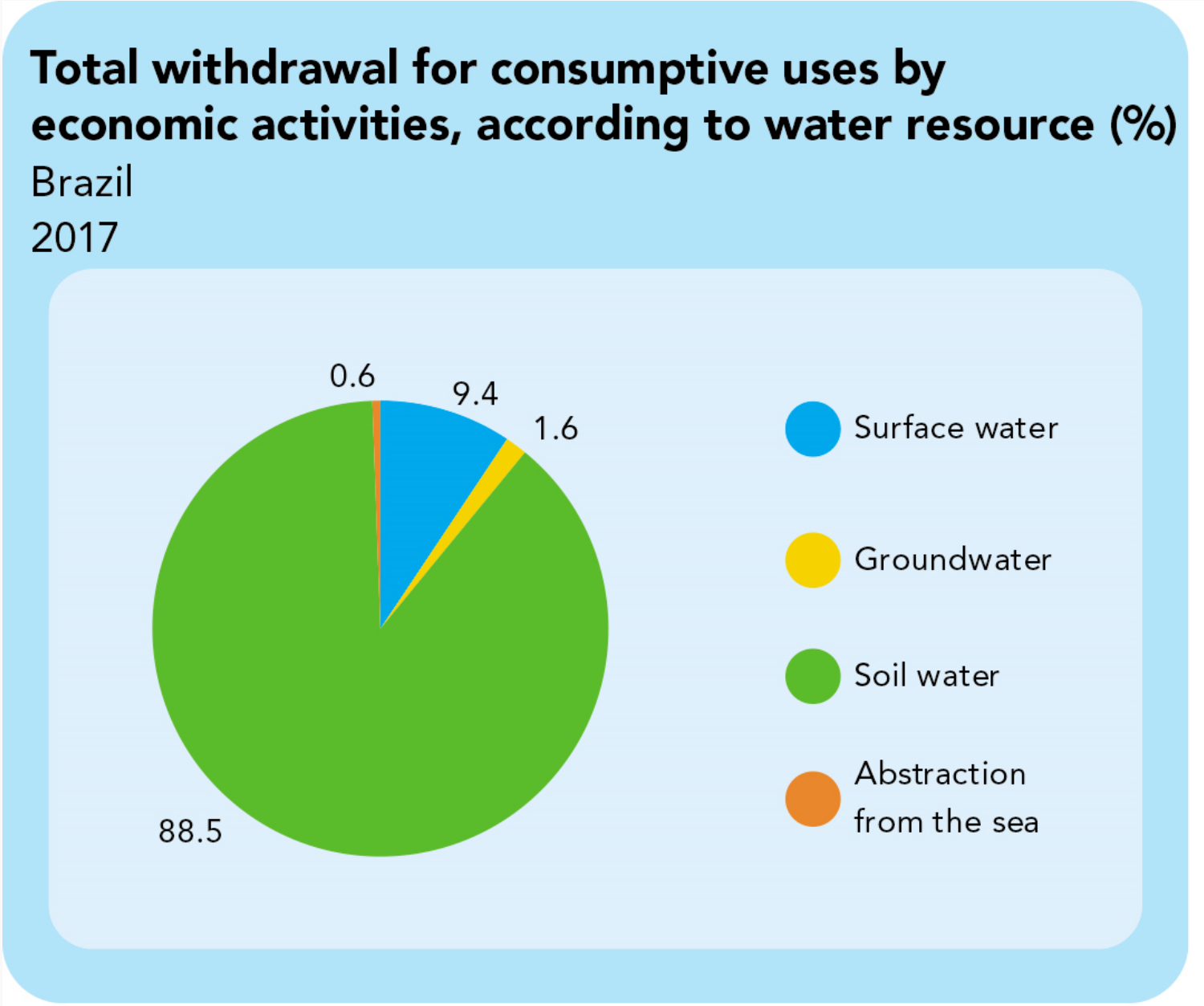
# Total Renewable Water Resources (TRWR), TRWR *per capita* and Withdrawal Index (WI) – hm³ – 2017



# EEA-W: Physical SUTs data




Sources: 1. IBGE. 2. Agência Nacional de Águas - ANA.

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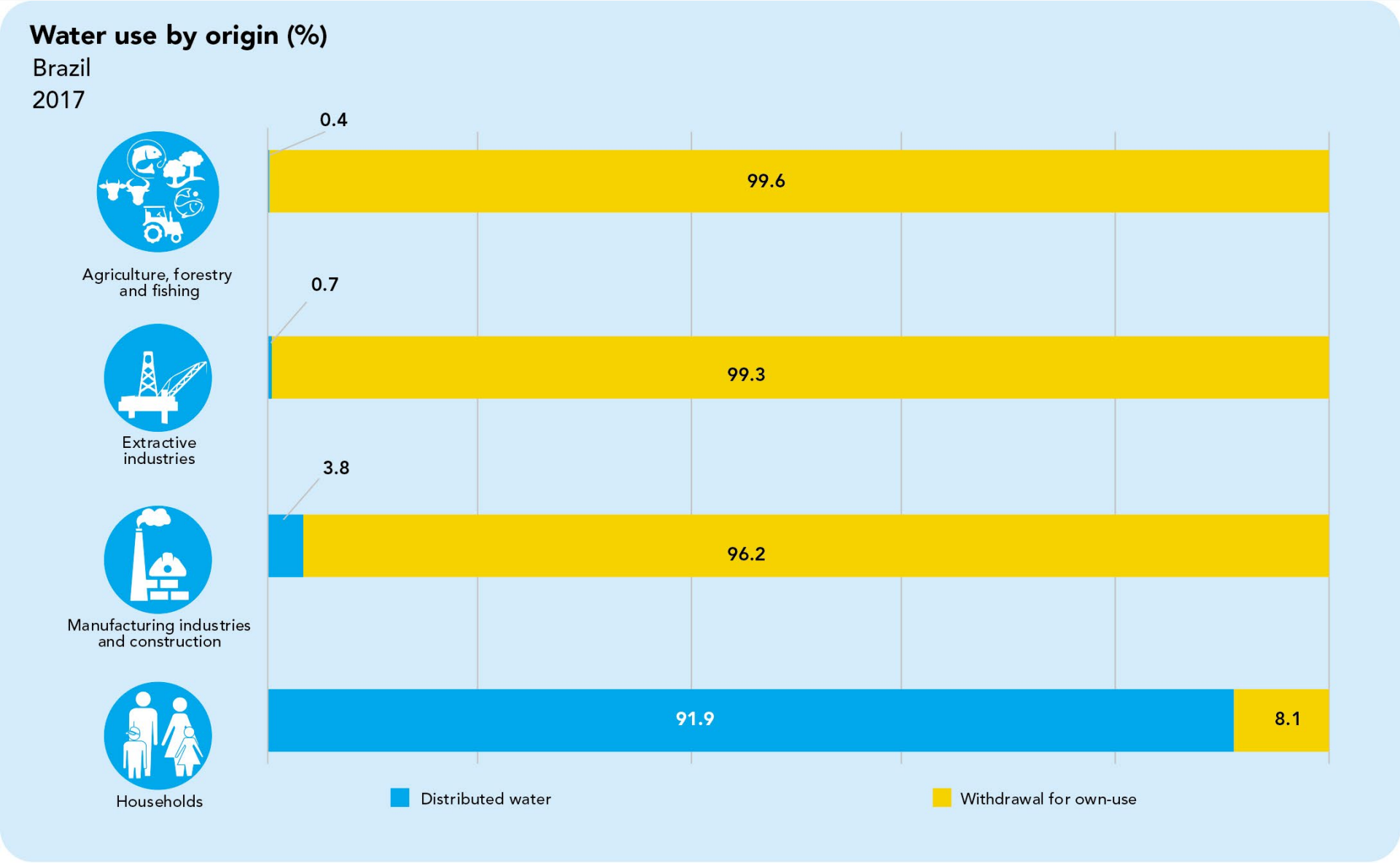
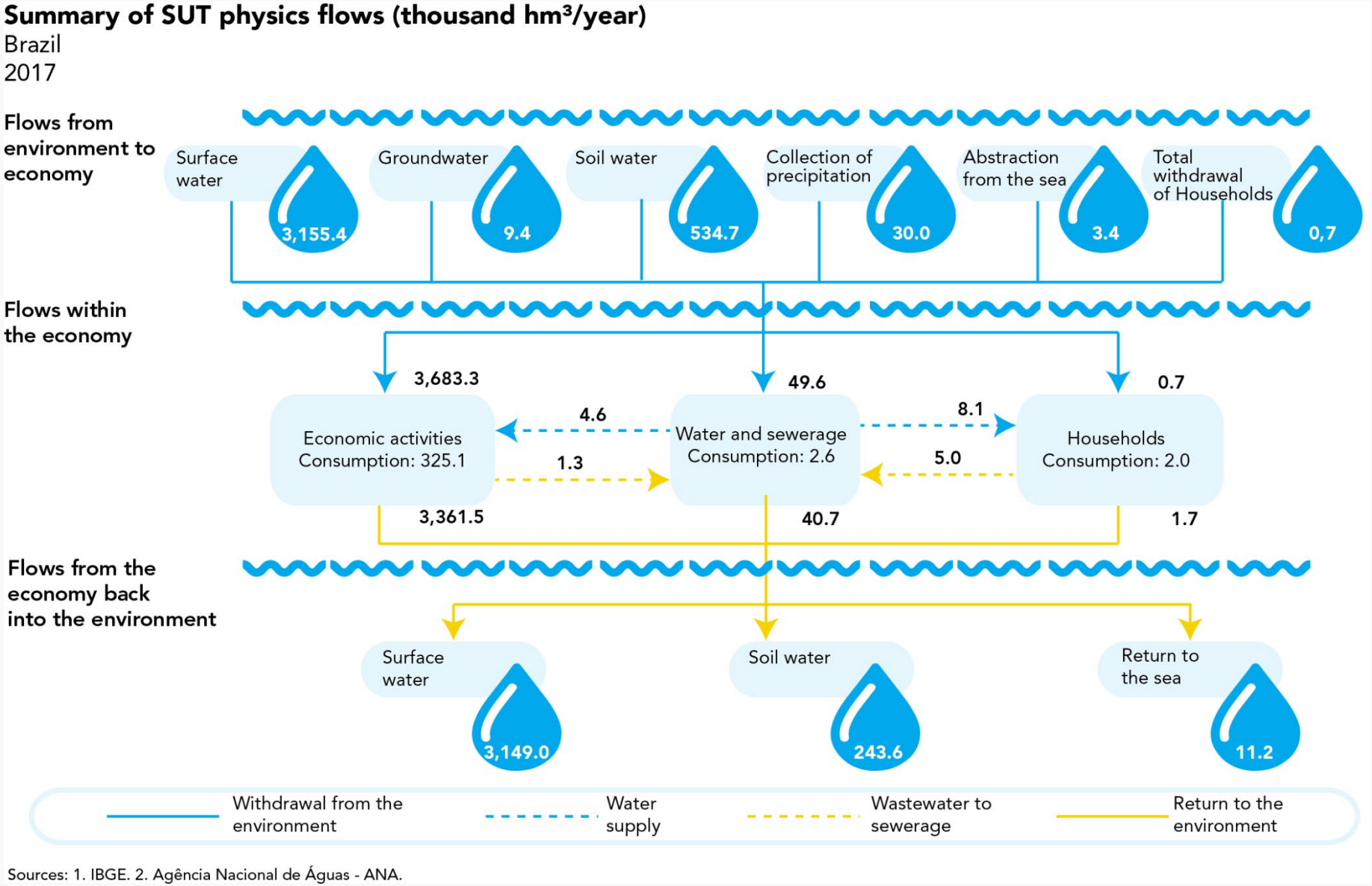


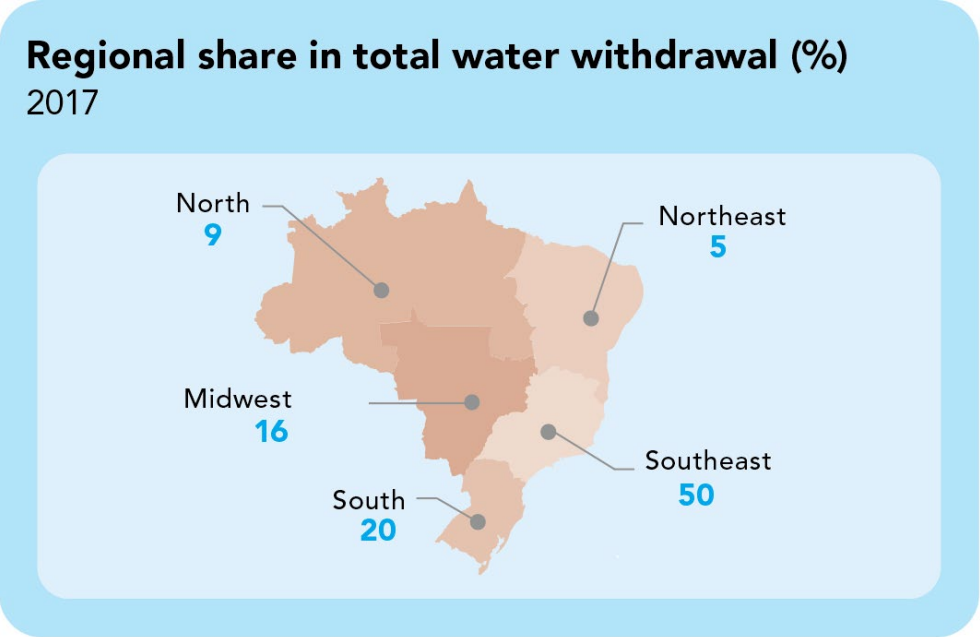

Sources: 1. IBGE. 2. Ministério do Meio Ambiente. 3. Agência Nacional de Águas - ANA.

# EEA-W: Physical SUTs data

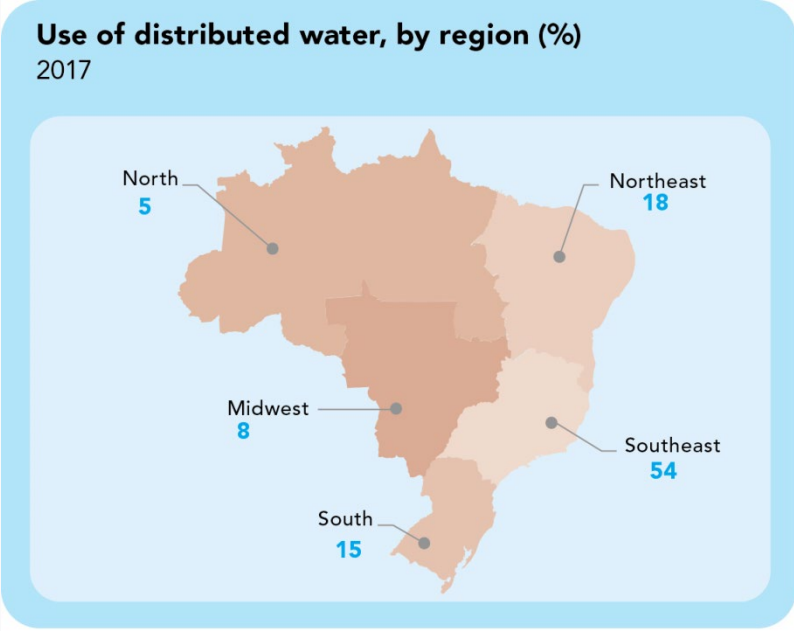



Sources: 1. IBGE. 2. Agência Nacional de Águas - ANA.

# Regional share in total water withdrawal, and use of distributes water, by region (% in 2017)

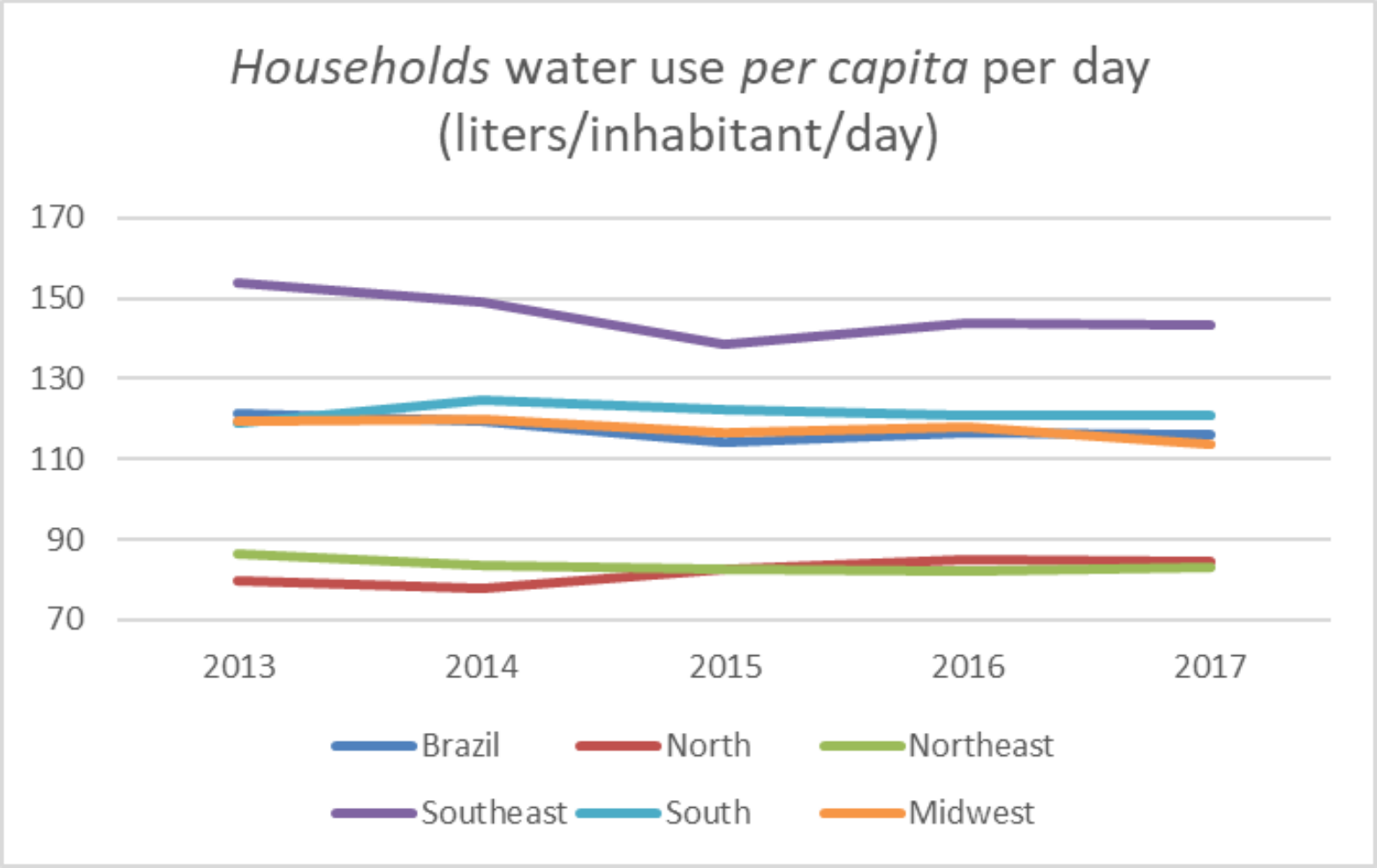



Sources: 1. IBGE. 2. Agência Nacional de Águas - ANA.

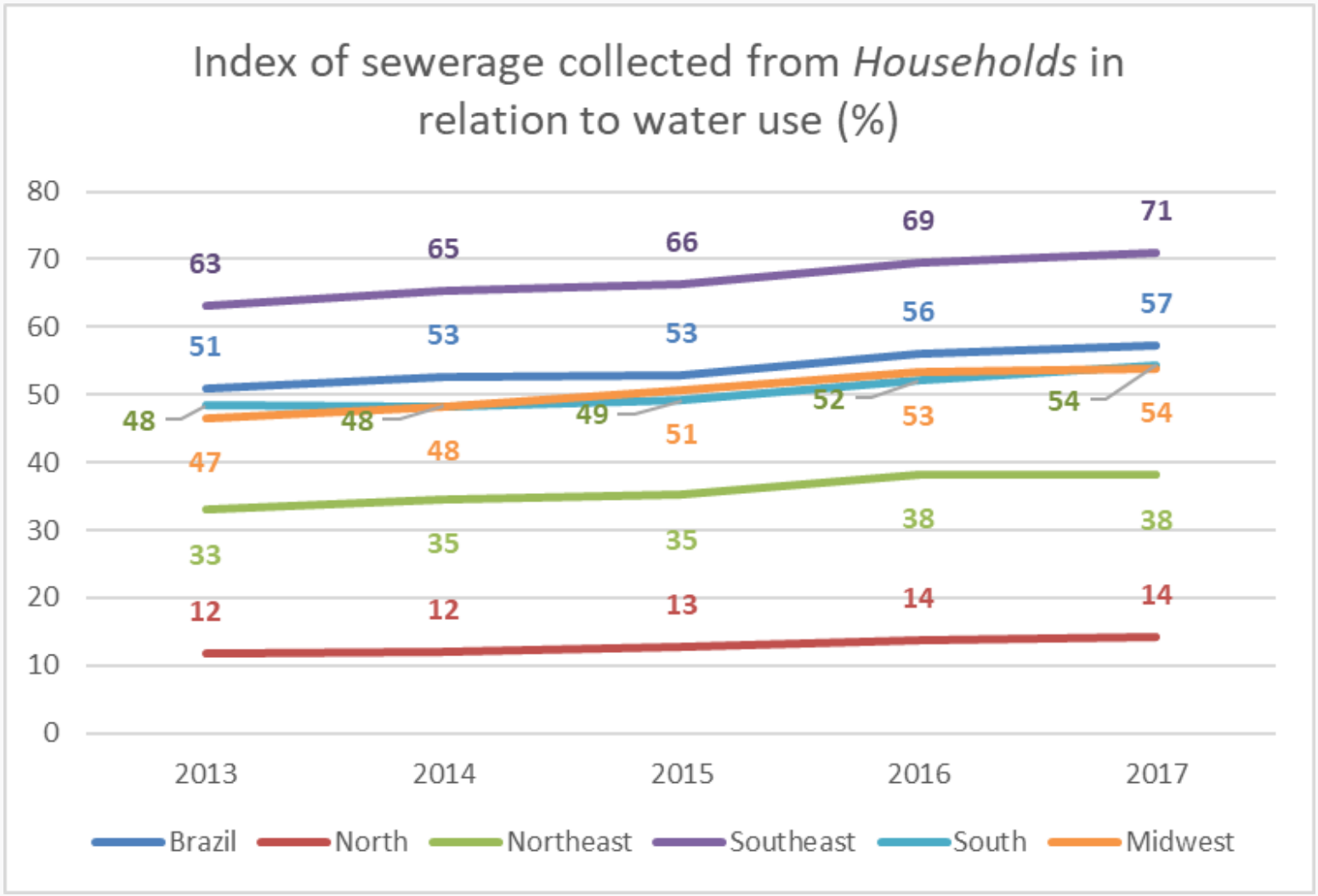



Sources: 1. IBGE. 2. Agência Nacional de Águas - ANA.
Note: Except PPI.

# EEA-W: Physical SUTs data



# EEA-W: Physical SUTs data



# EEA-W: Hybrid SUTs – main information

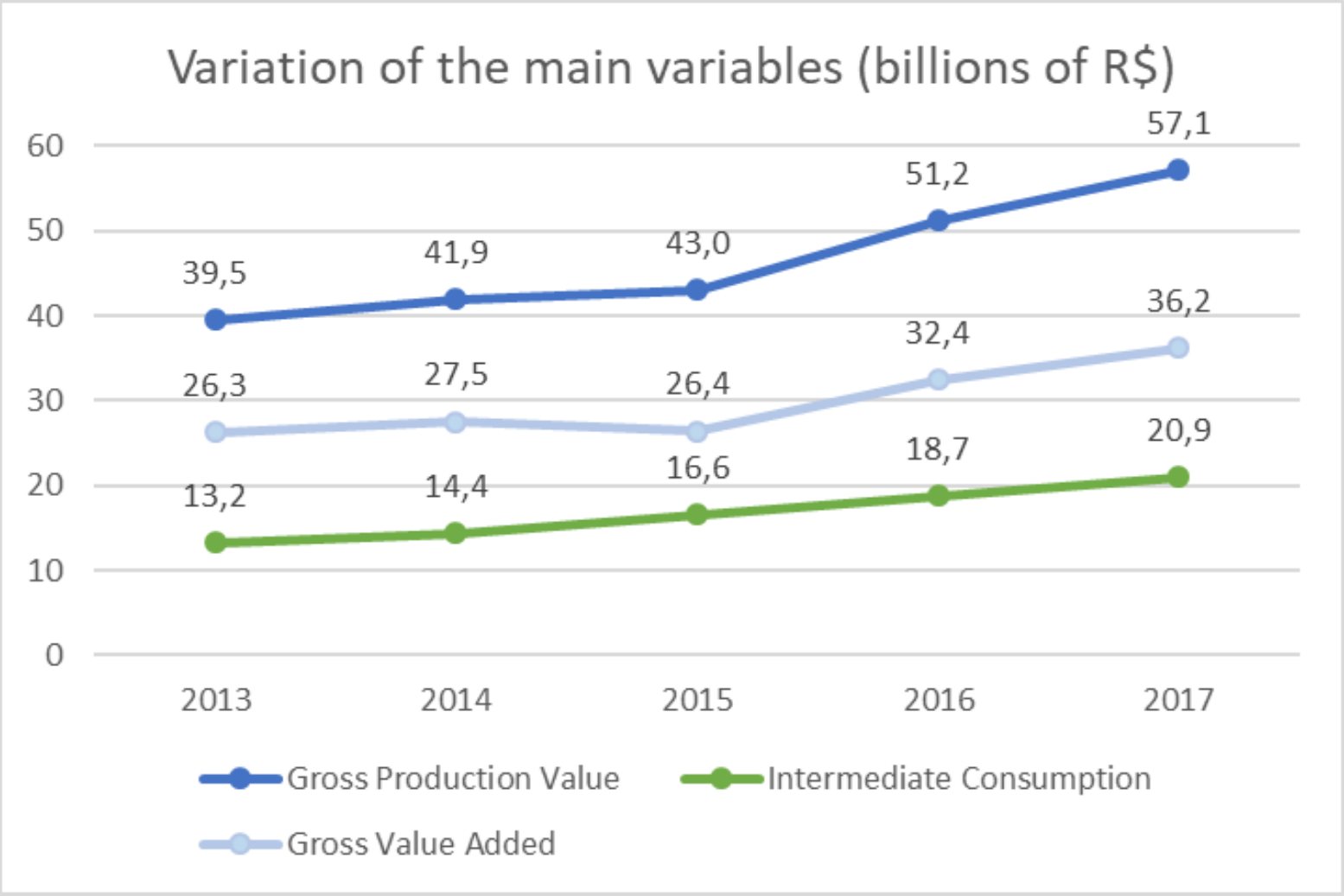
- Physical information:
  - Water withdrawal;
  - Treated water and wastewater supply and use;
  - Flows from the economy back into the environment.

- Monetary information:
  - Gross Production Value (GPV) of Water Distribution and Sewerage Services;
  - Intermediate Consumption (IC) of Water Distribution and Sewerage Services;
  - Families' final consumption expenditure with Water and Sewage sectors.

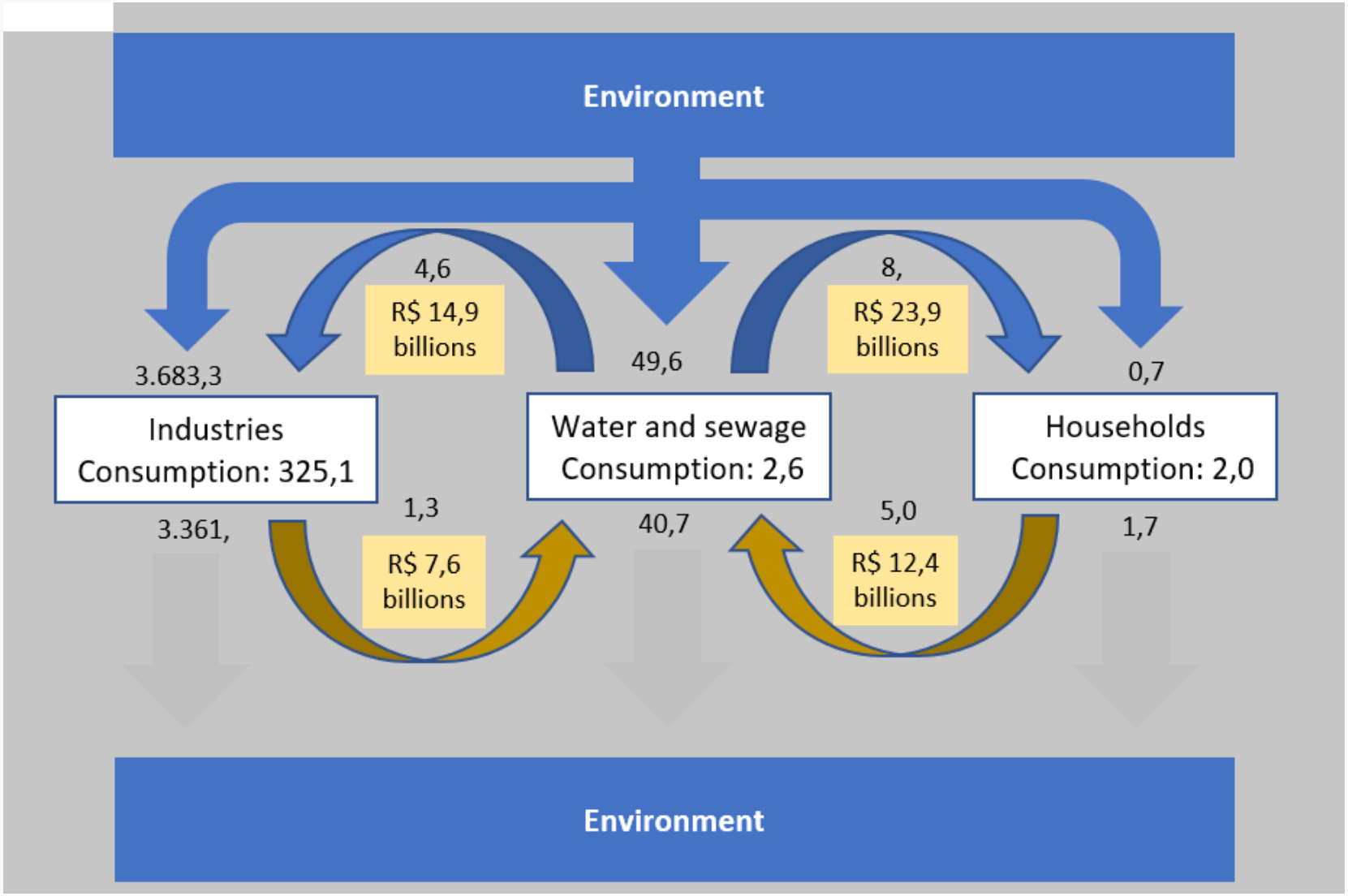
# Context of Water Distribution and Sewerage Services: 2017

| Economic Variables | Measurement unit | Value | Share of the economy |
|---|---|---|---|
| Gross Production Value | R$ billion | 57,1 | 0,5% |
| Intermediate Consumption | R$ billion | 20,9 | 0,4% |
| Gross Value Added | R$ billion | 36,2 | 0,6% |

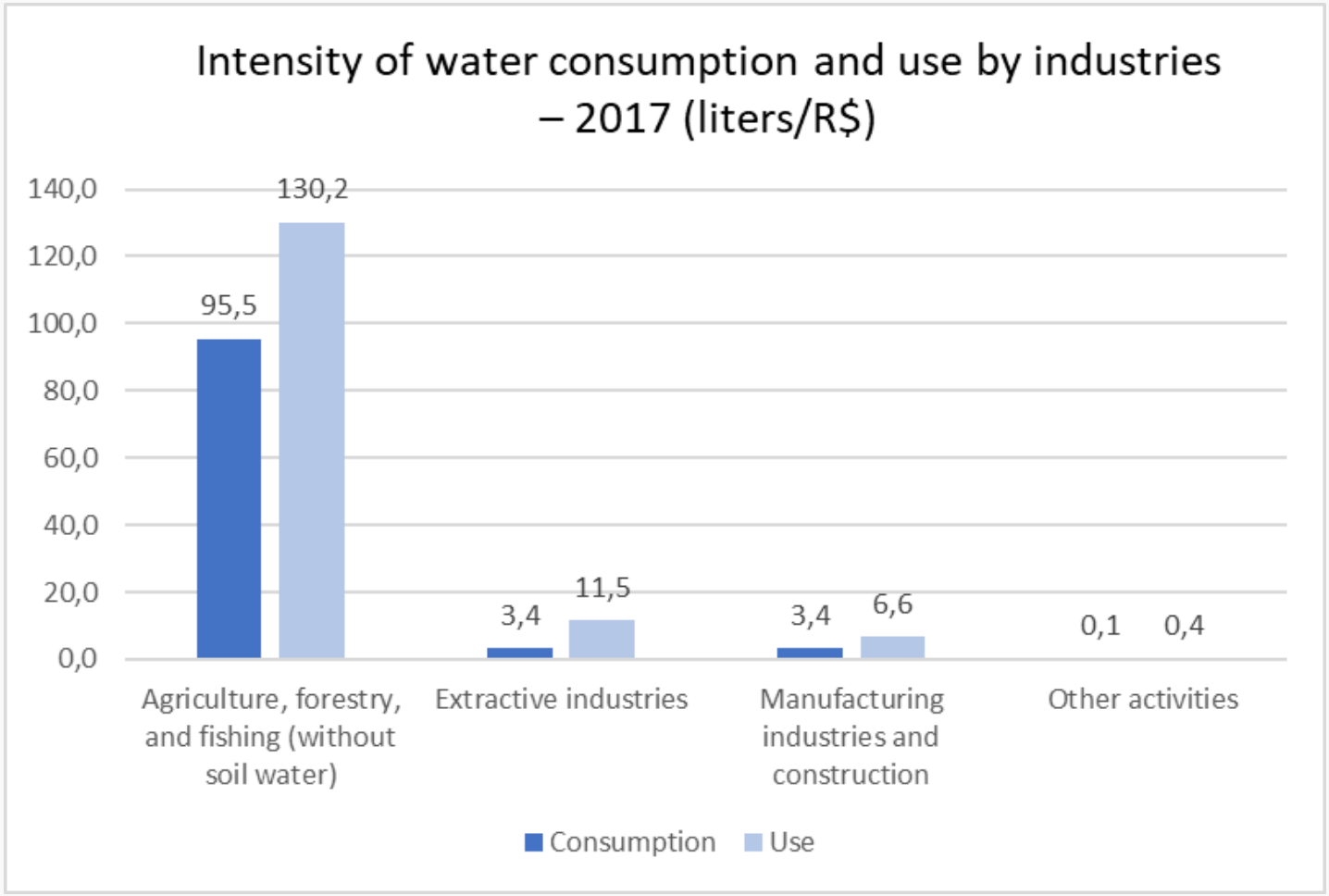
# Context of Water Distribution and Sewerage Services: 2017



# Total flows – Hybrid SUTs – 2017 (mil hm³/year)



# Intensity of water consumption and use: liters of water consumed or used to generate a Real R$ (1,00) of Value Added



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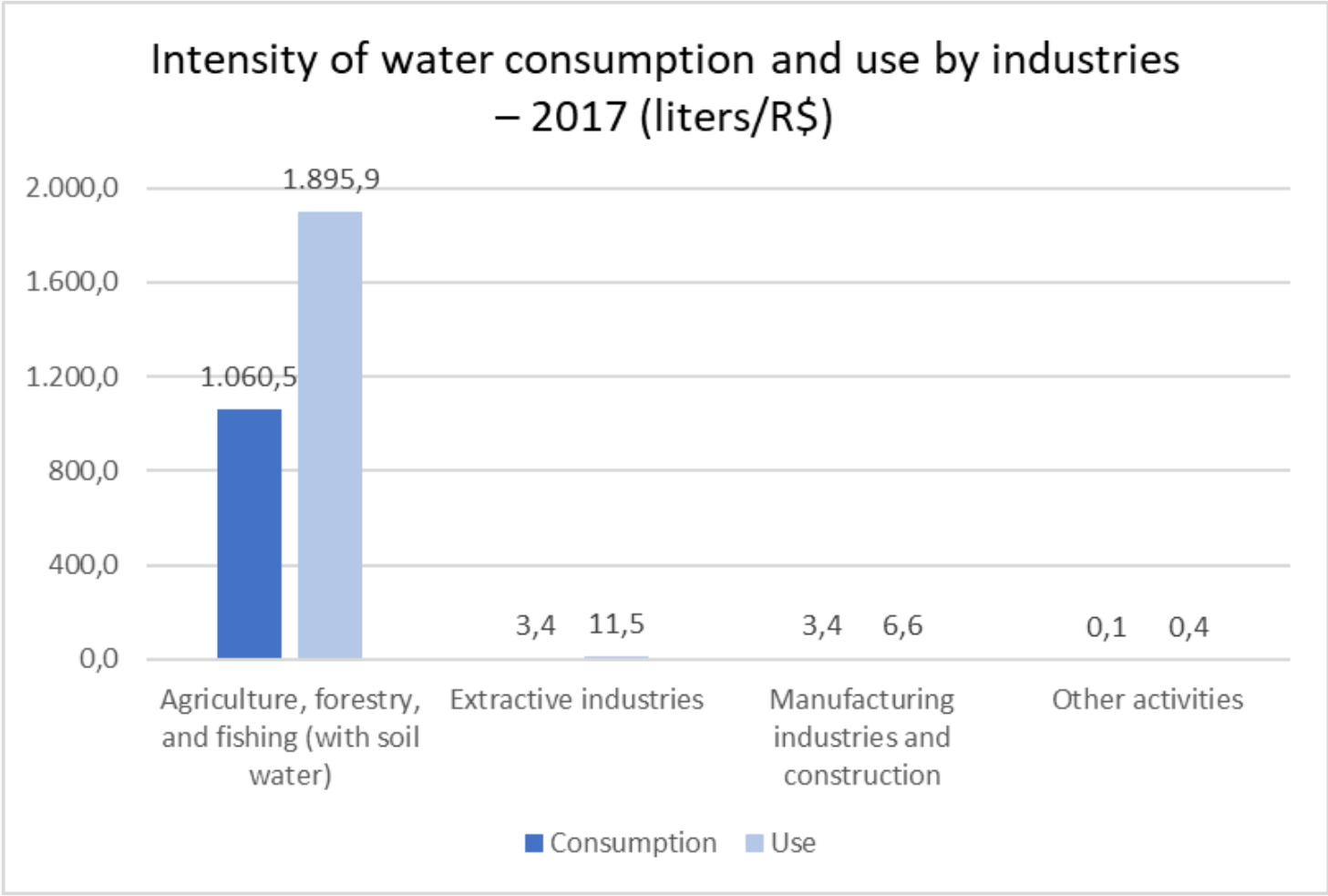
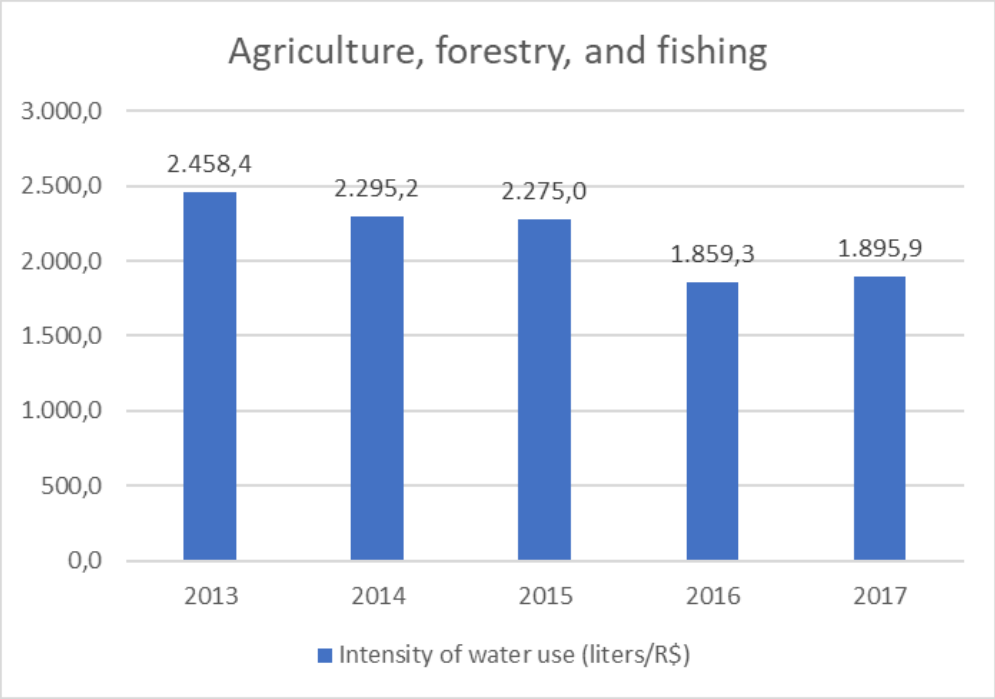
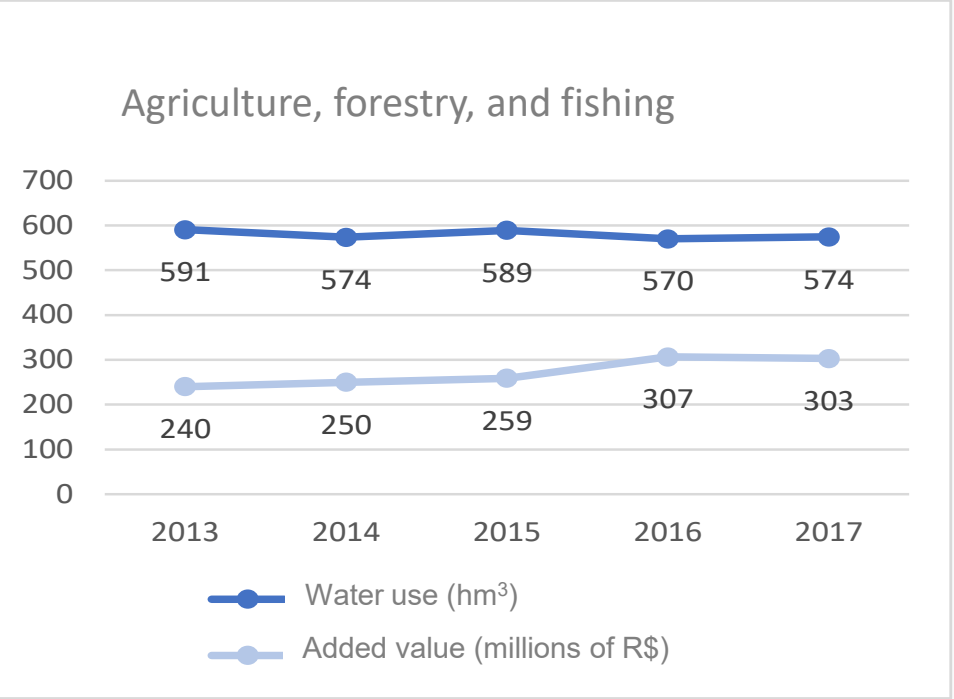
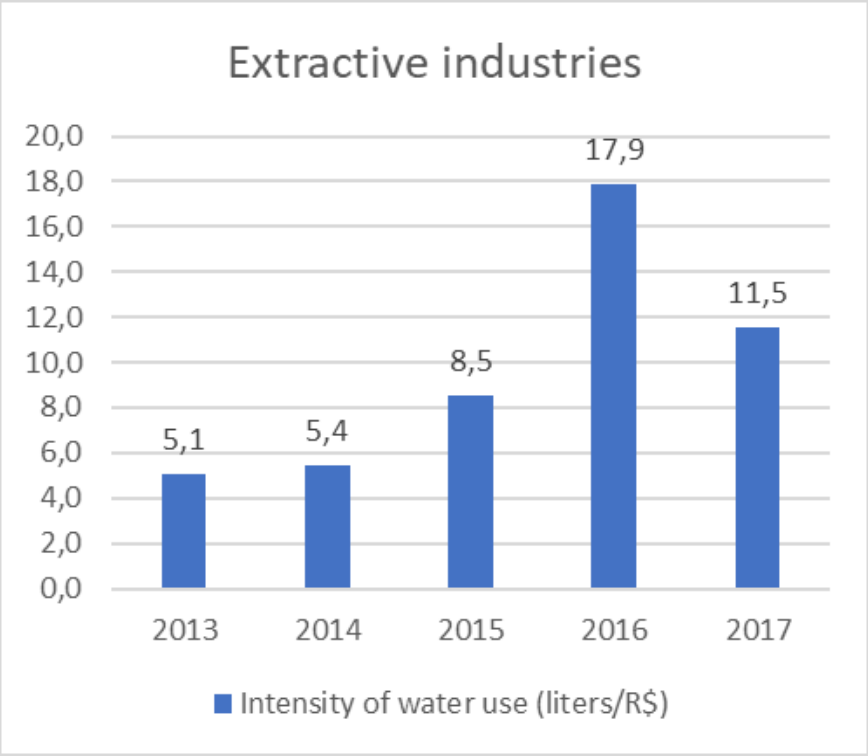


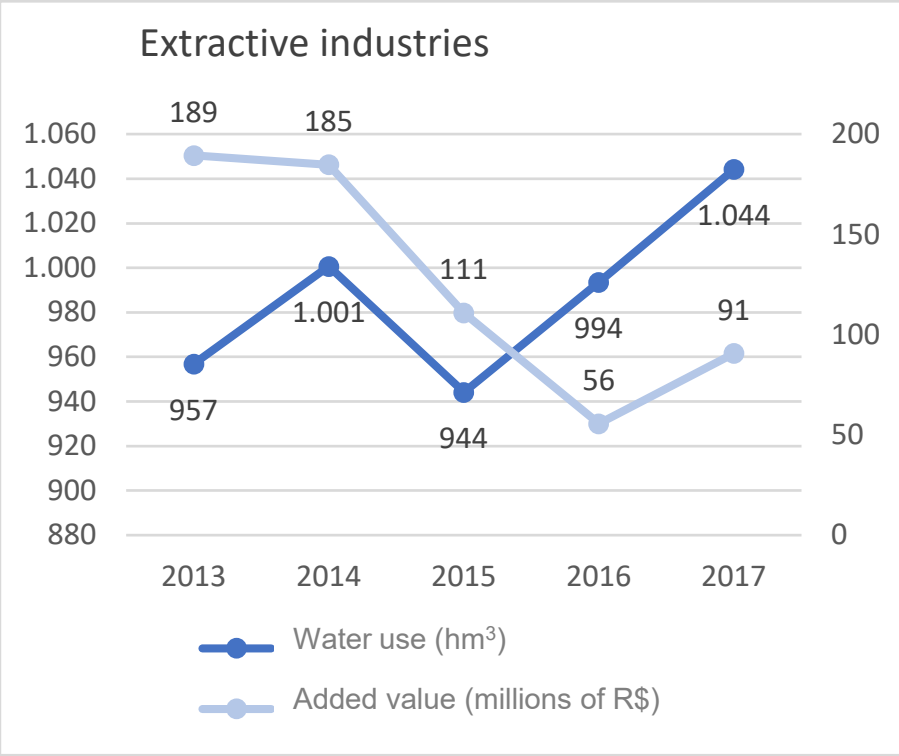
# Intensity of water use – Agriculture, forestry, and fishing (with soil water): 2013-2017



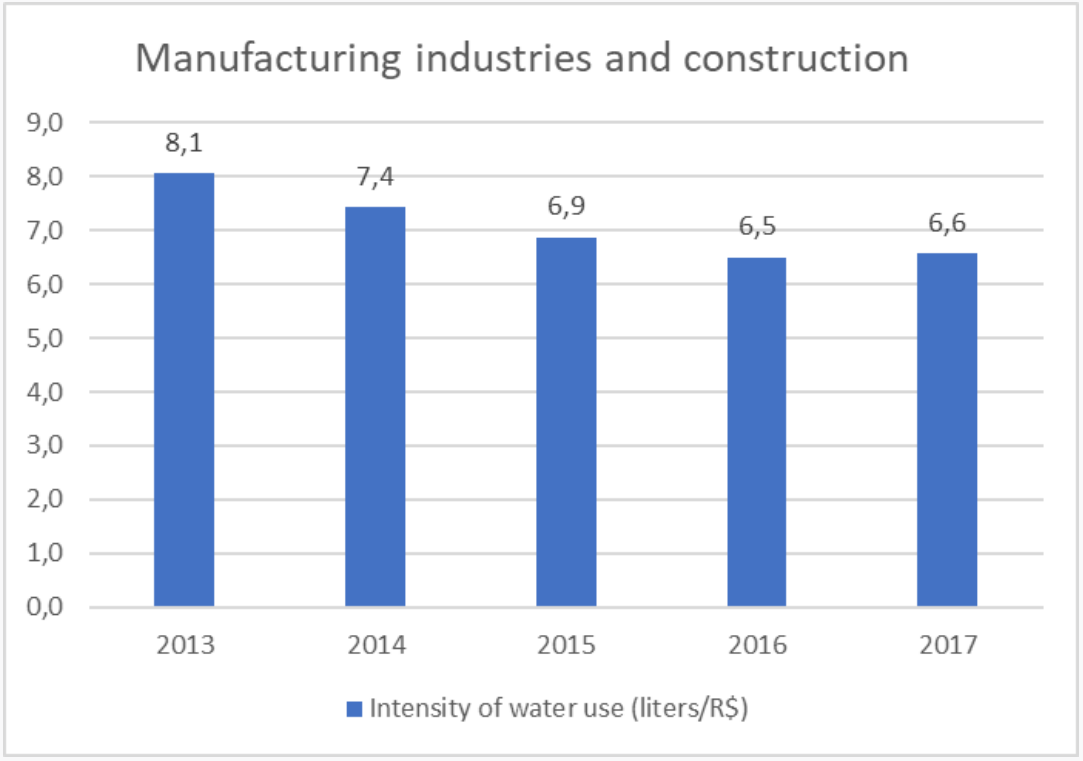



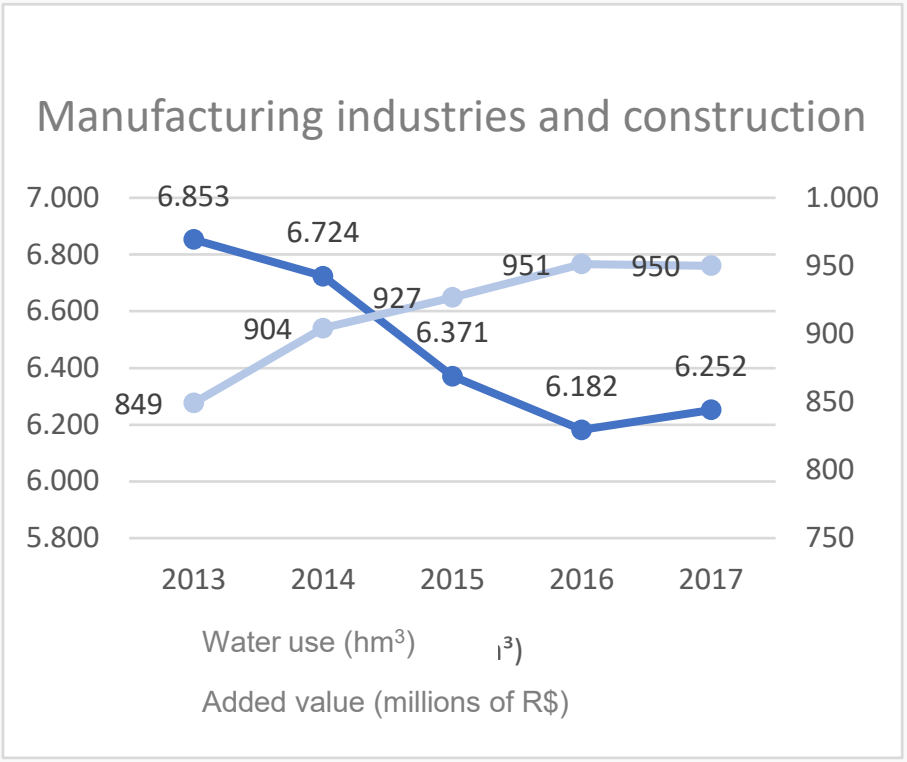
# Intensity of water consumption – Extractive industries: 2013-2017



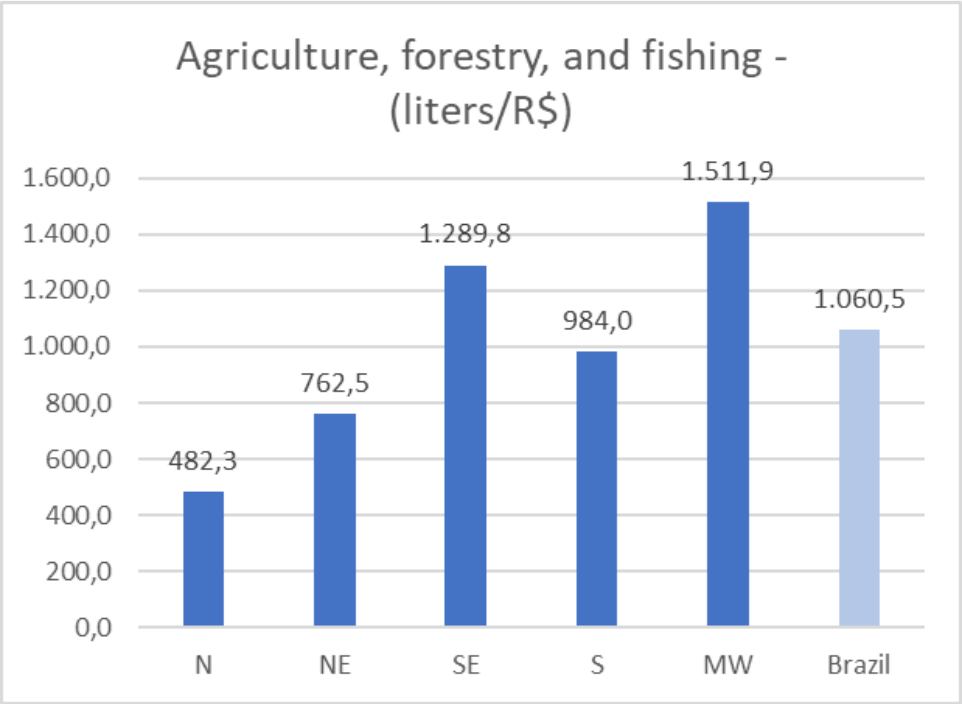



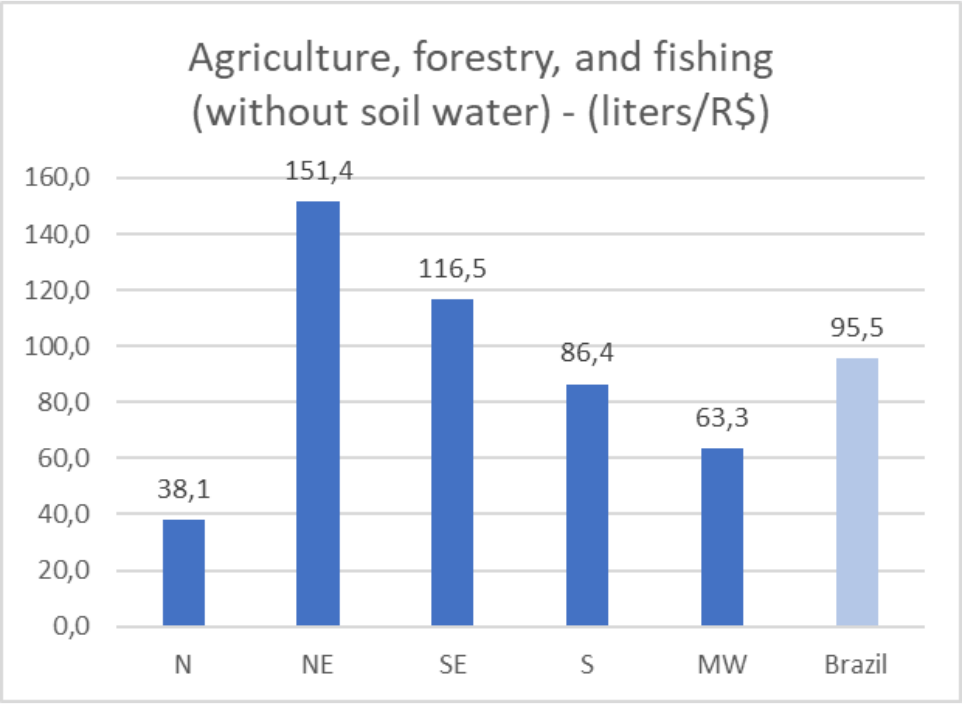
# Intensity of water consumption – Manufacturing industries and construction: 2013-2017



# Intensity of water consumption – industries, by region, 2017 (liters/R$)



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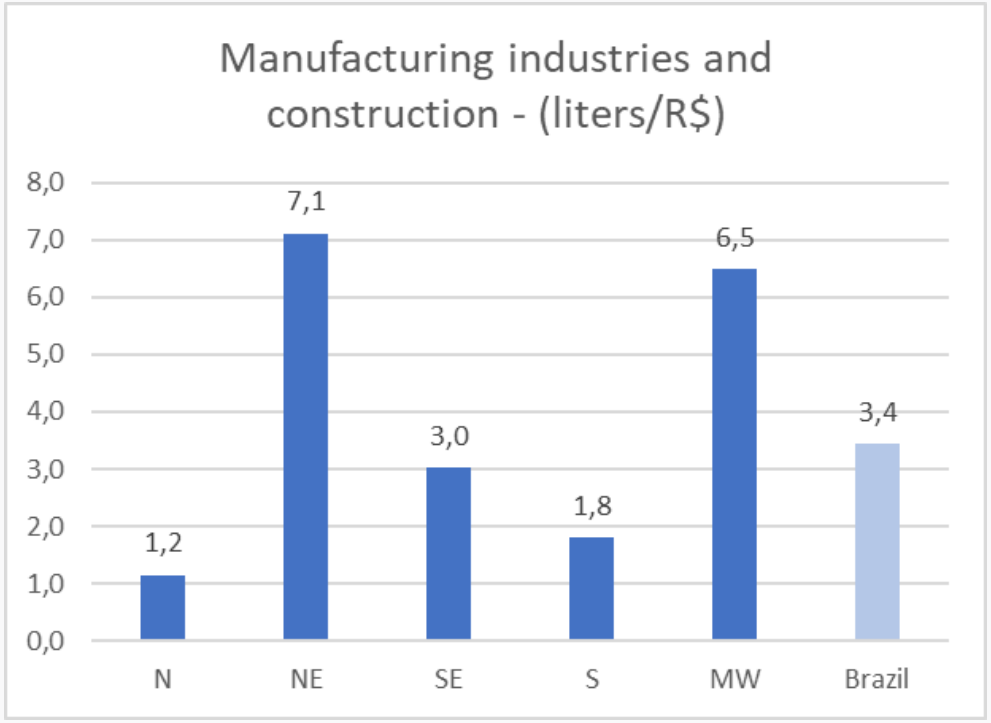
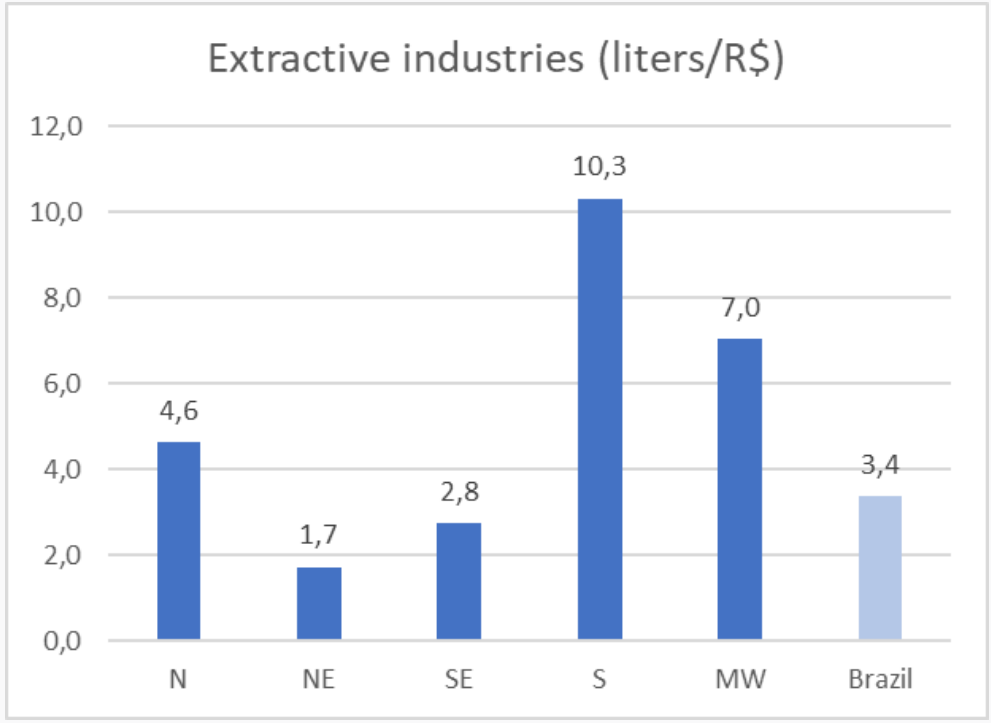
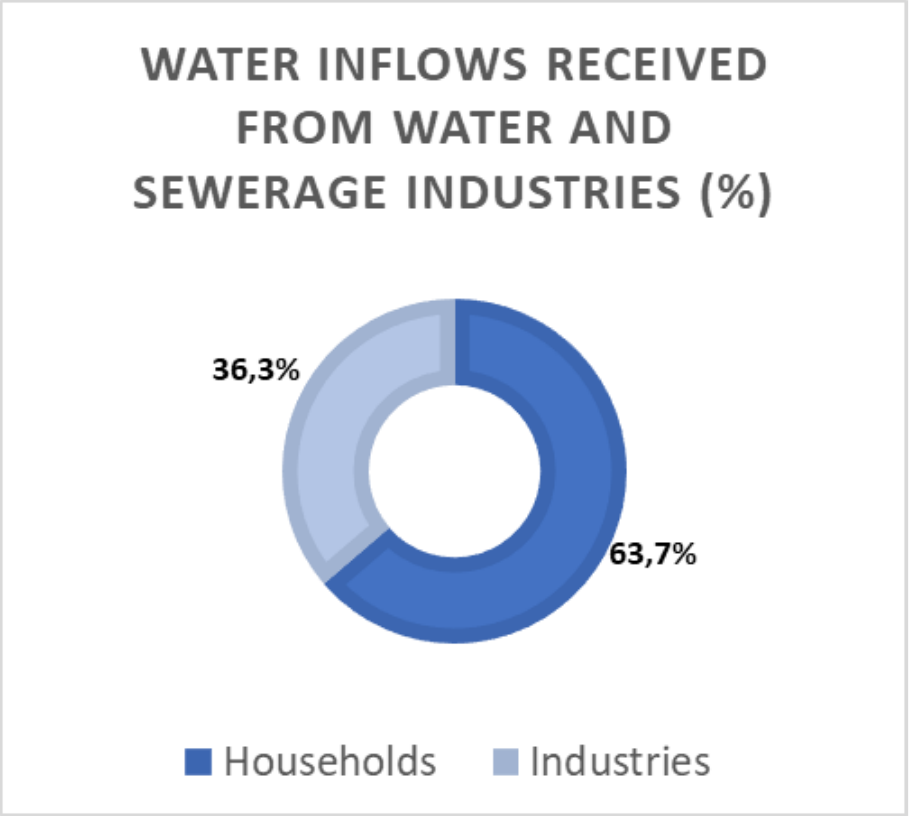
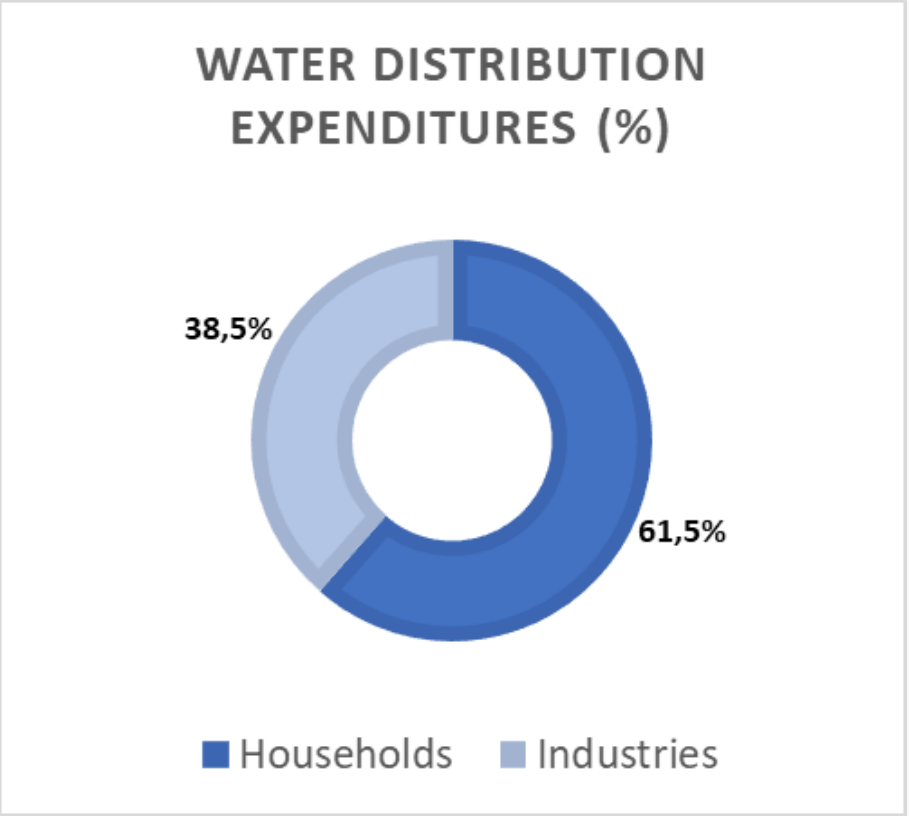


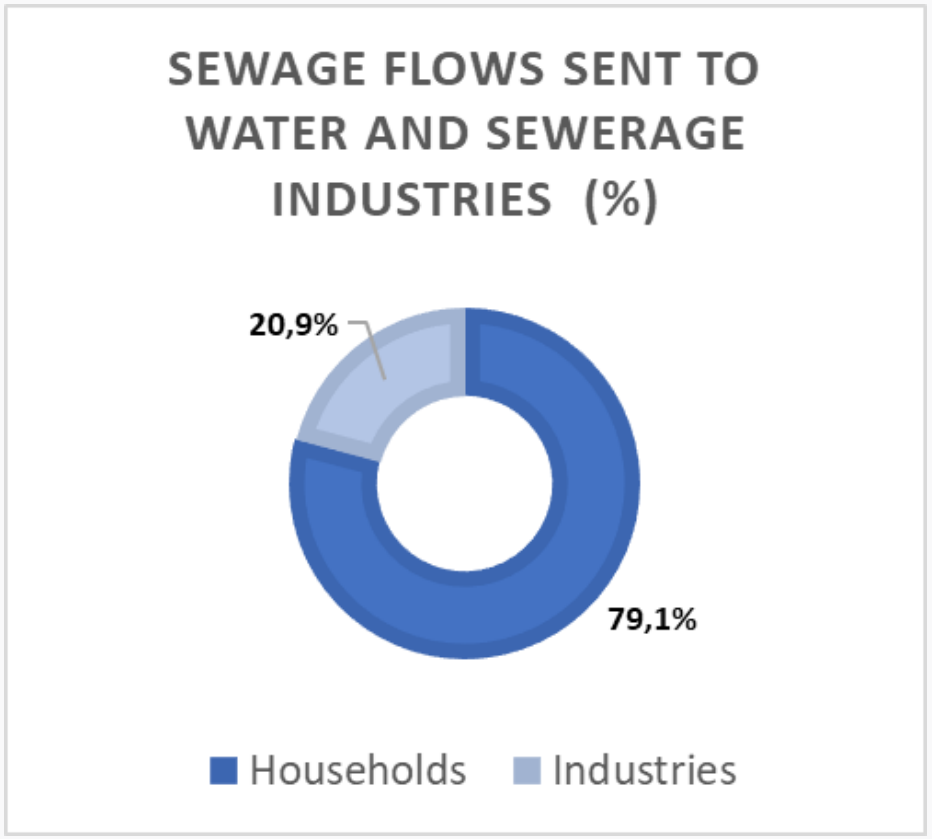



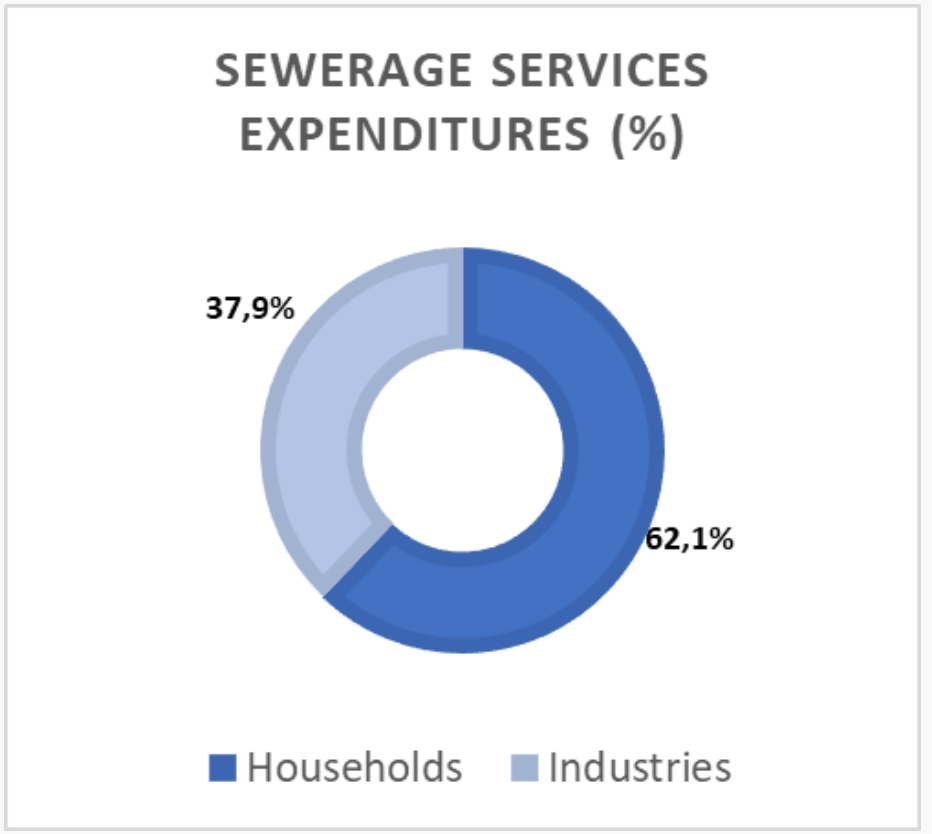
# Share of Water Distribution Use and Expenditure, Brazil, 2017 (%)



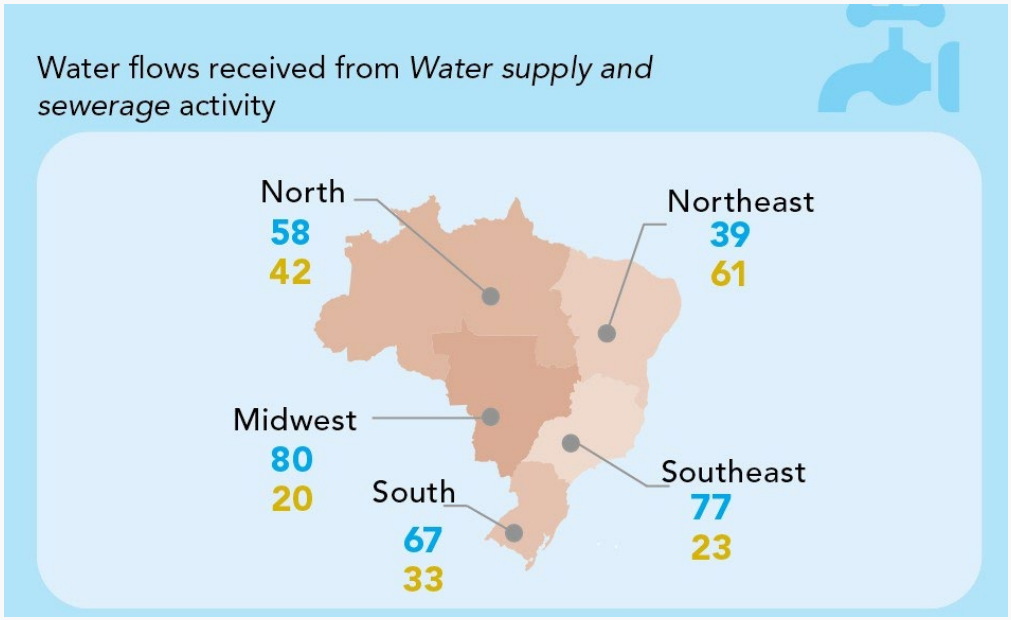



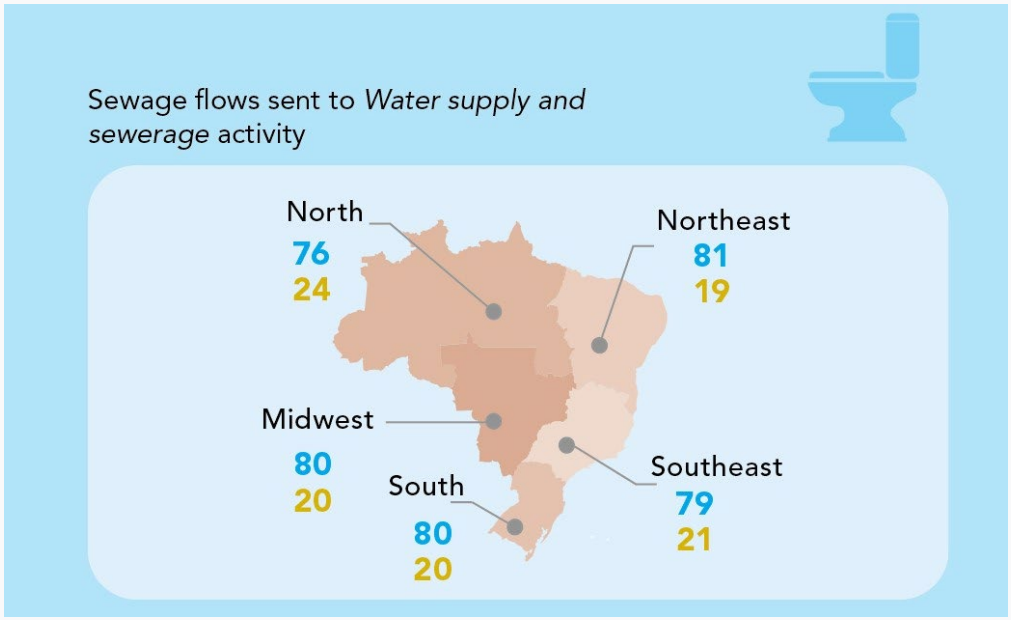
# Share of Sewerage Services Use and Expenditure, Brasil, 2017 (%)



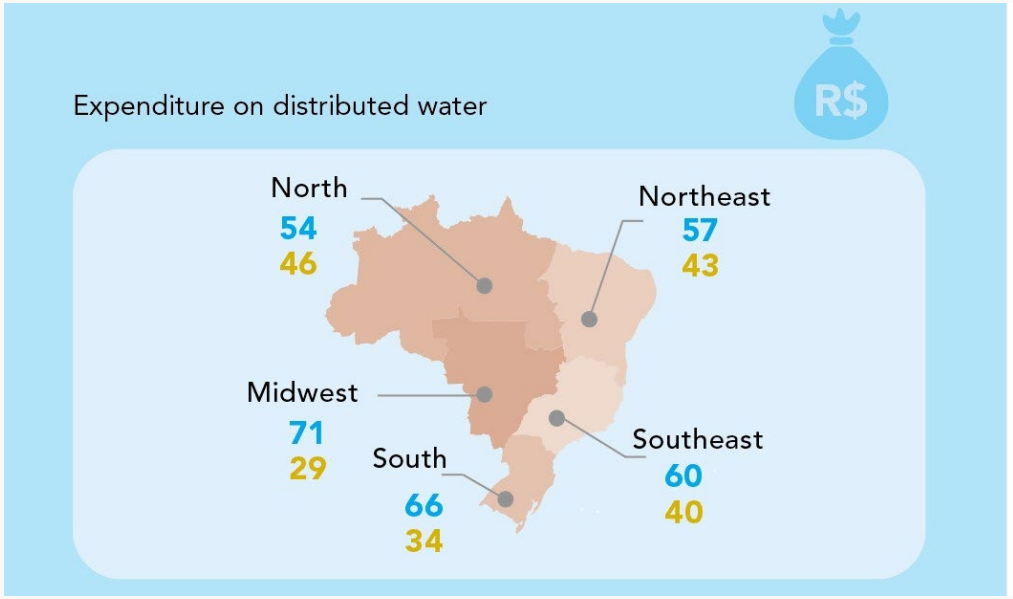
# Share of the use of distributed water and sewerage services in volume, 2017 (%)

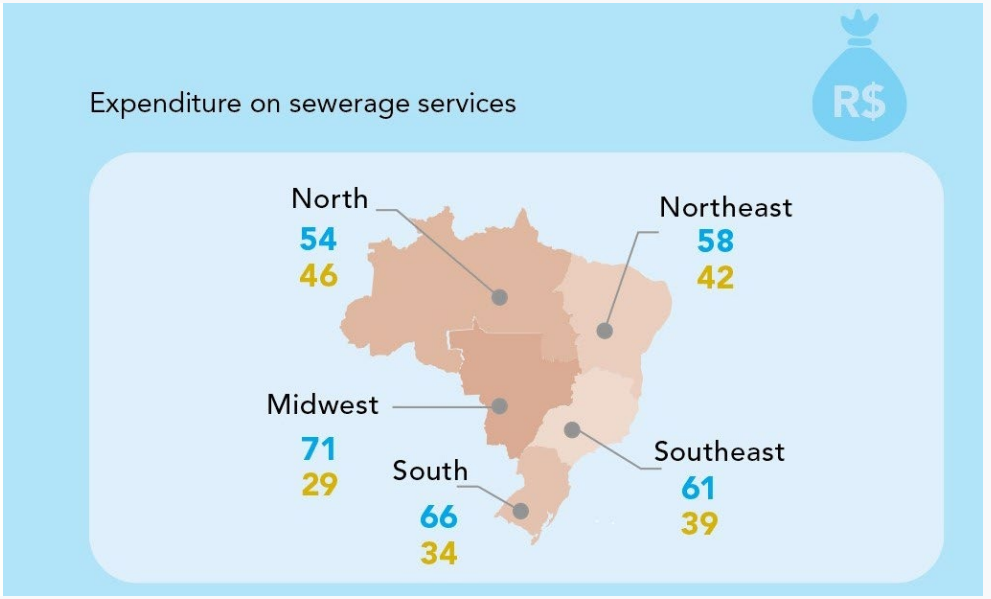



● *Households* ● Industries

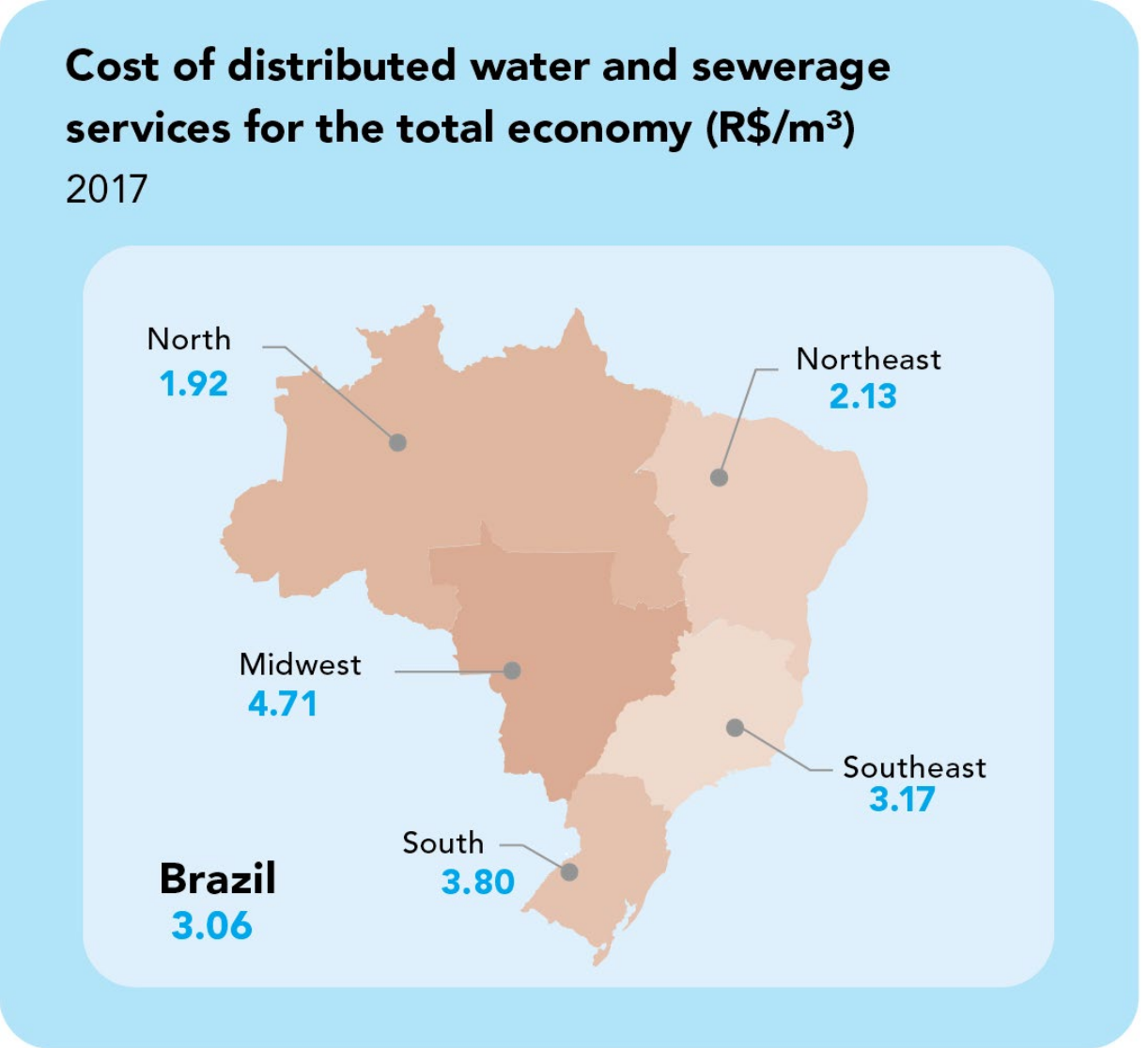
# Share of the use of distributed water and sewerage services in value, 2017 (%)



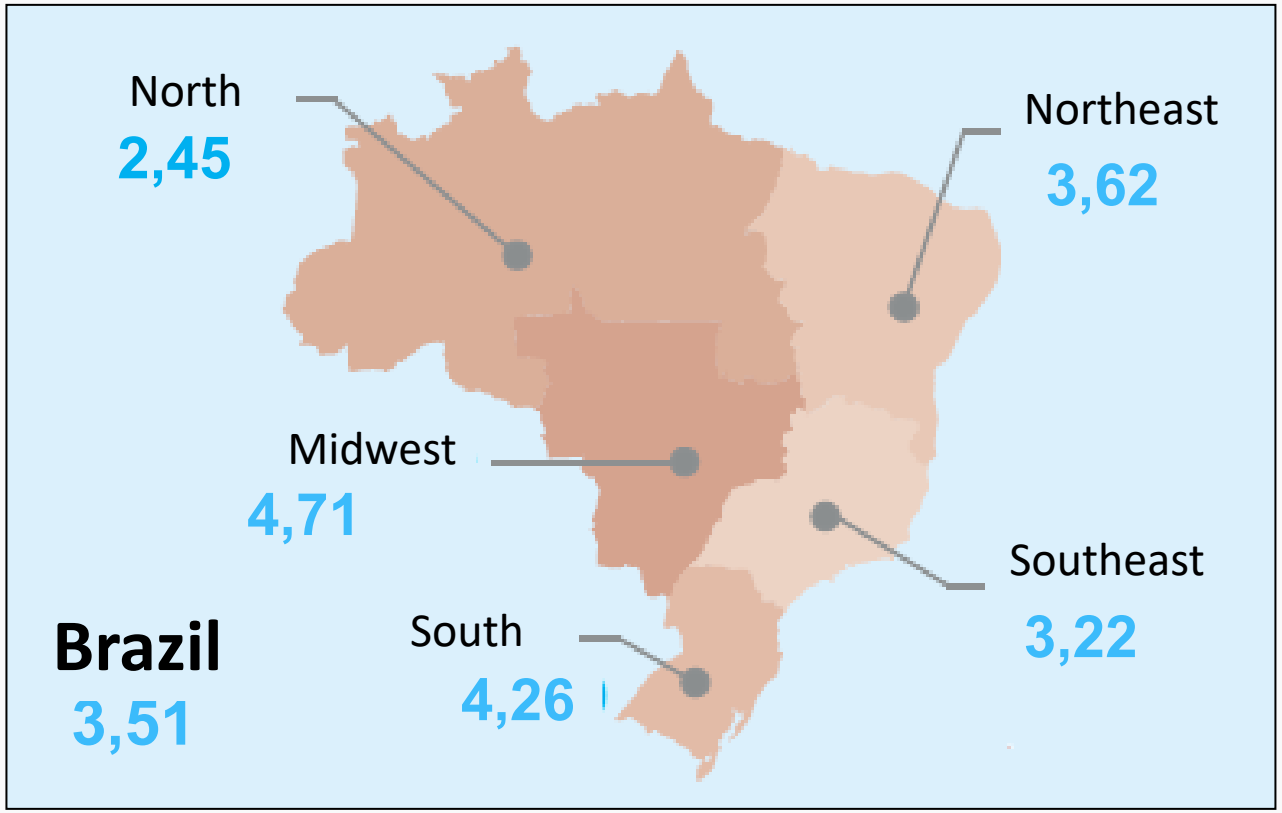

● *Households* ● Industries

# Cost of distributed water and sewerage services for the total economy (R$/m³) – 2017




Sources: 1. IBGE. 2. Agência Nacional de Águas - ANA.

# Cost of distributed water and sewerage services (supplied by the Water and Sewerage Services) (R$/m³) – without PPI – 2017



# Contribution of Environmental Water Accounts to the elaboration of the SDG6 indicators - Clean water and sanitation

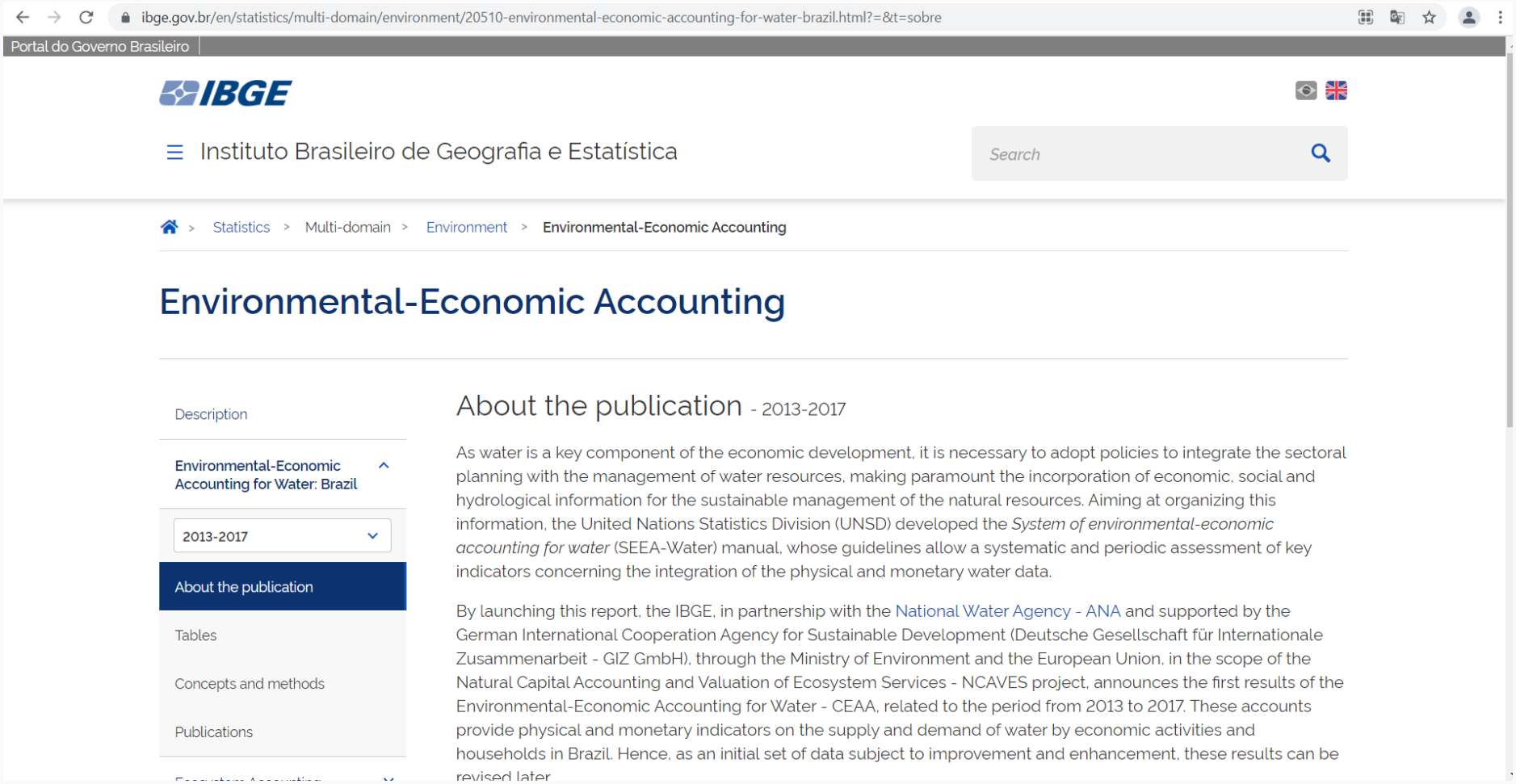
- Providing data to improve the management of water resources and wastewater, in order to collaborate with universal access to water for human consumption and access to adequate sanitation and hygiene for all (6.1 and 6.2);

- Information on the amount of water in water bodies and water use efficiency by economic activities and Families (contributing to indicators 6.3 and 6.4);

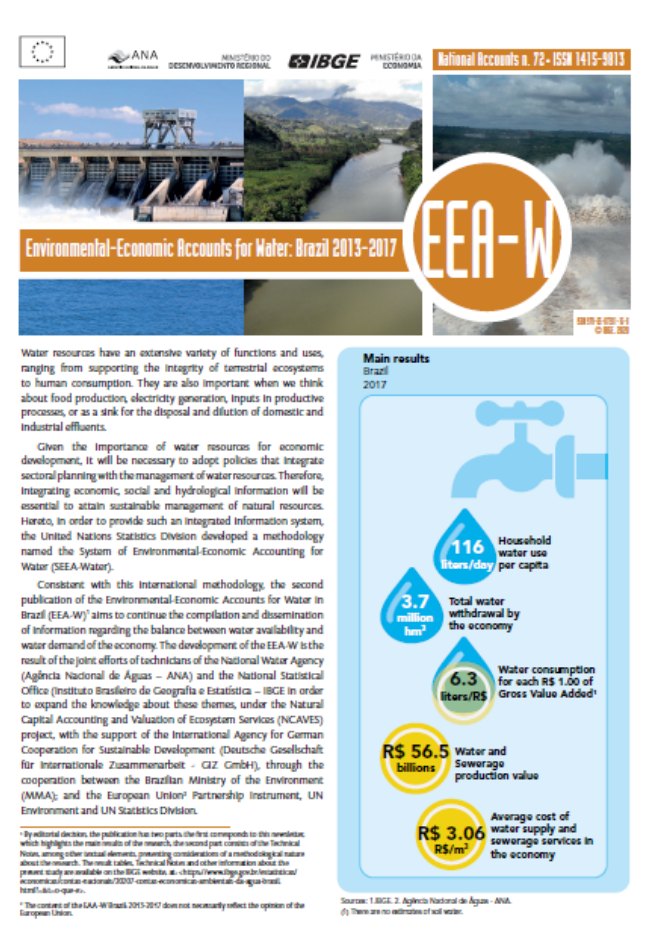
- Assistance in the integrated management of water resources and in supporting policies for the protection and restoration of water-related ecosystems (6.5 and 6.6).

# ABOUT THE PUBLICATION

**https://www.ibge.gov.br/en/statistics/multi-domain/environment/20510-environmental-economic-accounting-for-water-brazil.html?=&t=sobre**



# Thank you!



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Environmental-Economic Accounts for Water: Brazil 2013-2017

EEA-W

Water resources have an extensive variety of functions and uses, ranging from supporting the integrity of terrestrial ecosystems to human consumption. They are also important when we think about food production, electricity generation, inputs in productive processes, or as a sink for the disposal and dilution of domestic and industrial effluents.

Given the importance of water resources for economic development, it will be necessary to adopt policies that integrate sectoral planning with the management of water resources. Therefore, integrating economic, social and hydrological information will be essential to attain sustainable management of natural resources. Hereto, in order to provide such an integrated information system, the United Nations Statistics Division developed a methodology named the System of Environmental-Economic Accounting for Water (SEEA-Water).

Consistent with this international methodology, the second publication of the Environmental-Economic Accounts for Water in Brazil (EEA-W)[1] aims to continue the compilation and dissemination of information regarding the balance between water availability and water demand of the economy. The development of the EEA-W is the result of the joint efforts of technicians of the National Water Agency (Agência Nacional de Águas – ANA) and the National Statistical Office (Instituto Brasileiro de Geografia e Estatística – IBGE in order to expand the knowledge about these themes, under the Natural Capital Accounting and Valuation of Ecosystem Services (NCAVES) project, with the support of the International Agency for German Cooperation for Sustainable Development (Deutsche Gesellschaft für Internationale Zusammenarbeit - GIZ GmbH), through the cooperation between the Brazilian Ministry of the Environment (MMA); and the European Union[2] Partnership Instrument, UN Environment and UN Statistics Division.

[1] By editorial decision, the publication has two parts, the first corresponds to this newsletter, which highlights the main results of the research, the second part consists of the Technical Notes, among other textual elements, presenting considerations of a methodological nature about the research. The result tables, Technical Notes and other information about the present study are available on the IBGE website, at: <https://www.ibge.gov.br/en/statistics/economical/contas-nacionais/29207-contas-economicas-ambientais-da-agua-brasil.html?=&t=o-que-e>.

[2] The content of the EAA-W Brazil 2013-2017 does not necessarily reflect the opinion of the European Union.

**Main results**
Brazil
2017

- **116** liters/day — Household water use per capita
- **3.7** million hm³ — Total water withdrawal by the economy
- **6.3** liters/R$ — Water consumption for each R$ 1.00 of Gross Value Added[1]
- **R$ 56.5** billions — Water and Sewerage production value
- **R$ 3.06** R$/m³ — Average cost of water supply and sewerage services in the economy

Sources: 1.IBGE. 2. Agência Nacional de Águas - ANA.
(1) There are no estimates of soil water.

## ENVIRONMENTAL-ECONOMIC ACCOUNTS

## SECTOR OF NATIONAL ACCOUNTS

## DEPARTMENT OF SURVEYS

## IBGE