ANA
AGÊNCIA NACIONAL DE ÁGUAS

Brazilian Water Resources Report and Implementation of SEEA-Water in Brazil

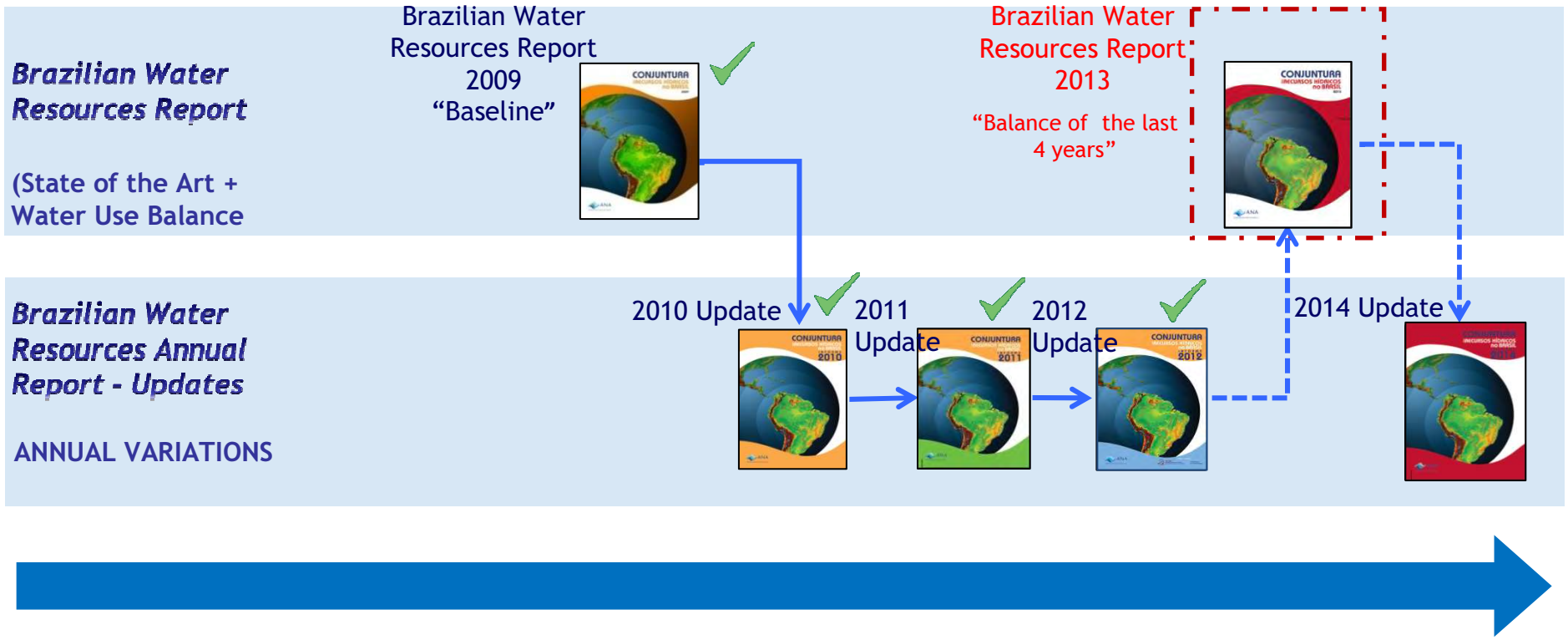
National Seminar of SEEA Implementation

Rio de Janeiro, September 2013

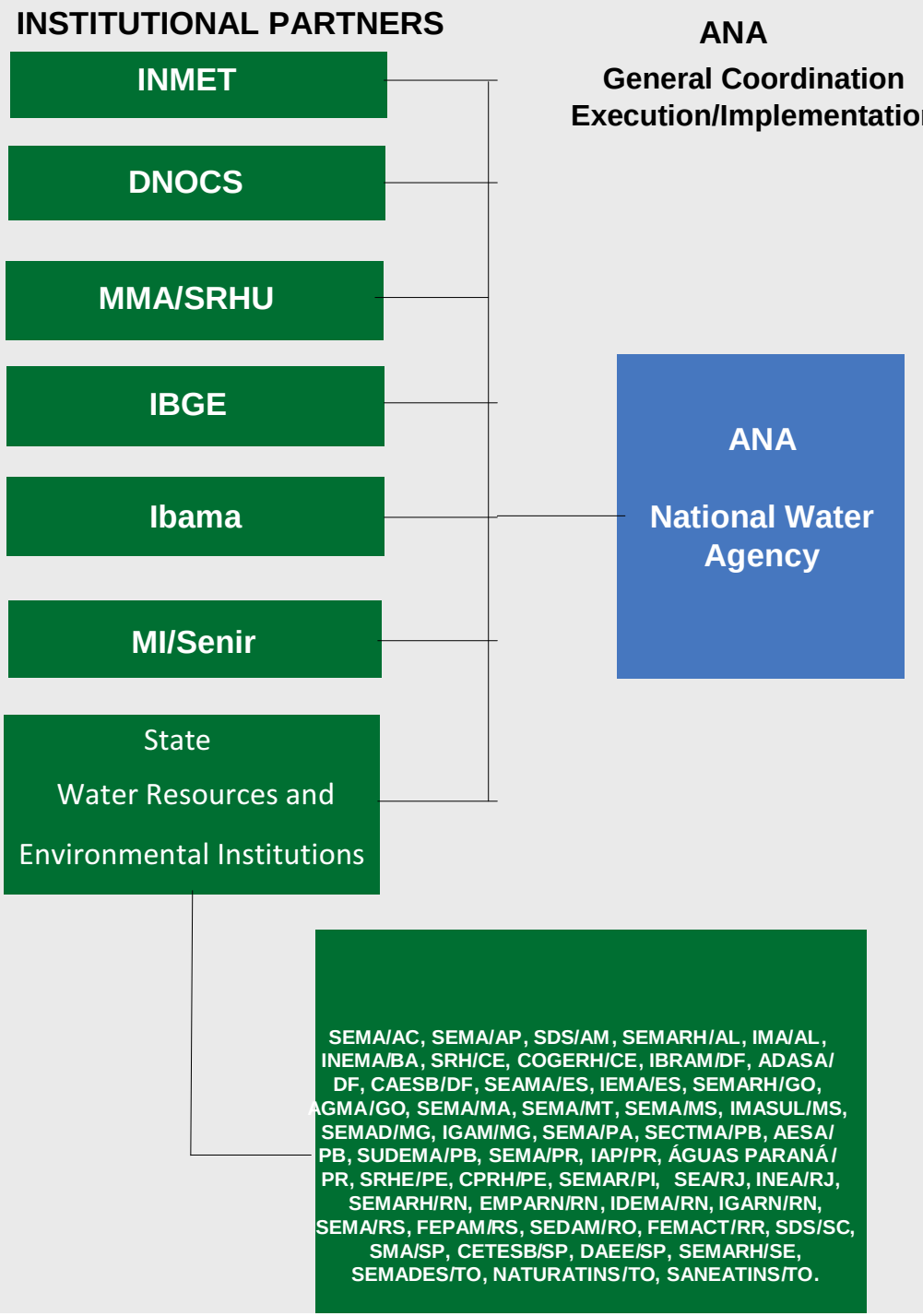
Ministério do Meio Ambiente

GOVERNO FEDERAL
BRASIL
PAÍS RICO É PAÍS SEM POBREZA

Brazilian Water Resources Report
Annual Editions



Reference for systematic and periodic follow up regarding water resources situation and management in Brazil, as well as NWRP implementation status.



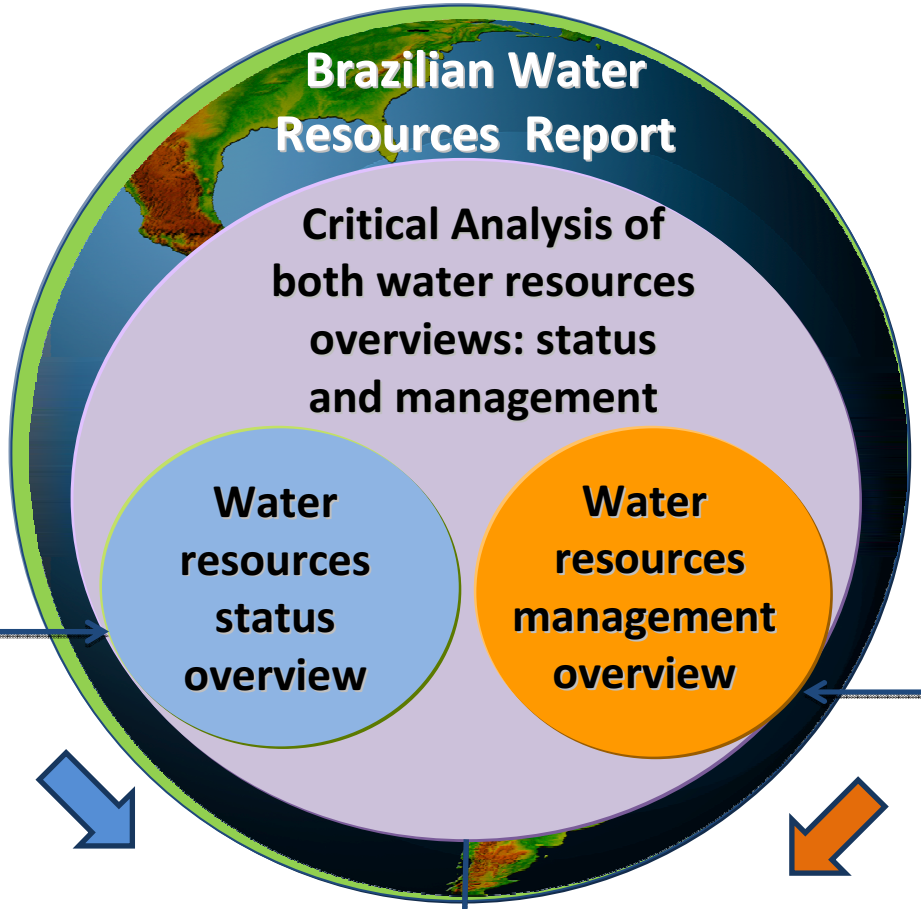
Context of the 2013 Report

- Result of the integration of multiple institutional partners in a complex process of information appropriation
  - Federal – SRHU/MMA, Inmet, DNOCS, SBF/MMA, Ibama/MMA, ICMBio/MMA, IBGE
  - Over 50 state water resources and environment institutions
- Use of the results of the 2008 National Survey on Water Supply and Sanitation - PNSB, 2010 Demographic Census (IBGE) 2006 Agricultural and Live Stock Census (IBGE)
- Use of the results of recent river basin plans (MDA, Verde Grande, Doce, Tocantins-Araguaia e Paranaíba) and Atlas Brazil: Urban Water Supply.

State Report
Thematic Division

Informations that can support the National Environmental Accounts

- Availabilities: water availability and water quality
- Uses: demands and multiple uses
- Water balance (uses x availabilities)
- Vulnerabilities: critical events (flood and drought)



- Institutional and legal framework
- Hydrometeorological monitoring
- Water resources planning
- Water resources regulation
- Inspection/supervising of water resources uses
- Charge/Charging for the water resources use
- Information system

Water Availability and Water Quality	Precipitation Anomalies
	Precipitation Effect at Fluviometric Stations
	Superficial Water Availability
	Water Quality
Water Demands and Multiple Uses	Consumptive Uses
	Non-consumptive Uses
Water Balance	Quantitative Water Balance
	Qualitative Water Balance
	Quali-Quantitative Water Balance
Vulnerabilities	Extreme Events
	Reduction of Native Vegetation
	Climatic Change

National approach

Systematization by Hydrographic Region and by State

Intitutional and Legal Framework	History of Water Resources Management
	Institutional and Legal Modifications
	Performance of River Basin Organisms
Water Resources Planning	Water Resources Planning
	Water Quality Classification
Regulation of Water Use	Water Use Permitting
	Water Allocation Negotiation
	Certificate of Water Works Sustainability Assessment (Certoh)
	National Registration of Water Use (CNARH)
Inspection of Water Use	Water Users Inspection
	Dam Safety Inspection
Charging for the use of water resources	Results of Water Charging at Rivers under Federal Jurisdiction
	Summary of the amount charged for the use of water resources
	Use of Financial Resources
Hidrometeorological Monitoring	Water Quantity Monitoring
	Water Quality Monitoring
Water Resources Information System	

ANA
AGÊNCIA NACIONAL DE ÁGUAS

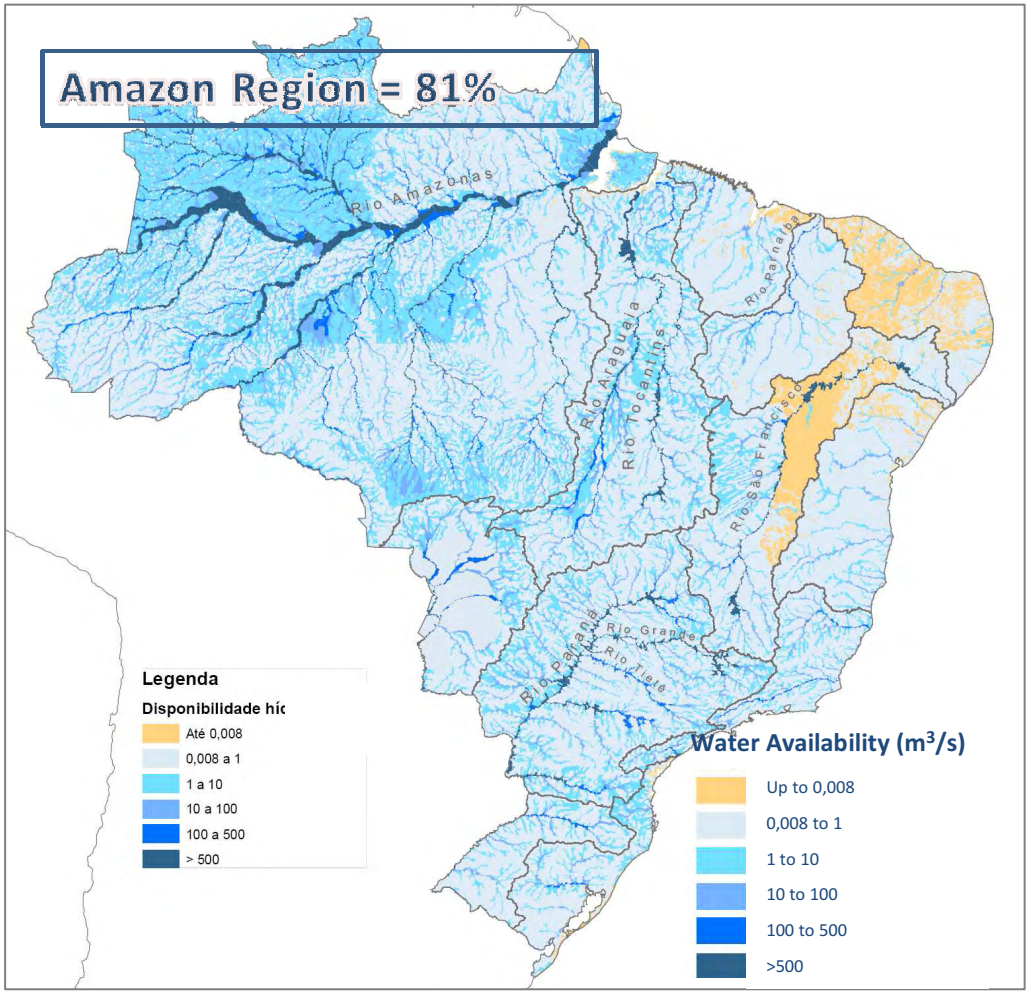
HIGHLIGHTS OF THE BRAZILIAN WATER RESOURCES ANNUAL REPORT

1 - Overview of Water Resources

Superficial Water Availability

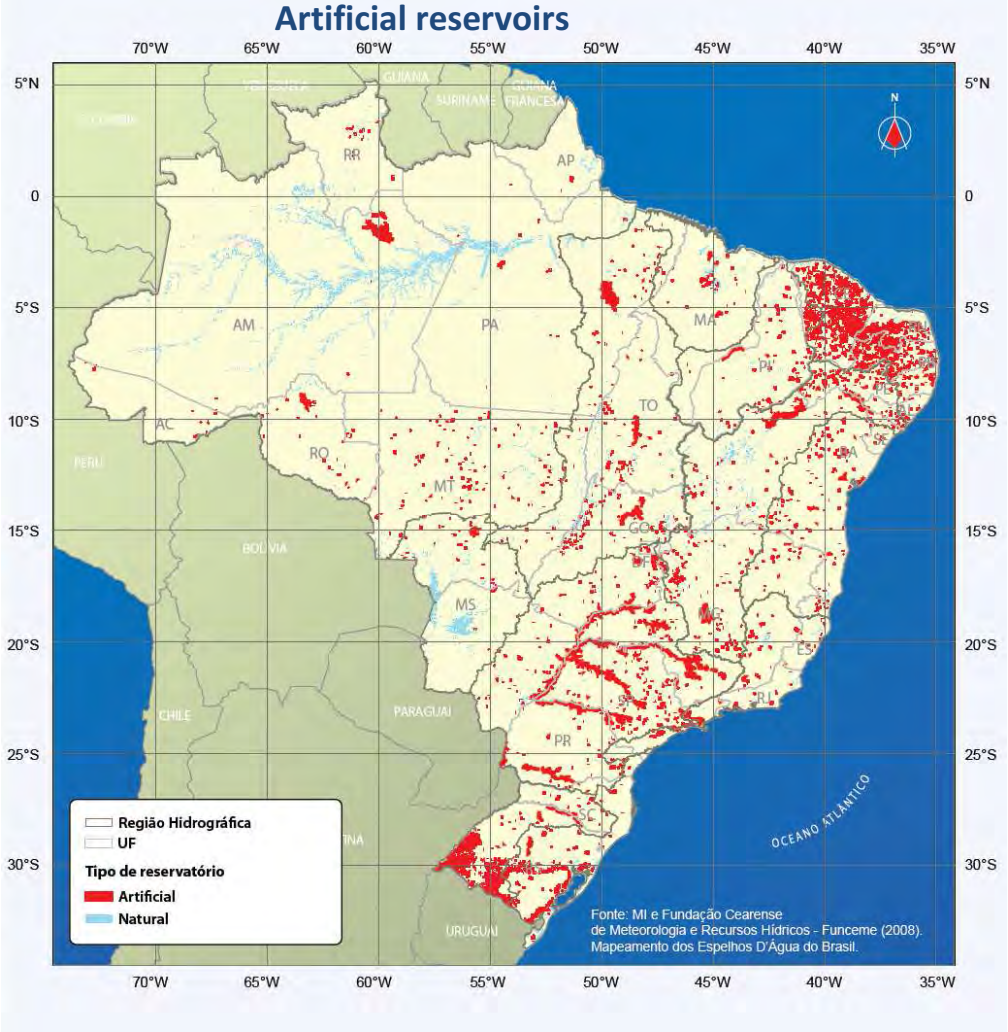
Overview of Water Resources

The aggregate value does not reflect the reality of Brazil. Knowledge on the superficial water spatial distribution ensures the identification of critical areas.



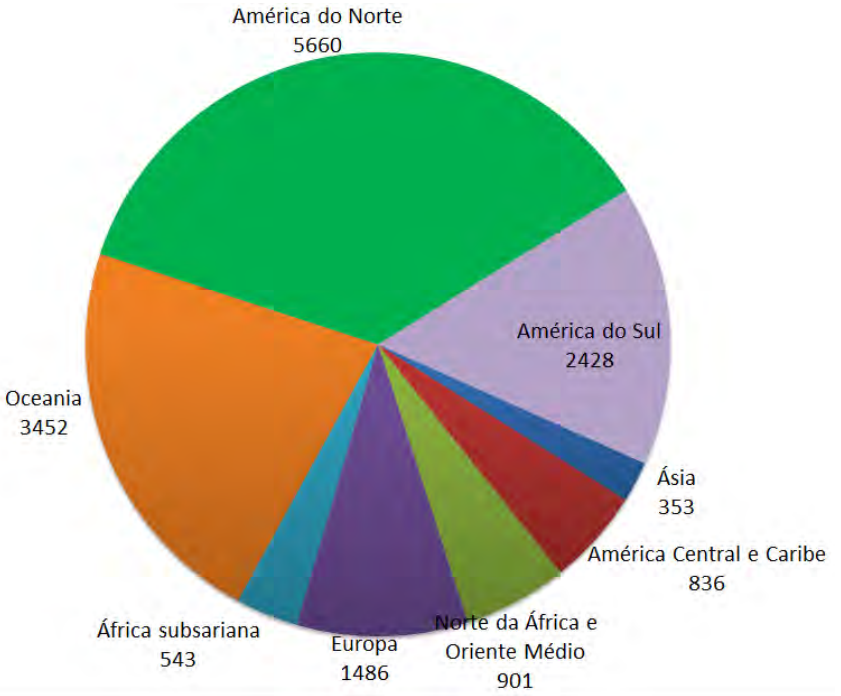
Brazil has 12% of World`s Total Water Availability (18%, if the water contribution of neighbor countries is summed up)

Water stock / storage capacity / reservation - artificial



Reservoirs => water stock in rainy season to guarantee water in dry period / flood control / hydroenergy / and others .

Storage capacity - Brasil = 3607 (m^3/ habitant)



Fonte: ANA. Adaptado de: WHITE 2005 apud McCARTNEY, M.; SMAKHTIN, V. In: Blue Paper. Water Storage in an Era of Climate Change: Addressing the Challenge of Increasing Rainfall Variability. International Water Management Institute, 2010. Disponível em: <www.iwmi.cgiar.org/Publications/Blue_Papers/PDF/Blue_Paper_2010-final.pdf>.

ANA
AGÊNCIA NACIONAL DE ÁGUAS

Map of the aquifer systems

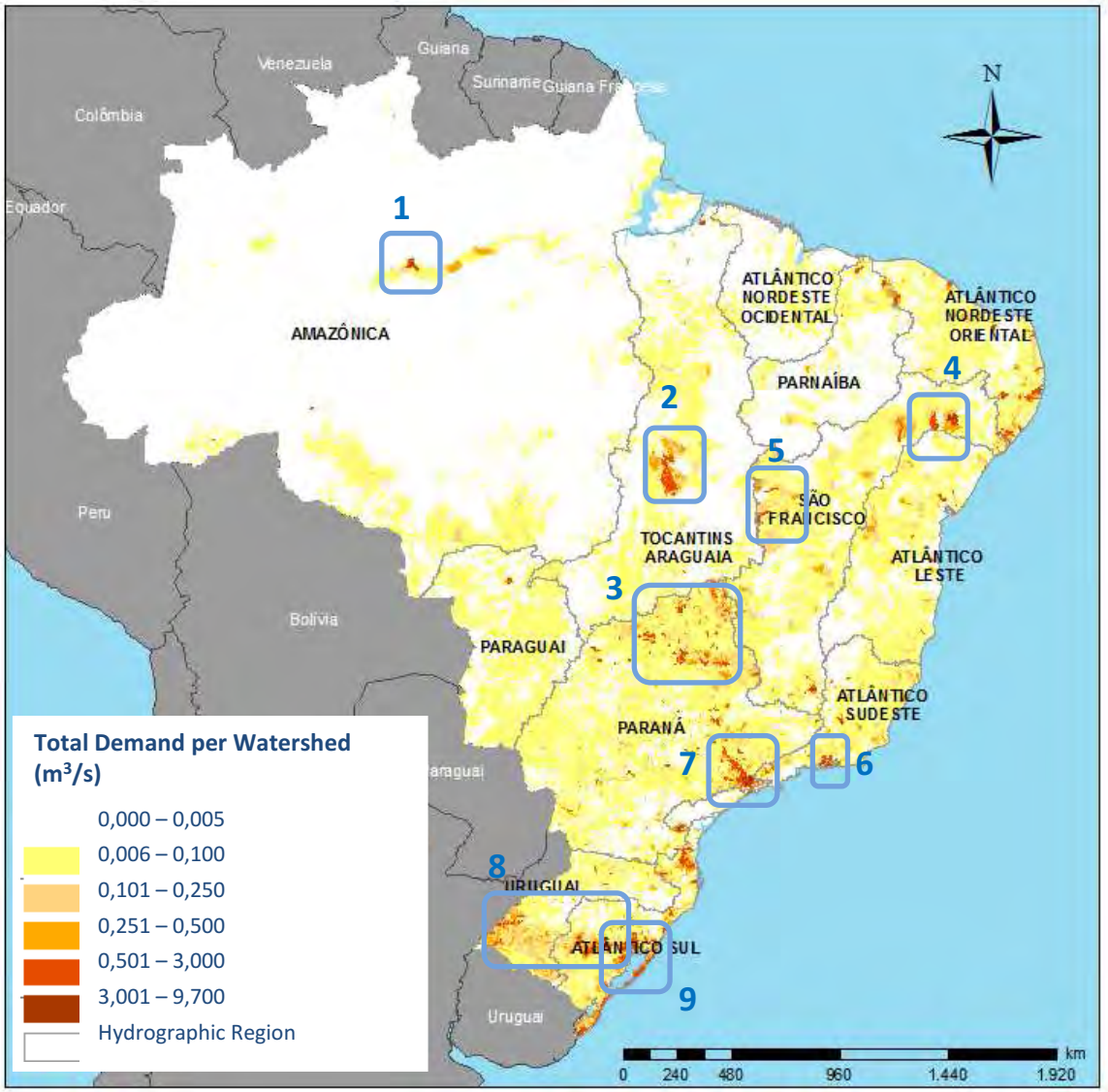
Groundwater availability = 11.430 m3/s

Hydrographic regions	Groundwater availability (m^3/s)
RH Amazônica	7.078
RH do Paraguai	617
RH do Tocantins-Araguaia	604
RH do Paraná	1.437
RH do Uruguai	400
RH Atlântico-Sul	212
RH Atlântico-Sudeste	146
RH do São Francisco	355
RH Atlântico-Leste	85
RH do Parnaíba	227
RH Nordeste-Ocidental	183
RH Nordeste-Oriental	86
BRASIL	**11.430**

Update of the Consumptive Demand

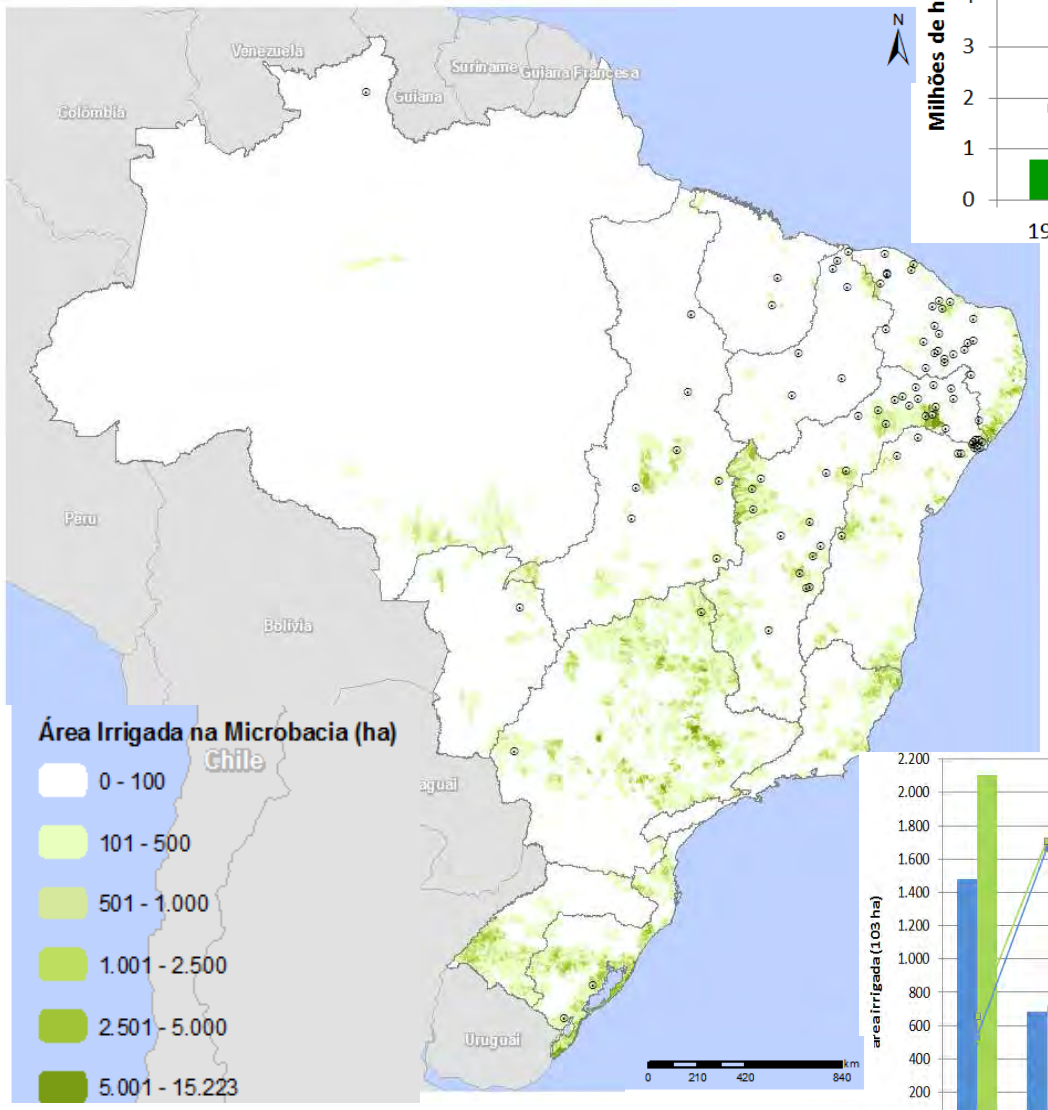
Overview of Water Resources

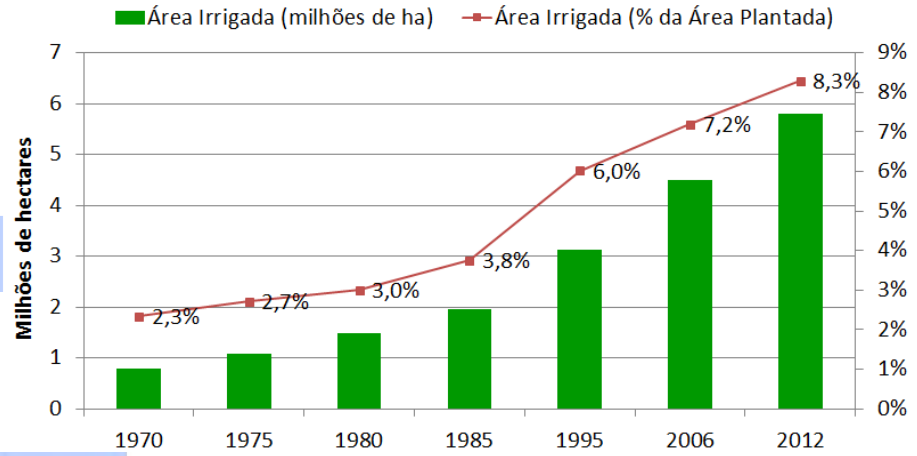
Brazil Total Water Withdrawal = 2.373 m³/s



1. High Urban Demand – Manaus Metropolitan Region (MR)
2. High Demand for Irrigation – Formoso, Pium and Urubu Projects
3. High Demand for Irrigation – Paranaíba River Basin
4. High Demand for Irrigation – Petrolina-Juazeiro Center
5. High Demand for Irrigation – West Bahia
6. High Urban and Industrial Demand – Rio de Janeiro MR
7. High Urban and Industrial Demand – Sao Paulo MR
8. High Demand for Irrigation of Rice Crops
9. High Urban Demand – Porto Alegre MR

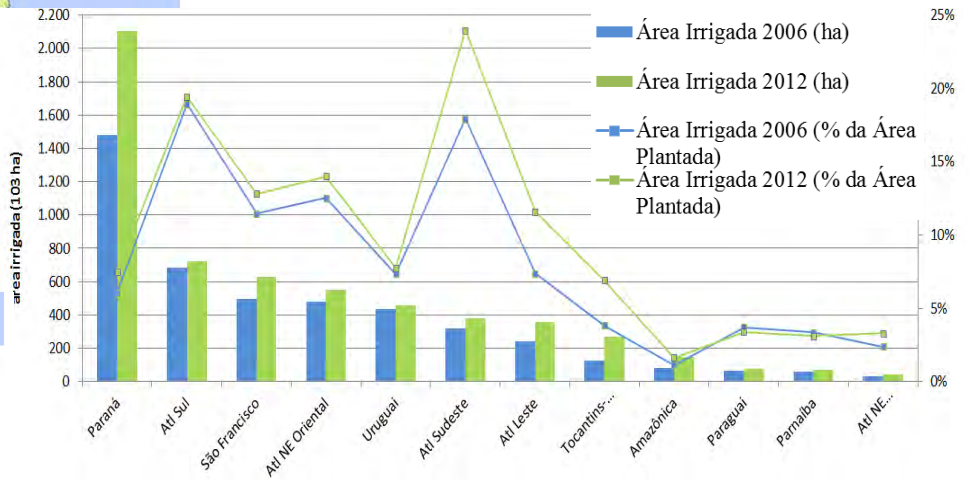
Irrigation





Irrigation area in Brazil – annual evolution (1970 to 2012)

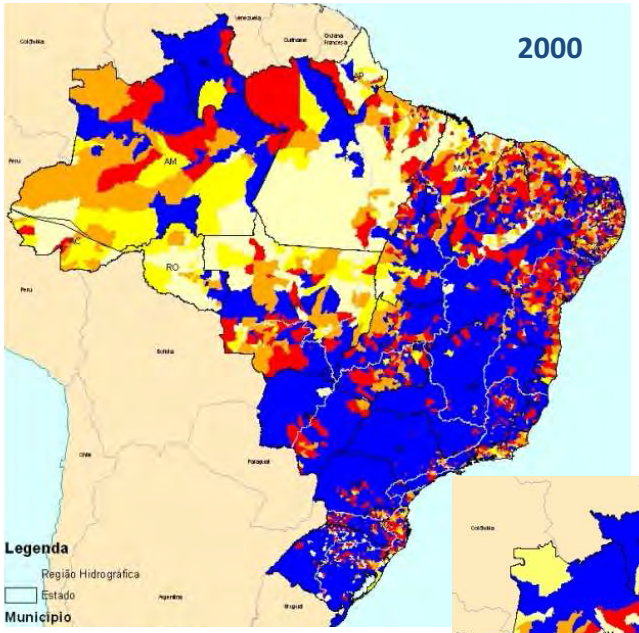
Irrigation area = 4,5 millon hectares (2006) and 5,8 million hectares (2012)

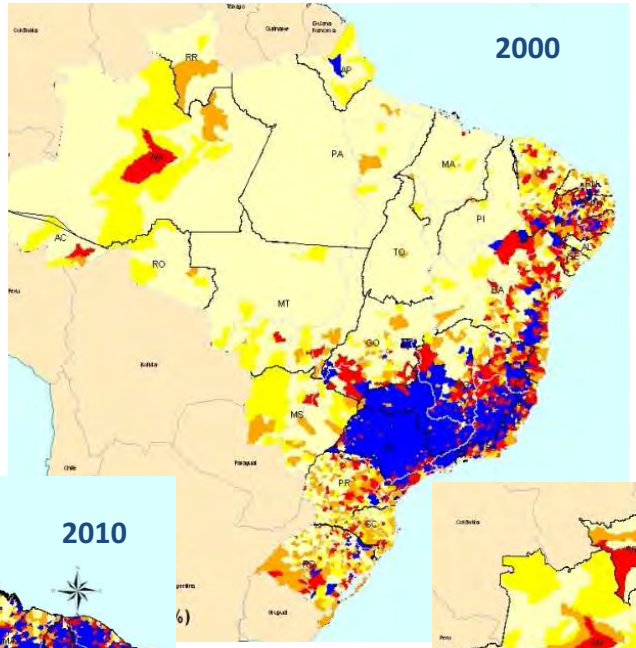


Evolution of the Water Supply and Sanitation Sector in the Last Decade

Overview of Water Resources

! **WATER SUPPLY AND SANITATION: INVESTMENTS CONTRIBUTED TO THE IMPROVEMENT OF THESE NUMBERS.**





53,47%

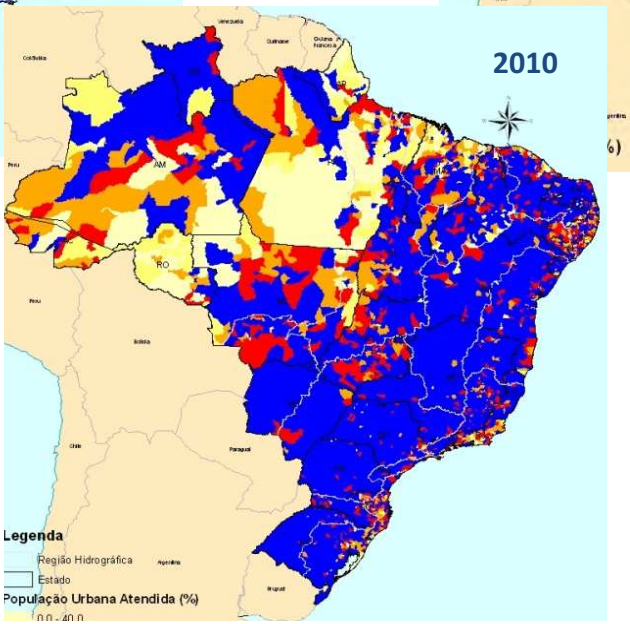
SEWAGE COLLECTION

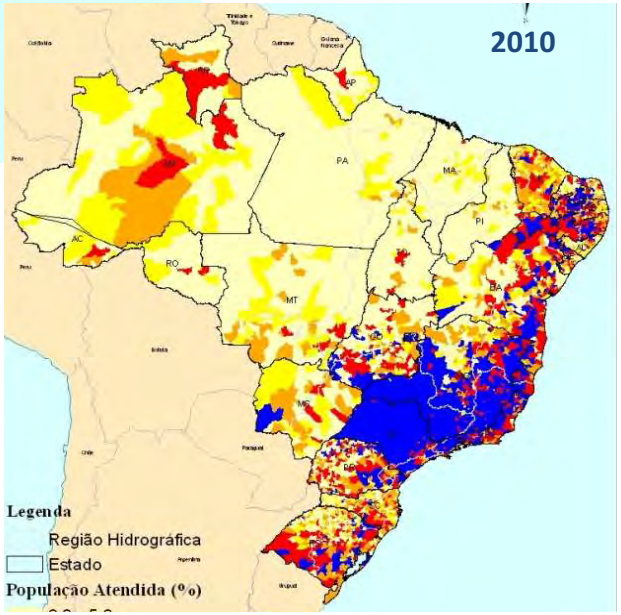
61,76%

89,76%

URBAN WATER SUPPLY

90,88%





Source: IBGE and ANA

Remaining Organic Load (2008) and Evolution of Sewage Treatment (2000-2008)

Overview of Water Resources

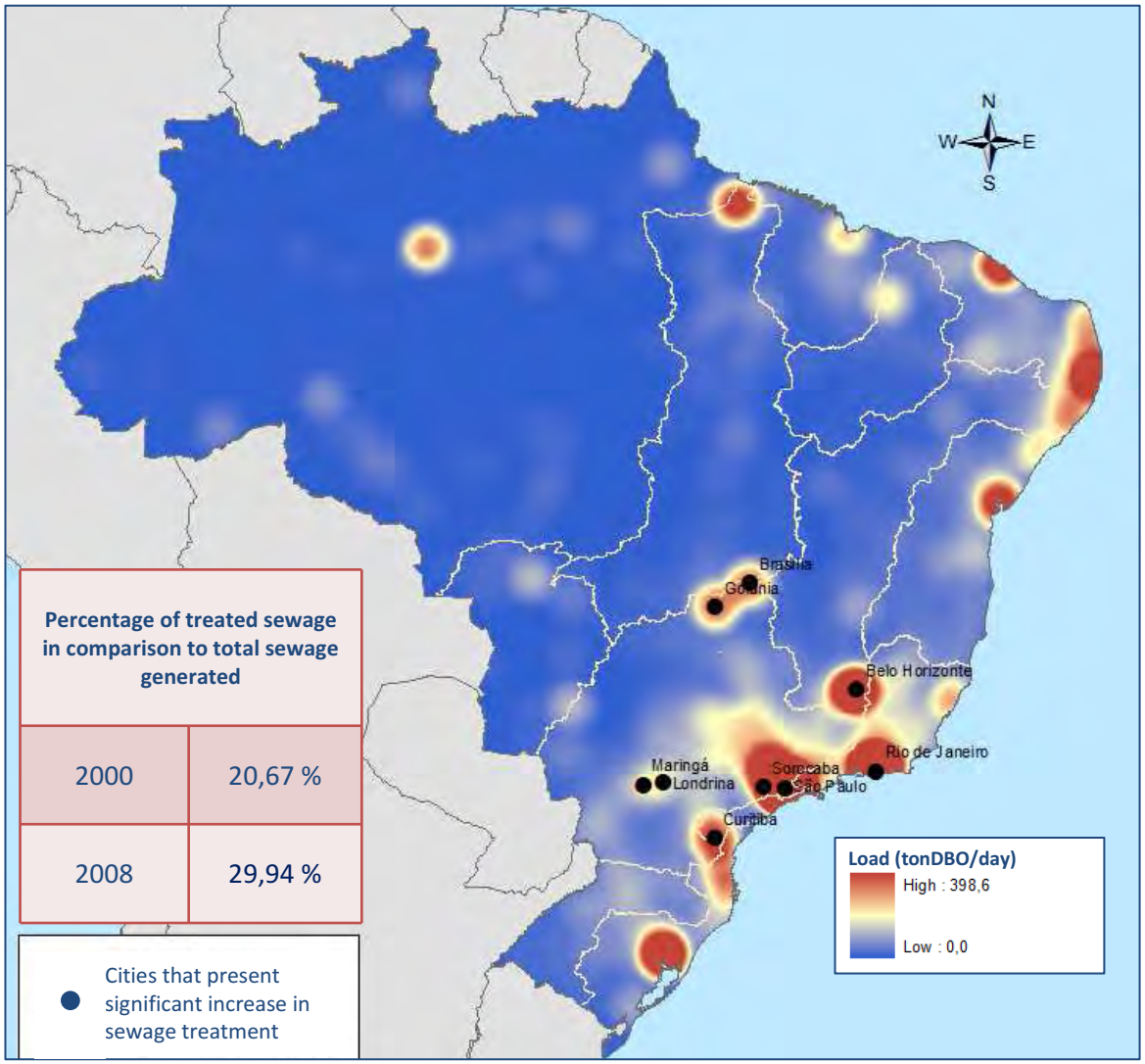
Places where the increase in sewage treatment did not reflect the increase in domestic sewage production:

Metropolitan Regions of Manaus, Cuiabá, Macapá, Florianópolis, Belém e São Luís, and the following cities: Palmas (TO), Porto Velho (RO) e Campo Grade (MT).

Metropolitan Regions that present high remaining domestic organic load, even with the increase in sewage treatment:

São Paulo, Belo Horizonte, Rio de Janeiro, Brasília, Goiânia, Curitiba, Londrina, Maringá

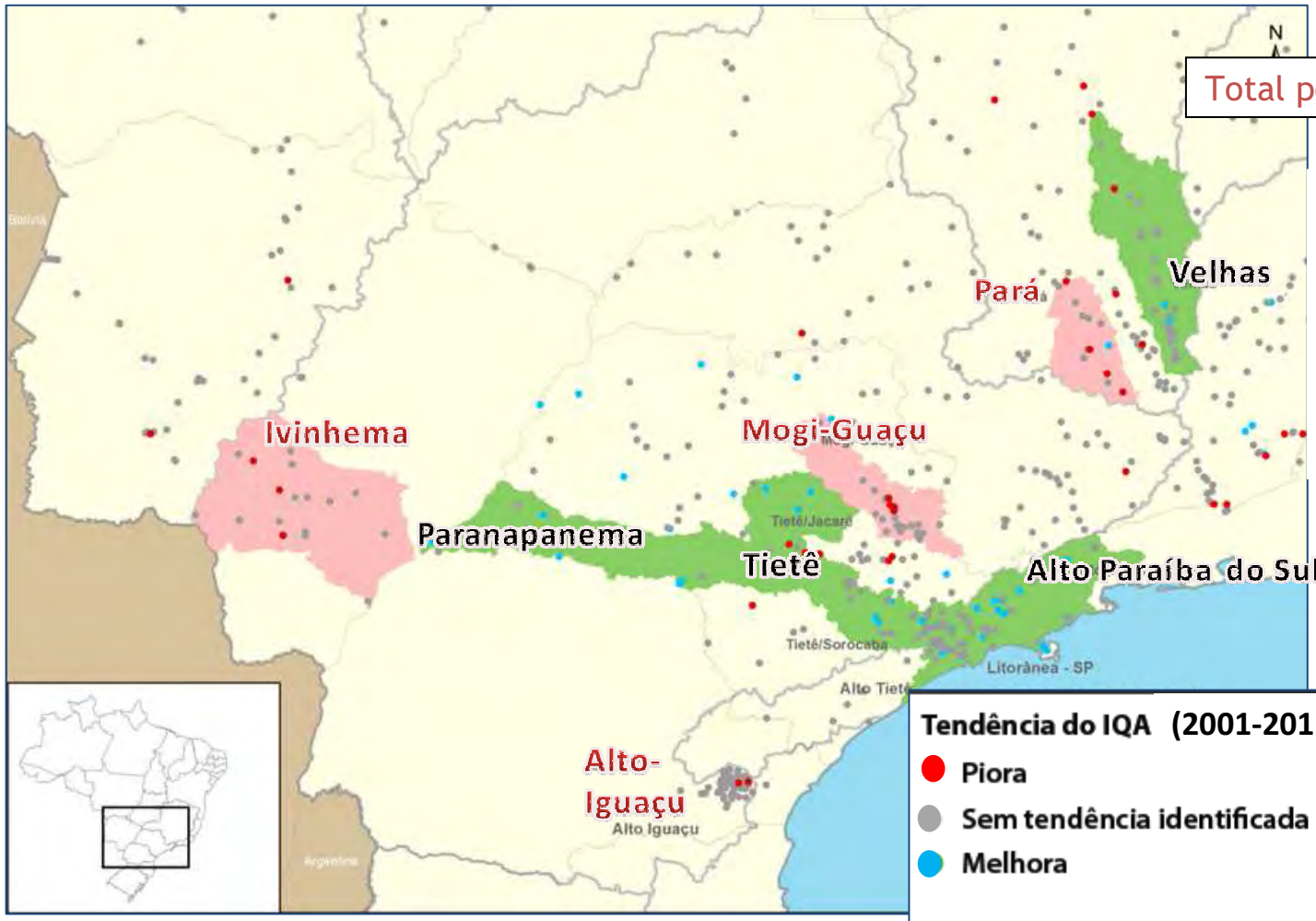
! THE INVESTMENTS IN SEWAGE TREATMENT SHOULD BE EQUIVALENT TO CITY GROWTH.



Source: IBGE (PNSB 2000/2008 and 2007 Population Count)

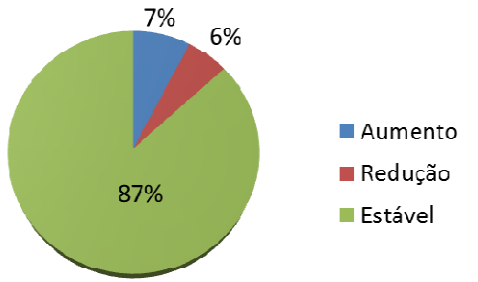
Monitoring and measurement points
Water Quality Index - WQI

Tendency analisys - WQI



Total points => 658

Tendência do IQA 2001 - 2011



Tendência do IQA (2001-2011)

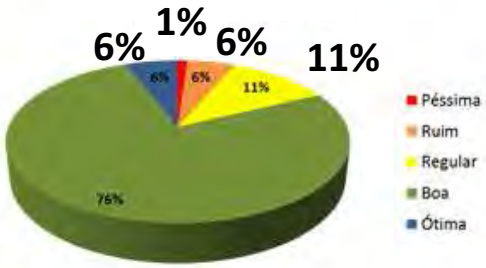
- Piora
- Sem tendência identificada
- Melhora
- UPH com presença significativa de pontos com tendência de piora
- UPH com presença significativa de pontos com tendência de melhora

! PONTOS MOSTRADOS NÃO SÃO NECESSARIAMENTE OS PIORES CASOS

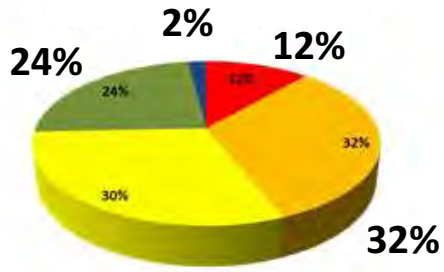
ANA
AGÊNCIA NACIONAL DE ÁGUAS

Monitoring and measurement points
Water Quality Index - WQI

Brazil: 2001 points



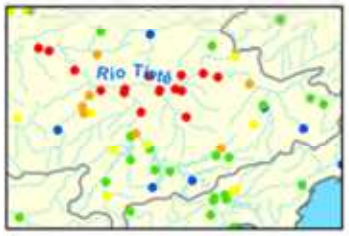
Urban areas: 148 points



76% 30%

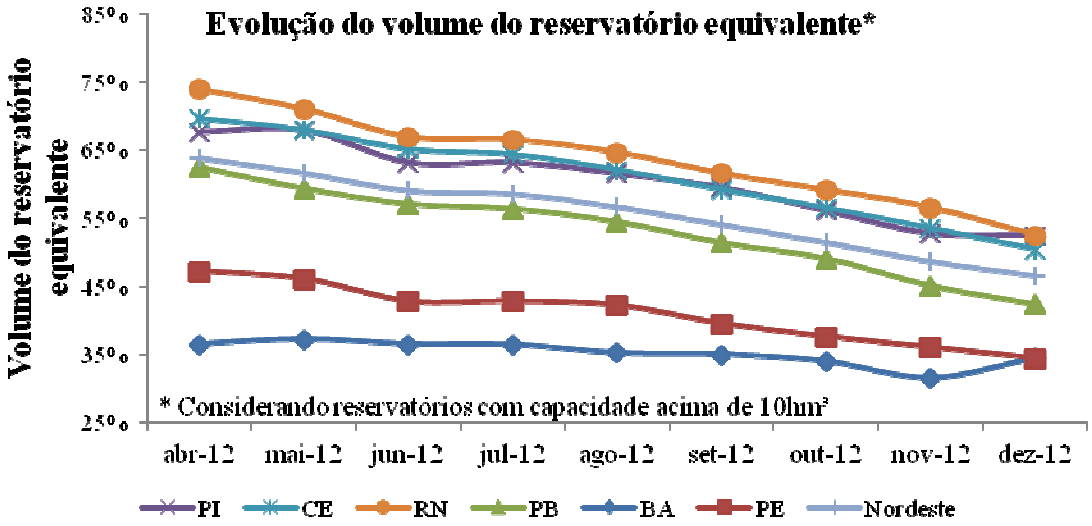
ÓTIMA BOA REGULAR RUIM PÉSSIMA

RM São Paulo – Alto Tietê



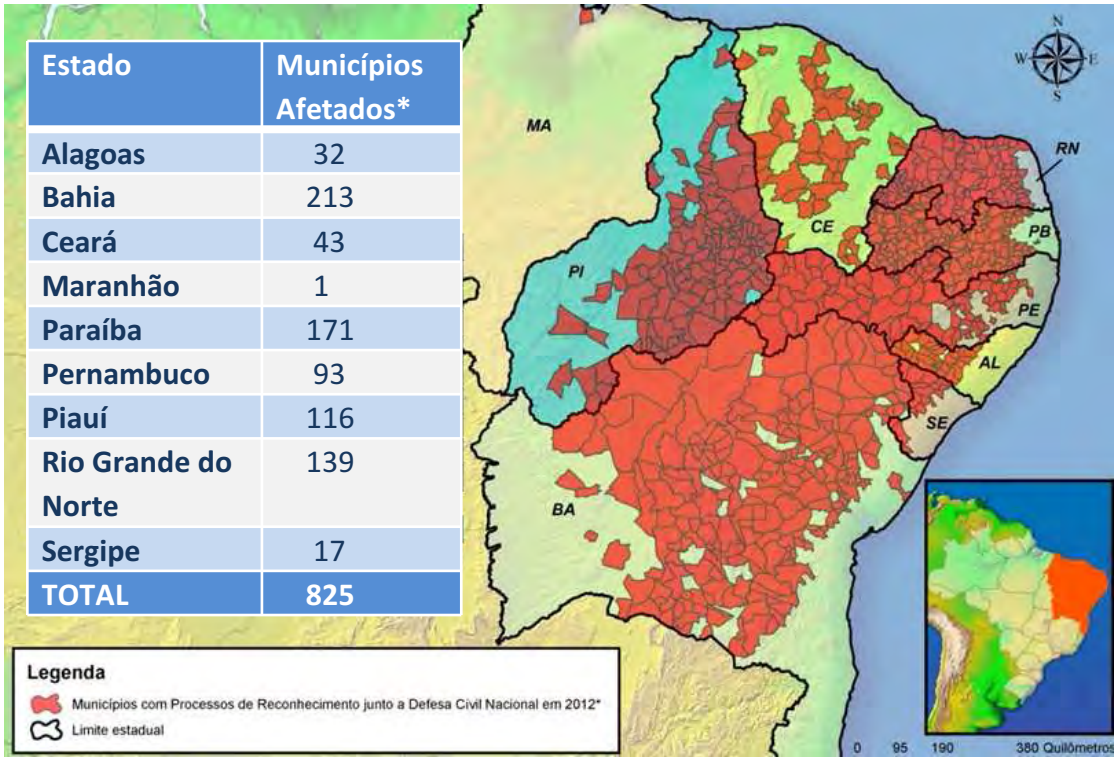
RM Belo Horizonte – Velhas

RM Salvador

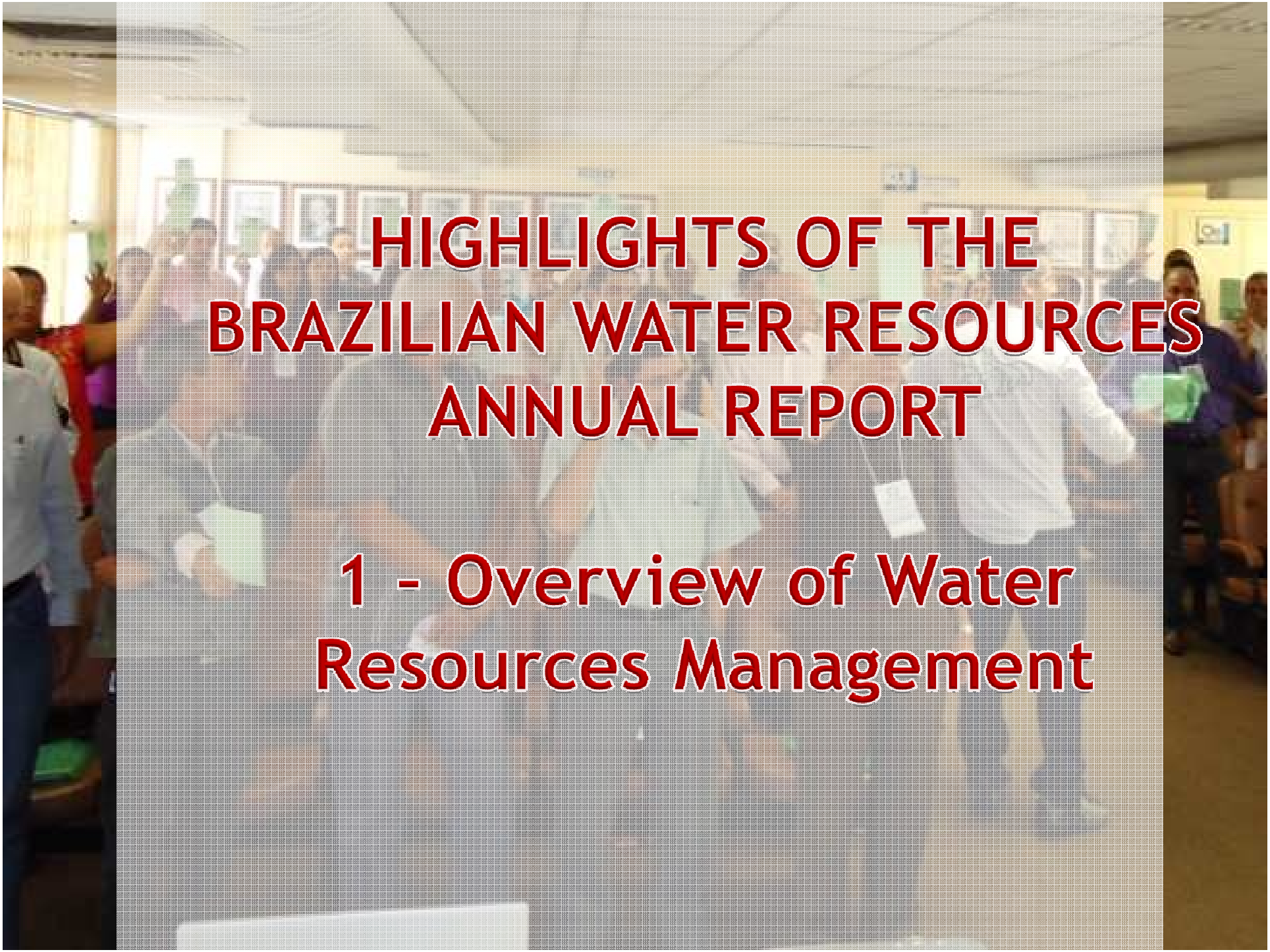


Jan/2012 – dec/2012

Estado	Municípios Afetados*
Alagoas	32
Bahia	213
Ceará	43
Maranhão	1
Paraíba	171
Pernambuco	93
Piauí	116
Rio Grande do Norte	139
Sergipe	17
TOTAL	825



Em 01 de dezembro, dos 540 açudes monitorados pela ANA na região Nordeste, 269 apresentavam armazenamento inferior a 40%.

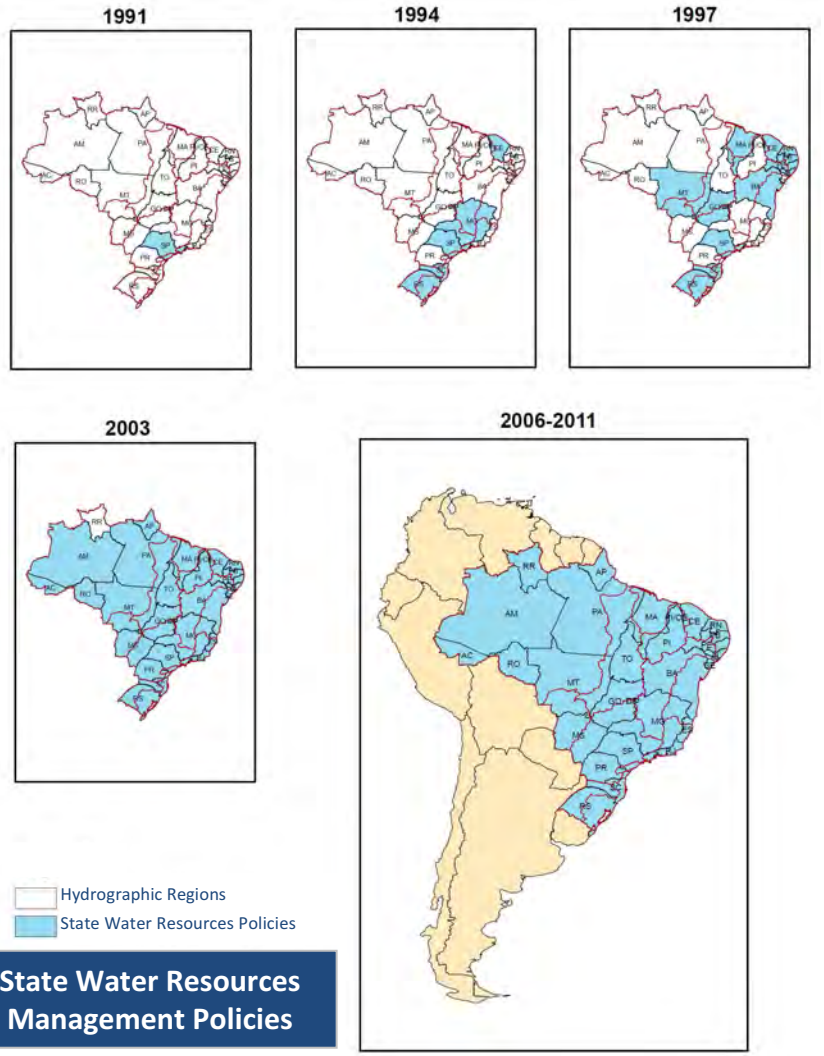


HIGHLIGHTS OF THE BRAZILIAN WATER RESOURCES ANNUAL REPORT

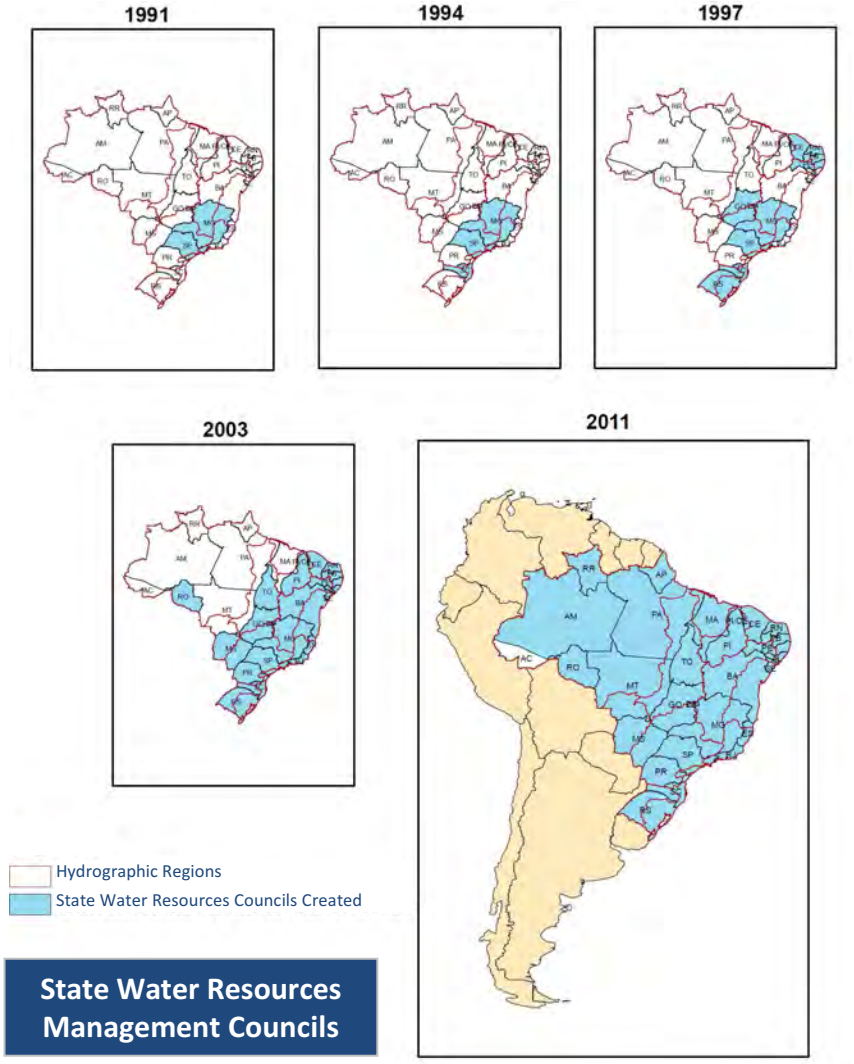
1 - Overview of Water Resources Management

Water Resources Management History

Overview of Water Resources Management



State Water Resources Management Policies

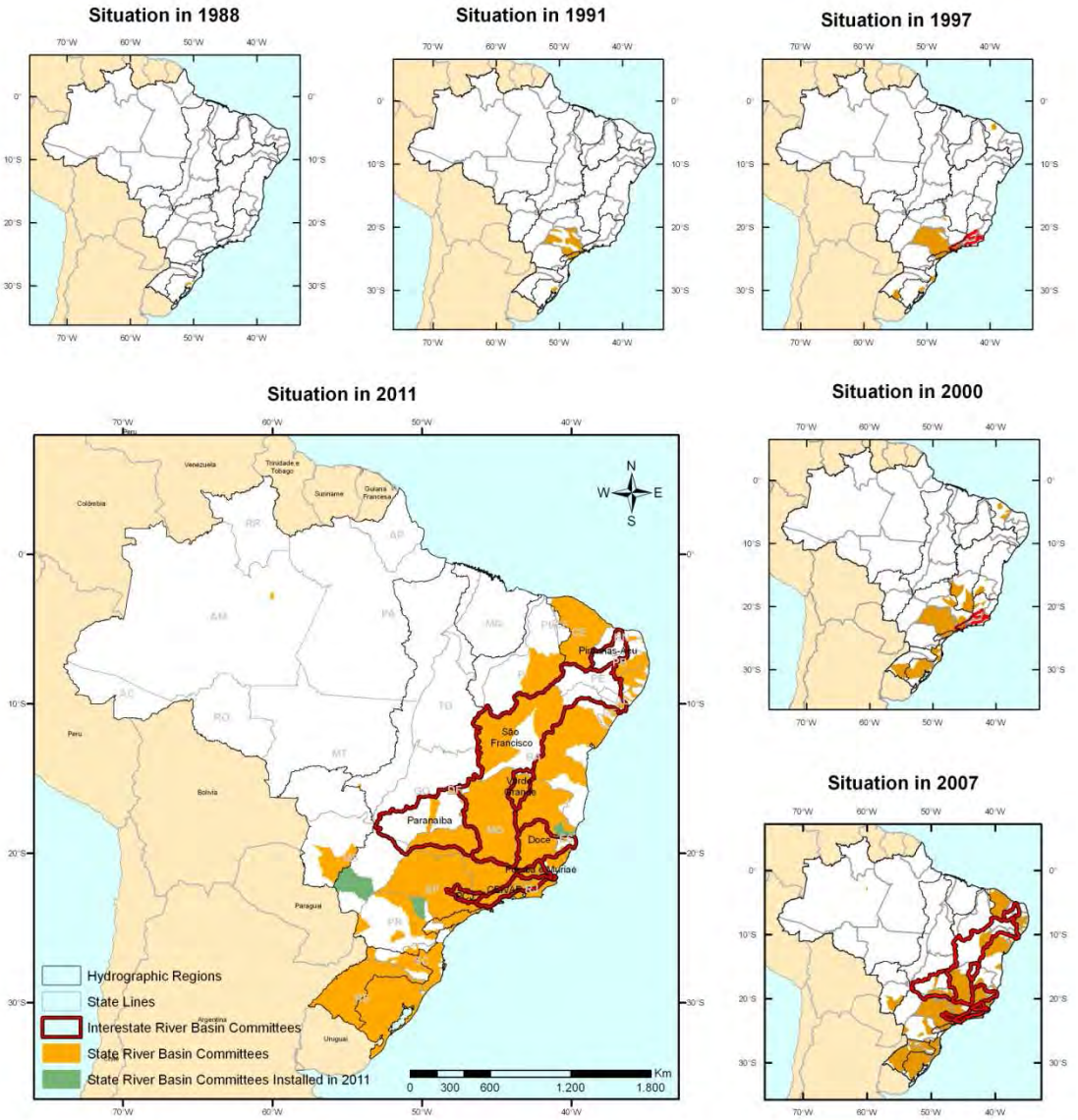


State Water Resources Management Councils

Water Resources Management History

Overview of Water Resources Management

River Basin Committees



Total Number

174 State River Basin Committees
10 Interstate River Basin Committees

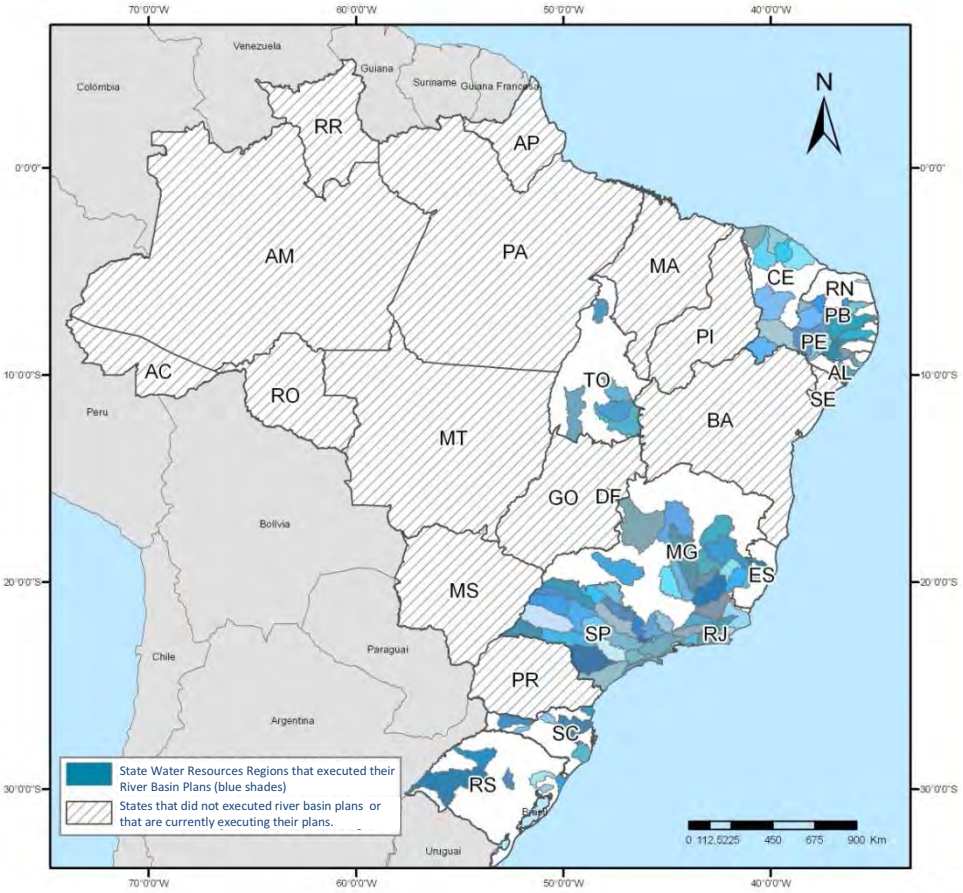
ADVANCES IN WATER RESOURCES MANAGEMENT AFTER THE CREATION OF THE WATER LAW AND THE ESTABLISHEMENT OF THE NATIONAL WATER AGENCY.

Water Resources Plans

Overview of Water Resources Management

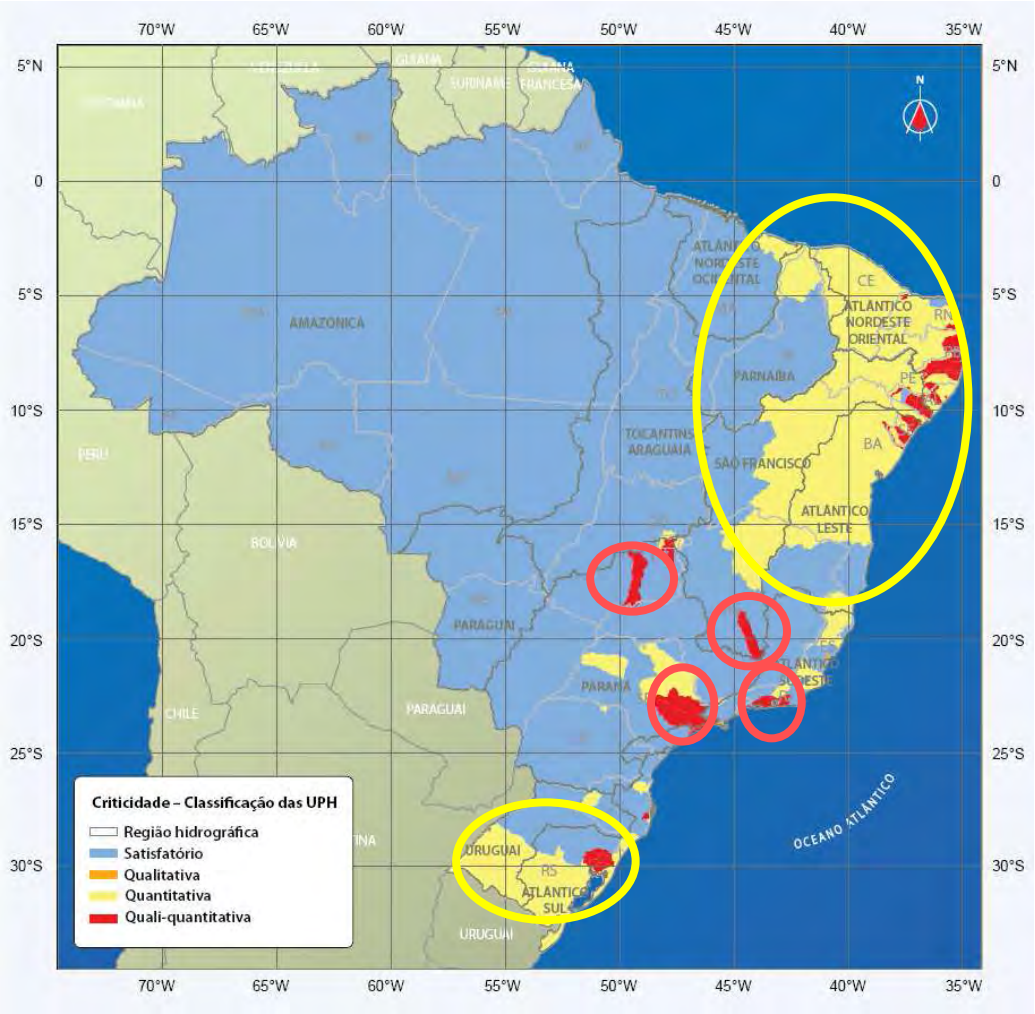
53% of the territory covered by Interstate River Basin Plans (executed)

96 River Basin Plans Executed in State Water Resources Regions

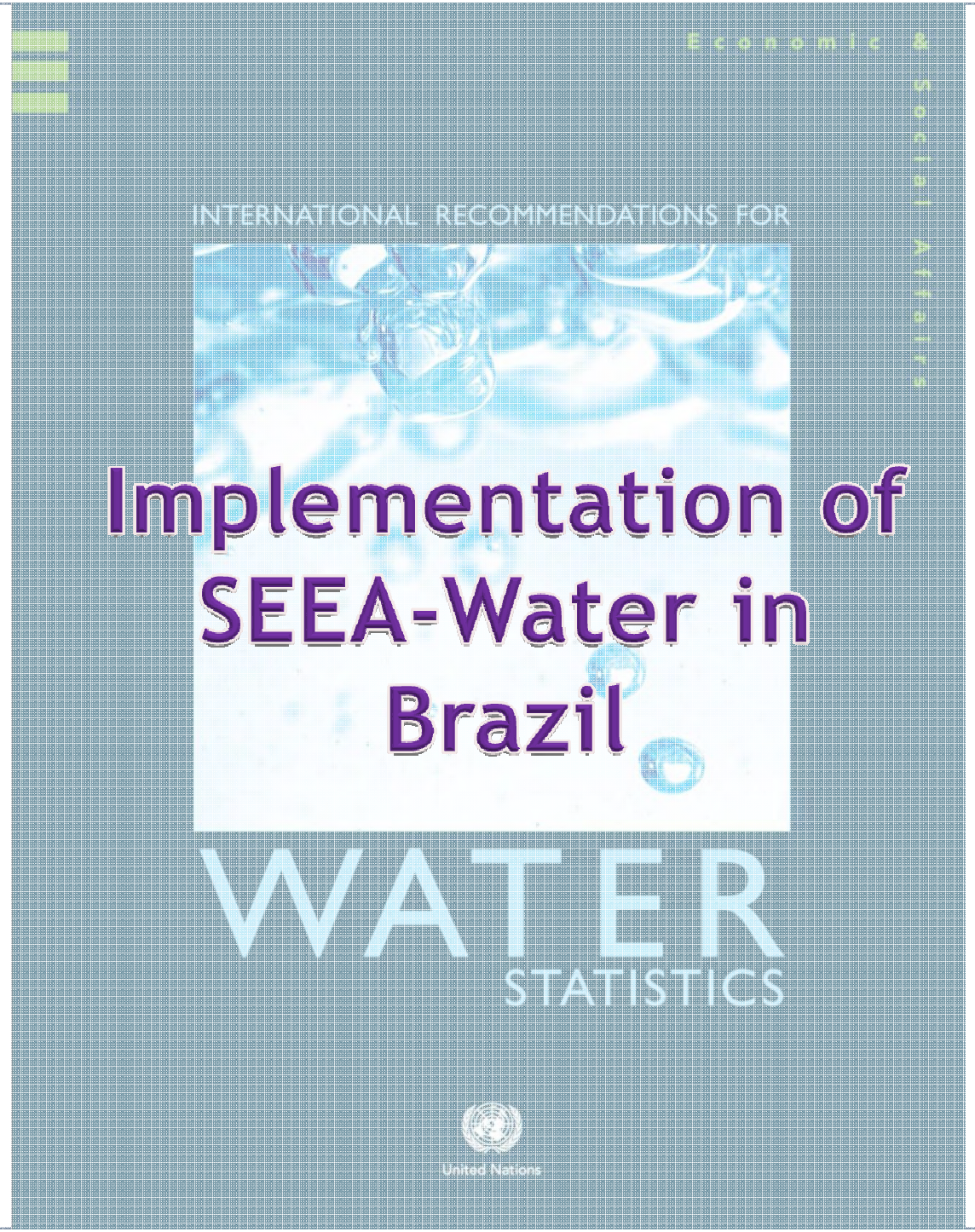


! **INCREASE OF THE KNOWLEDGE ABOUT WATER RESOURCES MANAGEMENT => SUPPORT TO DECISION MAKING AND IMPLEMENTATION OF ADDITIONAL WATER RESOURCES MANAGEMENT INSTRUMENTS => IWRM**

Critical basins x water resources management



Water resources manegement stage


Economic & Social Affairs
INTERNATIONAL RECOMMENDATIONS FOR
Implementation of SEEA-Water in Brazil
WATER
STATISTICS
United Nations

Implementation of SEEA-Water in Brazil

Background

- ✓ Interministerial ordinance nº 236/2012 – created the Committee for Environment-Economic Accounting for Water (IBGE, ANA and SRHU/MMA)
  - ✓ Goal – assess the National Environment-Economic Accounting for Water
- ✓ Meetings between IBGE, ANA and SRHU/MMA (2012-2013)
  - ✓ Analysis of the International Recommendations for Water Statistics (IRWS)
  - ✓ Identification of the institutional framework necessary to the assessment of the National Environment-Economic Accounting for Water
  - ✓ Work plan and time series data: aprovement in August 2013

ANA

AGÊNCIA NACIONAL DE ÁGUAS

	DADOS	UNIDADES	MÉDIA DE LONGO PRAZO	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1	**Informação de contexto**															
2	População à metade do ano (1o de julio)	habitantes	186.946.360	173.448.346	175.885.229	178.276.128	180.619.108	182.911.487	185.150.806	187.335.137	189.462.755	191.532.439	193.543.969	195.497.797	197.397.018	199.242.462
3	Área continental	km^2	8.515.767	8.515.767	8.515.767	8.515.767	8.515.767	8.515.767	8.515.767	8.515.767	8.515.767	8.515.767	8.515.767	8.515.767	8.515.767	8.515.767,05
4	**26**. Área irrigada	ha	5.233.333	ND	ND	ND	ND	ND	ND	4 500 000	ND	ND	ND	5 400 000	ND	5 800 000
5	Área irrigada convertida em kilmetros quadrados	km2	52.333	ND	ND	ND	ND	ND	ND	45 000	ND	ND	ND	54 000	ND	58 000
6	Energia elétrica gerada	GWh/ano	444.715	ND	ND	345.679	364.340	387.452	403.031	419.383	445.149	463.120	466.158	515.799	531.758	550.000
7	Energia hidroeléctrica gerada	GWh/ano	365.054	ND	ND	286.143	305.671	320.855	337.517	348.868	374.082	369.623	391.058	403.362	428.410	450.000
8	**Informação hidrológica (com códigos das RIEA)**															
9	**B.1**. Precipitação. Em volume	hm^3/ano	15.117.900	14.996.266	14.996.266	14.996.266	14.996.266	14.996.266	14.996.266	14.996.266	14.996.266	14.996.266	16.418.399	13.787.027	16.128.863	15.232.021
10	**C.1**. Evapotranspiração dos recursos hídricos internos	hm^3/ano	7.935.299	7.178.833	7.758.851	7.718.536	8.143.354	7.950.303	7.926.354	7.791.559	7.799.088	8.184.759	9.591.709	6.839.848	8.357.379	7.918.321
11	**B.1.a**. Escoamento superficial	hm^3/ano	6.097.353	6.732.185	6.152.167	6.192.482	5.767.664	5.960.715	5.984.664	6.119.459	6.111.930	5.726.259	5.741.442	5.861.931	6.686.236	6.228.452
12	**D.6**.Recarga de aquíferos	hm^3/ano	1.085.248	1.085.248	1.085.248	1.085.248	1.085.248	1.085.248	1.085.248	1.085.248	1.085.248	1.085.248	1.085.248	1.085.248	1.085.248	1.085.248
13	**B.1** Entrada de agua de territórios vizinhos	hm^3/ano	2.493.879	2.407.059	2.510.856	2.692.215	2.588.407	2.446.144	2.216.103	2.412.020	2.531.389	2.526.475	2.688.737	2.354.976	2.371.226	2.674.822
14	**C.2.1** Saídas de agua aos territórios vizinhos	hm^3/ano	709.403	668.515	678.938	782.713	684.827	625.662	680.450	628.840	750.715	719.242	740.554	821.975	807.765	632.041
15	**C.2.2** Saídas de agua ao mar	hm^3/ano	7.881.829	8.470.730	7.984.086	8.101.984	7.671.245	7.781.197	7.520.317	7.902.639	7.892.605	7.533.492	7.689.625	7.394.931	8.249.697	8.271.233
16	**1.1** Número de grandes barragens/açudes	unidades	98	73	75	78	84	87	94	100	102	105	105	119	120	128
	Volume armazenado por ano	hm^3	340.216	285.442	271.883	301.957	288.375	348.642	371.730	356.968	333.448	357.815	402.689	360.306	393.187	350.360
17	**2.** Capacidade das barragens/açudes	hm^3	525.853	488.771	499.885	506.981	507.471	511.789	517.597	530.421	532.777	538.123	543.729	547.385	553.350	557.809
	Percentual da capacidade de armazenamento	%		58%	54%	60%	57%	68%	72%	67%	63%	66%	74%	66%	71%	63%
18	**Agua na economía (com códigos das RIEA)**															
19	E.1. Agua extraida pela atividade CIIU 3600 (sem agricultura)(água potável)	hm^3/ano	15.536	13 204	ND	ND	ND	ND	ND	15 106	ND	ND	ND	16.456	16.456	16.456
20	E.1. Agua extraida pelas atividades CIIU 5-33, 38,39, 41-99 (3510 separado)(industria autoabastecida)	hm^3/ano	11.262	8.810	ND	ND	ND	ND	ND	10 142	ND	ND	ND	12.453	12.453	12.453
21	E.1. Agua extraida pela atividade CIIU 1-3 (agricultura)	hm^3/ano	37.762	22.615	ND	ND	ND	ND	ND	31 706	ND	ND	ND	44.830	44.830	44.830
22	E.1. Agua extraida pela atividade CIIU 3510 (esfriamento de centrais termoelétricas)	hm^3/ano	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
23	E.1. Agua extraida pela atividade CIIU 3510 (só para hidroeléctricas) (agua turbinada)	hm^3/ano	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	I.1. Perda de agua na distribuição (CIIU 3600, sem agricultura) (empresas de agua)	hm^3/ano	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
25	I.1. Perda na distribuição (na agricultura)	hm^3/ano	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26	G.1 Agua recibida pelos domicílios conectados à rede de agua potável	hm^3/ano	19.174	16.059,88								22.288,17				
27	G.1. Agua recibida por las industrias conectadas a la red de agua potable	hm^3/ano	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	**Dados relacionados com a contaminação da água (com códigos das RIEA)**															
29	G.3 Agua residual colectada en alcantarillado (CIIU 3700)	hm^3/ano	4.905	5.318,08	ND	ND	ND	ND	ND	ND	ND	4.491,01	ND	ND	ND	ND
30	H.a. Retornos de efluentes tratados ao meio ambiente	hm^3/ano	3.087	ND	ND	ND	ND	ND	ND	ND	ND	3.086,96	ND	ND	ND	ND
32	Número de Estações de Tratamento de Esgotos	unidades	5.300	4.560	ND	ND	ND	ND	ND	ND	ND	6.040	ND	ND	ND	ND
33	H.a. Retornos das atividades CIIU 5-33, 38,39, 41-99 (3510 em separado) depois de tratamento	hm^3/ano		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	K+J.1 Emisiones brutas de las industrias conectadas a la red de alcantarillado CIIU 37	ton DBO_5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	K+J.1 Emisiones brutas por las industrias NO conectadas al alcantarillado (CIIU 37)	ton DBO_5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
36	10. Capacidade de tratamento de efluentes (volume de efluentes)	ton DBO_5														
37	**Dados sociodemográficos relacionados com a água**															
38	S.1 Población que utiliza fuentes mejoradas de agua	habitantes	ND													
39	T.1 Población que utiliza instalaciones sanitarias mejoradas	habitantes	ND													

DATA ITEM	UNITS	2012
Contextual Information		
Mid-year population of the country (1st January)	inhabitant	199.242.462
Continental surface area	km^2	8.515.767
26. Land area irrigated	ha	5.800.00
Irrigated area converted to square	Km^2	58.000
Electric energy generated	GWh/year	550.000
Hydroelectricity generated	GWh/year	450.000
Hydrologic Information (with IRWS code)		
B.1. Precipitation. In volume	hm^3/year	15.232.021
C.1. Evapotranspiration from inland water resources	hm^3/year	7.918.321
B.1.a. Surface runoff	hm^3/year	6.228.452
D.6.Aquifer recharge	hm^3/year	1.085.248
B.1 Inflow from neighbouring territories	hm^3/year	2.674.822
C.2.1 Outflow to neighbouring territories	hm^3/year	632.041
C.2.2. Outflow to the sea	hm^3/year	8.271.233
1.1 Number of large artificial reservoirs	unidades	128
2. Artificial reservoir capacity	hm^3	557.809

DATA ITEM	UNITS	2012
Water in the economy (with IRWS code)		
E.1. Water abstracted by ISIC 36 (no agriculture) (drinking water)	hm^3/year	16.456
E.1. Water abstracted by ISIC 5-33, 38,39, 41-99 (3510 to be separated)(self supplied industries)	hm^3/year	12.453
E.1. Water abstracted for ISIC 1-3 (agriculture)	hm^3/year	44.830
E.1. Water abstracted by ISIC 3510 (only cooling)	hm^3/year	ND
E.1. Water abstracted by ISIC 3510 (only hydropower)(turbinated water)	hm^3/year	ND
I.1. Losses of water by utilities (ISIC 36 no agriculture) (water utilities)	hm^3/year	ND
I.1. Losses of water in distribution (in agriculture)	hm^3/year	ND
G.1 Water received by households connected to the water supply network	hm^3/year	ND
G.1. Water received by industries connected to the water supply network	hm^3/year	ND
Pollution related data items (with IRWS code)		
G.3. Wastewater collected by sewerage (ISIC 37)	hm^3/year	4.491,01
H.a. Returns from sewerage after treatment	hm^3/year	3.086,96
15. Number of wastewater treatment plants	unidades	6.040
H.a. Returns from ISIC 5-33, 38,39, 41-99 (3510 to be separated) after treatment	hm^3/year	ND
K+J.1 Gross emissions by industries connected to ISIC 37	ton DBO_5	ND
K+J.1 Gross emissions by industries NOT connected to ISIC 37	ton DBO_5	ND
10. Wastewater treated by ISIC 37 (emissions collected)	hm^3/year	ND

INDICADOR OU DADO INTERMEDIÁRIO DERIVADO	UNIDADES	MÉDIA DE LONGO PRAZO	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Informação de contexto															
Densidade Populacional	hab/km^2	22	20	21	21	21	21	22	22	22	22	23	23	23	23
Hidroelectricidade como proporção da energia elétrica gerada	%	82%	#VALOR!	#VALOR!	83%	84%	83%	84%	83%	84%	80%	84%	78%	81%	82%
Electricidade gerada por habitante	kWh/hab	2.379	#VALOR!	#VALOR!	1.939	2.017	2.118	2.177	2.239	2.350	2.418	2.409	2.638	2.694	2.760
Informação hidrológica															
Precipitação (lâmina)	mm/ano	1.775	1.761	1.761	1.761	1.761	1.761	1.761	1.761	1.761	1.761	1.928	1.619	1.894	1.789
Evapotranspiração como proporção da precipitação	%	52%	48%	52%	51%	54%	53%	53%	52%	52%	55%	58%	50%	52%	52%
Recursos Hídricos Internos Renovables	hm^3/ano	7.182.601	7.817.433	7.237.415	7.277.730	6.852.912	7.045.963	7.069.912	7.204.707	7.197.178	6.811.507	6.826.690	6.947.179	7.771.484	7.313.700
Recursos Hídricos Renováveis Totais (RHRT)	hm^3/ano	9.676.480	10.224.492	9.748.271	9.969.945	9.441.319	9.492.107	9.286.015	9.616.727	9.728.567	9.337.982	9.515.427	9.302.155	10.142.710	9.988.522
Grau de dependência (Entrada de água de territórios vizinhos/RHRT)	%	26%	24%	26%	27%	27%	26%	24%	25%	26%	27%	28%	25%	23%	27%
Recursos Hídricos Renováveis Totais por habitante	m3/hab/ano	51.761	58.948	55.424	55.924	52.272	51.895	50.154	51.334	51.348	48.754	49.164	47.582	51.382	50.132
Capacidade das barragens/açudes em relação ao escoamento superficial + entrada de água de territorios vizinhos	%	6%	5%	6%	6%	6%	6%	6%	6%	6%	7%	6%	7%	6%	6%
Capacidad de armazenamento por habitante	m3/hab	2.813	2.818	2.842	2.844	2.810	2.798	2.796	2.831	2.812	2.810	2.809	2.800	2.803	2.800

INDICATOR OR INTERMEDIATE DERIVED DATA	UNITS	LONG TERM AVERAGE
Contextual Information		
Population density	Inhab/km^2	22
Hydroeletricity as proportion of energy gerenated	%	82%
Eletricity generated per capita	KWh/inhab	2.379
Hydrologic Information		
Precipitation in height	mm/year	1.775
Evapotranspiration as a proportion of precipitation	%	52%
Internal Renewable Water Resources (IRWR)	hm^3/year	7.182.601
Total Renewable Water Resources (TRWR)	hm^3/year	9.676.480
Dependency ratio	%	26%
Total Renewable Water Resources per capita	m^3/inhab/year	51.761
Artificial reservoir capacity as proportion of surface runof and inflows from neighbouring countries	%	6%
Artificial reservoir capacity per capita	m^3/inhab	2.813

ANA
AGÊNCIA NACIONAL DE ÁGUAS

Final Comments

- Brazil has been implementing the IWRM approach for more than 20 years
  - The National Water Resources Management System was created in 1997 (institucional network approach)
  - The National Water Resources Plan was aproved in 2006 and revised in 2010 by National Water Council
  - The first ***Brazilian Water Resources Report*** was edited in 2009 and has been improving year by year. It will be a important support for the SEEA-Water implementation process.

- The agreement signed by IBGE-SRHU/MMA-ANA in 2012 was an important step to the ***Brazil SEEA-Water Project***

- The UN DESA support (*International Recommendations for Water Statistics, System of Environmental-Economic Accounting for Water, courses, etc.)* is fundamental for the ***Brazil SEEA-Water Project*** sucess

ANA
AGÊNCIA NACIONAL DE ÁGUAS

Thank you!

Alexandre Teixeira

alexlima@ana.gov.br | (+55) (61) 2109 –5365

www.ana.gov.br

www.twitter.com/anagovbr

www.youtube.com/anagovbr

Ministério do Meio Ambiente

GOVERNO FEDERAL
BRASIL
PAÍS RICO É PAÍS SEM POBREZA