

Brazilian Regulatory Process: including groundwater in urban water management

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Introduction

- Cities is a source of impacts on groundwater
- Groundwater protection creates soil and water conflicts
- Complexity of judicial arrangements
- Water legislation – national competence
- Water management regulations – state and municipalities competence
- Groundwater belong to states
- Water management unit – watershed
- Water extraction control - state
- soil management - municipality's competence
- Environment management – national, state and municipal

How Brazilian laws regarding water and urban policies promote better integration on groundwater into urban management processes???

Diagnosis of legal approaches linking groundwater and urban laws

National

State

Watershed

Municipalities

Strategies to enforce legislation and promote the articulation between water and urban management in municipalities

Watershed Plans

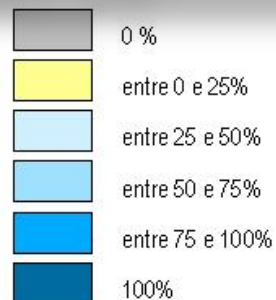
Municipalities Plans

Material & method

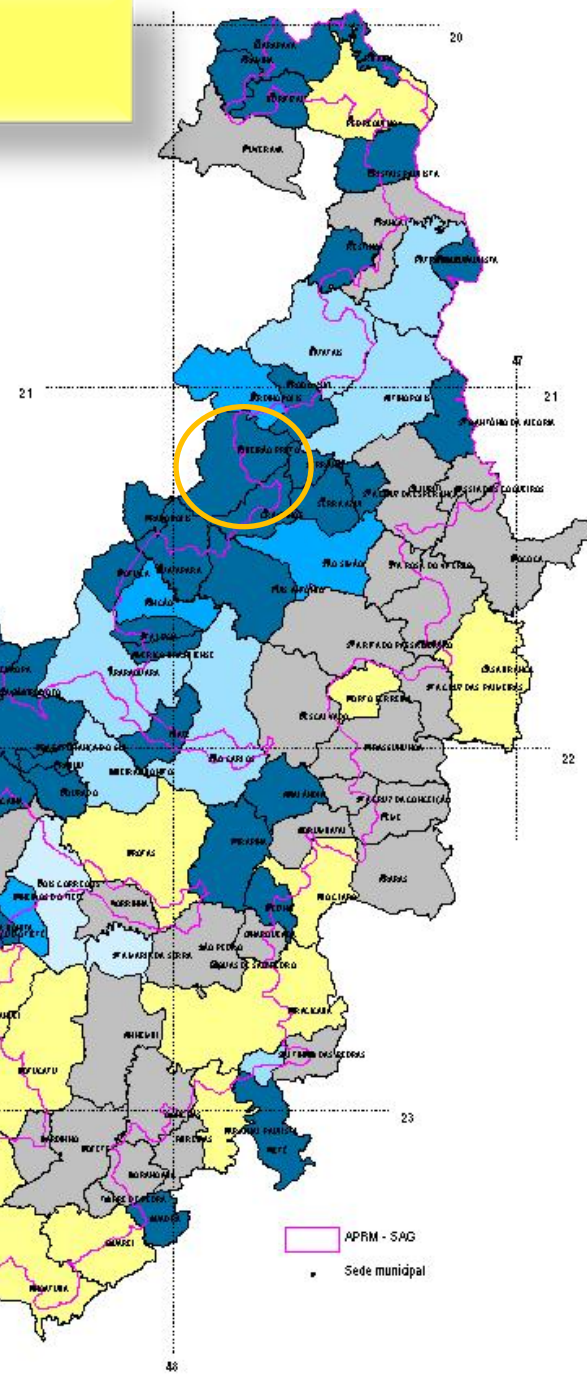
Qualitative analysis of legislation focus on groundwater protection regarding vulnerable areas and how it impact municipalities urban management

FEDERAL LAWS	STATE LAWS	MUNICIPALITIES
National Hydric Resources Policy (Federal law nº 9.433/97)	São Paulo State Hydric Resources Policy (Law nº 7.663/91)	Urban plans from Guarani Recharge areas in the State of São Paulo
National Hydric Resources Council resolutions	São Paulo State Hydric Resources Council resolutions	Special attention to Ribeirão Preto urban plans.
National Environmental Policy (Federal Law nº 6.938/81)	Groundwater laws (Law nº 6.134/88 and State Decree nº 32.955/91)	
City Statute (Federal law nº 10.257/91)	São Paulo state Water Spring Protection Policy (Law nº 10.257/01)	
Environment National Council resolutions (resolutions nº 357/2005 and nº 396/2008)		

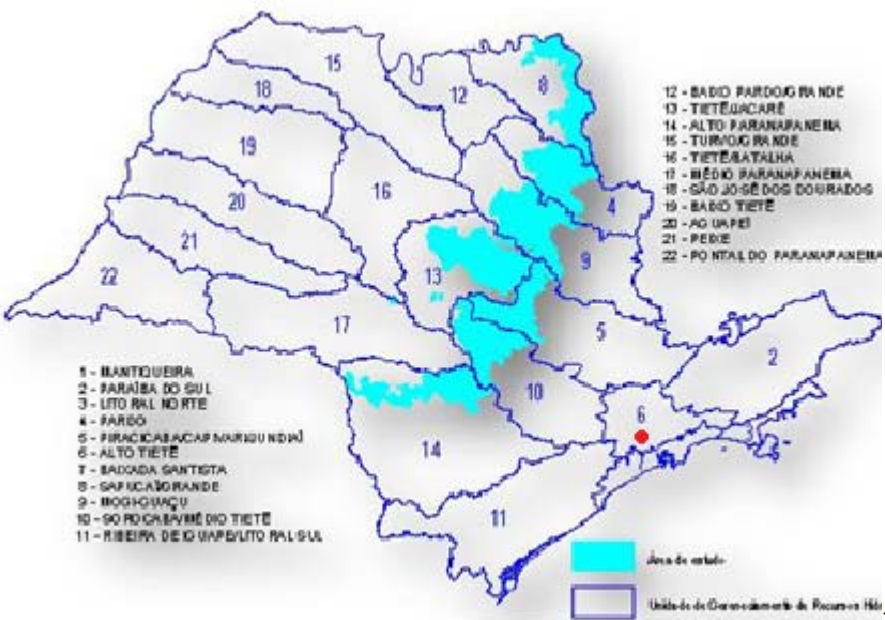
São Paulo Guarani aquifer recharge area and groundwater water use



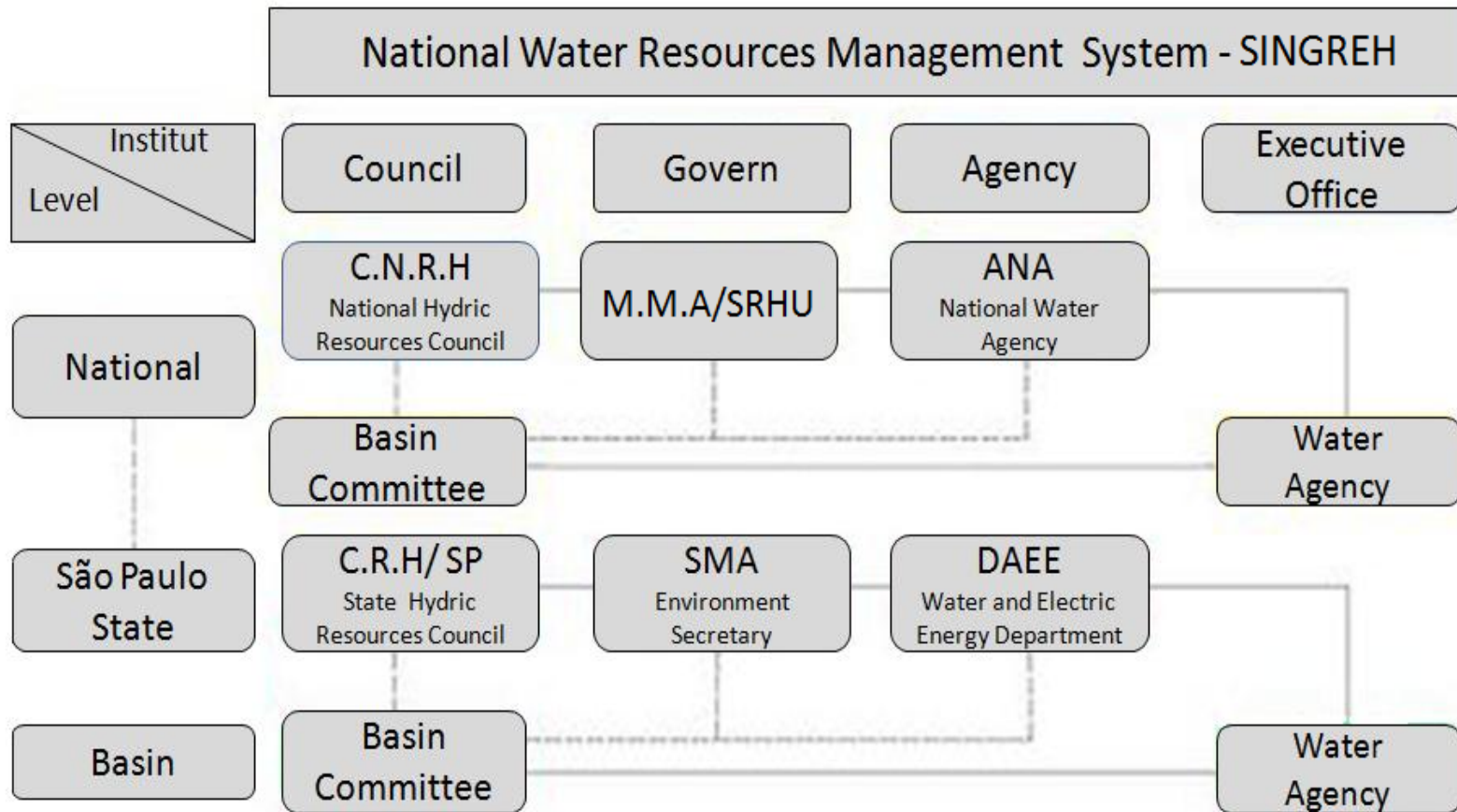
Fonte: CRH, 2006 (Plano Estadual de Recursos Hídricos: 2004/2007)



São Paulo basin management units and Guarani recharge areas in the State of São Paulo



Brazilian institutional structure to water management



Water instruments from National Hydric Resources Policies – São Paulo reality

	Definition	Implementation level	Groundwater situation
watershed plans	guiding plans which intend to orient the implementation of water resources management.	Ok, but need improvements	Included with deficiencies.
water body classification	aquifer classification according to its characteristics and main uses.	National legislation edited but water agencies and committees faces difficulties to implement this instrument.	no committees was able to proceed the aquifer classification until the present moment.
hydric resources information system	System that aggregates all the existing data regarding water.	problems with data divulgation to society	Problems to gather groundwater information
water pricing	Attribute a water price	State watershed haven't established financial values Federal watershed charging	not charged
water permissions and licenses	National or state authorization to use water resources	Many users are not authorize	only 30% of wells are registered number of licenses is increasing

Results and discussion

Groundwater legislation

- No specific laws on federal (national) level
- Water resolutions: Attribute to watershed plans the responsibility to include groundwater

São Paulo state

- Preservation of groundwater natural deposits in São Paulo :
Law nº 6.134/88 and decree nº 2.955/91
- Creation of permanent conservation and protection programs against pollution and overexploitation for groundwater
article 206, State Constitution
- The Water Resources State Act, institutional structure to water management:
(Law nº 7.663/91)

Analysis: Great juridical deficiencies, many instruments not defined, when defined not implemented for lack of public control or public action. State norms doesn't provide guidelines to municipalities or information about vulnerable aquifers area or applicable restrictions

Watershed plans

- Watershed doesn't match with geological basin (7 UGRHIs)
- Watershed is not an administrative level
- The SINGREH organs do not have legal power to compel actions foresee in the water plans.
- Watershed plans are not juridical instruments
- Vulnerable areas of aquifers do not have a legal dispositive with direct application to restrict the soil use like the superficial waters
- Society relation with groundwater is very weak – no perception of damages

Case of Ribeirão Preto

- ✓ Data available
- ✓ International Projects :
 - Guarani Aquifer Program for groundwater resource sustainability and environmental protection
 - Information System of Groundwater Resources Environmental Management in the Outcrop of the Guarani Aquifer in the São Paulo State.



Hydric Resources State Council deliberation n° 065/06 – Water Restriction Zones

- ✓ Aquifer Overexploitation
- ✓ Only source of water
- ✓ Society “awareness “
- ✓ Water restriction measures
- ✓ Soil restriction were indicated by the projects
- ✓ Urban plan include soil restriction, but in a contradictory way
Ex: Establishes low densities in the recharge area, but defines it 1.500 hab/ha



- Zone 1** - perforation of new wells only in the case of substitution and for public water supply
- Zone 2** – new wells only for public water supply
- Zone 3** – new perforation are allowed respecting strict conditions of distance between wells, superficial water bodies and contamination sources

Source: Hydric Resources State Council deliberation n° 065/06

Conclusions

- Fragile groundwater juridical framework;
- watershed plans fail to approach and conciliate soil and water conflicts. Focus on superficial water;
- Body water classification has potential if implemented;
- water plans recommendations create conflicts with strong soil users in municipalities. So they will not be include or include in a way that doesn't harm economic interests;
- watershed plans are the only instrument to promote water and soil integration.