

Groundwater: out of sight, out of mind and out of actions for its protection

Why groundwater is so important for population health? In Brazil, opening a tap does not guarantee having drinking water. Although this is fundamental for population health, public attention in sanitation is still deficient. In the access to water and sewage, the country occupies the 112th place among 200 countries, and coverage of the national water network is 83%.⁽¹⁾ However, this number hides an even greater deficiency, since having one's home connected to the public water network does not mean that it will receive water all the time, especially in the dry season and peripheral areas of cities

When the public service is not available, the users appeal to alternative systems. In the last 20 years, the construction of 10 thousand water wells in the metropolitan region of Recife (Pernambuco State) was a crude response to the crisis that occurred in the 1990s. The strategy to overcome drought effects evolved to a cost-reduction strategy, because groundwater is 50-70% cheaper than that provided by the water company.⁽³⁾ The Metropolitan Region of São Paulo, where 12 thousand private wells are estimated to extract more than 10 m³/s (contributing to 16-20% of the total supply), is another example.

Drilled wells are engineering works that allow access to groundwater reservoirs (aquifers). However, their costs are inaccessible to the poor population, who usually access groundwater by digging wells, which are vulnerable to contamination.

It is little known that groundwater supplies more than 82 million Brazilians (51% of the urban population) through the public network in more than 52% of Brazilian municipalities.⁽²⁾ Groundwater is part of the hydrological cycle, ensures the presence of water flowing in the rivers (baseflow) in the dry season, performing the ecological function of diluting sewage transporting sediments, and maintaining ecosystems.

Alternative supply and health risks

Well contamination should be distinguished from aquifer contamination. The first is caused by poor well construction, when the Brazilian standards (ABNT NB588 and NB1290) are not followed. Wells must have sanitary cementation and protection slabs to prevent surface water and water from the aquifer shallow portions from entering the well. Aquifer contamination is caused by the infiltration of pollutants, derived from human activities, into the soil and, subsequently, into the aquifer. Thus, even in a well-constructed well, water quality is not guaranteed if the aquifer is contaminated.

When well contamination occurs, responsibility is exclusively of the user and of the drilling company. On the other hand, when degradation of the aquifer occurs, responsibility lies with the owner of contaminant activity, who must accomplish the monitoring, and afterwards send the data to state environmental agencies. The Health Surveillance has the role of accompanying the monitoring reported by the public and private water well and springs.

Groundwater exploitation should be formally required to the state authorities. However, more than 70% of the drilled wells are not authorized to operate.⁽³⁾ With such high illegality rate, quality control over well construction is smaller. Regular monitoring of private water wells is mandatory, but owners of illegal wells usually do not comply with the ordinance (MS 2914/2011). Both the ignorance of risks taken by many private users and the inadequate surveillance of the public power are the main causes of illegality.

Given these uncertainties, the use of groundwater has been prohibited in regions where the public network already exists (Federal Sanitation Law N°. 11,445/2008, reinterpreted by Law N°. 7217). Although this law is meritorious, one has to take into account the limitations that water companies face in supplying the total water demand. Its application in Brazilian cities is not realistic, as private wells play an important role for the urban water security. In addition, groundwater is economically relevant to the industrial and service activities; abandonment of these wells would cause the water table to rise, which is a risk to the civil urban works too.⁽³⁾

For a peaceful coexistence with groundwater usage

Groundwater does not receive the necessary attention by the management organs, because society underestimates the importance of this resource. Given the great potential in water supply by aquifers which are still underused by the country, it is necessary that the State assume a user partner posture, guiding them and implementing protection *actions*, including:

- a) *clarification* the groundwater importance for the public and private supply (as well as for the environment and social welfare);
- b) *establishment of* a social communication program with view to *stimulate* the regularization of wells and to *inform* the public and private users on the correct use of groundwater wells;
- c) *enforcement on the usage of* ABNT norms ,regarding the drilled wells construction, and exigency that contamination and overexploitation risk studies are performed previously to the authorization concession for drilling new wells;
- d) user *orientation*, through service channels, regarding groundwater monitoring and incentive to systematically *report* well operation, and also *communicate* any problems to the Sanitary Surveillance;
- e) government institutions capacitation with regard to *guiding, managing, and monitoring* the groundwater resources usage;

f) *making the* territorial planning compatible with groundwater resources availability, in order to the government and watershed plans correctly treat the groundwater resources.

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