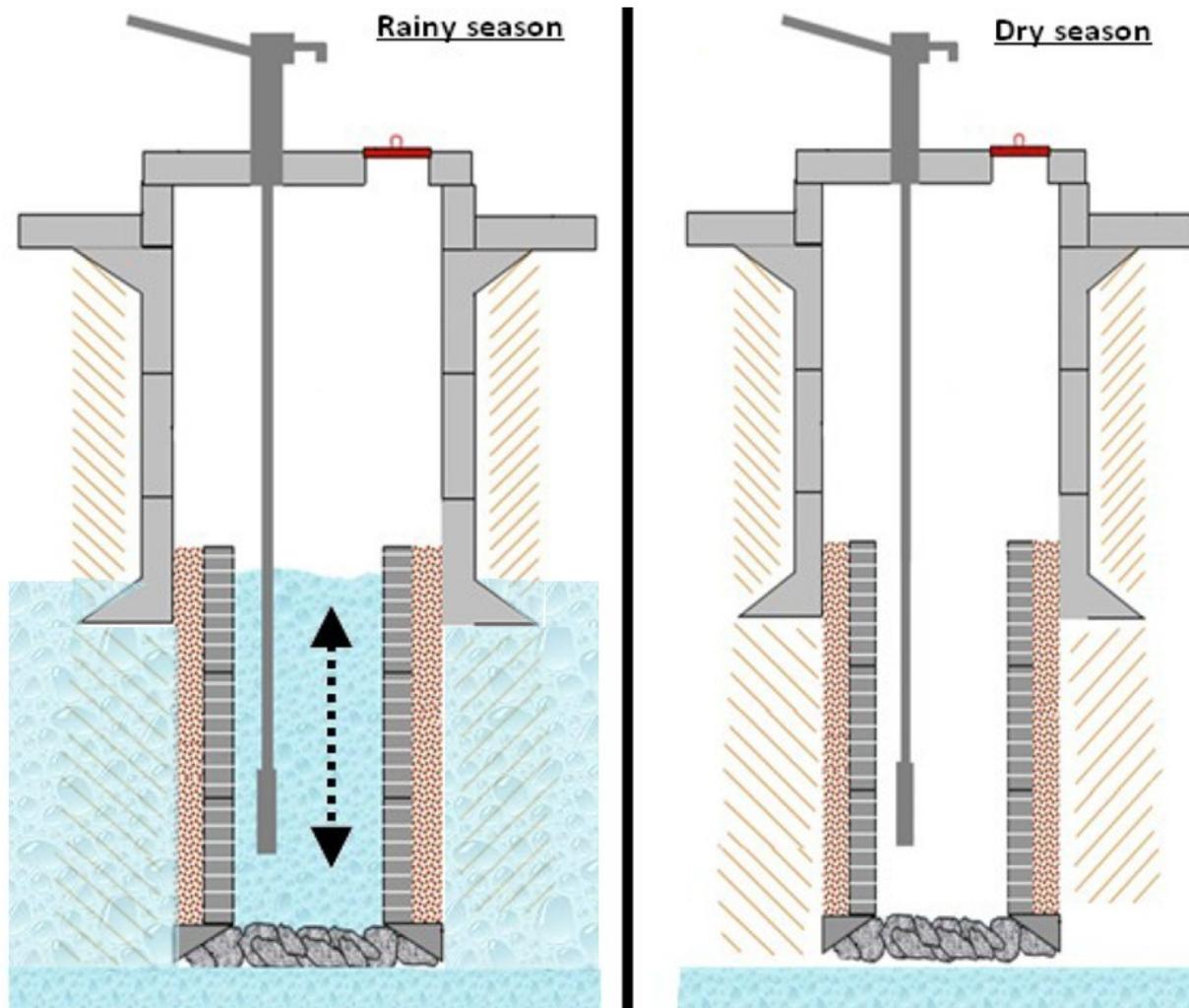


Why wells should only be dug in a specific period of the year?

Understanding one of the main causes of wells' drying in Sierra Leone, through an analysis of a water table movements.

A survey conducted by Inter Aide in 2010-2011 in 3 districts of Sierra Leone¹ has highlighted that among 2028 hand-dug wells visited, 45% of them were not delivering water permanently all year long.

From a technical point of view, hand-dug well drying is often due to the fact that the pumping system does not draw deeply enough or that the well itself has not been dug enough². This is typically the case of structures dug outside of the low water level period, so the bottom of the column dries up with the movement of the water table during the dry season, as shown by the picture below.



This situation usually happens when a well construction is not properly planned, designed and constructed. Timing the sinking of a well to correspond to low aquifer levels belongs however to standard practices (especially in the absence of a dewatering pump). Poorly designed and underdeveloped wells are then also subject to more frequent pump failures.

To illustrate the importance of taking this timing into consideration, especially in Sierra Leone where there is a heavy change of the rain pattern during the year, the analysis presented on the next page is self-speaking.

¹ Existing water access points in the districts of Bo, Koinadugu and Tonkolili in Sierra Leone, 2011-2012 – Inter Aide & Fondation Provicimtis
www.interaide.org/pratiques/sites/default/files/provicimtis_water_access_survey_2.pdf

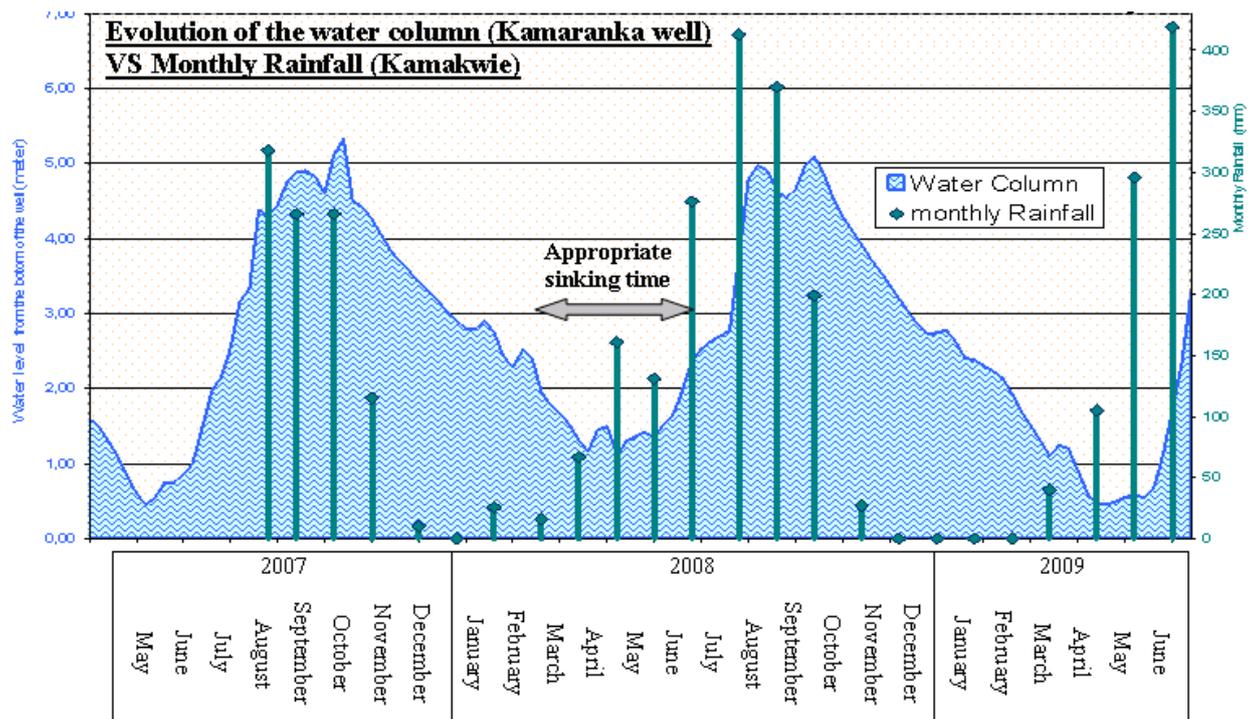
² Experience shows that the water level should not go below three meter deep in dry season



The following chart presents the result of a longitudinal measurement that has been done to observe the variations of the water table level in relation with the rainfall evolution. For that, data have been recorded for 29 consecutive month in a well located in Kamaranka village (Bombali District).

Comparing the fluctuations in the water level of the well (water column varying as a function of the movements in the water table) and in rainfall allows to identify the periods that are favourable for capturing the aquifer. This is a crucial factor because, as the graph below shows, **the height of the water column in the well can vary by nearly 5 metres on a seasonal basis!**

From this data, one can determine that, for this specific area, the optimal period for sinking the well and executing the intake point is between March and the end of June. By taking into account this period, the timetable for the construction site can then be organized accordingly.



	2007	2008	2009
	May June July August September October November December	January February March April May June July August September October November December	January February March April May June
Rainy Season			
High Water Column			
Site preparation			
Dry Digging			
Rock Survey*			
Water table observation*			
Lining and Casing casting			
Casing Sinking			
Finishing			

***Rock Survey** to drill the bottom of the well with rods in order to assess the presence of stone

***Water Table Observation** to follow the level of water in a hole dug at the bottom of the well (possibility to redig after)

IMPORTANT NOTICE

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