

Essay of definitions of the maintenance of hydraulic systems :

Access to water in rural areas (wells, boreholes equipped with hand pumps or not, gravity fed systems)

Providing or improving access to safe drinking water is not only implementing or building new infrastructures. Even if a construction was originally well built and that risks were integrated and forecasted (such as a well deep enough considering the drawdown of the aquifer, proper design of equipment of a gravity network that can support change of flow...), the guarantee that it will continuously run will decrease as time will goes on

Due to age and daily use of the systems, regular wear will occurs and for example concrete will erode, wearing parts will break, metallic parts will be corroded, platforms will collapse, etc.

If diagnosis routines and regular care are not organized (preventive maintenance), there is no chance to identify such risks, and the quality of the structure and/or the water quality itself will decrease and breakdowns are more likely to occur. The less maintenance there is, the more the conditions of a system will get down with age until it becomes useless. Then, the only way becomes to proceed to the rehabilitation of the system. Nevertheless, despite all efforts of prevention, breakdowns can always occur, meaning that there should be mechanisms in place to manage sudden interruption of the service.

For a sustainable approach, the question of maintenance should be integrated since the beginning of a project. It happens that water points are abandoned because of lack of involvement and investments, despite that the need for water is still there.

Before going into more details on how ensuring sustainability of water systems and proper management, this note aims to clarify the different layers of maintenance. The table hereafter gives definitions and examples for the wells, boreholes equipped with hand pumps or not, gravity fed systems

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Type of maintenance	Frequency	By who	Hand pumps, wells and boreholes	Gravity systems
<p>Routine care : Simple operations that users have to do regularly on accessible parts in order to preserve the working conditions and to protect the system.</p>	Monthly (once or twice a month)	Communities	Washing and cleaning platforms & surroundings (drainage, soak away pit, cattle trough...) Greasing elements where there are frictions (bearings, chain...), checking nuts Fencing	Washing and cleaning platforms & surroundings (drainage, soak away pit, cattle trough...) Cleaning spring box Fencing Light plumbing, painting doors and antirust
<p>Preventive Maintenance and regular periodic care : intervention on a functional system in order to avoid risks of breakdowns and to prevent regular wear of the systems.</p> <p><i>Require a technical control and detailed inspection on regular basis (diagnosis), with the support of specialists who have the specific skills and tools to run periodic care that will allow having an exact overview, pointing potential risks and scheduling requested interventions. A major stake is that someone decides to launch on a proper time the idea of doing the diagnosis that can lead to recommendations, action plan and maintenance operations.</i></p> <ul style="list-style-type: none"> ○ Diagnosis: technical control and detailed inspection on a regular basis to have an exact overview and to be able to come with recommendations ○ Regular periodic care: more technical operations, change of wearing parts, deep cleaning and reinforcement of protections. 	Yearly or regular deadline	Communities (if they received sufficient trainings, are equipped with tools and that the system allow it) Technicians, Public services	Retrieving rods, changing wearing parts of the pump head Retrieving and cleaning pipes, changing wearing parts of the pump body	Review of the whole adduction line, Visit of spring boxes, derivation boxes, break flow, reservoirs, taps etc. Plumbing, changing pipes and/or couplings, antierosive measures (reforestation, protection wall...)
<p>Corrective maintenance – Repair: Intervention to solve a sudden breakdown and that will include adjusting, repairing or changing broken or damaged parts,</p>	Punctual	Technicians, Public services	Replacing pumps parts after a breakdown or sudden dysfunction or vandalism	Correcting leakages, changing parts, masonry for rebuilding, solving breakdown, sudden dysfunction or vandalism
<p>Rehabilitation: Rebuilding of an important part of an existing system or additional interventions in order to restore or upgrade to improved standards. These are generally heavy interventions that required specific knowledge in hydraulic and masonry work.</p>	Punctual	Contractors Private technicians, Public services	Masonry work for improvement, installation of new parts to restore or to upgrade the system.	Installation of new parts, masonry for improvement, upgrade, extension, restoring of system

