

# Conserving water is conserving your life

*Conservar el agua es conservar tu vida*

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This article was written to raise awareness among people about the use of water in the home throughout the daily tasks, proposing consumption alternatives, and tips. The first part deals with the problem of the number of resources available and the importance of water for human beings. The second part presents some of the instruments that are being developed at the national and international level to save water. It also indicates some savings figures related to these tools and feasibility analysis for their implementation in Colombian households. Finally, in the last section, advice and alternatives are presented to facilitate the identification of waste sources and improve household consumption habits, habits that go hand in hand with saving money and caring for the environment.

*Keywords:* Care, culture, saving, shortage, vital, waste, water

Este artículo se realizó con el fin de crear conciencia en las personas respecto al uso que se le da al agua en el hogar a lo largo de las labores cotidianas, proponiendo alternativas de consumo, y consejos. En la primera parte se trata la problemática respecto a la cantidad de recurso disponible, y la importancia que tiene el agua para el ser humano. En la segunda parte se expone algunos de los instrumentos que se están desarrollando a nivel nacional e internacional para el ahorro de agua. También se indican algunas cifras de ahorro relacionadas con estas herramientas, y análisis de viabilidad para su implementación en los hogares colombianos. Para concluir, en la última sección, se presentan consejos y alternativas para facilitar la identificación de las fuentes de desperdicio, y mejorar los hábitos de consumo en el hogar, hábitos que van de la mano con el ahorro de dinero, y el cuidado del medio ambiente.

*Palabras clave:* Agua, ahorro, cuidado, cultura, desperdicio, escasez, vital

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## Introduction

The fundamental base of this article is the water resource, considered as a finite resource, essential for life and its development (Boretti & Rosa, 2019; Wang et al., 2018). However, this resource is considered vulnerable, largely as a result of its current use (Cai, Varis, & Yin, 2017; Cavalcante, Vasconcelos, da Silva, & de Azevedo, 2019). Therefore, at a global level, the good use of water has become a transcendental necessity for its sustainability (Good & VanBriesen, 2017; Megdal, 2018).

For this reason, it is required through different methodologies to create an awareness of savings in homes, schools, and industry. It is necessary to create this conscience in all people because everyone is responsible for taking care of water (Martínez & Martínez, 2014; Wada et al., 2016).

It is opportune to take advantage of this means to aim at this objective. In this same sense, the content of this article seeks to highlight the importance of water resources, its current waste, and contamination, as well as some future consequences resulting from continued bad habits, and finally, advice on how to put it into practice and thus contribute to water conservation (Cosgrove & Loucks, 2015; Mancosu, Snyder, Kyriakakis, & Spano, 2015).

### Let's talk about water

Water, as well as oxygen, is essential for plants, animals and human beings to exist. It is also one of the elements that have to do with the development of different forms of life. Ancient civilizations considered water to be synonymous with life. Water represents, in general, 70% of the human body, a little more in men than in women, depending also on the body size. The brain is composed of 95% water, the lungs of 90%, and the blood 82%. Therefore, the importance of water for life in general and human beings, in particular, is evident (Nizel & Nazrul, 2015).

According to the United States Geological Survey (USGS), the surface of our planet is made up of three-quarters of water, or 71%. Of this percentage, 96% are oceans and seas, while the rest, called freshwater, exists in the environment as water vapor, in rivers, lakes, the poles, glaciers, soil moisture and aquifers, and even in living beings. As can be seen, water is a liquid element that is found in many parts of the planet Earth in different forms. In the particular case of the human being, water is important to be consumed and for the organism to continue working correctly.

Although water is essential for the proper functioning of the human body, for the different organisms, plants, and animals, it also plays a very important role in other areas of daily life, such as domestic, industry, agriculture, among others. In this way, it is possible to affirm that the value and transcendence of this resource, water, is unquestionable. As

was rightly believed in antiquity, water is synonymous with life.

Water is essential for life, but for many millions of people around the world, it is a scarce resource. That's why these people struggle daily to get water that is suitable for consumption and to meet their basic needs. Millions of children still die every year from waterborne diseases. Water-related natural disasters, such as floods, tropical storms, and tsunamis, take a heavy toll on human life and suffering. And too often, drought ravages some of the world's poorest countries and exacerbates hunger and malnutrition.

Considering the finite nature of freshwater resources, and the increasing demand, it is essential to protect and properly manage water resources. Water shortages force people to consume contaminated disease-carrying water. In 2005, 500 million people lived in countries defined as water-critical or water-scarce.

Why is there a water shortage? That is the question we all ask ourselves when we need to know why there are often not enough water resources for the entire population. This is a very important factor when thinking about the not too distant future. In Colombia, water sources are not protected, and water is not treated as a strategic resource. The extractivist model seriously threatens the páramos (alpine tundra ecosystems), rivers, lagoons, and subway water throughout the country. The petroleum and mining multinationals have received all kinds of benefits, among them flexibility in environmental regulations. At the same time, investments in reservoirs and aqueducts, as well as the purchase of land for the protection of water sources, are insufficient.

There should be no shortage of water in Colombia (García, Piñeros, Bernal, & Ardila, 2012). We are one of the most water-rich countries in the world. Our surface water supply is six times above the world average, and three times above the average of Latin America. Groundwater potential represents 74.5% of the national territory and covers 683 municipalities, although of the 61 aquifer systems identified, 73% lack sufficient knowledge for their use. We have 1065 lakes that cover 6,814 Hectares located in different páramos, and six large areas of glaciers that favor the balance of the hydrological cycle but lose 3% of their mass per year (Fig. 1).

In the face of this scarcity, we must face up to both the population (Fig. 2), and the government itself, which has the resources to invest in different alternatives, so that we can turn off the tap to continue conserving this vital resource.

It is no mystery to anyone that pollution is a key factor that is affecting our entire environment, and it influences water as well. Many things are involved in the contamination of water in Colombia. According to the Ministry of the Environment, it is estimated that half of the water resources have quality problems. It is estimated that the industry, the

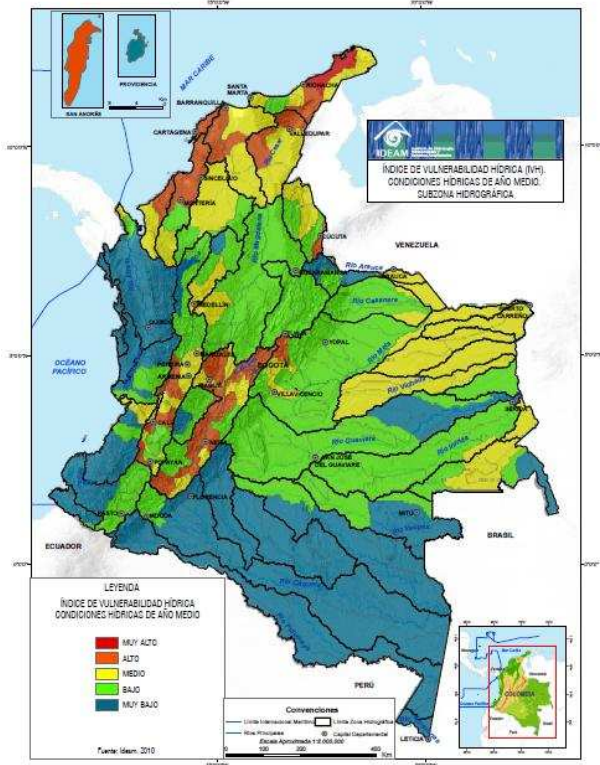


Figure 1. Water Vulnerability Index (IVH). Average year water conditions. Colombia. (IDEAM, 2010).

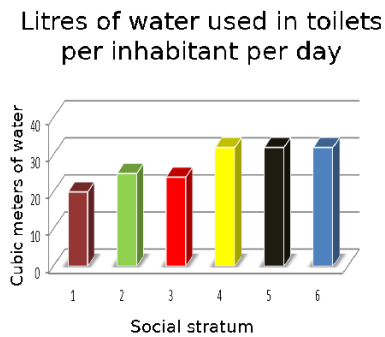


Figure 2. Liters of water used in toilets per inhabitant per day (Alarcón, Barrera, & Castro, 2015).

agricultural sector, and domestic water generate 9,000 tons of contaminating organic materials.

One of the reports states that almost 4,500,000 m<sup>3</sup> of domestic and industrial wastewater is discharged into the natural environment, and most municipalities do not have plants for its treatment. Cities at the level of Barranquilla only have oxidation ponds available before the water is discharged, while the capital, Bogotá, has a treatment plant that only processes 20% of what the inhabitants produce. According to the National Water Study (2010), conducted every four years by the Institute

of Hydrology, Meteorology and Environmental Studies (Ideam), most of Colombia's Andean water system has been altered due to the transport of sediments and toxic substances, with a marked incidence of the industrial corridors located in the basins of the Bogotá-Soacha, Medellín-Itagüí, Cali-Yumbo, Sogamoso-Duitama-Nobsa, Barranquilla-Soledad, and Cartagena-Mamonal corridors, which seriously affects the quality of the liquid in the Magdalena, Medellín, Bogotá, and Cauca rivers.

Everything has been influenced so that the levels of contamination generated are taken as a warning. These mustn't continue affecting, not only the water resources but the environment in general, which comprises a balance.

97.5% of the planet's water is found in the oceans and seas, this is not suitable for consumption, agriculture, and industry in general. The remaining 2.5% is freshwater, almost all of it in the polar caps, subway reservoirs, or difficult to use. Therefore, 0.26% of the total mass of water in the world that is easily exploitable for human use remains, which is in reservoirs, lakes, rivers, and accessible wells.

Much of the water that can be used is increasingly contaminated. Also, 70% of the water we use goes to irrigate crops, which are often not appropriate, causing waste. The average consumption of water per person per day in developed countries is more than double that which is strictly necessary.

The most common forms of water waste are a poorly closed tap, excessively long baths, unused connected hoses, road washing, excessive vehicle cleaning, among other practices. However, that is not the only cause of the problem in question. A considerable part of the waste is carried out in the transport of water to the consumer, which is the result of old or damaged public pipes, poorly executed works, as well as clandestine water redirections. This happens in all countries, however, there are certain places that have a low rate of water waste. An example of this is Japan, which wastes 10% of its water, or Germany, which loses 9%, following the average of European countries.

Therefore, the waste of water is one of the main causes of the lack of it in several places in the world (Fig. 3). Combating this problem is the duty of the citizen, of the businessmen, and the State.

The University of La Sabana reveals some disturbing numbers. The country wastes 43% of its water resources. One of the causes of this is the failure of the infrastructure of the aqueducts that carry it. For this reason alone, they lose more than 40% of the liquid they administer.

On the other hand, water is wasted by the population in some regions of Colombia due to certain annual customs or other factors. For example, in Valledupar, as well as in Manizales and Ibagué, there is the so-called hydraulic sweeping (cleaning of sidewalks, gardens, and streets with hoses). This high consumption increases the expenses in the



Figure 3. Soil, water and air pollution (Antón, 2008).

production and treatment processes of the wastewater. In Cali the levels of savings have been increasing, however, the waste continues because of the enormous theft of water that occurs in the areas of the Cali hillside, there the consumption is not measured or charged. On average, out of every 10 liters of water, four are lost due to overflowing or leaking tanks, deterioration of networks, illegal connections, and measurement errors. Bogotá, according to the University, has one of the highest indicators of water loss, at 38 percent.

But these are not the only problems that put the country's water at risk. According to the institution, each year more than 756,945 tons of organic waste are thrown into the rivers, such as food, fecal matter, rotten plants, among others. In addition to this, more than 918,670 tons of non-biodegradable organic matter, such as plastics, rubber, and other industrial waste, are also dumped annually. It is clear how waste or loss of water due to contamination is materialized in Colombia, and particularly in the capital. This shows the lack of culture and responsibility of citizens concerning water.

Although Colombia has large water sources, it has some deficiencies in managing them. About 80% of the population, and economic activities, are located in places where the resource is scarce. This is a major problem because the entities responsible for maintaining, caring for, and distributing water do not take responsibility for the direction they should take.

Ricardo José Lozano, director of IDEAM, added that the aqueduct infrastructure that allows water to reach homes is not strategically built, since many of the aqueducts are built-in high-risk sites vulnerable to winter. When there is no rain, the flow of rivers drops, and the aqueduct intakes are left without the resource. And when there is excess rainfall and the levels rise, there is the destruction of the infrastructure in the municipalities.

On the other hand, the fraud is also materialized by the citizens towards the aqueduct, manipulating the water meters (registers) thus managing to alter the real measurement. The Bogotá water and sewage company estimates that 10 percent of the 494.41 million cubic meters of water produced annually in the city is stolen.

Therefore, not only do those in charge of water administration commit water fraud, whether it is due to corruption, lack of planning, or disinterest, but the citizens themselves do it. It is clear then the failure and insufficiency of values, which allows the waste of this vital resource, regardless or perhaps without thinking about what may happen in the future with the scarcity of it. It is everyone's responsibility to take proper care of the water today that will serve the citizens of tomorrow.

Because of the abundance of this natural heritage in Colombia, culturally it has not been given the value, sense, and meaning it should have. It is conceived as an inexhaustible and free resource whose cycles are ignored. It is available without taking into account the parameters of quality and flow regulation. It is not known that it is a limited resource and that for its conservation all Colombians must take measures to transform this culture of waste, to begin to treat and manage water resources in a rational manner, with collective responsibility, making sustainable use of it, and improving practices in daily activities.

Not taking action in the face of the possible risk of losing this vital resource for our lives, could lead to several consequences that either in the short or long term end up altering our ecosystem, and could be the end of many things. Some of these consequences are:

- **Lack of drinking water.** The shortage will affect a third of the population, and this degree of drought can destroy all kinds of crops, and kill living beings.
- **Loss of biodiversity.** They represent an extremely important factor for the balance of the environment, and this has been decreasing due to the lack of water. This leads to the extinction of many species and gradually puts the planet at risk.
- **Diseases.** Contaminated water is a way of transmitting diseases. Scarcity and poor access to drinking water force communities to consume contaminated water, and it is responsible for 80% of the diseases that occur in developing countries.
- **Water pollution.** Cities and their large factories are the main water polluters. However, they are not the only ones, livestock also contaminate through animal feces, and agriculture through fertilizers.
- **Acid rain.** Smoke from industries and cars is also one of the biggest polluters. These go up into the clouds and stay there until the moment it rains. Therefore, the rain falls acidly on rivers, lakes, and seas, increasing their acidity and killing aquatic animals and plants.

The Ministry of Housing suggests 15 concrete actions to citizens to save water in their homes:

- Examine outdoor faucets, pipes, and tubing for leaks. Drop by drop the water runs out.
- Make use of the rainwater collection systems in the houses, which can be used for washing clothes, cleaning houses, and sanitary facilities.
- Water plants and gardens only twice a week, in the evening or early morning, preferably using drip irrigation systems.
- When washing dishes by hand, use a tub for washing and another for rinsing. Never under the jet of the open faucet.
- Take short showers, and turn off the faucet while soaping.
- Use a glass of water to brush your teeth. Do not leave the tap open.
- Close the tap while shaving. Use a container or the stopper of the sink to shave.
- Wash vehicles in a designated area. If you wash at home, use only a bucket of water.
- Teach children not to waste water.
- Periodically check that the toilet float is working properly.
- Install low-consumption toilets.
- Check key gaskets at least twice a year.
- Collect water from the shower while waiting for it to heat up to use it for plants or toilets.
- Use the washing machine for full loads avoiding its use for few clothes.
- Avoid the use of hoses because of the waste of water.

### Tools or techniques for saving water

As discussed in the previous section, water is important and must be cared for, thus avoiding future shortage problems, which could even cost lives. For this reason, it is significant that the population is aware of some methods, tools, products, or even inventions under development that can be used to reduce consumption. In general, it is possible to use the current technology to improve the quality of life of the human being, developing customized solutions (Garcia, Osuna, & Martinez, 2018).

Although only approximately 10% of total water is used for domestic purposes, this is where advice should be initiated and implemented to make water use more efficient, as the behavior of each of its members has a potential impact.

Currently, around the world, there are researchers and people without the theoretical knowledge of the problem of water, who develop objects for the same purpose: to save water in the home. Because water scarcity is a phenomenon that affects 1200 million people, equivalent to one-fifth of the world's population, who suffer from physical water

shortages, while a quarter of the population faces economic shortages.

In Latin America, universities like the National University of Colombia (UNAL) and the Autonomous University of Querétaro, (UAQ), are developing two quite interesting proposals, and although they are similar, they would benefit all social classes, because they affect a practice that occurs throughout society, the shower.

In Colombia, a person spends between 40 and 50 liters of water bathing once a day, in a shower of between 3 and 15 minutes. In hot weather, this number goes up, because people are used to taking a bath twice a day with similar duration. Besides, the consumption generated by the toilets is similar, because a discharge can consume from 3 to 5 liters, and if this operation is done on average 3 to 5 times a day, the value would go from 30 to 48 liters per day.

Given this situation, students from the Universidad Nacional de Colombia, in the Mechatronics Engineering and Mechanical Engineering careers, designed a prototype to contribute to savings in the home and reduce service costs (Fig. 4). The device consists of a rectangular base that collects the water that falls during the shower so that it can be used later in the toilet flushes. The components of the device are a water collector in the shape of a platform, a filter for solids (hair, rings, soap, etc.), and a pump that drives the collected water to the collection tank. The energy consumption of this device is 20 W, so it is also energy efficient. The energy consumption of this product would increase the cost of the energy bill by 500 Colombian pesos, which is considerably less than the savings on the water bill, which can be as much as 14,000 Colombian pesos a month.



Figure 4. Home water saving device (Universidad Nacional de Colombia, 2010).

The model that was developed in Mexico differs from the Colombian prototype in that it is composed of four modular cells, which make it possible to reuse 90% of the water it collects (Fig. 5). Also, it has no electrical components. Each cell can hold 10 liters, which is equivalent to an average bucket. According to the calculations made by its inventor,

it can save about 80 liters of water per day in an average household, so in a country like Colombia with 50 million inhabitants, it could be possible to save 1.5 million liters of water per day.

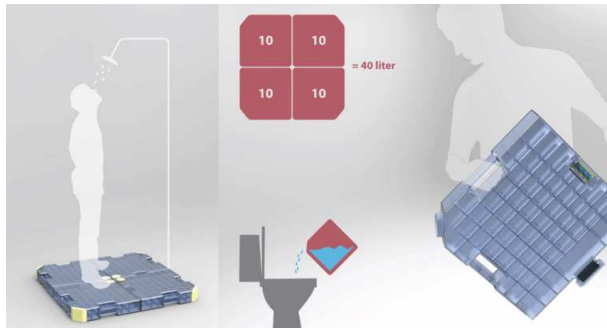


Figure 5. A young Hungarian-Colombian developed a system that allows the reuse of shower water (design, 2016).

Besides, the Universidad Autónoma de Querétaro is developing a pedal, which besides saving water, helps to prevent the spread of diseases by contact with the taps of the sinks (Fig. 6). This works thanks to the action of a pedal, which pumps the liquid into the cistern. This idea came up in 2009 and its main objective is to save water without having to use electrical sources and taking advantage of mechanical strength. The objectives of its developers were to avoid direct contact with the device, due to the germs and infections that live in the bathrooms and are transmitted through the sink. Also, to avoid the spread of pandemics such as influenza A/H1N1, because one of the sources of spread was the handling of water taps.

On the other hand, Mexican engineers are developing an alternative, which, although it cannot be considered an invention, is quite useful: to save rainwater (Fig. 7). According to the calculations of Mexican engineer Jesús Hiram García Velázquez, the roof of a 40 square meter house could capture 100,000 liters of water in six months, although this amount depends on the weather conditions. Rainwater harvesting is an abundant, free, sustainable, good quality source of water that goes directly to the homes, and even cheaper than the traditional ways used by the government to supply us publicly. A good example of companies that have adopted this measure is Mexico City's international airport, which collects 400,000 liters per year. In existing structures, it is possible to use digital tools to facilitate the efficient and economical design (Martínez, Montiel, & Martínez, 2018).

Another alternative to reuse water is to collect the water that comes out of the washing machine when it finishes its cycle because an average washing machine with a capacity of 7 kg of clothes consumes between 42 and 62 liters of water, which is an exorbitant amount considering that it can be used to clean some areas of the home such as the patio.



Figure 6. Pedal-operated wash basin (BRUNOTICIAS, 2017).



Figure 7. Rainwater harvesting (iAgua, 2017).

It is not only in Mexico that initiatives are being carried out to make better use of the liquid. In Colombia, private sector companies such as Corona are designing and selling their products with international standards for water flow, all in the interest of conserving the resource. Toilets more than 10 years old require an average water consumption of 18 liters, while those less than 6 years old with variable discharge only consume 6 liters for solids, and 4.8 liters for liquids. The new variable flush system contributes to saving an average of 210 liters of water, compared to toilets that do not have this system.

In the 21st century, we must be aware that in the age of technology we must look for alternatives to solve the water

shortage and how to save this resource as much as possible. This is where the different products with which we have been innovating to achieve maximum savings in water resources come into play, providing multiple alternatives so that it is not wasted and is easily accessible to everyone.

Many products currently exist for these purposes, but some of which are commercially available in Colombia are the following.

### Ecological urinals (Fig. 8)



Figure 8. Urimat, ecological urinal without water consumption (EcoInventos, 2017).

One of the benefits generated by this product is that it does not require the use of water-saving about 30 thousand liters of water per year. It does not require the use of chemicals in addition to being practical because its cleaning is organic.

### Energy-saving faucets (Fig. 9)



Figure 9. Push water taps (Commercial Washroom, 2019).

These water-saving faucets dose the water, making us use the necessary amount, avoiding waste, and saving up to 80% of water. These can be of the push type with a water pressure

output of 5 to 7 seconds or in other cases there are sensor faucets that can be graduated to the point that when you approach your hands they open and when they are removed they close, but they can also be adapted as the push type from 5 to 7 seconds, giving this an estimated time and sufficient for proper handwashing.

### Organic cleaners (Fig. 10)



Figure 10. Organic cleaners (Camargo, 2019).

They are used as an alternative for the water since they have different uses for the cleaning as the services of cleanliness like those of the bath, soils, kitchen, etc, avoiding this way the use of water and managing to be very efficient at the moment of realizing the above-mentioned offices.

### Aerators for faucets (Fig. 11)

These are inexpensive products that are placed in the taps, these mix the water with the air reducing its flow but giving the impression that it falls with the same amount. They allow you to save up to 50% of water.

### Eco-stop systems (Fig. 12)

These products allow you to stop the flow of water with just a gesture or a button. In the case of the showers, they allow the water not to be wasted when soaping up, so that the tap is open, which is very useful since a normal shower can consume from 16 to 24 liters, while this system has a consumption of up to five liters.



Figure 11. Aerators for faucets (EcoInventos, 2017).



Figure 12. Eco-stop systems (EcoInventos, 2017).

### Thermostatic faucets (Fig. 13)

These will be of great help when it comes to saving water as energy, given that when looking for the desired temperature, either in a shower or in a tap, eight liters of water can be wasted. On the other hand, with one of these, the temperature can be predefined reducing up to two liters of consumption.

There is an infinite number of products that can also considerably reduce water waste, here are some of them.



Figure 13. Thermostatic faucets (EcoInventos, 2017).



Figure 14. AQUUS® System, water recycling system (EcoInventos, 2017).

### Water recycling system (Fig. 14)

This system collects water from the sink and, after filtering and disinfecting it, uses it to fill the toilet tank.

### Dual discharge systems (Fig. 15)



Figure 15. Dual discharge systems (CLUXTER, 2015).



The idea of this product is to be able to choose between two different types of flushes when using the toilet.

### Nebia shower (Fig. 16)



Figure 16. Nebia, the shower of the future that reduces consumption by 70% (EcoInventos, 2017).

Nebia is a shower system that splits the water into millions of tiny drops that spread over your body, just like an atomizer does. With Nebia the water covers an area 10 times larger than a conventional shower head.

These products give us different alternatives when choosing the savings we want to make in our homes. Also, they tend to be economical and functional for each of the aspects in which we are going to use them in our homes. And this advance will not stop here, every time it will seek to innovate in the market with new products that will aim to have greater savings, and above all that is friendly to the environment. That is why technology has been a fundamental part of the implementation and creation of each of these products that can extend the existence of a water resource that is increasingly seeking to preserve.

### Changing habits

Let's start by defining and knowing about the word *habit*. The word *habit* refers to an act that we take for granted and adapt to the environment around us. However, when it comes to the use of water, it is known that many people use it inadequately. This is due to bad habits in daily activities, irresponsible habits of which, it seems, we are not aware. Some of the practices in which there is evidence of waste or excessive application of water are, for example, washing cars, cleaning teeth, washing dishes, lowering the cistern, among others. This speaking from the domestic sphere.

Modify, change, transform, renew, are words that should now remain in our vocabulary. Become aware of the negative consequences that they bring year after year, even if they

are not seen at the moment. Not all the population enjoys this resource, in many places, there is no water source. At the same time, in another scenario, people have to walk kilometers to get some of it, while in another area or sector the tap is opened, and what was needed in the other two cases is spent. How ironic, isn't it? And not content with this, as soon as the opportunity arises there is the human being contaminating rivers or lakes within their reach, it seems that a negative attitude towards our environment is expressed (Fig. 17).



Figure 17. Practical tips for saving water (cuencarumiyaco, 2014).

Fig. 17 shows some of the actions that are carried out daily in households. Likewise, the liters of water that can be spent approximately, as can be seen, is in habitual activities, and that besides, are necessary. However, one does not always have good habits to carry them out in the best way. Some tips that could be put into practice are, to replace a bath with a shower that can suppose a saving of about 150 liters, to cut the water while you brush your teeth or shaves can suppose a saving of 10 - 12 liters per minute, to repair the taps that drip, among others.

It is said that great results come from small changes. This is why we start from each household, with each family member, rather than giving a voice to the industry or the agricultural sector. Small changes that can mean great annual savings, adding to it the incentive that we want to create in each person, the transformation starts from home, it goes from the inside out. The solution is in the hands of each person, starting from the family, reforming those bad habits, and valuing water, the source of life. There are many tips, tools, and methods that can be found to reduce consumption, just be aware of the need to apply them today.

### Tips to avoid water waste in the home

To begin with, we would like to mention the bad habits that there are in the home regarding the use of water since

we can observe that in Colombian homes. The bad habits are (Fig. 18):

1. Brushing your teeth with the tap turned on.
2. Not to close the faucet of the shower at the time of soaping.
3. To wash the plates with the open faucet.
4. Wash the vehicles with conventional hoses.
5. Clean the garden with a jet of a low-pressure hose.
6. Wash clothes by hand.
7. Do not report a leak in the hydrant.
8. Take long showers.



Figure 18. Primary awareness of water use, UASLP experts (Luis, 2018).

In addition to these habits, certain tools in the home also contribute to waste, such as:

- **The garden hose.** It wastes a large amount of water because the pressure it offers is too low, making it more difficult to remove dirt and requiring more water usage.
- **The old washing machines.** They consume a higher percentage of water than modern machines, which even offer an option to re-use the water. While these are less affordable, in terms of savings there is no discussion.
- **The old taps.** The flow of water they carry is greater, so their pressure translates into greater consumption of the liquid.
- **The old toilets.** These do not have an efficient water consumption design, so when compared with a modern one, their consumption is much higher.

The characteristic that all these devices have in common is that they were designed many years ago, without taking into account the need we have today to save water, so it is necessary to be careful when using them to make an adequate consumption. That's why we're going to give you some tips on how to save water.

- Slightly turn off the water tap in your home. By decreasing the flow, you will get fewer liters from the tap per minute. Such a small gesture becomes a very useful measure to save such precious liquid. You will hardly notice the difference every time you open the taps, but your pocket will appreciate it.
- Perform regular maintenance on your home's hydraulic system to check and repair leaks. If the meter *runs* when all

your taps are turned off and your appliances are turned off, you probably have a water leak in your system.

- Repair the taps. Prevent them from leaking. You will save 200 liters of water (a drop per second is 30 liters per day).
- Use the remaining water from the food jars and from washing the vegetables to water the plants.
- Wash the car once a month, using a bucket and cloth.
- Don't let your toilets lose water. Check that your toilet doesn't lose water in a very simple way: pour a small amount of colorant into the water tank. Do not use the toilet, and if after 15 minutes you find colored the toilet, it means that your toilet is leaking water and you must repair it.
- Use a cup to rinse your mouth when you brush your teeth. You will save six liters of water per minute.
- Use your dishwasher or washing machine only when they are full. You can save up to a thousand gallons a month.
- Soap all the dishes and then rinse them all together.
- Wash fruits and vegetables in a bowl of water instead of running the tap.
- Designate a glass for drinking water throughout the day or refill a water bottle. This will reduce the number of glasses to be washed each day.
- Don't let the water run to defrost food. Defrost it by leaving the food in the refrigerator.
- Before buying a new washing machine, compare the amount of water you will save with each model. Remember that if you choose well, you will also save energy.
- Use the washing machine only with full loads. That is, when washing clothes, check that the water level corresponds to the size of the clothes.
- If your shower is capable of filling up to a gallon in less than 20 s, replace it with a more efficient model. You can save up to 750 gallons of water per month.
- If you shorten your bathing time by a minute or two, you can save up to 150 gallons of water per month.
- You've always been told to turn off the water when you brush your teeth, but did you know that you can save up to 25 gallons of water if you do?
  - In case you need to leave the faucet or shower running to get hot water, put a container or bucket together, and then reuse it in the toilet or for watering plants.
  - Decrease the frequency of washing the floors. It is preferable to mop them.
  - Turn off the shower while washing your hair to save up to 150 gallons of water per month.
  - Turn off the sink while you're shaving to save up to 300 gallons of water a month.
  - To save time and money, you can wash your face and teeth while bathing.
  - Hidden water leaks are a silent source of wasted liquid. To avoid that situation, read your water meter and don't turn on any faucets for two hours. If the indicator changes after

that time, a leak will occur. By the way, check your water meter frequently and check your water bill to see how much water you are using.

- Repair any leaking faucets and be sure to turn off the faucets.
- Report broken pipes to the property owner or water supplier.
- Water your garden with rainwater. Do this once a week.
- Bathe your pets on land that needs watering.
- Instead of a hose, use a broom to clean the sidewalk.
- Opt for an ecological car wash, which can be done with products offered by the market to clean and shine the car, without using a drop of water. You can also do without the hose and use a bucket of water.
- Avoid toys that require a constant flow of liquid, such as water guns.
- Try to take a bath in a few minutes and prefer to use a water-saving shower.
- Install a low-volume toilet. If your toilet is old, adapt a water-saving device in the cistern that allows partial and total water discharges.
- Do not let the water run while washing the dishes. Remember that you can use water-saving filters in the dishwasher or use a dishwasher. The dishwasher is a mechanical device that saves 30 liters of water daily.
- Prefer to soak your pots and pans to clean them and not waste water while removing dirt.
- If you prepare a tea, pour the amount of water it will require into the pot. It is also recommended to cook food in the least amount of water possible.
- Wash fruits and vegetables in a container with water and do not clean them under the tap.
- Throw accidentally falling ice cubes at a plant. You can also pour the water left over after cooking into a plant. Do not use the water to defrost the food, better use the refrigerator.

### Conclusions

The problem that was developed during the article was the use of water in the home, looking for alternatives to achieve savings of this resource. For this reason, we talked about the importance of water in our ecosystem as a first step, raising different arguments about possible situations that can arise if we do not take care of the water resource. Within the proposed solution, the content was based on the writing of advice that could be made at home to achieve the preservation of water for much longer, relying on the different products that may offer the market or actions that could be supportive in helping against this problem. Finally, with this article, we seek to create awareness in society, on this issue that is not a mystery but a reality that is already lived in many countries where scarcity abounds, so the importance of being involved and achieve not only preserve this vital resource for us but future generations.

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