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Technologies of savings systems that generate greater efficiency in the consumption of drinking water

Tecnologías de sistemas de ahorro que generan una mejor eficiencia en el consumo de agua potable

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Abstract

This review article examines the main aspects of drinking water demand management from a technological and cultural perspective as a strategy for the efficient use of urban aqueducts. It is necessary to know the factors that affect the consumption of water in homes in order to generate management processes to solve the misuse of this resource. In the first room, a description of the demand is presented and some investigations are presented. Then some low water consumption devices are described, finally social mechanisms are mentioned to achieve a more efficient use of water.

Water conservation, Water management, Social participation

Resumen

Este artículo de revisión examina los principales aspectos acerca de la gestión de la demanda del agua potable desde una visión tecnológica y cultural como estrategia para el uso eficiente de acueductos urbanos. Es necesario conocer los factores que afectan el consumo de agua en viviendas con el fin de generar procesos de gestión para resolver el mal uso del este recurso. En primera estancia se presenta una descripción de la demanda y se exponen algunas investigaciones. Luego se describen algunos dispositivos de bajo consumo de agua, finalmente se mencionan mecanismos sociales para lograr un uso más eficiente del agua.

Conservación de agua, Gestión del agua, Participación social

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Introduction

Caring for the environment has been a very important issue to preserve the life of human beings and their environment. Over time, the use of natural resources is becoming scarcer and has brought risks. For this work the objective is drinking water, it is not only an indispensable resource for human life but also for socioeconomic development, energy production or adaptation to climate change; However, the mismanagement of this vital resource has caused pollution and shortages.

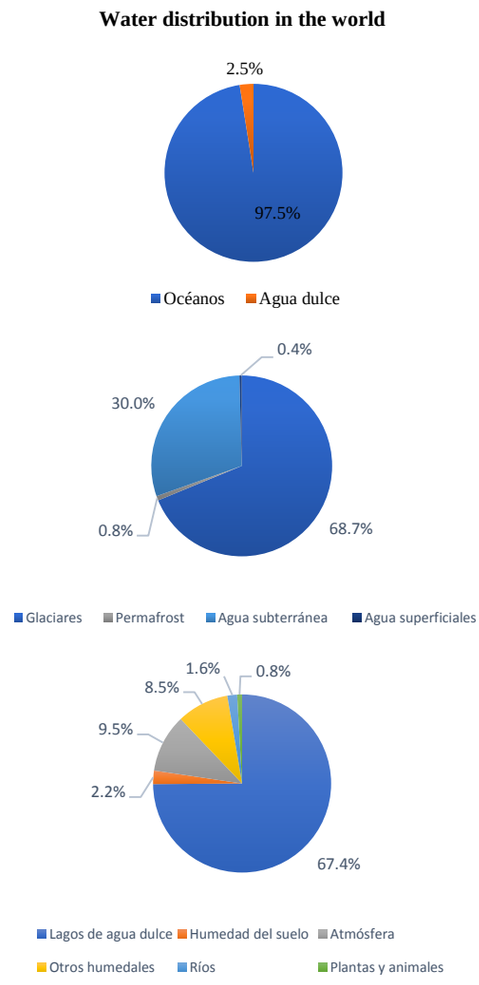
Water pollution exists in seas, lakes, rivers, and canals. The World Health Organization (WHO) defines contaminated water as that which undergoes changes in its composition until it is unusable. (IBERDROLA, s.f.) Therefore, contaminated water causes diseases and cannot be reused for irrigation of agricultural crops. The causes of pollution come from the roots of the use of fertilizers, pesticides, plastic waste, among others. Another cause for the deterioration of water comes from activities that we carry out. Deforestation, industrial, agricultural and livestock activities, garbage, maritime traffic and fuel spills. The problem of water pollution has produced negative effects on the environment and health.

The purpose of this work is to seek alternatives to reduce the inappropriate use of water and preserve this resource for future generations. The investigation allows to expand in knowledge to be able to act based on the results. That is why the investigation was carried out in the municipality of Santa Cruz de Juventino Rosas. In order to know through a sample, what tools and techniques of use, people use in their homes to make efficient use of drinking water.

1. Fresh water reserves in the world

There are around 1,400 million cubic kilometers of water on the planet, of which 2.5% correspond to fresh water, located mainly in rivers, lakes, glaciers, ice sheets and aquifers (UNEP-GEMS, 2007). Of the total fresh water, about three quarters are contained in glaciers and ice sheets, the majority (97%) in Antarctica, the Arctic and Greenland. Surface waters (lakes, reservoirs, rivers, streams and wetlands) very heterogeneously retain less than one percent of fresh, unfrozen water:

Only in the world's lakes are stored more than 40 times what is contained in rivers and streams (91,000 versus 2,120 km3) and approximately nine times that stored in swamps and wetlands (Graph 1). (Report on the Situation of the Environment in Mexico, n.d.)



Graph 1 Distribution of water in the world (Report on the Situation of the Environment in Mexico, n.d.)

2. Consumptive uses of water

In Mexico, Conagua classifies water consumers into three sectors: agriculture, public supply and industrial.7 In 2017, the volume that was concessioned to these consumptive uses was 21% higher than that registered in 2001, going from 72.7 to 87.9 kilometers cubic; this last figure represents 19.2% of the total renewable water (451.6 km3). In 2017, in addition to the 87.9 cubic kilometers concessioned to the aforementioned sectors, an additional 183 cubic kilometers were concessioned for non-consumptive uses, in particular, for the generation of electricity in hydroelectric plants.

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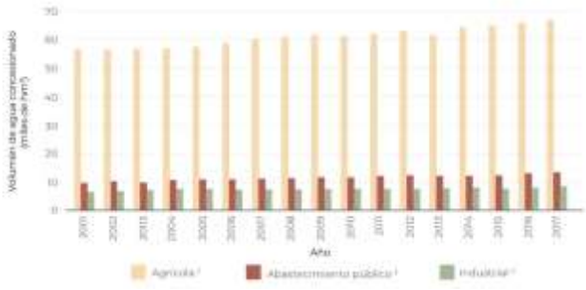
If the water concession in 2017 is detailed to the three main consumptive uses, it can be seen that 66.8 cubic kilometers corresponded to the agricultural sector (76.3% of the total concession), 12.6 km3 to public supply (14.4%) and 8.5 km3 to the industry: 4.3 to self-sufficient industry (4.9%) and 4.2 to electric power excluding hydroelectricity (4.7%). The sector that has grown the most in terms of the volume granted between 2001 and 2017 was public supply, which increased 32.8%, while the agricultural and industrial sectors increased 18.3 and 26.9% (Graph 2). (Report on the Situation of the Environment in Mexico, n.d.)



Graph 2 Volume of water concessioned by sector, 2001-2017. (Report on the Situation of the Environment in Mexico, n.d.)

3. Water conservation

Life on Earth exists thanks to the presence of water on the planet, especially that which is in a liquid state. The "blue gold" as this resource has already been called, receives this name for the importance it has for our existence and at the same time for its scarcity. Although three-quarters of the planet is water, only a very small percentage can be used by humans. Therefore, it is necessary to take care of the water we have because our present and future depend on it. In Green Ecology they talk about why it is important to take care of water, how to take care of it and about more related aspects.

4. Social participation

Doctors, scientists, nutritionists and other health specialists recommend drinking between a liter and a half and two liters of water a day, but why? The answer is that water is the most necessary element for our life. Our body is made up of 70% water, 95% of the weight of our brain is water, our blood contains 85% water and our lungs 90%. Each cell in our body contains around 70-80% water. But water also fulfills functions apart from hydrating our cells and organs.

Water is the medium where chemical reactions occur, such as in the manufacture of proteins, it is also the means of transporting ions and nutrients, it helps to cleanse our body of toxins by dragging our excretion products, it participates in digestion, regulates our temperature. body and performs other functions. As we see it, water is essential to our lives because we are partly water.

If water is important for human beings, it is also important for other living beings. Plants need water to photosynthesize and animals need to drink water just like we do to hydrate themselves and for their bodies to carry out the rest of its functions.

But not only that, water is the medium where many living beings such as animals, bacteria, plants, protozoa, fungi, etc. live. In addition, water helps regulate the temperature and climates that exist on the planet, it is a sink for CO2 and a source of oxygen, it is also the means of transport that carries nutrients to all areas of the planet so that they are used by all organisms and of course it is a source of energy. Energy that can be harnessed to produce movement, electricity and heat.

5. Low water consumption devices

The installation of water saving systems in homes guarantees an efficient use of the resource on a continuous basis, a simple way to reduce the water bill, both environmentally and economically. Some of the savings systems that can be incorporated inside the houses to the hydraulic connections.

5.1 Thermostatic taps

The thermostatic faucet is an element of the water installation in the home that is based on a system that maintains the temperature of the water constant when it comes out of the tap.

5.1.1 Characteristics:

Flow control.
Temperature control.
With this tap we save a lot of water since it helps us to measure the temperature and thus we do not waste water since it is a priority to take care of it.

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5.1.2 What is a thermostatic tap?

It is a method of installing water in a home that maintains the constant temperature of the water that comes out of the tap, it is also used for a shower in a bathroom so as not to waste cold water. As shown in Figure 1, 2 and 3

5.1.3 What is a thermostatic faucet for?

The function of thermostatic taps is, as the name suggests, to keep the water temperature fixed, and it does so automatically. Its operation is based on the fact that it lets through more or less cold water depending on the temperature we have selected. (Arch, 2019)

Figure 1 Roca thermostatic taps. (Topgrifo.com.es, s.f.)

Figure 2 ROCA Thermostatic Prada faucet. (Gerontological, s.f.)

Figure 3 ABC of reform. (FYCAL, s.f.)

5.2 Automatic taps

Automatic faucets may seem a bit frivolous, but they are actually smart, hygienic, and energy- and water-efficient inventions in your home.

The taps that turn on without the need for you to touch them:

You put your hand underneath and the water comes out as if by magic. But its operation is based on technologies that have been used for decades, very intelligently adapted to taps. These automatic faucets have four key components: sensor, solenoid controlled valve, power source, and spout.

5.2.1 Sensor

The sensor of an automatic faucet is usually at the base of the faucet spout. It is not a motion sensor, but a presence sensor designed to detect the hands under the mouth and turn on the tap. When you remove your hands, the sensor commands the tap to turn off. Most faucet sensors use a small infrared light in conjunction with an infrared detector. When the hands get within a few inches of the base of the mouth, the remote infrared light on the skin towards the detector, which sends a signal that turns on the tap valve.

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5.2.2 Solenoid valve

The faucet sensor typically controls a diaphragm solenoid valve. The solenoid is an electromagnet that you can pull or push, depending on the electrical polarity. Diaphragm valves use a kind of rubber disc to control the flow of water. The valve is usually kept closed, but, in response to a signal from the sensor indicating that the hands are present, the solenoid pulls to open the valve and that water can flow through the mouth; then push to close the valve when the sensor indicates that the hands are gone. Most automatic faucets flush only warm water, but some models can also flush hot or cold water. (Engines, 2017)

Figure 4 Solenoid valve. (NEUCON, s.f.)

5.2.3 Power source

All automatic faucets require a power source. Some models use dry batteries, while others draw low-voltage current from AC (alternating current) transformers. Electricity powers the sensor, controls the electronics and the water valve. Battery-operated faucets use solenoid valves that remain in the open position with no further electrical current until a stroke of power pushes them back to the closed position. Transformer-operated faucets use electrical current. (Engines, 2017)

5.2.4 Mouths

The automatic faucets, which hold all the parts, are made of zinc (the cheapest models) and brass (the highest quality). They can be coated with nickel or chrome, to ensure greater durability and better appearance. The mouths can be made by machine, with sand mold or pressure. There are different styles of faucet heads for the kitchen or bathroom, laboratory sinks, bars and restaurants. In addition, in the mouth of the tap is where aesthetics play a role. The shape and finish are the main factors that buyers take into account when choosing one tap or another.

The 3 most demanded automatic faucets with sensor:

5.2.5 Fy-Light Automatic Faucet with Infrared Sensor

Saving water and electricity: water flows when your hands get close to the induction zone and stops immediately once you remove your hands. This automatic faucet will greatly reduce your water use and save a ton of money on water bills. For DC (direct current) type, 4 AA batteries can be used for about 1 year.

Convenient and Hygienic: The faucet bath sensor is used without hand contact, preventing cross infection by germs. It is very convenient and easy to use. Comes with the temperature adjustment valve, you can adjust the water temperature with the hot and cold temperature mixer according to your preference.

High-quality and durable material: Made of high-quality solid brass, the automatic faucet is durable and not easy to rust. Its exquisite workmanship and classic and modern style blend perfectly in any sink. Filter built into the faucet that prevents sand and solid materials in the water from leaving the flow.

Easy Installation: Even if you are not a professional plumber or handyman, easy installation as long as you follow our instructions. The infrared automatic bathroom faucet comes with detailed instructions (diagram) included and all necessary accessories for installation. Satisfaction Guaranteed: Fy-light aims to offer 100% customer service satisfaction. (Engines, 2017)

5.2.6 Auralum - Electronic Automatic Sensor Faucets Mixer Sink Faucet with Sensor for Hot and Cold Water for Bathroom

– Faucets with automatic infrared sensor. You just have to put your hand under the tap to activate the water and it closes as soon as you remove your hand.
– Automatic basin faucet, water outlet automatically, no switch required, more convenient to use, the ideal choice for at home or public areas.
– Sink mixer with warm water, suitable for year-round use, the water flow can be adjusted by the button on the side of the faucet, very practical.

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– Sensor tap with honeycomb aerator for the smoothest water jet, since without splashing, it allows to save water up to 30%, reduce water bills.
– Sink mixer mounts easily with provided installation instructions and accessories. (SuperVent, s.f.)

5.2.7 AZUNX Automatic Rubinetto Basin Faucets with Infrarossi Sensor Bathroom Mixer Tap for Cold and Hot Water

Adjustable temperature: you can adjust the temperature of the water with the hot cold temperature mixer according to your preference.

Cleaning and sanitation: the water will come out and stop automatically without touching the metal parts and it is convenient and hygienic. In case of cross-infection by germs, it should be effectively disinfected and rinsed once automatically after a 24-hour interval, if necessary.

Water saving function: the automatic function can prevent you from wasting water, and there is overtime of induction or the automatic function of induction due to its continuous deception by eye cobwebs, and the effect of saving water is obvious.

Faucet filter: The filter setting can prevent sand and solid materials in the water from coming out of the outlet. Easy installation: bathroom faucet with motion sensor. (SuperVent, s.f.)

Figure 5 Automatic faucet. (comprargrifos, s.f.)

5.3 Ecological toilet

5.3.1 What are ecological dry toilets?

When we talk about dry bathrooms or ecological toilets, we are referring to those in which we will not need water, saving this element so necessary and at the same time scarce.

These toilets are not attached or connected to the downspout of the house, so they will not be directed to the sewage network, and can be placed anywhere, both in a conventional house, as in a guest room or a shed. They are also called ecological because the waste that has accumulated can be used later for the cultivation of fruits and vegetables, saving both water and fertilizer.

5.3.2 How does a dry toilet work?

The operation of this type of toilet is very simple, as is its installation. The first thing we have to know is that these are two large cameras that will be located under the place where we will place the toilet. These cameras are dry, so you will continue to save water and will not produce pollutants. In addition to having this characteristic, we have to make sure that they are waterproofed, as well as that they will have to be completely hermetic, so that there are no leaks that could contaminate the environment of these toilets, nor does it leak into the ground.

The chamber that is located below the toilet is the first to be filled, taking approximately 6 months with conventional use, when this has occurred, the second will be filled, which will also have the same filling period. During this process, the residues and wastes that were in the first chamber will gradually become compost that will be very useful as compost. Once the two chambers have been filled, it must be emptied completely, so that the whole process can start again.

5.3.3 Advantages of the ecological dry bath

Having a toilet of these characteristics will bring you many benefits, among which we can highlight that you will not need a single drop of water to work. We are only going to use, of course, the water from the shower, the sink or the bidet, but that's it, saving a lot on the water bill. Its installation is very simple and can be done in any home, whether or not it has a conventional toilet, although it is always recommended that it is supervised by an expert plumber so that there are no risks of leaks or floods. Thanks to this clean process you will not pollute, being able to use the waste or compost that is formed to fertilize the land.

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5.3.4 What types of toilets are there?

Figure 6

In the current market you can find two types of dry toilets, which can be installed in a very short time by a plumber, giving you all the advice you need for their use.

5.3.4.1 Dry bath

The first of the models is known as a dehydration dry bath. And it consists, as its name indicates, in dehydrating all the waste that falls into the chambers. This is achieved by different methods, but none include chemicals, something very important for later use as compost. The chamber will be partially filled with drying material, which will absorb all the moisture and liquid from the waste, being also helped by the ventilation that exists in these chambers such as the heat itself. It is advisable in these cases that the urine is destined for a different deposit, to avoid adding more moisture to the mixture. For the drying to be effective, what we have to look for is that the process is carried out as quickly as possible, thus achieving that certain pathogens and odors are produced.

Although urine can become a perfect organic fertilizer for the plants and crops that you have in the garden, mixed with the feces will make the dehydration of the feces much slower and therefore, it will not be processed as it should, being able to get to smell. Once we see that the chamber has been filled, something that, as we have told you, will happen after a year, in double chamber toilets, the waste can be handled with peace of mind, being a perfect compost.

5.3.4.2 Composting toilets

This type of toilet is more common to be found in country houses that have large crops and that seek to produce organic fruits and vegetables, saving both water and compost. The structure of these ecological composting baths is exactly the same as those that we have described previously, although instead of finding drying materials, we will have a series of organic materials from the field that will help create a much richer compost. Among these materials we can include pieces of vegetables, fruits, peat, sawdust or straw. All this will be mixed with human feces, causing the microorganisms to treat all this waste material to get the compost to form. For this to happen, the ambient temperature must be taken into account, as well as ventilation and humidity.

To achieve this, these bacteria must be allowed to work, which will decompose all the matter, something that will happen after approximately 10 months.

For both the first and second cases, hiring a qualified plumber is essential, since a failure can cause our toilet to produce floods, leaks or contaminants, being a greater problem when it is inside an urban home. . This professional will advise you at all times, guide you through the installation and tell you the best tips for its correct operation. (B2B)

5.3.4.3 Importance

Water is synonymous with life, purity and well-being. For this reason, it is essential to know how to take care of it, since it is a non-renewable resource that we are depleting in an accelerated way. This reality puts our immediate future at risk, since its scarcity represents a danger for the permanence of the living beings that inhabit the planet.

The commitment is unavoidable and urgent for everyone: we must save water. The foregoing requires conscious consumption in which we are obliged to be attentive to the spending we make and the solutions we can adopt to reduce it.

Let's think, just to cite an example, in the water that is used with each flush of the toilet. It is estimated that the average annual water consumption each time a person pulls the water supply is almost 11 thousand liters.

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The figure rises when using old toilets, with a storage capacity of 10 to 12 liters. For this reason, it is of great importance to review the type of toilet we have at home, and if necessary change it for an ecological toilet capable of saving thousands of liters of water per year.

Some companies, concerned about this situation, have long invested in the development of toilets that work efficiently with less water, and that can well adapt to both the aesthetic demands of consumers and their budgets.

The new smart toilet claims to offer exceptional water efficiency, custom cleaning and drying functions, a heated seat and even high-quality built-in speakers. The toilet's signature colors have been enhanced for dynamic and interactive multi-color surround and ambient lighting.

Users can easily perform any task such as playing music, writing items on the shopping list, operating home automation (technologies that allow home automation) of the home, and even listening to the news.. (Interiorismo, 2020).

6. Methodology

6.1 Statement of the problem

This article was made to obtain information on water consumption in Santa Cruz de Juventio Rosas, Guanajuato. In some regions of the country there is a serious problem due to their scarcity of water. The hydraulic resource required in all human life must be supplied to all regions through efficient distribution.

6.2 General objectives

Create an awareness of the care of water, since it is an indispensable resource to survive; through saving technologies, which create an efficient use of drinking water and help to maintain this resource for future generations.

6.3 Specific objectives

Identify the main factors that intervene in the misuse of water and detect the problem that prevents the use of water-saving devices. To implement daily habits strategies that make the use of drinking water more efficient in addition to informing the benefits of drinking water saving devices.

6.4 Demand management

The constant growth of the population and the need to meet the demand for water required to meet their basic needs considers management strategies that promote efficient use of water, such as: legal regulations, rate measures, information and / or educational campaigns, implementation of new technologies and infrastructure control. Demand management implies changing the way in which it has traditionally been dealt with, based solely on predicting and supplying, for a strategic and comprehensive management that involves modifying the practices and behaviors of water users.

Water consumption is determined by different variables that are included in the following factors: climatic factor (temperature, rainfall, relative humidity), social factor (inhabitants per dwelling, family composition, level of education, social stratum), economic factor (family income, water price, historical consumption) and / or cultural factor (people's lifestyle, values, norms and social models, beliefs associated with environmental behavior), which, according to the context, will have different relevance.

For the analysis of the variables that intervene in the demand for water for residential use, the first works carried out on the forecast were based on a single variable: population growth. Based on the study and knowledge of the variables influencing the use of water, consumption patterns in residential users can be analyzed, which makes it possible to build an integrated model that describes water consumption, which translates into strategies to reduce water consumption. demand and contributes to the improvement of resource management policies aimed at its conservation and the promotion of efficiency in its use.

The shower and toilet consume approximately 30% to 40% of the water in a home. So replacing these appliances with low discharge ones would help save money since the consumption bill would lower and save up to 32% of water consumption. As can be seen in fig. 1.1.

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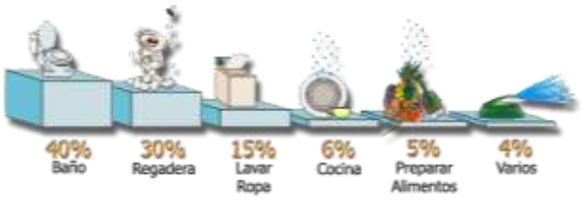

Figure 7 Approximate percentages of water use in the home. (CESPT, s.f.)

6. 5 Justification

The waste of water due to manual activities or the lack of awareness is a fundamental part to be able to maintain the levels of the vital liquid, for the supply of all the activities that take place in each region of the country.

By having the problem of the lack of water in certain regions, we could improve this condition through its correct distribution and use of the proposed technologies. It is considered to apply the system in houses-rooms to improve the sanitary system and to know the results to see if they are favorable both technically and economically.

Since the toilet consumes approximately 40% of the water in the home, replacing this appliance with a low-flush one or applying appliances that minimize the amount of water they consume would help save money in a family.

6. Geographical segmentation

(Country, area, region, municipality ...) our brand or product can be perceived or consumed differently in each geographic unit and the differences are usually so important that they force us to differentiate a marketing strategy or a communication campaign in two territories. (Moraño, 2010)

Figure 8 Santa Cruz de Juventino Rosas, Gto. (Google Maps, s.f.)

7.1 Demographic segmentation

Demographic (Age, sex, marital status, studies, occupation, income ...) we will segment the market taking into account all those demographic variables that influence the consumption of our product or brand. (Moraño, 2010).

Numerous studies have addressed the characteristics of environmentally conscious consumers, either as a primary point of research or as a secondary topic.

7.1.1 Years

Going back to the first studies of ecology and green marketing, several researchers have explored age, (eg, Aaker and Bagozzi, 1982). The general belief is that younger people are likely to be more sensitive to environmental problems. There are a number of theories offered in support of this belief, but the most common argument is that those who have grown up in a period where environmental concerns have been a prominent issue at some level are more likely to be sensitive to this questions. (D. Straughan & A. Roberts, 1999)

7.1.2 Income

In general, income is thought to be positively related to environmental sensitivity. The most common justification for this belief is that people can, at higher income levels, bear the marginal increase in costs associated with supporting green causes and favoring the supply of green products. (D. Straughan & A. Roberts, 1999).

7.1.3 Education

Education level is another demographic variable that has been related to environmental attitudes and behavior (eg, Aaker and Bagozzi, 1982). Specifically, education is expected to have a positive correlation with environmental concerns and behavior. (D. Straughan & A. Roberts, 1999)

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7.1.4 Place of residence

Place of residence has been another variable of interest since the beginnings of green research, Hounshell and Liggett (1973) have found that those who live in urban areas are likely to show more favorable attitudes towards environmental problems. Hounshell and Liggett did not find a significant relationship between the two variables. (D. Straughan & A. Roberts, 1999)

7.2 Pictographic segmentation

Pictographic (Personality, lifestyle, values, social class ...) is a widely used criterion that analysts value highly, since it allows us to know the reaction of a certain profile towards its environment, reaching a greater level of depth, in the one that we come into contact with the emotional part of the consumer. (Moraño, 2010) Several studies have attempted to identify pictographic correlates of ecological attitudes and behaviors.

7.2.1 Political orientation

Hine and Gifford (1991) investigated the effect of a fear appeal related to the anti-pollution movement on several different pro-environmental behaviors. Among the significant findings, the researchers found that political orientation was significantly correlated with one of the lower-order responses, verbal engagement. Specifically, their findings suggest that those with more liberal political beliefs are more likely to show strong verbal commitment than those with more conservative political views. (D. Straughan & A. Roberts, 1999).

7.2.2 Altruism

Based on the norm activation theory of Schwartz, Stern et al. (1993) examined the role of social altruism and selfishness in influencing ecological behavior. Specifically, their discussion focuses on whether social altruism, a concern for the well-being of others, is the sole driver of environmentally friendly market behavior, or whether the positive effect of social altruism is countered by the negative influence of social altruism. selfishness, which inhibits the will to incur. (D. Straughan & A. Roberts, 1999).

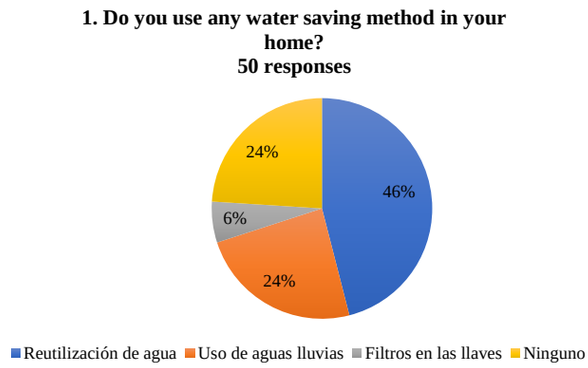
7.2.3 Efficacy perceived by the consumer

Several studies (eg, Antil, 1978; Berger and Corbin, 1992; Kinnear et al., 1974) have addressed the premise that consumers, Attitudes and responses to environmental appeals are a function of their belief that individuals can positively influence the outcome of such problems. This attitude or belief is known as perceived consumer effectiveness (PCE).. (D. Straughan & A. Roberts, 1999).

7.2.4 Environmental concern

The relationship between attitudes and behavior is one that has been explored in a variety of contexts. In the environmental literature, the question has been approached by exploring the relationship between the attitudinal construct, environmental concern and various measures of behavior and / or observations. Those studies (eg, Antil, 1984; Kinnear et al., 1974) examining concern for the environment as a correlate of ecological behavior have found a positive correlation between the two. (D. Straughan & A. Roberts, 1999).

7. Graphs and conclusions of the results obtained



The graph indicates that 23 people who represent 46% of the 50 people who reuse drinking water, the behavior of the data allows us to infer that in Juventino Rosas the majority of people reuse water, although 12 people who represent 24% also do use of rainwater like another 24% of people use filters in their faucets and in a lower percentage of 6% do not use any method to reuse water.

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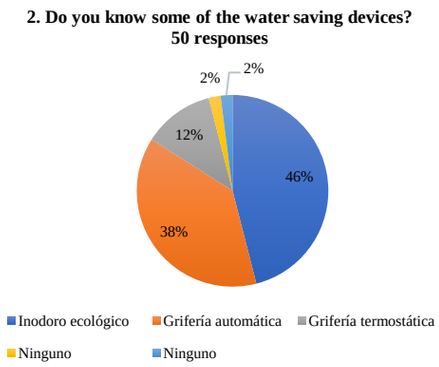
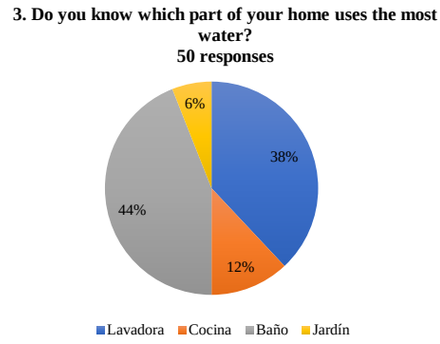
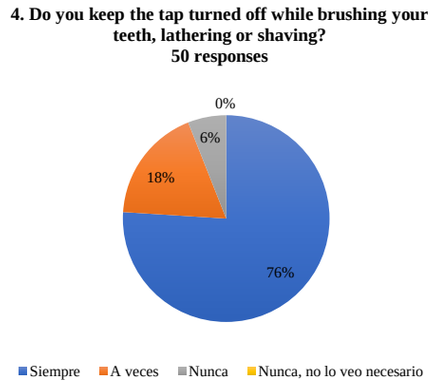


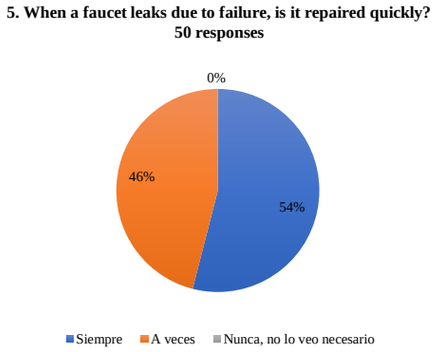
This graph indicates that 23 people, representing 46% of 50 people, know about ecological toilets, 38% know about thermostatic taps and 12% about thermostatic taps, it can be seen that most know some device that improves the efficiency of drinking water.



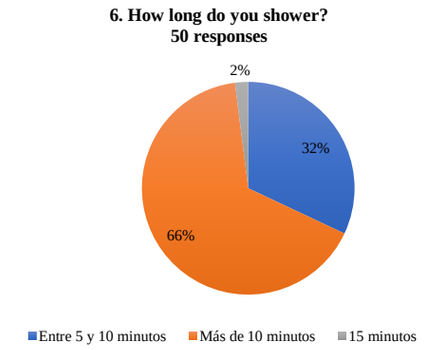
It can be seen in the graph that 44% of the people affirm that most of the water is used in the bathroom.



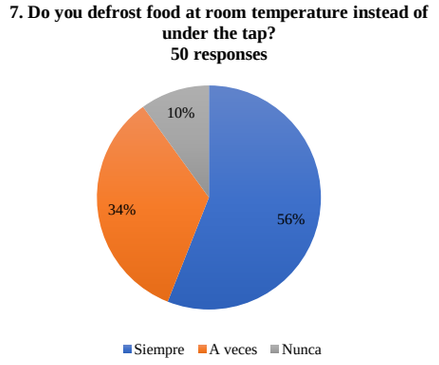
In some way, the majority of the people surveyed, 76%, are aware of the care of drinking water by keeping the tap closed while brushing their teeth, lathering or shaving.



It can be seen in this graph that 54% of people pay attention to immediate repair when a tap in their home leaks, but also 46% sometimes pay attention to a tap repair.



Most people shower for 5 to 15 minutes overall.



Thawing food with water is for most, still a habit that could affect the efficient use of water.

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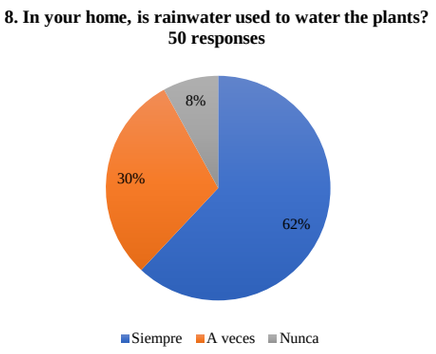
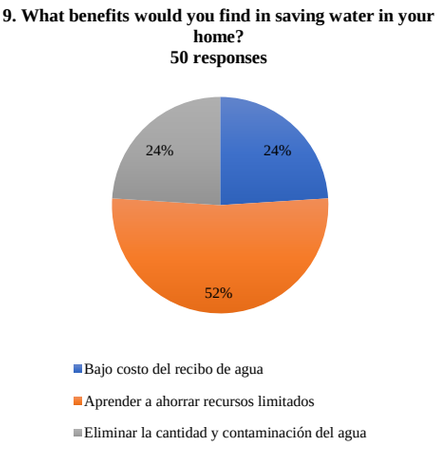
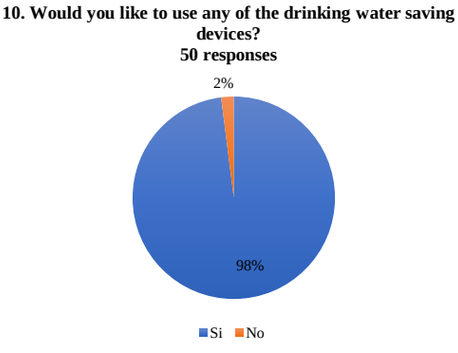


It is observed that 62% of people take advantage of rainwater. Although in recent years the rains have decreased in some places.



There are many benefits that we can obtain by taking care of water. In this graph, 52% of the people believe that the benefit is the low cost of the water bill, and 24% learn to save water and another 24% eliminate the quantity and contamination of the water.



98% of people would like to use a device that improves efficient water use.

8. Conclusion

According to the data obtained, we can see that most of the people who responded to the survey know of a drinking water saving device and also in some way seek to improve the efficiency of water consumption to contribute to the environment. Although there are actually currently many technologies that efficient the use of drinking water.

Life on Earth exists thanks to the presence of water on the planet. The "blue gold" this resource receives this name because of the importance it has for our existence and at the same time because of its scarcity, human consumption is increasing in progression, Driven by population growth and a rapidly growing economy, environmental sustainability is then about conservation efforts to maintain the traditional sense and measurement of income in an age when the natural capital is water. sweet, it is no longer a free good but, with increasing frequency, a limited factor in development. Our objective of the project is to implement our ideas such as thermostatic faucets, automatic faucets, dry toilets and composting toilets. The efficient use of water brings benefits, both to the companies that provide drinking water and sewerage services; in savings, in development and construction of new infrastructure, reduction of commercial losses, reduction of operating costs, drought management and supply cut.

9. Annexes

Development of a research questionnaire

Technologies that help us save drinking water.
1. Do you use any water saving method in your home?
□ Water reuse
□ Use of rainwater
□ Filters on the keys
□ None

2. Do you know some of the water saving devices?
□ Saver toilet
□ Low consumption tanks
□ Pearlizers

3. Do you know which part of your home uses the most water?
□ Washing machine
□ Kitchen
□ Bathroom

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 Garden

4. Do you keep the tap turned off while brushing your teeth, lathering or shaving?
 Always
 Sometimes
 Never, I don't see it necessary

5. When a faucet leaks due to failure, is it repaired quickly? (the dripping of a tap uses 30 liters a day and 10,000 liters a year)
 Always
 Sometimes
 Never, I don't see it necessary

6. How long do you shower?
 Between 5 and 10 minutes
 More than 10 minutes
 Other

7. Do you defrost food at room temperature instead of under the tap?
 Always
 Sometimes
 never

8. In your home, is rainwater used to water the plants?
 Always
 Sometimes
 never

9. What benefits would you find in saving water in your home?
 Low cost water bill
 Learn to save limited resources
 Eliminate the amount and contamination of the water

10. Would you like to use any of the drinking water saving devices?
 Yes
 No

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