Mexperience

Mexico Insight

Guide to Eco & Energy Efficient Homes in Mexico

2021 Edition

About Mexico Insight

Mexico Insight is a continuously updated series of concise guides and reports that share local knowledge and helpful advice about lifestyle and living in Mexico.

The series is published and distributed by Mexperience.com

About the Mexico Insight Series of Guides

Mexico Insight is a continuously updated series of concise guides and reports that share local knowledge and helpful advice about lifestyle and living in Mexico, published by Mexperience.com. These guides and reports apprise you of the subject and assist further research with helpful cross references.

Mexico Insight: Guide to Eco & Energy Efficient Homes in Mexico | 2021 Edition v521/0

Marketed and distributed by Mexperience.com.

Cover image used under license from Shutterstock.

Disclaimer

This guide/report has been published for general guidance and information without warranty. Although the author and publisher have endeavored to ensure that the information in this document is correct at its date of publication, the author and publisher do not assume and hereby disclaim any liability to any party for any loss, damage, or disruption caused by errors or omissions, or any other cause. This guide/report is not intended to constitute personal, professional, financial, investment, or legal advice to its readers.

Stay updated with the Mexico Newsletter from Mexperience

Our newsletter is emailed to you monthly and shares inspiration, local knowledge, and opportunities for lifestyle, living and leisure in Mexico

Sign-up free

Mexico Newsletter

Table of contents

Foreword

If you are building a home in Mexico —or upgrading or remodeling an existing home— Mexico's offers you choices that can take advantage of the natural terrain, varied climates and building materials available here so that your home can be more sustainable ecologically as well as becoming more energy efficient.

The concept of creating homes that are more attuned to the local environment and which save on fossil fuel related energy costs is not new, but in recent decades companies specializing in this sphere have sprung-up and have developed techniques, materials, and technologies to make houses more ecologically sustainable by way of the materials used for construction and improvements in the way the home.

There is added incentive for your home to be energy efficient in Mexico because electricity, gas and water are not inexpensive relative to local earnings; this is especially relevant if you own a swimming pool or have a large garden to tend and maintain, or if you live near the coasts where sweltering summers require expensive air conditioning, or in highland towns where winter nights can drop to near-freezing temperatures.

Good planning is the essential ingredient for creating an energy-efficient home or transforming an existing dwelling into one which is much more energy-efficient. Mexico is the northern hemisphere and therefore homes built here should be designed in the same energy-efficient way as those in the USA and Europe, for example, but differently to those in the southern hemisphere. This is predominantly to do with one of the most important aspects to consider when you plan an energy-efficient home: the orientation of the sun.

If you are building your house from new, then you will have the widest choice of energy efficient options; if you are transforming an existing dwelling space then you will need to plan your building projects around the existing structures, which may be favorably or unfavorably situated depending on the situation.

Although the design and position of the house structure itself are the most important elements, there are numerous other aspects which need to be considered too, and the principal ones are outlined in this guide.

The more elements you can integrate into your home, the more energy-efficient it may become, although care must be taken that the various elements and techniques you are employing integrate with each other so as not to create a "zero sum" efficiency; for example, installing solar energy panels to create electricity and then ignoring the way in which you consume that energy.

This guide provides an introductory primer that explains, in layman’s terms, the principal options, techniques, and materials that you can consider for building a new home or upgrading or remodeling an existing home into a more energy-efficient and ecologically sustainable dwelling space so that you can approach the subject with some foreknowledge when you talk with your architect.

Ask your architect about energy efficient designs, materials, construction techniques, and home utilities; most architects worth their salts will be knowledgeable on matters related to eco-friendliness in home construction and energy consumption. Check their previous work and, if you don't feel that the person or firm you are dealing with is up-to-speed on the key issues that matter to you, consider alternatives. Architecture is a competitive business in Mexico and, like hiring any other professional, it's important to consider several options, check references, and review portfolios.

Design your home in Mexico efficiently

The most important aspect of an energy efficient house is its position in relation to the sun and local topography. Getting this part right, or adjusting the design of your renovations, where possible, to maximize your efficiency from these two factors, is the principal foundation upon which the level of your energy efficiency will ultimately depend.

Always take a compass with you when you are viewing land or homes in Mexico and get an exact picture about how the building may take advantage of the sun and local topography.

Working with the sun

The sun's energy is the overriding factor which affects the Earth's climate: nothing else in the atmosphere comes close to influencing it. Thus, designing your home around the sun's orientation will make a colossal difference to how much alternative energy you will need to use to be comfortable in your home.

Designing your house to make efficient use of the sun is a term known as 'solar gain.' The principle aims to maximize the sun's power upon the building in the winter months and minimize it in the summer months.

The effect of surface angles for solar gain

The angle at which surfaces are placed will also have an impact on your home's solar gain. Most of Mexico's existing homes are flat-roofed, which means that in the summer months they bear most of the heat, which can cause overheating of upstairs rooms, particularly during the summer months. Pitched roofs provide a means to insulate from the heat (and from the cold in the winter) and also provide an excellent foundation for solar panels.

The most efficient angle for a surface to receive solar heat reception depends on where you are located in relation to the Equator; for example, if you live on the equator, then a flat surface is best. A surface somewhere between 20 and 35 degrees is likely to be best for locations in Mexico—you'll need to make some calculations based on the precise location of the property; ask a local architect for details. This 'efficient' angle, based on your geographical location, will also be the same for any solar panels you install. For more information about the use of solar energy in Mexico, read the chapter later in this guide.

Further Insight

- Read more about solar gain

Building Orientation

In the northern hemisphere, where Mexico is situated, only south-facing sides of your home will receive sun all year round. Mexico has four time zones: although most of the country is on US Central Time; north of Puerto Vallarta is one hour behind this, and the Baja peninsula is on Pacific Time, two hours behind US Central Time.

Despite the change of clocks in spring and fall, Mexico does not suffer the tremendous change of daylight which northern USA, Canada, and north-western Europe experience. For example, in Scotland, the

Insurance Coverage for Your Home in Mexico

Protecting your most valuable physical asset against unforeseen events is an essential consideration as you formulate your lifestyle budget.

Learn how to cover your home in Mexico

Home Insurance

shortest day of the year (December 21st) will only receive about 6 hours of daylight. However, on the longest day of the year (June 21st) the reverse is true: there will only be 6 hours of darkness.

Mexico's sunlight distribution over the course of the year is much more evenly distributed and because it is considerably further south than Canada, northern USA and north-western Europe (even in Mexico's northern regions), the sun's power is considerably stronger, giving rise to opportunities (using that energy) and challenges (keeping cool while using the least amount of electricity).

Another factor when buying or building a house in Mexico is to consider the elevation. At sea level, in the northern deserts, and on the unique geology of the Yucatan Peninsula (wiki), temperatures soar in the summertime and humidity is also constant by the coasts. Inland, most of Mexico's towns and cities are situated at high elevation. Up in the mountains, where you'll find many of Mexico's colonial cities as well as Mexico City, Guadalajara and Monterrey, the climate is much more temperate year-round: requiring less use of energy to keep cool in the summers, but more to keep warm in the winter months.

Whether you are buying at sea-level or inland at elevation in Mexico, it's important to consider which parts of the house face north and south. Southern facing sides are ideal for solar panels and windows that feed natural light into the building. Solar panels should face as close to due south as possible to capture the maximum amount of solar energy during the cooler winter months. In hotter climates, you need to consider the maximum amount of heat that will bear down upon the southern facing sides of your home when you are building or renovating (see building mass, below).

Some new eco designs bury the north or south face of the building into the ground (depending on whether the environment is predominantly hot or cold) to maximize energy efficiency.

The proximity of other buildings, especially in built-up areas, or in the heart of old colonial cities, will also have a significant effect on your solar gain. Big windows looking out onto a courtyard with a high wall (perhaps next door's house) may get precious little sunlight through them in the day and allow large amounts of heat to escape at night. Because most inland cities in Mexico are situated at high elevation, the use of over-sized windows should be considered carefully as nights do get chilly (or cold) in the winter in places situated at high elevation.

When you are building your house: consider the situation of the plot, nearby buildings (existing or potential future buildings) as well as local topography (nearby mountains and hills, lakes, rivers, woodland, ocean) and how these will impact your home's energy efficiency. Consider how your home design may take full advantage of the sun's orientation and the topography in both winter and summer months in relation to the local climate.

When you are buying an existing house: You will need a south facing roof that is not blocked by other buildings for solar panels. An ideal design is to have the front of the house facing north and rear facing south, allowing the use of solar panels that don't face the street and adding energy efficient new buildings and construction to the rear (south facing) side of the house.

When adding new features to an existing home: Having land on the south side of your existing buildings will give you more flexibility and choice when it comes to adding energy-efficient living space to your home. Keep this in mind if you're buying an existing property with surrounding land or garden space.

Further Insight

- Mexico: Land of three lands
- Climates and weather in Mexico
- The effects of living at elevation
- Elevation and cooking
- Hot coasts, cool colonial cities
- Mountain living in Mexico
- Time zones in Mexico

Building Mass

The mass of a building (often referred to as 'thermal mass' in relation to energy efficiency) is a building's capability to absorb, store, and regulate heat internally.

Buildings with a high mass take a long time to warm up and then long time to cool down. Buildings with low mass heat up quickly, but give up their heat gain quickly, too.

Concrete, stone, brickwork, and timber have a high density, making them ideal for high-mass buildings, whereas areas with large windows and wide air spaces heat up and cool down quickly.

Energy efficient homes use high mass materials. Most colonial-era buildings in Mexico are built from high-mass, thick stone (or adobe). This is a centuries-old natural energy efficiency technique as it keeps the building cool in the scorching summer months and keeps the heat indoors in cooler winter months. The drawback is that they tend to have small windows and tend to be quite dark, requiring more use of artificial light if they are occupied during the daytime. In recent times, property developers have been using skylight installations to brighten up otherwise dark rooms in older colonial properties.

If you want your home to be energy efficient, then build, upgrade, or remodel using high-mass materials. This means that the solar gain during the day will be absorbed and released slowly overnight. Building solid walls (or stone floors with dark colored tiles) behind south facing windows will help to create natural 'heaters' in your home: they will absorb the heat through the window during the day and release the heat overnight.

Building homes using high mass materials will keep you cool in places in Mexico which experience hot summers. In the hottest regions, keeping your home well ventilated at night will cool the high mass of the building overnight and leave your home cooled throughout the next day.

Another advantage of using high mass materials is that your home will experience a much lower temperature *fluctuation* between day and night; this will make your home more comfortable to live in, as well as reduce your heating and cooling costs.

Whenever you build a new home, it’s prudent to choose high mass materials instead of less expensive lower mass materials. If you are building onto an existing property, use high mass materials for the new build. If existing walls —especially exterior walls that do not meet adjoining properties— are of low-

density mass, consider ways of adding to the mass with modern insulation or, if space allows, by building an extra layer onto the inside or outside of the building.

Regulating room temperatures naturally

Depending on the room, different temperatures are usually preferable in your home:

- bathrooms, the kitchen, and airing cupboards are usually preferred very warm (20-24C / 68-75F); whereas
- living rooms, studies, and library rooms are generally preferred warm (17-20C / 62-68F); while
- bedrooms are best kept cool for best health (around 16C / 60F); and
- your home's 'cold zones' would include areas or rooms of the house that are not in regular use like cellars, cold stores, and the garage (all 15C/59F or lower).

Very warm rooms should, ideally, be in the center of the building: rooms with no external walls. The kitchen should face the center of the house, which enables it to radiate its natural heat inwards; your oven should be placed against an internal wall. Many homes in Mexico are built with internal bathrooms featuring covered sky-light 'chimneys' for light and ventilation.

Warm rooms should have south facing walls where they can receive the lion share of the sunlight to warm up during the day; high mass buildings will retain this heat keeping them comfortably warm after dark. Children's rooms are sometimes preferred slightly warmer than adult rooms, especially if they double as a playroom for use during the day in cooler climate zones.

Cool rooms such as bedrooms, should be designed into the cooler north side of the house. Windows facing east or west (to capture morning and evening sun) as well as skylights may be employed to ensure good lighting.

In cold rooms, the key concern is to keep the area dry to prevent damp and mold from developing, and excellent ventilation is required here. Rooms which are used infrequently —for example storerooms or very occasional guest rooms— are best on the north side of the house; basements and cellars are ideal for storage provided they are water- and damp- proof and well ventilated.

By taking some time to consider the design of your new home (or re-arranging the use of an existing building during an upgrade or remodeling project) you can make best use of the natural heat and cooling, without resorting to extensive use of heaters or air conditioners. This will make your home more energy efficient while keeping you and your family comfortable, your running costs down, and reduce the consumption of non-renewable resources.

Use of glazing (glass)

Glazing (windows) plays three crucial roles in house design: it enables sunlight into the building reducing need for the use of artificial light; correctly installed, it can trap the sun's heat in indoor spaces; and windows also provide a means to create essential ventilation.

Although glass can trap heat, after sundown the effect is reversed: glass is a poor insulator, although measures can be taken to reduce this heat-loss after dark by use of drapes, blinds, and shutters.

South facing windows should be as large as practicable, to allow in sunlight and heat to build up during the day; unless you live in a predominantly hot climate zone and want to keep the house cool, in which case south-facing windows should allow ventilation and some light. Be careful how you employ the use of south facing skylights as they may lead to overheating in those rooms.

The use of double or triple glazed panes, where practical, is a good idea. Some buildings have six or more inches of empty space between two or three panes of glass, allowing light in and creating an insulating barrier that keeps heat in and cold out. These do require additional space and the best multi-glazed window installations are specially manufactured (to order) inside a purpose-built frame that features an air vacuum between the panes of glass for additional insulation efficiency.

North facing windows in hot climates should be a source of light and ventilation; in cooler/temperate climates north facing windows should be smaller and skylights should be used to maximize the use of natural daylight.

Windows that face east and west need to be considered carefully; they receive the least amount of sunlight in the winter months but will face directly to the low sunrise and sunset in the summer months, and west-facing rooms with large windows are particularly susceptible to overheating.

After dark, windows should be covered with drapes, venetian blinds, or some other type of shutter to retain heat inside the house and regulate the indoor temperature.

In extremely hot climate zones, you might not employ the use of glass at all and simply have fine wire netting (to keep out insects) substituted for glazing. If this is the case, you should have an additional shutter (or windowpane) to cover the insect netting for days when it rains and for home security when you want to leave the property vacant.

Further Insight

- Mexico's seasons
- Home security in Mexico

Hundreds of thousands of people read our Mexico eBooks

Our range of freely-available eBooks share valuable knowledge about Mexico. Sponsors get brand exposure and direct referrals to their offers from our engaged readership interested in Mexico for lifestyle, living and leisure.

Ask us about advertising in our Mexico eBooks

Mexico eBook Ads

Using natural materials for your Mexican house

As mentioned in the previous section, using high-mass materials is preferable to low-mass materials for best efficiency. There are also other factors to consider when choosing materials for building or extending an energy-efficient home in Mexico:

Materials to consider

Efficiency: Materials like stone, adobe, concrete, and timber (from managed forests) are the best materials for building a high-mass, energy-efficient home.

Ease of delivery: Choose materials which can be bought locally, where possible. One of the significant advantages Mexico offers for home builders and those who want to upgrade or remodel their own homes is the abundance of local materials, especially stone, adobe, marble, and timber. Buying your materials locally will also pay dividends with your local community who appreciate local residents making use of local labor, materials, and other local resources.

Licensed timber: Don't buy unlicensed timbers, which are harvested predominantly from old forests. It's highly illegal and, worse, encourages (and finances) the wanton destruction of highly valuable jungle habitats, especially in regions like Chiapas in southern Mexico. Ensure that all your timber comes from reputable and licensed timber merchants who have government-granted certificates to harvest woods from managed forests and commercially sustainable wood plantations.

Clay and sand: When combined with water, this mixture creates one of the oldest and most natural building materials (adobe). Most colonial buildings in Mexico are made from this (or a mixture of this and other natural materials, like horsehair).

Straw-bale construction: Straw bales are now being used for house construction in Mexico. See the straw bale construction reference in the final chapter of this this guide for more information about this excellent natural building material.

Natural materials: Other natural materials used in home construction include blocks of compacted earth or 'earth bags'; recovered timber, rice-hulls, rocks, bamboo, and insulation made from recycled denim, cork, plastic, or cellulose (sugar).

Recycled and recovered materials: A significant opportunity exists to use recycled materials for home construction in Mexico. Recycled materials include iron and steel from old furniture, doors and window guards, salvaged chunks of previously used concrete and old brickwork, old tires, old clothes and textiles, discarded plastic bottles, and waste glass.

Tips for materials to avoid

Avoid using materials which are not only toxic but also detrimental to the wider environment and good practice. These include:

- avoiding all timbers from unmanaged forests (see unlicensed timber, above); and
- use of toxic wood preservatives (e.g., creosote); and
- use of paints or other surface coatings that contain volatile organic compounds (VOCs); and

- plastics containing formulations which are harmful to the environment such as PVC (polyvinyl chloride). See the link about green building techniques, in the final chapter of this guide, for more details.

Using solar energy in Mexico

Mexico's year-round long daylight hours and warm temperatures provide you with an ideal opportunity to make good use of natural solar energy in your home. Solar energy has been harnessed for thousands of years, for example, by civilizations who positioned their buildings so as to make best of use of the sun, and to heat water. Today, the most common use of solar energy in modern homes is to heat water and create electricity. However, living in a sunny climate also offers other energy-saving opportunities too.

Solar energy for light

As noted in the 'Design your home in Mexico efficiently' section of this guide, efficient use of sunlight can be one of the most effective ways to create an energy efficient home in Mexico. Good use of windows and skylights can save you considerable amounts of electricity by providing natural light instead of needing to power artificial lighting indoors, especially in older colonial properties.

When you do need lighting, solar energy can charge up a battery that can power low-energy lighting options around your home.

Solar energy for electricity

Solar panels can provide an ideal low-voltage electricity circuit for your home. With so many appliances now powered by low-voltage sources: for example, computers, cell phones, radios, and effective low-voltage lighting systems, creating a low voltage circuit in your home —powered by solar energy— is an an ideal way to harness the power of the sun to electrify parts of your home.

Stepping down 120V to 12V or less, that is what happens when you plug in any technology gadgets into the wall using a charging adapter, is extremely inefficient and the process wastes a lot of energy. The installation of a low-voltage circuit around your home could save your electric bill and will be an efficient way to charge up batteries and run other devices requiring 12V or less of energy to operate. In practice, your solar panel would charge a battery which would power your local 'low voltage' home circuit. Speak to your architect or electrical professional for advice about how to do this.

On a smaller scale, small, portable solar panels can be purchased that will easily charge up a cell phone and other low-voltage devices. Due to the abundance of sunshine in Mexico, these small panels can be a convenient and energy-efficient way to re-charge your smaller technology items and help to lower your overall energy consumption from external sources.

Solar energy for hot water

Heating your home's water using solar panels is an excellent way to save energy. The hot water may be used for showers and washing machine cycles and, if you have a swimming pool, using solar panels for heating the pool water can save enormous amounts of natural gas (and money).

Hot water for home use: The most commonly used hot water heaters comprise a modest sized unit composed of a tank with solar panel tubes extending out from it. These tanks are placed on the home's roof and the hot water circuit is routed through this tank, that heats up the water using solar energy and stores that water in the tank ready for use. When a hot water tap is switched on, the hot water flows from this tank into the home's hot water circuit. The pipes can be routed through a gas-fired hot water system that will heat the water if it falls below a certain temperature as set by the heater's thermostat; or a tap can be installed that will route water from the roof directly into a gas-fired water heater during cold spells.

Hot water for swimming pools: To cope with the enormous volumes of water they store, swimming pools require much larger solar panel units than self-contained solar water heaters for in-home use. Large solar panels (the precise dimensions are calculated to suit the volume of water in the swimming pool) are installed on a roof and plumbed into the pool's pump and filter system. A tap controls whether the water is pumped up to the roof for heating or simply recycled without passing through the panels when the pump is switched on.

Other uses of solar energy

Clothes drying: Drying your clothes on a clothesline outdoors instead of using an electric/gas powered clothes tumble dryer is possible thanks to Mexico's wonderful natural climate. Even apartment blocks in Mexico tend to have roof-top laundry drying areas, or patios where laundry can be sun dried. If you buy a tumble dryer in Mexico it will consume electricity *and* gas, unlike European tumble dryers which operate solely on electricity.

Food preparation and cooking: Drying-out foods for their preservation; making tea in the sun; cooking foods on a 'solar frying pan' or oven are all possible in Mexico's warmer climate.

Composting: If you have the outdoor garden space, you can operate a 'hot compost' in Mexico that will breakdown all your food waste and create rich compost to feed your plants and garden. See the composting reference in the final chapter of this guide for details.

Further Insight

- Articles about climates in Mexico
- Land of three lands
- Mexico's rainy season
- Guide to climate and weather in Mexico

Eco-friendly gardens and landscapes

There are sensible reasons to employ the use of 'eco-friendly' garden and landscape techniques when you build or develop your home in Mexico, and these include:

- Protection from the sun (shade for your home);
- water conservation;
- wind breaks; and
- the reduction of electricity consumption.

Protection from the sun

Creating shade around your home by the use of trees and shrubs is the perfect way to prevent excess heat from entering your home through windows and roofs, especially in exceptionally hot climates. Keeping the interior of your home cooled down naturally will save energy by reducing the amount of air conditioning required to cool the indoor living areas.

Water conservation

Water conservation is of primary concern in Mexico's hotter climates and desert regions and especially so during the dry season. The use of certain breeds of grass as well as alternative landscaping materials that don't require water (e.g., bark chipping, pebble stones) will provide you with a means to create an attractive landscape around your home without the need to use up scarce water supplies. Some property developments and golf courses use a species of salt-tolerant grass to make use of previously unusable water sources to irrigate the local landscaping and the golf course, thereby preserving the region's precious potable water supplies.

Wind breaks

Wind breaks help to prevent the wind from carrying heat away from your house, in climates where indoor heat preservation is desirable; for example, in Mexico's high-up mountain regions. The most common form of wind breaks are shrubs and vines planted to divert winds away from the house walls. Another technique is to use 'earth breaks' by either creating mounds of earth in strategic places or using the land's natural topography to create wind breaks for the house.

FURTHER INSIGHT

- Mexico's mystical wind
- Hidden liabilities in your Mexican home

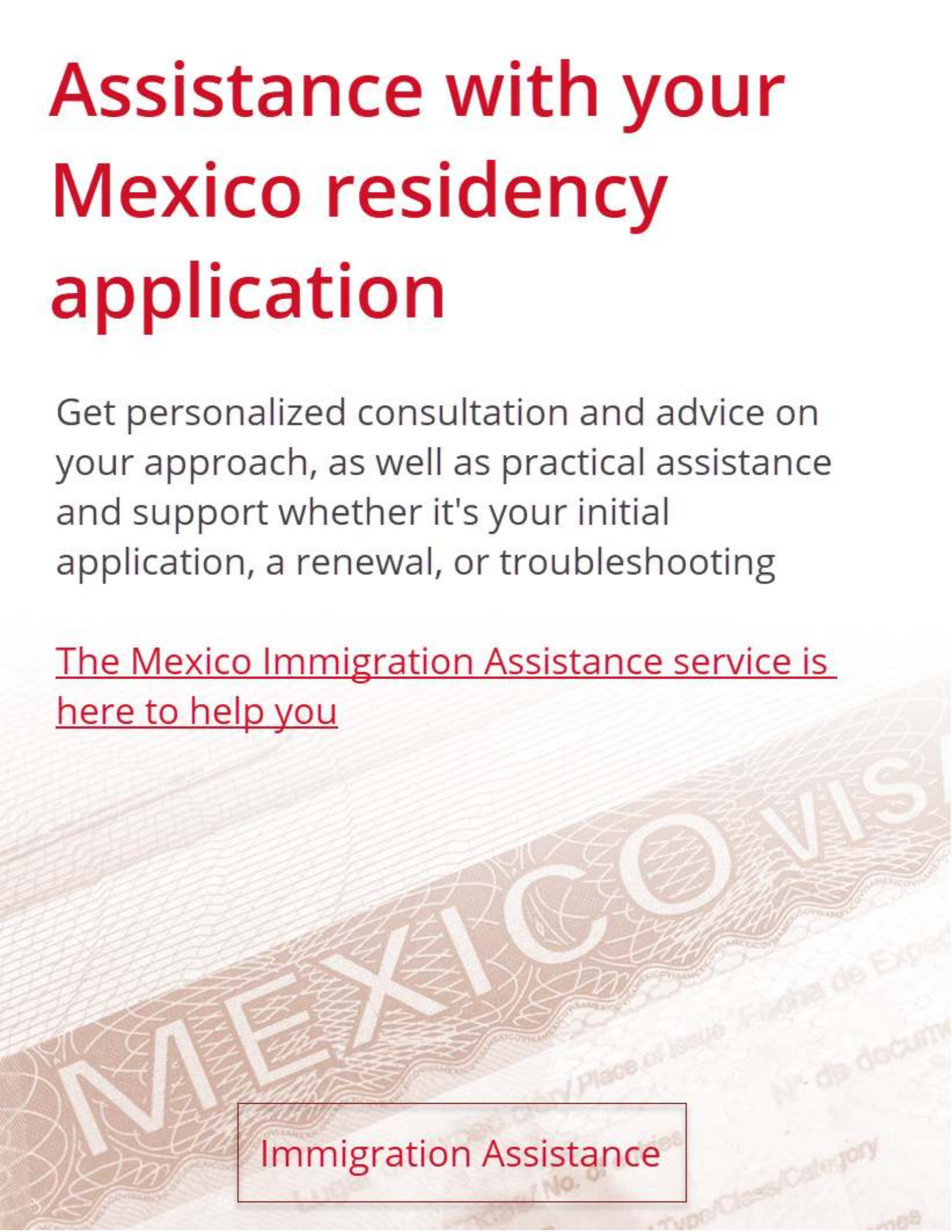
Reducing electricity consumption

By employing the use of solar powered lighting for your garden (if you use garden lights, buy the stand-alone type which charge up during the daylight and use that stored power to illuminate the bulb at night)

Assistance with your Mexico residency application

Get personalized consultation and advice on your approach, as well as practical assistance and support whether it's your initial application, a renewal, or troubleshooting

The Mexico Immigration Assistance service is here to help you



Immigration Assistance

and reducing the amount of water required in your garden, especially in areas where water supply is scarce, energy may be conserved through less use of electricity (e.g., water pumps, water delivery to your home, sprinkler systems). A carefully thought-out garden and landscape can provide beautiful surroundings for your home and save energy. See the 'Landscape ecology' link in the last chapter of this guide for more details.

Use of energy-efficient lighting in Mexico

Mexico enjoys many hours of daylight every day of the year, and so effective use of natural lighting is by far the most eco-friendly way to light your home. Dark rooms may be transformed by the creative use of skylights and even mirror-light systems. Wherever possible, you should try and use natural light to illuminate your home in Mexico; it will save you money and is better for your health and wellbeing. Where artificial light is required (for example, dark rooms where skylight or windows cannot be installed) and at night, there are, broadly speaking, four options to consider:

Incandescent lighting

These are no longer available for general sale but can be purchased in specialist stores and online; they are the regular light bulbs that have been around since Edison invented them (wiki). They work by running electric current across a filament in a glass vacuum. They create a warm 'yellow' colored light, and some bulbs are sold with a color coating to give additional 'softness' to the light they emit. Although their life span is shorter than CFLs (see below), and they create a warmer color temperature which some people prefer, especially for lamps and small sidelights.

CFL lighting

Compact Fluorescent Lights are similar to fluorescent strip-lights except that, as the name suggests, they are compact. CFLs are filled with a gas, and mercury. The mercury molecules get excited when electricity is passed between the electrodes at the base of the light unit; they, in turn, produce UV light which excites the molecules on the tube's phosphor coating, thus creating visible light.

CFLs have a much longer shelf-life and use a fraction of the energy an incandescent bulb consumes to produce a similar amount of brightness. The color temperature of the light is higher, which means that CFLs create a bright white light instead of the softer yellow and amber tones created by incandescent light. Some versions of CFLs deliver a more natural color of light, closer to that given out by incandescent bulbs; if you want these, look out for the label on the box that reads "*luz cálida*" (warm light) instead of "*luz blanca*" (white light).

The mercury used in CFLs may be a cause for environmental concern if the bulbs are not properly disposed of when they finally expire. There have also been some reported cases of CFLs causing headaches and epileptic fits in some people (due to the color temperature which they emit and the way in which the light from them is produced).

CFL lights are commonly available at hardware stores and supermarkets across Mexico, and it is difficult to find incandescent lights except from specialized suppliers.

Low voltage halogen lights

These have been popular for years. A small halogen bulb is placed inside a highly reflective socket unit that is powered by a low voltage (12V) circuit. These lights are popular in kitchens, bathrooms and other areas where bright, distinct ('spot') areas of light and shadow are preferred. These lights are not ideal for areas where you want low-level warm or intimate lighting.

LEDs for home lighting

Light Emitting Diodes have been around for decades, although recent advances in this technology have produced LEDs that can create sufficient amounts of light for effective use in homes and offices.

A common use of LEDs can be seen on bicycles (for safety lights) and new-style small flashlights. LEDs are also widely available for use in domestic lighting systems, although you still need a good number of LEDs to produce an equivalent amount of light given off by incandescent or CFL bulbs.

The key advantage of LEDs is that they use a fraction of the energy incandescent lights consume and a typical LED will last 100,000 hours. They generate exceptionally low levels of heat and, clustered together, they may be used for an array of lighting purposes and situations.

FURTHER INSIGHT

- Home maintenance in Mexico
- When the lights go out: power cuts in Mexico

Energy-Efficient Heating and Cooling in Mexico

If your home in Mexico is situated at elevation, you may be concerned with keeping heat in, especially during the winter months. If your home is at sea level and/or in the desert or jungle regions, keeping cool will be one of your primary concerns for home comfort. Both require a significant consumption of energy. Here are some tips to save energy in your Mexican home:

Hot water

Most homes in Mexico are fitted with traditional water heaters, where water enters a semi-insulated tank and is heated by means of a gas-fired heating system at the base of the unit. The water is kept to the temperature set on the tank's thermostat; when the water falls below the temperature indicated on the setting, the heater kicks-in and heats the water up again. These boilers are common in older houses but are inefficient. A way to reduce the gas consumption is to leave the thermostat setting on "tepid" (or better, off) and turn it up/on about ten minutes before you need hot water: e.g., to shower or wash-up.

Modern homes and upgrades to water heating in existing older homes in Mexico are now being installed with condenser boilers, solar heating tanks (see solar energy for hot water), or a combination of both. Condenser heaters are known in Spanish as "*calentadores de paso*" because they heat the water from cold, on demand, as water passes through a coiled pipe system. They are more efficient as they do not keep a tank of water constantly warm (or hot); instead, they heat as much water as is required when the hot water tap is switched on. Where these are combined with a solar water heater, the water from the solar tank is plumbed through the condenser heater and only if the water temperature is cool enough (based on the heater's thermostat setting) will the heater switch-on and heat the water.

Keeping warm in the cold

Most homes in Mexico are not fitted with gas-fired central heating systems. Portable electric heaters are common, although the cost of running these is high as they consume copious quantities of electricity, which is not cheap in Mexico.

Smart design of your home (or smart upgrades and renovations) can make use of the sun's natural heat (see design your home efficiently) and additional planning —such as getting the kitchen to face to the center of the house and placing your oven against an internal wall— will contribute to keeping your home warm without the need for additional heating sources.

Water-based heating systems, such as underfloor heating, may be installed using gas-fired heaters to warm the water in the underfloor pipes or, better, using solar-panel systems, in areas where the days are warm, and the nights are chilly or cold.

A wood-burning stove in the living room is another way of creating a good amount of heat with a minimal amount of fuel; wood-burning stoves can also be a source of energy to heat your water. Older properties have fireplaces although the smoke they release into the living spaces that surround them make them less attractive than wood-burning stoves, that are closed when burning and fitted with their own flu/chimney that funnels most of the smoke out of the house.

Keeping cool in the heat

When you live in some of Mexico's hottest regions, you will need to keep cool to stay comfortable and, in many cases, to be able to work and live normally. Electricity prices are subsidized by Mexico's government in the summertime for regions in the north and south of the country, where the heat is intense and people rely upon the use air-conditioners to keep cool in their homes and offices.

However, air-conditioning, even at subsidized rates, is expensive and too much is never too healthy for your lungs. Wherever possible, you should try and use natural cooling systems, especially in your home and at night when you are sleeping.

Good home design can help to keep your home cool: read about high-mass materials which enable your home to keep the heat out in the day and ventilation systems which 'sweep away' the heat from the building during the night in the first section of this guide.

Using ceiling fans for ventilation instead of air-conditioning units is better for your health, much less expensive to run than air-conditioning, and better for the environment.

Employ the use of trees and shrubs as part of your landscaping to provide shade from the sun; some homes have 'green roofs,' where grass and shrubs provide natural insulation against the heat; and inner courtyards and patios filled with flora and natural shade create a pleasant environment to dwell in, and actually reduce the air temperature in that area of the building.

Living at higher elevation

Another factor when buying or building a house in Mexico is to consider the elevation. At sea level along the coasts, in the northern deserts, and on the unique geology of the Yucatan Peninsula (wiki), temperatures soar in the summertime and humidity is also constant near the coasts. Inland, most of Mexico's towns and cities are situated at high elevation. Up in the mountains, where you'll find many of Mexico's colonial cities as well as Mexico City and Guadalajara, the climate is more temperate all year-round: requiring less use of energy to keep cool in the summers, and some energy (but not too much) to keep warm in the winter months.

Most of Mexico's colonial cities and its major cities are situated at high elevation. The temperate climates offered in these areas provide a natural heating and cooling system. Summers are not too hot, and winters never get too cold. Usually, a properly insulated home will provide sufficient protection from the summer heat and the use of a low-energy heating system for the coldest winter months (January and February), to take off the chill edge in the air, will suffice. Living at elevation has its advantages and disadvantages; a key disadvantage is that you won't be alongside the ocean, which many people prefer.

FURTHER INSIGHT

- Breathing easy at high elevation
- Hot coasts, cool colonial cities
- Mountain living
- Land of three lands
- House maintenance
- Seasons in Mexico

Eco-friendly water systems

Most homes in urban areas in Mexico are supplied by mains water; some homes in more remote areas require water from a local well, and homes situated out in the countryside tend to rely on a combination of rainwater collection and water deliveries in the dry season.

Sewerage can be more complicated; urban areas are served by mains sewerage systems; some homes in rural areas have septic tanks, and even some areas in big cities need septic tank systems, for example, the upscale *Pedregal* area in southern Mexico City, a neighborhood built on volcanic rock, makes a mains sewerage system unviable so home there have septic tank systems.

Regardless of where you home is situated, there are ways to reduce your water consumption, recycle and re-use 'gray' water.

The easiest way to reduce the amount of water you use with each flush if the toilet units in your house are the older type that can use two or more gallons per flush, is to place a brick or a plastic bottle filled with water in the toilet's water cistern. Many older houses in Mexico still have these old toilets installed, and the method is particularly effective for those old toilets when you're not ready to change the toilet for a newer style unit which have smaller water tanks and offer you a "short flush" / "full flush" option.

Making use of rainwater

Mexico's rain season runs from May to September each year. Afternoons and nights are often marked by colossal pour-downs of rain and these provide an ideal opportunity to collect rainwater for use around your home.

The latest rain recycling systems will collect water from your roof and funnel it into a huge water cistern (or several cisterns) built under your house, or under your home's garden.

Stay updated with the Mexico Newsletter from Mexperience

Our newsletter is emailed to you monthly and shares inspiration, local knowledge, and opportunities for lifestyle, living and leisure in Mexico

Sign-up free

Mexico Newsletter

Unfiltered rainwater: If you collect rainwater and store it in a cistern, you can plumb your home's toilets using this water and save on potable water for flushing. It's also ideal for use to water your plants and garden during the dry season.

Filtered rainwater: Rainwater can be purified by means of special water filters between the underground cistern and your home's taps to make it useable for washing and even potable (drinkable). By doing this, you can use rainwater your home collects and become independent of the need to use any main water system. (In some areas in Mexico, especially rural or semi-rural areas, there are no mains water feeds and property owners need to make their own arrangements for water delivery or collection.) The cistern will need care, and cleaning occasionally. Talk with an architect or plumber about options for achieving this.

Recycling bath and shower water

It's possible to design your home's wastewater system as to make best use of the water; recycling as much as half a liter or water for every liter taken from the underground cistern. Recycling water on the property will reduce your need for mains water, or water deliveries, and maximize your use of the seasonal rainwater that stored in the property's cistern. It's less expensive to do this if you are building the home from the 'ground up' although it's possible and practical to introduce water recycling to existing properties as well. Talk with your architect and plumber for options and connect to further articles on Mexperience about water and water services in Mexico for additional information.

Further Insight

- Water in Mexico
- Water services
- Drinking water
- Mexico's rainy season
- Beware of land without water
- Home maintenance

Online resources

Here is a list of web resources for further research on the subject of home energy efficiency, eco-building, and sustainable living:

Energy Savers - a US Government Agency, dedicated to helping homeowners and other realty stake-holders create more energy-efficient homes

US DOE - The US Department of Energy Efficiency and Renewable Energy

ACEEE - The American Council for an Energy Efficient Economy, gives consumer tips and advice on energy savings

Thermal Mass - Wikipedia entry on Thermal Mass (buildings)

Recycling - Wikipedia entry on recycling

Waste Management - Wikipedia entry on Waste Disposal

Composting systems – Wikipedia entry on Composting

Septic Tank Systems - Wikipedia entry on Septic Tanks

Wood as Fuel - Wikipedia entry on Wood Fuel and Wood-burning Stoves

Straw-Bale Construction - Wikipedia entry on this construction technique

Solar Gain - Wikipedia entry and links about solar gain

Solar Energy - Wikipedia entry on Solar Energy

Heating Systems - Wikipedia index of heating systems

Solar Air Conditioning - Wikipedia entry on solar powered air conditioning

Lighting Systems - Wikipedia entry on lights and lighting

Landscape Ecology - Wikipedia entry on eco-friendly landscaping

Irrigation Systems - Wikipedia entry on types of irrigation

Green Building - Wikipedia entry about ecology-friendly buildings

Sustainable Development - Wikipedia entry about Sustainable Development

Sustainable Living - Wikipedia entry about Sustainable Living

Voluntary Simplicity - Wikipedia entry about 'simple living' lifestyles

Related real estate guides

This Mexico Insight guide to real estate in Mexico is one in a series of Mexico Insight guides about property and real estate in Mexico. For further research and local knowledge, download the accompanying Mexico Insight guides in this series, available free:

Guide to Real Estate in Mexico

This is the anchor guide to our series and provides extensive local knowledge, tips, and insights for anyone who intends to rent, buy or sell a home in Mexico.

Download Mexico Insight Guide to Real Estate in Mexico

Realty Agents in Mexico

Cultivating a strong relationship with an experienced realty agent in Mexico can pay dividends in the long term. This guide helps you to understand realty agents and their services in Mexico and helps you to spot a good one to work with to help you buy, sell, or rent a home in Mexico.

Download Mexico Insight Guide to Realty Agents in Mexico

Realty Developments

Buying your home from a realty developer offers a range of advantages, including the opportunity to buy a brand-new home on a tun-key basis, built to the latest standards, with décor to suit your tastes and budget. This guide introduces you to realty developments in Mexico and helps to you understand the process purchasing a home from a developer.

Download Mexico Insight Guide to Realty Developments in Mexico

Maintenance and Security

Whether you are renting or buying, keeping your home well maintained and secure is part and parcel of enjoying your homestead in Mexico. This guide helps you to understand what you need to know to keep your home in good working order, and secure.

Download Mexico Insight Guide to Home Maintenance and Security in Mexico

References & further reading

Learn more about real estate in Mexico with Mexperience

- Free eBooks about real estate in Mexico
- Mexico Home Life (Mexperience)
- Articles about real estate in Mexico
- Articles about renting property in Mexico
- Articles about lifestyle in Mexico

Hundreds of thousands of people read our Mexico eBooks

Our range of freely-available eBooks share valuable knowledge about Mexico. Sponsors get brand exposure and direct referrals to their offers from our engaged readership interested in Mexico for lifestyle, living and leisure.

Ask us about advertising in our Mexico eBooks

Mexico eBook Ads