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Sustainable Housing in Mexico and Latin America: the Green Mortgage

WINNER, WORLD HABITAT AWARD

This interactive resource introduces the award-winning work of the Green Mortgage, as well as other initiatives in terms of sustainable housing in Mexico and their transfer through the creation of the Latin American Network for Sustainable Housing.

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The Institute for the National Workers' Housing Fund (Infonavit) is one of the world's biggest mortgage organisations, positioned in first place in terms of its number of customers and fourth with regards to the number of loans it provides. At the national level, it provides around 70% of the mortgage loans in the country, which makes Infonavit the most important organisation in terms of asset management.

This success is due mostly to the current law, which stipulates the maintenance of a national fund with 5% of employers' payroll contributions for each worker in Mexico, in order to provide workers with the chance to obtain a mortgage and, at the same time, to comply with the right to housing as established in the Political Constitution of the United States of Mexico. In this way, since its establishment in 1972, Infonavit has provided support for more than seven million workers to become house owners. To date, it is estimated that one in every four Mexicans lives in a house financed by Infonavit, which confirms the social commitment that characterises the organisation. The challenges faced by Mexico today in the housing sector are much more complex than just reducing the housing deficit. Nowadays, this problem is tackled by Infonavit from a new perspective, by analysing and understanding the size and composition of the housing demand and as a result the creation and implementation of new activities and products that respond to the needs of its beneficiaries. Today, the challenge that Infonavit is facing is to promote high equity housing solutions, where the quality of the house, its surroundings and the communities around it guarantee a long-lasting increase in the added value of the houses and improves the quality of life of the residents.

With this aim, the current administration at Infonavit has established the three strategies of the National Development Plan, as established by the Presidential office in Mexico:

- To move towards a Sustainable and Intelligent Urban Development Model that provides decent housing for Mexican people.
- To responsibly reduce the housing deficit through improvements and increases in existing housing and the promotion of new housing acquisition.
- To achieve an increased and improved coordination between institutions that guarantees the concurrence and co-responsibility of all three levels of government, for sustainable legislation re land as well as promotion of housing, metropolitan, urban and regional development.



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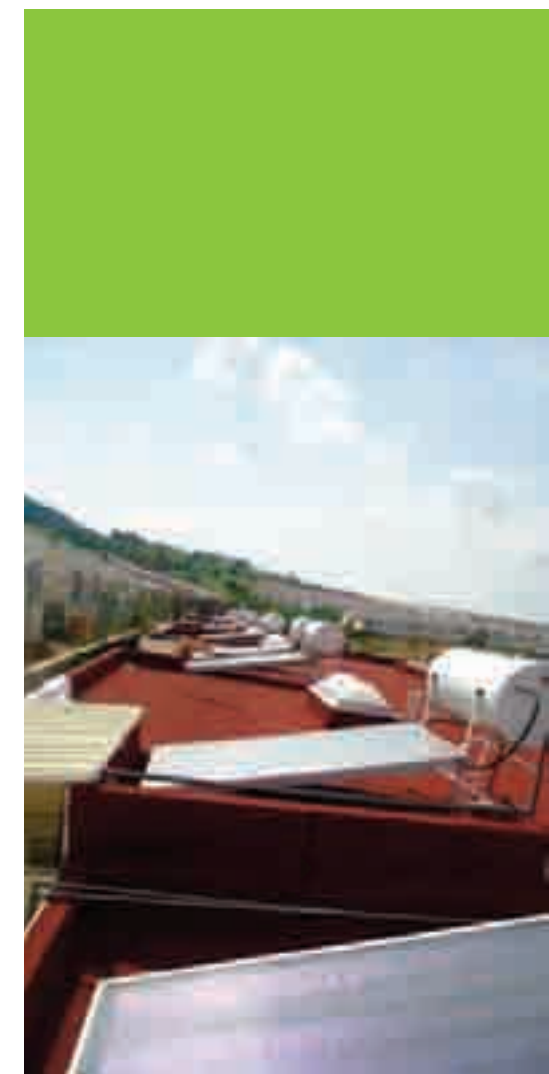
A word from Infonavit

In this way, Infonavit aligns its activities with the new national policy, supporting organised urban development which encourages the construction of housing which consolidates the existing urban centres, as well as undertaking prevention initiatives and rehabilitation in urban areas with a deficit in their social fabric and, more importantly, to avoid the construction of housing in risky areas, with the final aim of decreasing the vulnerability of the population to climate change.

In addition to the social and economic impact, it is important to consider the environmental impact of houses throughout their lifespan, which is usually, around 30 years or more. In this respect, the Green Mortgage Programme represents, for Infonavit, a key element of their contribution to sustainable development, establishing the organisation as the most successful financial mechanism for acquiring a house in Mexico with efficient technologies that contribute to a reasonable use of energy and water. To date, more than 1.7 million green mortgage loans have been provided, which have contributed to mitigating an estimated 1.4 million tons of CO₂. As a consequence, the programme has received important recognition from international and financial organisations which, in turn, has allowed the organisation to share its experience with other countries, in different forums and bilaterally.

In 2012, through the existing cooperation with the German Agency for Development Cooperation (GIZ), Infonavit signed an Agreement for Triangular Cooperation with the Colombian and German governments, with the aim of transferring the Green Mortgage scheme to Colombia. At the same time, Colombia shared successful practices in terms of urban legislation and comprehensive neighbourhood improvements with Mexico. By 2013, the creation of the LAC Network (Latin American and Caribbean Network) for Sustainable Housing had taken place, with the scaling-up of the triangular cooperation to the whole of Latin America. Infonavit would play a key role in the Network through the promotion of a number of initiatives on sustainability, with the final aim of reducing the Green-House Gas Emissions related to housing.

Infonavit continues to look for mechanisms to increase its contribution to the reduction of CO₂ emissions. As a result, it is now moving from an approach of individual measures such as eco-technologies, towards a system that considers housing from a comprehensive viewpoint. This transition is taking place through the Green-House Gas Evaluation System (*Sisevive-Ecocasa*), which was developed with the support of GIZ, the Inter-American Development Bank and the British Embassy in Mexico. This system assesses the level of energy efficiency of housing through simulations based on design characteristics, construction materials and the technologies incorporated in any house in Mexico, as well as measuring the environmental impact through the mitigation of Green-House Gas emissions.



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Being one of the main actors in the housing sector in Mexico, Infonavit has understood the responsibility that comes with the provision of a mortgage as an opportunity to contribute to solving many of the urban issues that affect our country, without encroaching on the responsibilities that each governmental sector has. It is for this reason that in 2014 Infonavit created a Sustainability Strategy that integrates four strategic concepts: housing, community, surroundings and sustainability. Each one of them responds to meeting a need, and has an impact at four levels: beneficiaries, housing, neighbourhood and city, recognising that it is not sufficient to act individually on one of them but that it is necessary to act in a comprehensive way.

The development and implementation of Infonavit's Sustainable Housing Strategy reflects its vision of the national challenges in terms of housing and urban development from a sustainability perspective. Infonavit sustains its commitment to offering housing solutions that contribute to increases in asset value and quality of life, without compromising the resources of future generations.



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In Mexico, there is great potential to make homes more efficient in their energy and water consumption, which represents a huge opportunity to mitigate Green-House Gas Emissions and to contribute to the sustainable development of the country. Since 2008, commissioned by the Federal Ministry for Economic and Development Cooperation (BMZ) and, since 2010, by the Federal Ministry of Environment, Nature Protection and Nuclear Security (BMUB), the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) GmbH has supported the Mexican government to establish and strengthen policies, strategies and technical concepts in order to contribute to more sustainable housing.

The areas of work of the technical cooperation between Mexico and Germany in the housing and sustainable building sectors are included in the "Programme for Sustainable Energy in Mexico, Building Component", from the Project "25,000 Solar Roofs for Mexico", the "Mexican-German Programme for NAMA (ProNAMA)", the "NAMA Facility: Implementation of the NAMA for New Housing", and the project "Triangular Cooperation Germany-Mexico-Colombia for Sustainable Housing". Financial and technical advice is provided through these programmes and projects.

Important advances as a result of this technical and financial cooperation include: the development of the Green-House Gas Evaluation System (*Sisevive-Ecocasa*) with Infonavit; the subsidy for 25,000 solar heaters provided through Infonavit's Green Mortgage Programme; the first Nationally Appropriate Mitigation Action (NAMA) for new and existing sustainable housing – developed in collaboration with the National Housing Commission (CONAVI) as well as the Triangular Cooperation Germany-Mexico-Colombia together with Infonavit and the National Planning Department of Colombia (DNP). The latter has provided the basis for the creation of the first Sustainable Housing Network for Latin America and the Caribbean (LAC Network), in order to take the experience of the Triangular Cooperation to a regional level.

The LAC Network for Sustainable Housing: In the last few years, the emerging countries in Latin America have greatly expanded their South-South cooperation. This has increased interest in triangular cooperation and the creation of networks. Triangular cooperation enables the grouping and combining of the advantages and the complementary skills that exist in Latin America. In this way, the growing interest in sustainable housing in the region has facilitated the creation of the current network, which has been led by Infonavit due to the success of their innovative programmes such as the Green Mortgage and *Sisevive-Ecocasa*.



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Sisevive-Ecocasa: through BMZ's "Programme for Sustainable Energy in Mexico", GIZ (and by mandate the GOPA-INTEGRATION consortium) have provided advisory services to Infonavit for the development and implementation of the Green-House Gas Evaluation System (*Sisevive-Ecocasa*), which includes two tools for calculation: DEEVi (based on the German PHPP¹ from the Passive House Institute and adapted to the Mexican context) to assess energy performance and SAAVi (simulator for water saving in houses) to assess water consumption. The final calculation takes into account three aspects: the total specific demand (cooling and heating), the primary energy demand (electricity and gas) and the projected water consumption.

In order to determine a single rating generated by these indicators, the Global Performance Index was developed. This index provides, as a result, the energy and environmental performance of a house.

The rating scale of *Sisevive-Ecocasa* goes from A to G, with A being the most efficient level. This allows beneficiaries, housing developers and institutions to easily identify those houses with better energy and environmental performance.

In 2012, *Sisevive-Ecocasa* was adopted by the Federal Mortgage Society as the tool to assess the housing units to be incorporated into its new credit programme for sustainable housing, *Sisevive-Ecocasa*. The name '*Sisevive-Ecocasa*' was therefore adopted as a result of the synergy between the programmes. This system also supports the Programme of Nationally Appropriate Mitigation Actions, known as NAMA, for the construction of housing with reduced CO₂ emissions in Mexico.

The NAMA for Sustainable Housing: In 2011 and 2012, based on BMUB's "Mexican-German NAMA Programme", GIZ assisted CONAVI in the development of the first Nationally Appropriate Mitigation Action (NAMA) in the social housing sector. The technical concept of the NAMA – an innovative approach and new to Mexico is based on the "overall performance" of the house, taking into account the total energy efficiency of the building. Three different performance standards are proposed initially, which are related to the categories from *Sisevive-Ecocasa* for the main bioclimatic zones in Mexico, with the objectives of increasing the adoption of basic efficiency standards (similar to the Green Mortgage) within the whole market of new housing in Mexico and reducing CO₂ emissions.



¹ Passive House Planning Package

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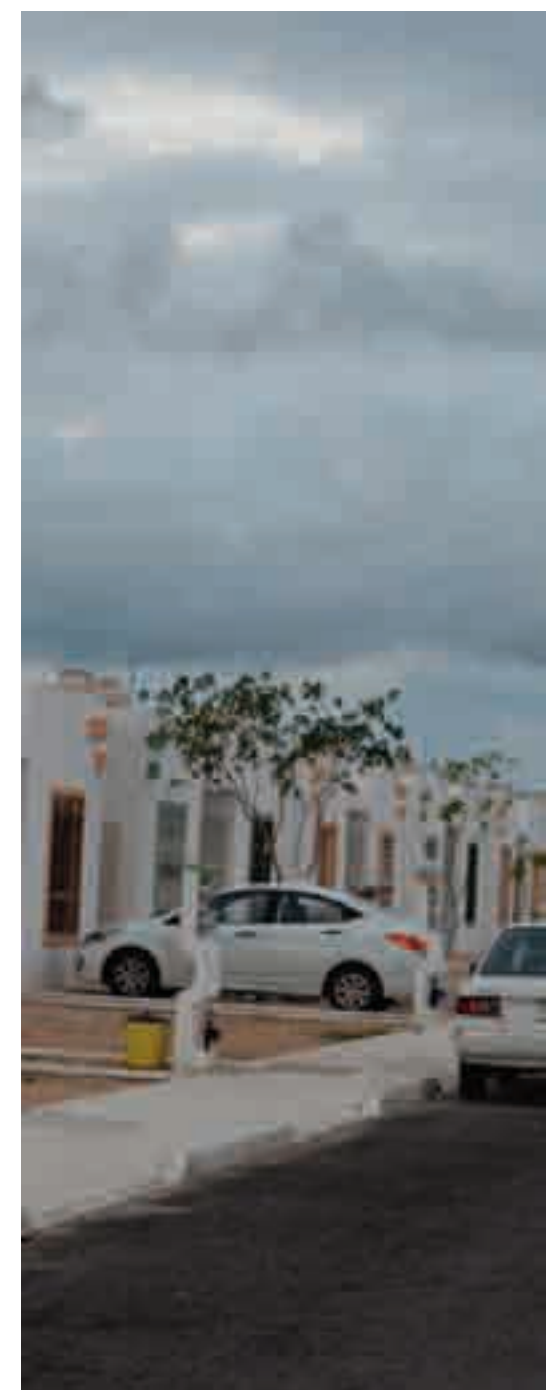
The 2012 World Habitat Award for innovative, sustainable and scalable housing solutions was presented to the Institute for the National Workers' Housing Fund (Infonavit) for its Green Mortgage Programme at the UN-Habitat World Urban Forum in Naples, Italy in September 2012.

Since 1972, Infonavit has supported low-income Mexican workers by enabling them to become home owners, becoming the main mortgage provider not only in Mexico but also in the whole of Latin America. Although Infonavit also provides mortgages to mid-income earners, its impact on the lowest earners within the population is considerable, as the low interest rates they offer are the only way many families can access decent housing. Since 2007, the Green Mortgage Programme has provided an additional benefit to the households that obtain mortgages from Infonavit. In addition to having access to housing, families can acquire eco-technologies which improve their quality of life, reduce their monthly expenditure on water and energy and contribute to preserving natural resources and reducing carbon emissions, a key problem in Mexico and the rest of the world. Also, as a result of the success of the initiative, Infonavit has continued to improve the programme, developing tools such as the *Sisevive-Ecocasa* system which help to optimise the results of the Green Mortgage Programme.

The evaluation committee of the World Habitat Awards, including recognised international housing experts on the World Habitat Awards Advisory Group, as well as the international judges at the United Nations Human Settlements Programme (UN-Habitat) and the United Nations University, were enthusiastic in their endorsement of Infonavit as a worthy winner of the World Habitat Award. The committee recognised the significant achievements of the Green Mortgage Programme in the provision of sustainable and affordable housing options for low-income households, whilst at the same time achieving significant scale, with almost two million Green Mortgages provided.

Recognising the social, environmental and economic impact of the programme, the initiative has been adopted as an example of housing sustainability by other countries in the region and around the world. The LAC Network of sustainable housing is an example of this, looking not only to promote the Green Mortgage experience but also the exchange of ideas and good practice in terms of housing sustainability in the region. It is through cooperation and exchange that good ideas can grow and expand and at BSHF we have supported the LAC Network as a way to transfer and scale up the Green Mortgage and other sustainable housing solutions.

Further details of the Green Mortgage Programme and its transfer can be found in this report, as well as a presentation of the key lessons learned from this programme and links to a range of additional resources.



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Buildings in general, and housing in particular, represent a big opportunity for the reduction of Green-House Gas Emissions through the efficient use of natural resources. In Mexico it is estimated that the residential sector is responsible for 16% of energy use and 7% of Green-House Gas Emissions, whilst the amount of water destined for the residential sector represents 14% of the total volume distributed for public use.

Because of the above, the design of a programme that promotes the use of eco-technologies in houses such as the Green Mortgage represents Infonavit's commitment to improving the life quality of its beneficiaries as well as to supporting climate change mitigation policies and promoting a culture of respect for the environment. The inclusion of products for efficient water, gas and electricity consumption in around 400,000 affordable housing units every year, which make up the majority of houses financed by Infonavit, is possible through the savings that the household can achieve from their bills, generated by the implementation and use of eco-technologies, as well as promoting optimised use of natural resources and renewable energy. These additional savings allow Mexican workers to increase their capacity to repay loans and to be able to invest in products that will improve their quality of life. In this way, the Green Mortgage delivers an average monthly saving of \$15 US dollars in the utility bills for each household.



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The Green Mortgage Programme was created in 2007 with the aim of improving the quality of life of Mexican workers, by reducing household spending on utility bills whilst at the same time contributing to the efficient use of natural resources and the reduction of Green-House Gas Emissions. The programme provides additional funds to mortgages for the acquisition of a house with efficient eco-technologies which decrease the consumption of energy and water. In addition to promoting savings and reducing the lower environmental impact of houses, it contributes to promoting other factors such as:

Technological innovation: as it is a platform for the development and implementation of new technologies which promote the efficient use of energy and water in households.

Comfort: as a means of promoting the comfort and wellbeing of beneficiaries in their houses.

Cultural: as a tool for cultural transformation towards sustainability and a respect for the environment by the household.

Through the Green Mortgage Programme, an evolution in the eco-technologies market has been achieved, enabling the introduction of new equipment and making quality standards more demanding, ensuring more comfort inside houses and supporting and familiarising the beneficiaries with the acquisition, use and maintenance of eco-technologies.

From 2007 to 2010, the programme focused on low income workers with an income of up to four times minimum wage, representing approx 60% of Infonavit's clients. A minimum monthly saving of US\$ 7.4 was established, as the total savings from a pre-defined eco-technology package for each climatic area. In that period, 253,450 mortgages were provided with the additional Green Mortgage loan.

Following from the success of the first few years, the programme was updated and changed from fixed eco-technology packages to a flexible selection of technologies, involving a minimum savings amount in relation to beneficiaries' incomes as well as the different bioclimatic regions in the country and being a compulsory part of all housing loans provided by Infonavit since 2011.

Today, the programme continues to evolve, incorporating new measures for energy efficiency - both active and passive - updating the criteria for participation in the programme, analysing and verifying savings generated by the eco-technologies and, more recently, incorporating household appliances into the scheme.



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Operation and requirements

All the mortgages currently provided by Infonavit are ‘green’, which means that all the houses financed by the organisation must incorporate eco-technologies, complying with the following requirements:

- a) The house must incorporate a flexible combination of eco-technologies as specified in the Programme’s Explanatory Manual
- b) The eco-technologies to be incorporated can be chosen from those that have been validated according to savings measured by an independent and recognised body
- c) The eco-technologies to be incorporated must guarantee a minimum amount of progressive savings in relation to the income level of the worker (measured in TMW), according to the following table:

Table 1. Minimum savings amounts required to acquire a Green Mortgage

Income: Times Minimum Wage (TMW)	Minimum monthly savings amount required	Green Mortgage Amount in TMW	
1.00 - 1.59	US\$ 7.4	Up to 2	US\$ 302.5
1.60 - 3.99	US\$ 15.9	Up to 10	US\$ 1,512.3
4.99 - 6.99	US\$ 18.5	Up to 10	US\$ 1,512.3
7.00 - 11.00	US\$ 21.4	Up to 15	US\$ 2,268.5
From 11.00	US\$ 29.6	Up to 20	US\$ 3,024.6



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The eco-technologies

The technologies that are incorporated in the Green Mortgage Programme must comply with quality, safety and efficiency standards which ensure their lifespan in relation to their performance. These standards are validated through compliance with the current Mexican regulation (Mexican Official Norms – NOM and Mexican Norms – NMX), through certificates produced by the Standardisation and Certificatory Bodies: National Body for Standardisation and Certification for Construction and Edification – ONNCCE; National Association for Standards and Certification of the Electric Sector – ANCE; Centre for Standards and Certification of Products – CNCP; and Mexican Society for Standards and Certification – NORMEX. These specify both the level of efficiency of the products above the minimum national standards as well as details of guarantees and lifespan.

The eco-technologies which are currently included in the Green Mortgage Programme are:

Energy saving

- Energy-saving lamps
- LED lamps
- Air conditioning
- Roof and wall thermal insulation
- Roof and wall reflective coating
- Double glazed windows
- Voltage optimisation devices
- Solar heaters
- Energy efficient boilers
- Fast recovery water heaters

Water saving

- Ecological toilets
- Ecological sprinklers
- Water saving kitchen taps
- Water saving bathroom taps
- Flow control valves for water supply (kitchen and bathroom)



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The eco-technologies

The savings from each eco-technology are calculated in relation to the most representative climatic zones of the Mexican Republic and the salary scale of the beneficiary, considering that with a higher income there is likely to be a higher consumption of electricity, gas and water. In addition, these calculations are validated through theoretical and on the ground evaluation, which is undertaken every 6 months by an external consultant.

As a result of the constant development and evolution of new technologies which enter the market, there is a risk of these not being utilised because of the lack of relevant standards or technical specifications. For this reason, in 2011 Infonavit signed a Collaboration Agreement with the National Housing Commission (CONAVI) and with the product Standardisation and Certification Bodies for the production of technical reports for technologies which contribute to sustainability in housing programmes. This ensures the production of protocols when standards for the regulation of a new product don't exist, and the quality control of companies and products, to ensure the updating and inclusion of eco-technologies of the highest standards as well as supporting continuous innovation in the market.

Different aspects of the programme

Following the process of allocation of mortgages, there are two options in the selection and inclusion of eco-technologies in the Green Mortgage Programme:

- New housing: In this case, the developer or house builder is responsible for the selection of the water and energy technologies that comply with the minimum savings indicated by the programme, in order to connect the house with any of Infonavit's loans.
- Existing housing, extensions, repairs or self-build: The beneficiary is responsible for the selection of the technologies that comply with the minimum stipulated savings.



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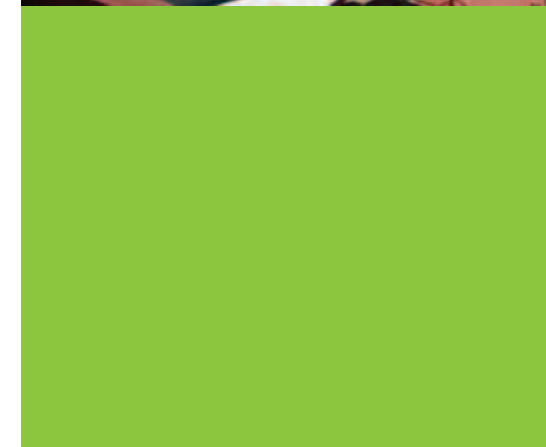
In 2011, the Green Mortgage Programme was extended to all loans offered by Infonavit, including those intended for the acquisition of existing housing and self-build, so it became necessary to establish a mechanism to ensure the provision of eco-technologies when the beneficiary uses their loan through the Individual Open Market (which refers to the sale of new or existing housing by a low-volume builder or individual).

Because of this, and with the aim of giving beneficiaries confidence in the eco-technologies they bought, a distribution market was established, via suppliers certified by Infonavit, which included an inventory of the eco-technologies within the programme. This ensured the distribution, correct installation and compliance with guarantees was required.

To date (2015) there are more than 70 authorised retailers who sell both at regional and national levels, ensuring provision across the Mexican Republic and the correct installation of eco-technologies in all the housing financed by Infonavit.

Taking into account both aspects of the Programme, two Green Mortgage eco-technology simulators were created, to enable beneficiaries and housing developers to make an appropriate selection of the technologies that allow them to comply with the minimum savings amount required. These 'simulators' took into consideration the income level, house location and the approximate maximum amount given by the Green Mortgage Programme to finance these technologies. The simulators are available online:

- [Eco-technologies simulator for new or existing housing on the Individual Open Market \(in Spanish\)](#)
- [Eco-technologies simulator for new or existing developer housing \(in Spanish\)](#)



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The Green Mortgage in figures

Since its inception in 2007 until the end of 2014, a total of 1,799,652 mortgages had been provided with additional funds for the incorporation of eco-technologies. 156,906 loans were given in 2014 alone, which represents 96% of mortgages provided by the whole of Infonavit during that year, and the goal for 2015 is to exceed 2 million loans provided with Green Mortgages.

These numbers translate into a positive impact for families and the environment, with an estimated average saving per family of US\$ 16 per month during the lifespan of the eco-technologies. In terms of energy efficiency, the accumulated savings from electricity and gas are 71,227 million kWh are the equivalent of the electricity sold in Mexico during the months of January and February 2013². The savings from water are estimated to be 24,38 million m³, equivalent to filling 9,750 Olympic pools and the mitigation of 257,474 tons of CO₂, equivalent to planting approximately 766,750 trees.



² Source: Energy Information System, electricity users by federation body, 2013

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The Green Mortgage Programme has been recognised for being an innovative initiative which focusses on both social and economic aspects - by benefitting mainly low income families (it has, however, been designed for housing for all incomes); environmental aspects – by promoting a savings culture and the efficient use of resources, thereby ensuring a better quality of life and above all, promoting integration between different sectors (government, private and academic) for the common good of society.

Key success factors of the programme

- The volume of loans approved by Infonavit is a major attraction for eco-technology manufacturers and suppliers, so it is essential to work transparently and within standards and with control bodies as well as the academic sector and experts in the field to ensure decision making is appropriately carried out.
- Dissemination of knowledge amongst eco-technology users is necessary so people receive instructions on the equipment, about its benefits, its use and maintenance and to guarantee a long lifespan of the eco-technologies.
- Infonavit has gone through a process of change to implement an environmentally targeted project which takes into consideration the improvement in the quality of life of its beneficiaries. It also shows the advantages that all householders (especially low income families) can get from incorporating more efficient technologies in their houses through the Green Mortgage Programme, thus reducing energy and water consumption.

Social sustainability

An important factor in the success of the programme is its high penetration amongst low income families and the economic benefits that are achieved through the incorporation of eco-technologies in their houses, which translate to monthly savings in household bills.

Several awareness-raising initiatives have been carried out with the aim of reinforcing and expanding the take-up of the programme among its beneficiaries, such as the development of a comic book, creation of posters, leaflets, videos, information signs and a space on Infonavit's website designed to make people aware of the use and benefits of eco-technologies. This, in turn, has established the programme as a means of culture change towards a respect for the environment and the reasonable use of resources.



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Another key success factor of the programme is its financial sustainability, being a financial scheme which guarantees that the savings generated throughout the lifespan of the eco-technologies surpass the additional amount received for including them in the house.

The additional amount required for the acquisition of Green Mortgage eco-technologies comes from the National Housing Fund, as is the case with the mortgage loans. Infonavit is responsible for administering this Fund and for offering accessible credit solutions through interest rates which vary according to householders' income levels.

Interest rates vary from 4% for low-income beneficiaries to 10% for those on higher incomes, cross subsidising this with the higher rates charged to higher income households and lower rates to families whose income requires more financial support.

Environmental sustainability

This initiative has promoted a change in the existing model within the housing construction industry, by designing homes that incorporate materials according to the different climatic zones of the country, such as the use of thermal insulation and double-glazed windows in warm areas, the use of energy and water saving technologies and the incorporation of solar heaters and the installation of water saving toilets and bathroom appliances.

The implementation of all these measures translates into savings for the families in their monthly water and energy bills, and it means an even higher saving for the State because of the subsidies that exist in those services. In addition, as mitigation of Green-House Gas Emissions is achieved, the programme contributes to the National Mitigation and Climate Change Policy and the achievement of national goals.



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Among the main challenges that were faced during the design and implementation of the programme are the following:

- The lack of standards to regulate the quality and efficiency of the new eco-technology products was a barrier during the first stage of the project. In order to overcome this, Infonavit worked in partnership with regulatory bodies to establish appropriate quality standards that achieve the necessary savings via their use and correct installation.
- The lack of environmental awareness in society means that, on occasion, public resources are not invested in this area. To overcome this, Infonavit participates in conferences, specialist forums, workshops and publications, working in collaboration with academia as well as other public and private sector organisations, in order to raise awareness within both civil society as well as other organisations regarding the transfer of knowledge and lessons learned.
- The challenge of gaining acceptance from users of the use and maintenance of eco-technologies has been addressed through educational materials such as videos, comics and a variety of media, as well as the creation of the eco-technology simulators to help decision making regarding the acquisition of these measures.



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Awards received

The Programme has been recognised throughout its existence by a number of organisations at national and international levels:

- Infonavit was recognised by the editorial company 'World Finance' as the Most Sustainable Bank in Mexico 2014. This recognition is the result of the evolution of Infonavit from 2013 (guided by the New National Housing Policy and National Development Plan 2013-2018), moving from a mortgage lender model based on the number of loans provided to a model that prioritises people's quality of life and the value of their homes, turning the housing sector into a driver for development. This strategy has started actions and programmes that have enabled the houses financed by Infonavit to reach three main quality standards: housing quality, quality of the surroundings and quality of the social fabric of the community where it is based. This is achieved through three programmes which promote access to housing through a sustainability approach: The Green Mortgage Programme, Mortgage with Services and Improving the Unit.
- In 2012, the Green Mortgage Programme was awarded the World Habitat Award, run by the Building and Social Housing Foundation (BSHF). The Awards focus on innovative, sustainable and transferable housing projects that promote improvements in people's living conditions, as well as promoting increases in sustainable income generation, increases in affordability and the empowerment of marginalised groups.
- In the same year, the Green Mortgage Programme was awarded the ONNCCE 2012 award for Standardisation and Certification. These awards aim to promote a culture of standardisation, promotion and implementation of compliance evaluation in order to increase the lifespan of products, goods, services and systems.
- In 2011, the Inter-American Development Bank recognised Infonavit's Green Mortgage Programme with the "Beyond Banking 2010" award, the objective of which is to recognise projects of environmental, social and sustainable governance, implemented by finance organisations in Latin America and the Caribbean.
- In 2009, Mexico received the "Star for Energy Efficiency" recognition for the Green Mortgage Programme from the Alliance to Save Energy, in recognition of the work of Infonavit and CONAVI in promoting energy efficiency in houses for low income workers.
- In 2008, Infonavit was awarded the National Awards for Energy Saving and Renewable Energy in the Financing category for the Green Mortgage Programme, organised by the National Commission for Energy Saving. The awards look at initiatives to promote energy efficiency and renewable energy in Mexico.

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Infonavit has developed the Sustainable Housing Strategy with the aim of establishing action plans which define all their activities and programmes which when carried out create a change in their model in terms of Infonavit's sustainability vision. The technologies used in a house are no longer seen in isolation, and the vision moves towards a focus on the overall performance. Rather than focusing on actions at the level of the houses, there is a change towards a comprehensive vision in which the beneficiaries, the house, the surroundings and the community become different "impact levels" in which the actions of the organisation are implemented, in order to increase the equity value and the quality of life of the beneficiaries, as well as to contribute effectively towards achieving the objectives defined in the National Housing, Urban Development and Climate Change Policies.

The creation of the Green-House Gas Evaluation System 'Sisevive-Ecocasa' forms part of this change in Infonavit's vision. The System was developed in 2012 by Infonavit, the Unified Housing Registry (RUV) and the German Agency for Development Cooperation (GIZ) with the support of different organisations and national and international bodies working in the housing sector in Mexico. This initiative responds to the need for a system to identify and inform beneficiaries and housing developers about the level of energy and environmental efficiency of houses in Mexico, taking into consideration the thermal comfort of the house, projected annual consumption of energy and water and the environmental impact - in relation to the mitigation of green-house gases released to the atmosphere as criteria for assessment. The initiative is supported by other international organisations such as the British Embassy in Mexico, through funding provided to the IDEA Foundation and the Inter-American Development Bank.

From an energy and environmental perspective, the *Sisevive-Ecocasa* System enables the comprehensive evaluation of the elements of design, construction characteristics and technologies of any house in Mexico. Likewise, using thermal comfort and rational water consumption as starting points, this system provides a better rating to the houses with lower energy and water use when compared to a "reference" house. The objective is to develop a system which becomes the first step towards a national model for energy efficiency and environmental impact rating in housing construction. This system is used as the assessment method for the National Appropriate Mitigation Actions (NAMA) for new and existing housing in Mexico, as well as other programmes related to the environmental impact of the housing sector, such as *Ecocasa* (Federal Mortgage Society – SHF/ Inter-American Development Bank – BID/ German Development Bank – KfW) and the NAMA Facility (German Ministry of Environment, Protection of Nature, Public Works and Nuclear Security – BMUB, and the Energy and Climate Change Department – DECC from the United Kingdom).



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The *Sisevive-Ecocasa* system is designed to inform people about the energy efficiency and environmental performance of a house using different categories and is designed to unify different assessment criteria in the housing industry in Mexico. The programme sets the basis for the transition towards a national system of certification for sustainable housing, which includes considerations such as energy, water and housing environment.

The benefits of the system include:

- For Infonavit, it represents the transition from the calculation of savings based on isolated technologies towards the overall performance of a house, focusing efforts on the establishment of standards in energy efficiency and environmental impact.
- For the housing construction sector, it represents the improvement of construction processes and the introduction of more efficient technologies and the interaction of these, which contribute to improved energy performance in houses.
- For the housing market, the tool enables the provision of accessible information around the benefits that an efficient house brings for the beneficiary, in comparison to a conventional house.
- For the users, it promotes water and energy savings through the understanding and promotion of the potential of the house they have acquired.
- For the country, it contributes to the national commitment to reduce Green-House Gas Emissions, where housing plays a key role.

This programme is expanding and by the end of 2014 achieved the assessment of 8,704 houses registered in RUV, 49 capacity building activities at national level - which represents a total of 900 users trained, 750 people trained on verification and a technical representative in each one of Infonavit's 32 state delegations.

In 2014, the system was expanded to a national level, when it was included in the Operation Regulations for the Federal Subsidy for Housing 2014 from CONAVI as one of the ways of achieving higher score in "Competitiveness". The Federal Mortgage Society (SHF) uses the DEEVI tool as one of their eligibility criteria for the houses to be incorporated into the *Ecocasa* Programme. Currently (2015) Infonavit is working together with GIZ to include further functionality in the calculation tools in order to be able to assess existing housing, incorporating a wider variety of appliances, allowing its use for the NAMA for new housing, as well as to increase the market for potential use at a national level.



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Relevant links and documents (in Spanish)

[Infonavit's Financial Plan 2014-2018](#)

[Infonavit's Website – Saving and caring for the environment](#)

[Eco-technologies simulator for new or existing housing in the Individual Open Market](#)

[Eco-technologies simulator for new or existing housing from housing developers](#)

[What is the Green Mortgage?](#)

[Mexican NAMA for Sustainable Housing \(New Housing\) / National Housing Commission](#)

Relevant videos

[World Habitat Award presentation to Infonavit at the World Urban Forum
on 6 September 2012 in Naples, Italy](#)



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In 2012, a triangular cooperation agreement between Mexico, Colombia and Germany was signed, with the participation of different organisations from those countries. Triangular cooperation is an innovative and effective way of working in the international cooperation sector, which involves the implementation of development projects between three actors, where each of the participants brings a specific contribution. The areas of work include capacity development, strengthening institutions, management tools and the exchange of knowledge and experience.

In this project, organisations which participate from Mexico (acting as a cooperating country) include: AMEXCID (the Mexican agency of international cooperation for development) as the negotiating body, Infonavit and the Unified Housing Registry (RUV) as technical bodies. From Germany (as a "cooperating" country) the following participate, GIZ (German International Cooperation Agency) on behalf of BMZ (Federal Ministry of Economic Cooperation and Development), as negotiating and technical bodies. From Colombia (as the recipient country) the following organisations participate, the Presidential Agency for International Cooperation of Colombia (APC) as a negotiating body, and as technical bodies the DNP (National Planning Department), MVCT (Ministry of Housing, City and Territory), MADS (Ministry of Environment and Sustainable Development), MME (Ministry of Mines and Energy), and FNA (National Saving Fund).

The general objective of this triangular cooperation is to enhance the synergies and experiences of the bilateral cooperation that has been taking place between Mexico and Germany, making significant contributions to the sustainable development of Latin America and the Caribbean.

Through information exchange and a review of lessons learnt as well as successful experiences and exchanges with experts, the specific objectives are:

- In Colombia, the development of promotion and financing mechanisms for sustainable housing, based on Infonavit's Green Mortgage
- In Mexico, to generate and promote tools for land-related legislation and urban land management, based on the knowledge of the Government of Colombia and, in that way, to strengthen the Mexican experience
- Germany provides technical assistance, support to the coordination and planning for the implementation and compliance with the objectives



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The specific objectives of the support from Mexico to Colombia include: the establishment of a platform of key actors; harmonisation of the regulatory framework; development of a system for the transfer of the Green Mortgage experience and the development of technical skills in the counterpart organisations.

Currently (2015), a “Green Financing” model for Colombia is being developed, based on the experience of the “Green Mortgage” in Mexico. This model aims to create a financial mechanism that enables the development of a sustainable housing industry in Colombia, as well as the preservation of the environment through reductions in Green-House Gas Emissions. The development of the model will be linked to the construction of housing “pilots” with the aim of measuring savings in electricity, gas and water in relation to current performance baselines.

As a result of the success and international recognition obtained by Infonavit’s Green Mortgage Programme and *Sisevive-Ecocasa*, the organisation has actively participated in the promotion of these programmes, extending the exchange of experience beyond the triangular cooperation to include other countries in Latin America that are interested in the work and the programmes implemented. In this way, Infonavit and GIZ started to work on the creation of a Network for Sustainable Housing in Latin American and the Caribbean, in order to extend the triangular cooperation and promote the good practices recognised in Mexico in terms of housing sustainability.



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The LAC Network (Latin American and the Caribbean Network) for Sustainable Housing is the scaling up of the triangular cooperation towards a regional cooperation within Latin America, where Infonavit plays a key role in promoting the Green Mortgage and *Sisevive-Ecocasa* programmes, as well as learning about and promoting other experiences in terms of housing sustainability.

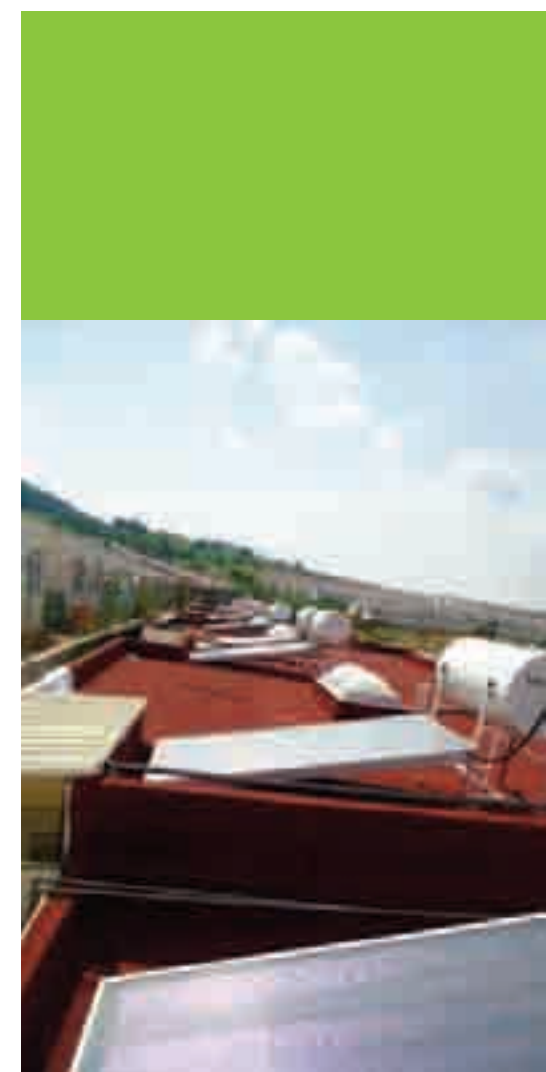
The objective of the initiative is to create a network of knowledge regarding mechanisms and programmes for the expansion and development of the sustainable housing sector and urban development in countries in Latin America and the Caribbean. This is done through the exchange of best practices, knowledge and experience between governments and public and private institutions which work towards establishing and strengthening the sustainable housing sector in the countries in the region. The initiative looks to expand the existing collaboration between Infonavit, from Mexico, and the Colombian Government through its National Department for Planning, and GIZ (German Agency for International Cooperation) in the field of housing sustainability and urban policies.

The anticipated impacts of the Network include:

- promoting sustainable development in Latin America and the Caribbean
- strengthening institutions
- improving the quality of energy efficiency measures focused towards sustainability
- finding out about alternative ecological and practical technologies and sustainable practices
- promoting technological development and innovation, linking academia, industry and government in the housing sector

This is achieved through:

- Sharing best practices between countries and facilitating the exchange of knowledge and experiences in the sector
- The provision of advice services to identify opportunities for implementation and development of these mechanisms
- The establishment of a network of events and seminars for dissemination of experiences
- The setting up of virtual libraries that provide information about the participating countries and that facilitate information exchange
- The organisation of technical visits and study visits to learn about and promote housing projects in different countries



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First meeting of the LAC Network

The first meeting of the LAC Network for Sustainable Housing took place in Merida, Mexico, from 25-27 November 2013, with sponsorship from BSHF and GIZ. The meeting was framed within the 5th International Forum of Sustainable Housing (FIVS) organised by Infonavit and aimed to establish the formation of a regional network, promoting future collaboration in order to share experiences in terms of housing and urban sustainability. The event brought together a range of representatives from governments, policy makers and housing practitioners from different countries in the region.

Participants

The event involved representatives from organisations in Brazil (Ministry for Cities, National Secretariat for Shelter), Chile (Chilean Agency for Energy Efficiency), Colombia (Ministry of Housing, Cities and Land), El Salvador (El Salvador Development Bank), Nicaragua (Institute for Urban and Rural Housing) and Peru (Ministry of Housing, Construction and Sanitation), the German Agency for Development Cooperation (GIZ), the Building and Social Housing Foundation (BSHF), as well as the participation of the most relevant Mexican organisations in the sector, such as the Secretariat for Rural, Territorial and Urban Development (SEDATU), National Housing Commission (CONAVI), the Unified Housing Registry (RUV), and, as hosts, the Institute of the National Housing Fund for Workers (Infonavit).

Discussions

The activities and discussions undertaken in the three-day exchange can be summarised as follows:

- **Presentations by the host organisations:** Infonavit presented the Green Mortgage Programme and *Sisevive-Ecocasa*, GIZ in Mexico showed the programmes and the work towards housing sustainability in Germany and the cooperation taking place in Mexico and BSHF presented the World Habitat Awards, peer exchange activities and the relevance of supporting the LAC Network, whilst Colombia presented the triangular cooperation between Mexico, Colombia and Germany
- **Presentations from international participants:** focused on best practices and the challenges in sustainable housing in Colombia, Peru, Nicaragua, Brazil, Chile and El Salvador
- **Conclusions through a round table:** regarding shared challenges and best practices in Latin America in terms of sustainable housing and urban development
- **Participation in the FIVS plenary session:** to present the results of the workshops as well as the main achievements of the triangular cooperation and the LAC Network for sustainable housing



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Shared challenges

One of the main objectives in the transfer of knowledge among different organisations and countries is the identification of the challenges that each one faces. Whilst these are specific to the context of each country, similarities and shared points of reference are often found. It is through the recognition of these shared challenges that we can reflect on how these issues are faced and what can be learnt from other organisations.

Overcoming poverty and access to housing are two of the main problems in most countries in Latin America. Across the region, different initiatives have been put in place to support the reduction of the housing deficit, in which the state and the private sector interact. At the same time, there is work being done in terms of sustainability and climate change mitigation.

At the exchange in Merida, the challenges faced in each country and region were presented and discussed, resulting in a series of common challenges for the Network. The points discussed can be summarised as: i) Sustainability; ii) Criteria for working together; iii) Equality; iv) Finance; and v) Housing policies.

i) In terms of sustainability, the main challenges faced are the need to meet the housing demand within sustainability criteria without significantly increasing housing costs; directing housing funds to allow the construction of more sustainable cities; incorporating the location of the house within sustainability criteria; lowering energy and water consumption as well as the household expenditure in those areas; and to define what a “compact house” should be in Latin America, where the densification of cities is not always the most appropriate solution. And finally, that sustainability is understood to be an interaction of different actions in the social, environmental and economic areas.

ii) In terms of the criteria for working together, it is important to establish indicators and common methodologies that are appropriate both for each country and for the region in order to bring the actions taken and the results obtained into alignment and therefore create an information system about housing. In addition, it is important to have standards for materials, technologies and skills that the construction industry can rely on. It is also important to identify the lack of mechanisms and cooperation for sharing results and lessons learned at a Latin American level.



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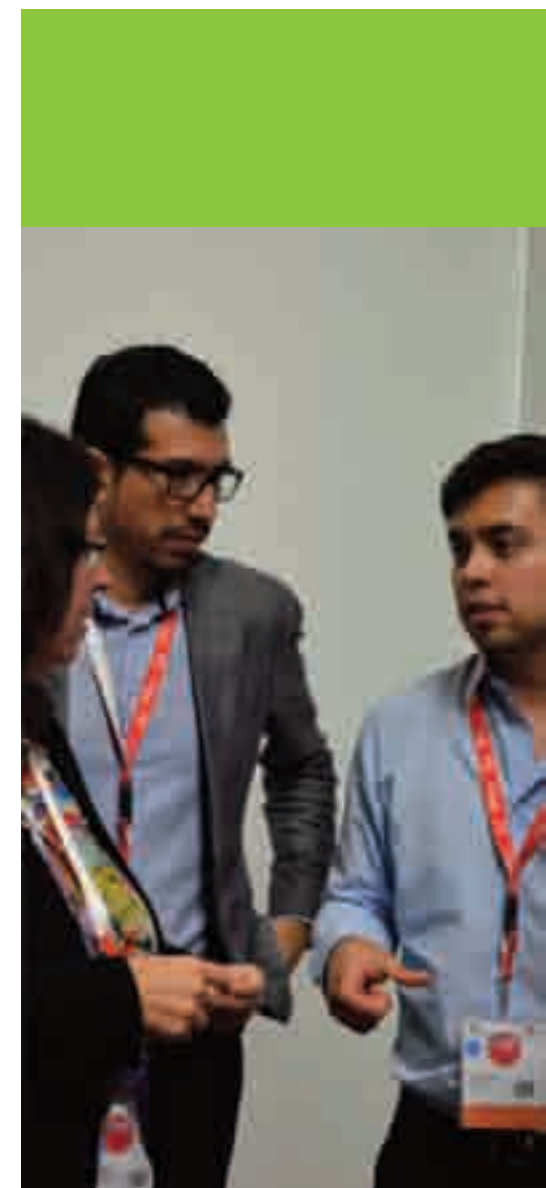
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iii) With regard to equality, it is important to promote housing for the lower income levels in the population and those without access to credit, in order to deal with the housing deficit, overcome poor housing conditions whilst at the same time as moving the social housing closer to the city, without forgetting about the search for household savings from water, electricity and gas. The solution to the housing problem is not solved by the provision of a housing solution alone, it is also necessary to consider the sustainability of these solutions, which requires considering the creation of permanent sources of income for residents. That is the biggest challenge that Latin American countries face and the solution should be part of the considerations of policy-makers in the region.

iv) Finance: Housing policies that focus on the poorest communities need to consider the financial value of the house, income levels and the difficulties this segment of the population has in accessing credit which can mean rejecting traditional finance options and also additional loans and subsidies. In these cases, organisations such as Infonavit become very relevant.

v) A key point is the definition of the scope and the aims of housing policies, which must engage the public and private sectors in the promotion and construction of sustainable housing, creating a regulatory framework for housing development in which urban growth is regulated, houses are re-allocated into risk-free areas where it is compulsory to guarantee quality and the continuity of public services for new housing. A link with climate change policies at national and international levels should be sought, interacting with academia to generate shared and comparable research, looking for the implementation of pilot projects to demonstrate results and to influence public policy.



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As well as common challenges, the actions recognised as best practice in different organisations were identified and categorised as: i) finance schemes, ii) policies and management and iii) sustainability.

i) In terms of finance schemes, promoting the use of local and national incentives for sustainable housing construction was considered fundamental, channelling housing funds towards public infrastructure and providing loans and support for housing in risk-free areas or areas that do not have a negative impact on the environment.

ii) In terms of policies and management the clear alignment of a sustainable public housing policy with the finance mechanism that support its promotion and sustainable housing construction and urban development with local economic growth is considered necessary. Housing construction should be considered key to the development of sustainable cities, as well as reinforcing community support to improve employment rates and minimising transience in new housing developments. The final objective of government policies has been identified as the generation of a framework of standards for sustainable construction, the promotion of the use of local and national incentives for sustainable housing through the linkage of sustainable housing reconstruction and urban development with local growth, technical assistance for residents in developing risk mitigation measures and the participation of the community in improvement work.

iii) In terms of sustainability, there is a recognition of the need to identify adequate eco-technologies for each bio-climatic zone and its associated savings through independent, neutral bodies, the creation of guidelines for construction and the efficient use of resources and energy, the inclusion of schemes for the reduction of environmental risks and capacity building in renewable energy and energy efficiency in the public and private sector.



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At the end of the exchange, the steps needed to form the LAC Network were agreed along with a joint work plan focusing on the following:

1. To create a document about the first meeting as a first step towards the exchange of information and promotion of the initiative.
2. To develop an information system for the exchange of experience and knowledge, which includes information such as:
 - A glossary of key concepts regarding sustainable housing and urban development (which would have to be discussed and agreed)
 - Information and data around results and programme impact
 - A list of names, positions, key experience and addresses of the participants at the exchange (database and knowledge mapping)
 - A calendar of national and international events
 - Presentations from the meetings
 - A definition of the specific topics to be discussed in the LAC Network meetings and the generation of products around those topics
3. To involve other organisations that could be part of the LAC Network, such as financial institutions, with each country representative preparing a preliminary list (and in Brazil, to involve GIZ).
4. Each country's representative should identify their country's contribution in terms of knowledge as well as learning needs.
5. To clearly define roles and responsibilities of the LAC Network participants.
 - To identify or choose leadership/coordination of the Network (rotational).
6. To create sub-networks or micro-LAC Networks for each (sub) region.



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First meeting of the LAC Network for Sustainable Housing – Merida, Mexico



Welcome to Mexico! The LAC Network for sustainable Housing took place within Infonavit's annual International Forum for Sustainable Housing, which brought together housing experts from Mexico and several other countries.



The LAC Network and its members are presented at the Forum, attended by hundreds of participants.



The Ministry of Housing in Colombia and GIZ (Germany) discussing the opportunities and challenges of international cooperation and transfer.



Presenting experiences around sustainability from different countries in the region.



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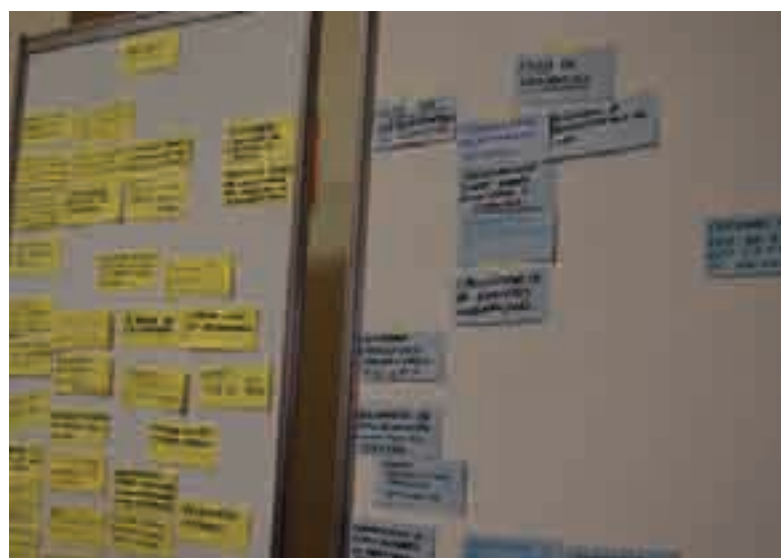
First meeting of the LAC Network for Sustainable Housing – Merida, Mexico



Eight countries from the LAC region participated in the exchange and the aim is to bring together more representatives in future meetings.



Participation is key to understanding common challenges expectations and steps forward.



Common challenges and expectations were identified and a work plan for the future was drawn up.



The three-day meeting was productive and marked the start of long-term regional collaboration.



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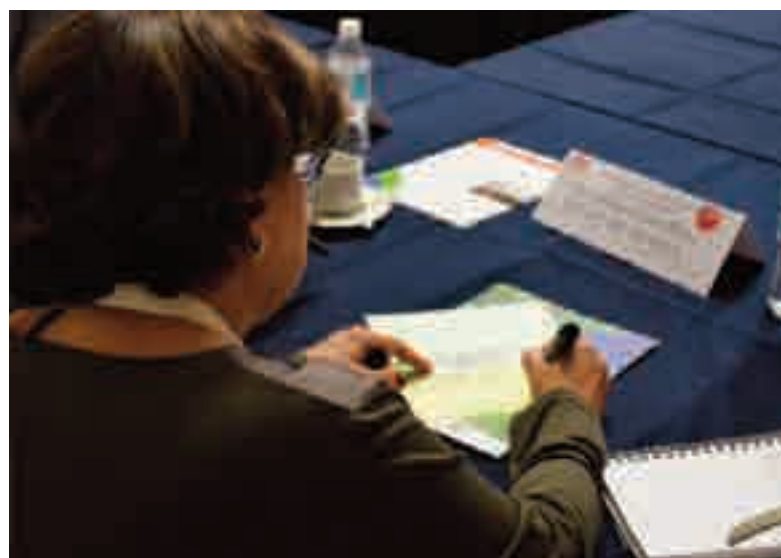
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First meeting of the LAC Network for Sustainable Housing – Merida, Mexico



Reflecting on each other's experiences and finding common issues is essential to start working together.



An engaged group of participants.



The LAC group attended relevant sessions of the wider International Forum for Sustainable Housing.



Participants also had the opportunity to visit Infonavit's housing developments in the area.



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Participation of the LAC Network in the 7th World Urban Forum (WUF7)

On the occasion of the 7th World Urban Forum celebrated from 5-11 April 2014 in Medellín, Colombia, Infonavit and GIZ organised a side event which included Infonavit, the National Housing Commission (CONAVI), the Federal Mortgage Society (SHF) from Mexico and the National Planning Department from Colombia. Around 120 participants attended the event from different Latin American countries and other parts of the world. The side event was named "Mexico: Sustainable Housing for low-income households", and it presented the programmes from Infonavit's Sustainability and Technical Sub-Department, such as Green Mortgage, *Sisevive-Ecocasa*, the Mexico-Colombia-Germany triangular cooperation and Urban Regeneration, '*Pintemos Mexico*' (Let's Paint Mexico). The event showcased innovative efforts from Mexico to finance sustainable and affordable housing for low-income sectors, showing that south-south cooperation benefits from mutual learning (in terms of urban development and sustainable housing) and inviting other countries from Latin America to participate in the LAC Network for sustainable housing.

At the end of the event, Infonavit's Executive Director, Mr Alejandro Murat Hinojosa and the Head of Monitoring and Evaluation of the United Nations Programme for Human Settlements (UN-Habitat), Dr Eduardo López Moreno, signed a Collaboration Agreement to make Mexico the first country where UN-Habitat's Urban Prosperity Index (UPI) would be implemented at a national level.



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The LAC Network at the World Urban Forum 2014 – Medellín, Colombia



Infonavit, GIZ and the LAC Network participated in a series of events at the World Urban Forum 2014 in Medellín, Colombia.



Presentation at the side event "Mexico: Sustainable housing for low-income households", organised by Infonavit and GIZ.



Participation at the side event "Urban regeneration in big-scale housing developments: challenges for the construction of more-equal cities", organised by the Institut de Recherche pour le Développement.



Presentation at the side event "Sustainability and energy efficiency in social housing", organised by Caixa Econômica Federal from Brazil.



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The LAC Network at the World Urban Forum 2014 – Medellín, Colombia



Presentation of the Collaboration Agreement between UN-Habitat and Infonavit. Infonavit's Executive Director, Mr Alejandro Murat Hinojosa, the Head of Monitoring and Evaluation from the United Nations Human Settlements Programme (UN-Habitat), Dr Eduardo López Moreno, and as a witness of honour Mr Alejandro Nieto, Sub-Secretary of Urban Development and Housing at SEDATU, signed an Collaboration Agreement to make Mexico the first country to implement UN-Habitat's Urban Prosperity Index (UPI) at a national level.



Signing the agreement letter between UN-Habitat and Infonavit.



Architect Carlos Zedillo presenting the Infonavit Green Mortgage Sisevive.



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Participants' presentations from the first LAC Network meeting (in Spanish) cont'd

FIVS

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Relevant videos (in Spanish)

Presentation of Infonavit's 5th Sustainable Housing Forum

Presentation of the LAC Network in the International Forum for Sustainable Housing (FIVS), Merida, November 2013



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About the World Habitat Awards

The World Habitat Awards are an annual international competition that recognises innovative and sustainable solutions to key housing challenges in the global South as well as the North. The Awards were established in 1985 by the Building and Social Housing Foundation as part of its contribution to the United Nations International Year of Shelter for the Homeless.

Every year an award of £10,000 is presented to each of the two winners at a UN-Habitat global event. In addition to the prize and international recognition, peer exchange activities are carried out with each of the winners to promote the international transfer of the approach.

Further information about the Awards, including previous winners, related study visits or peer exchange activities and assessment procedures can be found by visiting www.worldhabitatawards.org.



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About BSHF

The Building and Social Housing Foundation (BSHF) is an independent research organisation that promotes sustainable development and innovation in housing through collaborative research and knowledge transfer.

Established in 1976, BSHF works both in the UK and internationally to identify innovative housing solutions and to foster the exchange of information and good practice.

BSHF believes that everyone should have access to decent housing and is committed to promoting housing policy and practice that is people-centred and environmentally responsible.

For more information visit www.bshf.org.



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The Institute for the National Workers' Housing Fund (Infonavit) was founded on 21 April 1972 by constitutional mandate and is a tripartite assembly between the workers' sector, the private sector and the federal government. Among its main duties is that of collecting and administrating employers' payroll contributions of 5% for each Mexican worker to give them the chance of obtaining a mortgage or the right to have their savings returned, framing in this way the mission, vision and objectives of the organisation.

Vision

To contribute to Mexico's progress, being the organisation that supports workers throughout their working life, providing financing alternatives to satisfy their different housing needs through schemes that promote equity value, wellbeing and the quality of life of communities.

Mission

To contribute to the general wellbeing of workers, by:

- Offering accessible finance solutions, to solve their housing needs in sustainable, safe environments and in competitive communities.
- Paying competitive rates for the Housing Sub-account (this refers to the account where employer contributions are made).
- Offering information and guidance on their saving, loans and housing choices so that they can build their value.

Institutional Objectives

- To promote housing solutions that improve quality of life and promote sustainable development.
- To provide adequate financial solutions throughout the workers' life cycle, in order to meet their housing demands.
- To ensure the efficient performance of the Housing Sub-account, in order to complement for retirement savings.
- To ensure financial viability of the organisation in the long term.
- To increase the resources available to workers.

For further information please visit the [infonavit website](#)



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About GIZ

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Recognised regional experience, solid specialist knowledge and management capacity supported in practice form the basis of the services of the *Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH*. As a federal company, GIZ serves the Government of the Federal Republic of Germany in its task of reaching its objectives in the field of international cooperation for sustainable development. At the same time, it acts worldwide in the field of international education.

A big part of the mandates taken forward by GIZ come from the Federal Ministry of Economic Cooperation and Development. GIZ also works on assignments from other federal ministries, as well as other public and private bodies, both from Germany and abroad including, for example, Governments from other countries; European Union institutions, such as the European Commission; the United Nations and the World Bank. GIZ gives equal support to clients from the private sector in the implementation of their objectives.

Data, figures, facts

GIZ operates worldwide in more than 130 countries. In Germany, it has a presence in almost all the Federal states and is based in Bonn and Eschborn. GIZ has 16,510 collaborators around the world, of which almost 70% are national staff working in situ (Figures from 31 December 2013).

