

Technical Cooperation for the CTF-IADB Ecocasa Program-ME-L1121

I. Basic Information for TC

- Country/Region: Mexico
- TC Name: Technical Cooperation for the CTF-IADB Ecocasa Program-ME-L1121
- TC Number: ME-T1201
- Team Leader/Members: Claudio Alatorre (INE/CCS), Team Leader, Gisela Campillo (INE/CCS), Ramón Guzmán (IFD/CMF), Leticia Riquelme (CMF/CME), Gmelina Ramirez (CCS/CME), Maria Isabel Haro (IFD/CMF), Juan Carlos Pérez-Segnini (LEG/SGO), Ernesto Monter (VPS/ESG), Víctor Escala (PDP/CME), and Juan Carlos Gomez-Sandoval (INE/CCS).
- Indicate if: Operational support
- If Operational Support, provide the number of the Operation associated to: ME-L1121
- Reference to Request: IDBDOCS # 36680760
- Beneficiary (countries or entities which are the recipient of the technical assistance): Sociedad Hipotecaria Federal (SHF), Mexico.
- Executing Agency and contact name: Inter-American Development Bank. Contact: Claudio Alatorre, Climate Change and Sustainability Division (INE/CCS).
- IDB Funding Requested: USD1,600,000
- Local counterpart funding, if any: N/A
- Disbursement period (which includes execution period): December 2012-December 2016
- Required start date: December 1st, 2012
- Types of consultants (firm or individual consultants): firm and individual consultants.
- Prepared by Division: INE/CCS
- Division of Disbursement Responsibility: INE
- Included in Country Strategy (y/n) No; TC included in CPD (y/n): Yes
- GCI-9 Sector Priority: Protect the environment, respond to climate change, promote renewable energy, and ensure food security.

II. Description of the Associated Loan/Guarantee

A. Background

- 2.1 Sustainable houses (houses with improved thermal performance, less lifecycle emission-intensive building techniques, more efficient water using devices, and transport-based location criteria) offer a number of benefits to their dwellers (comfort, energy savings), to urban infrastructure and to the national economy. But they also significantly contribute to the mitigation of climate change, and are in fact crucial to enable the country to reach its goal of greenhouse gas (GHG) emission reductions of 50% by 2050. Due to these synergies between its development and climate benefits, sustainable housing is located at the intersection between Mexico's housing and climate change policies, and carbon has become a proxy for the multiple benefits of sustainable housing.
- 2.2 There are a number of initiatives within Mexico's governmental housing agencies, aimed at improving the sustainability of Mexico's housing stock.¹ The most recent one (April 18th, 2012) has been the approval by Congress of the First General Law against Climate Change. The new law contains many sweeping provisions to mitigate climate

¹ http://bit.ly/Sus_Hous

change, including a mandate to reduce emissions of carbon dioxide by 30% below business-as-usual levels by 2020, and by 50% below year 2000 levels by 2050. Furthermore, it stipulates that 35% of the country's electricity should come from renewable sources by 2024, and requires mandatory emissions reporting by the country's largest polluters. The act also establishes a commission to oversee its implementation, and encourages development of a carbon-trading scheme.

- 2.3 The National Housing Commission (CONAVI) recently launched an “Inter-institutional Sustainable Housing Working Group” in order to coordinate the existing initiatives and find synergies in pressing topics such as monitoring and evaluation, training and capacity building and sustainable pilot projects.
- 2.4 This wide array of initiatives in the housing sector, which show Mexico's climate leadership and interest to promote sustainable growth, has been especially focused on the low-and medium income markets and has resulted in the implementation of the world's first Nationally Appropriate Mitigation Action (NAMA) in the housing sector, intended to promote the use of energy-efficient appliances and sustainable building design, as well as to scale-up the adoption of new technologies, which would make new homes increasingly efficient as the program develops. The NAMA concept is based on the whole-house approach, not focusing on specific energy efficiency and renewable energy measures in housing, but on performance of the house as a whole. The NAMA has designed three levels of energy efficiency for standard housing units in the different climatic areas in Mexico: Ecocasa I, Ecocasa II and PassivHaus Level. The Ecocasa Program takes its name from these different levels, and is aligned with the NAMA concept. SHF and CONAVI are working together with IDB to ensure this alignment. Worldwide experience shows that performance-based systems are more cost-effective, as they enable housing developers to choose the most appropriate means to achieve emission reductions *vis-à-vis* a baseline.
- 2.5 The program will rely on the DEEVI² thermal performance simulation system currently being developed by CONAVI and the Housing for Workers National Fund Institute (INFONAVIT) with a double purpose: labeling of finished houses for buyers' information, and determination of eligibility to access to NAMA-related finance. The DEEVI is currently being developed by the PassivHaus Institut (PHI), by simplifying and adapting to the Mexican conditions its Passive House Planning Package (PHPP). Unlike the PHPP, which is a complex software that requires several days of work to assess a single house, the DEEVI is a simplified, Excel-based version. INFONAVIT is currently working with the Housing Registry (RUV) so that it can provide licenses and training on the use of DEEVI to developers.
- 2.6 In order to support these efforts, the Bank, as an executing agency for the Clean Technology Fund (CTF), will request to the CTF Trust-Fund Committee (TFC) USD51.6 million in concessional loan and grant resources. These resources would be channeled, together with USD50 million from the Bank's ordinary capital, for the implementation of the ECOCASA Program. In addition, the German Bank (KfW) will provide an additional concessional loan of EUR80 million.
- 2.7 The general objective of the ECOCASA Program is to contribute to the reduction of GHG emissions in the housing sector in Mexico. This will be achieved by providing financing for housing developers to build housing projects that meet GHG reduction goals established by the program, as well as mortgages that follow CONAVI's sustainability criteria. A component financed by European Commission resources through the LAIF window to build Passive Houses in Mexico has been requested. The program envisages: (i) developing and implementing, building on the existing efforts, the simulation, rating, inspection, and

² Energy efficient Design for Buildings, DEEVI for its Spanish Acronym.

monitoring procedures addressing the thermal performance of houses; (ii) developing methodologies for assessing the GHG emissions resulting from water usage, accessibility (location) and building material lifecycle aspects of houses, so that they can be used in the program; (iii) strengthening the capacities of the housing industry and housing finance institutions for the financing and construction of low-carbon housing through the provision of bridge loans to housing developers, as well as technical studies and training opportunities; (iv) disseminating knowledge on low-carbon housing among the public, industry, universities, and government institutions at the national and local level; and (v) providing inputs to support the development of public policies for low-carbon housing.

- 2.8 The immediate outcome of the program will be the construction of homes with lower GHG emissions. In addition, the program is expected to provide additional, long-lasting benefits to the housing sector in Mexico, as it will: (i) constitute an integral part of the NAMA Program, joining targeted efforts with relevant actors in the housing sector and contributing to the mainstreaming of sustainability criteria in the housing industry; (ii) encourage municipal and state governments to incorporate sustainable housing tools into their housing and urban policies; (iii) provide the grounds for intermediaries to offer financial products designed in accordance with the particularities of sustainable homes; (iv) reach an increasing number of home buyers who will be made aware of the long-term benefits of sustainable homes; and (v) provide access to housing industry stakeholders to knowledge about improved architectural and building approaches and techniques.
- 2.9 This TC aims to support the implementation of the ECOCASA Program through: (i) the improvement of simulation tools on energy and water use, building materials, and location and transportation systems; (ii) the development and implementation of a Monitoring and Evaluation system; (iii) a Knowledge Management and Training component; and (iv) a Project Management component.

III. Objectives and Justification of the TC

- 3.1 The TC components envisages: (i) the development and implementation, building on the existing efforts, of simulation, rating, inspection, and monitoring procedures addressing the thermal performance, water usage, accessibility (location) and building material lifecycle aspects of new homes; (ii) the strengthening of capacities for the housing industry and housing finance institutions to promote the financing and construction of low-carbon housing through technical studies and training opportunities; (iii) the dissemination of knowledge on low-carbon housing among the public, industry, universities, and government institutions at the national and local level; (iv) the generation of inputs to support the development of public policies for low-carbon housing; and (v) the development and implementation of a Monitoring and Evaluation (M&E) system for the program.

IV. Description of Activities

- 4.1 The activities to be developed in the framework of this TC operation are:

A. Component 1. Improvement of the simulation capabilities

- 4.2 The TC will contribute to the enhancement of the simulation data and capabilities regarding the performance of sustainable buildings in Mexico through the improvement of the DEEVI System. The activities will enhance the DEEVI system by: (i) improving its thermal performance module including new climate and building material data; (ii) including a model that represents the ownership and use of air conditioning and heating devices; and (iii) including the carbon reductions related to the lifecycle of building materials. Case studies on the carbon footprint of housing developments in urban areas related to transport will also be conducted in the framework of the improvement of the simulation efforts.

B. Component 2. Design and implementation of the monitoring and evaluation tool

- 4.3 This TC will finance the design and implementation of a Monitoring and Evaluation System in close coordination with the initiatives being undertaken by CONAVI in the framework of the “Inter-institutional Working Group for Sustainable Housing”. The TC will finance the installation of monitoring devices in selected pilots and control groups to reliably obtain data regarding: (i) water and electricity consumption in 2,400 houses, annually, over a period of 4 years (Basic NAMA Monitoring); and (ii) temperature and energy performance and other selected variables in 200 houses one year after the program starts, to serve as a calibration and reassessment method, together with a household survey (in depth, short term monitoring). This TC does not include a budget allocation for the mid-term and final evaluation activities. Funds for the evaluation component are now being requested to the CTF (USD400,000), for which a TC operation will be developed in early 2015 upon completion of the construction and occupation of the first ECOCASA and Passive Houses homes. The evaluation will include post-2015 monitoring and a final impact evaluation 5 years after the implementation of the program, to assess its impacts regarding CO₂ emissions, utilities savings and the level of comfort of the beneficiaries.
- 4.4 The survey will be designed in order to obtain gender-disaggregated data on: (i) socio-economic conditions of the household; (ii) electricity and water consumption habits; (iii) characterization of the housing devices (appliances, shades); (iv) usage of the house; (v) perceptions about comfort; and (vi) decision-making related to home buying.
- 4.5 The technical cooperation operation ME-T1202, also linked to this program, includes an allocation to hire a Technical Coordinator to support SHF in the delivery of reports and the evaluation of the program’s performance.

C. Component 3. Knowledge management and training

- 4.6 This component includes several activities for capacity building within SHF and among beneficiaries and developers, as well as to raise awareness among the general public regarding the benefits of energy and resource efficient homes. Some of those activities are:
- a. **Training courses** by international experts to SHF and housing developers, focusing on South-South Exchange, to foster knowledge interchange and the sharing of best practices in sustainable housing.
 - b. **Study on the assessment of the economic benefits of low-carbon housing**, and on the design of enabling policy, regulatory, and financial instruments, including gender issues.
 - c. **Municipality/state level policy development:** Resources will be channeled to provide Housing Institutes and Municipalities with training regarding potential modifications in building codes and municipal and state level regulations to enforce sustainability principles and implement energy efficiency policies at the local level.
 - d. **Communication strategy**, which will focus on differentiated target groups and highlight different aspects of the program. SHF will publish educational material aimed at homebuyers regarding the use and maintenance of environmental technologies, including new ones in addition to those provided in the INFONAVIT package, such as cross ventilation. As part of this effort, a new manual will be distributed, which will include general information about the average energy savings associated with each of the environmental technologies. It will be presented during the first half of 2013, which coincides with the event that will launch the program. Both KfW and SHF will take part in the launching event to introduce the program to relevant housing institutions and developers that were not able to participate in its first round. Media material will be prepared as part of the dissemination efforts.

D. Component 4. Program management

- 4.7 The present TC will finance a technical team to support SHF with activities related to the management of the program, the coordination between IDB and SHF, the technical review of the TC's products and actions and the supervision of monitoring efforts. The structure of the team is yet to be defined, as it will depend on the needs of the program as it is implemented, but it will be tentatively be composed of: (i) one Senior Specialist in Energy Efficiency, Sustainable Housing and Simulation and (ii) a Junior Manager to lead the implementation of the program on a daily basis.

1. Alignment with the work of the IDB in the sector in Mexico

- 4.8 The SHF Low Carbon Housing Program is aligned with the IDB's Country Strategy with Mexico in two intervention areas:

a) Housing, by increasing the availability of construction finance

- 4.9 In 2001 the loan 1298/OC-ME for USD505 million was approved to promote the expansion of the housing sector activities through the Fondo de Operación y Financiamiento Bancario a la Vivienda (FOVI), and in 2003 this loan was transferred to the Federal Mortgage Society (SHF) to continue the execution until its conclusion in December 2010. This program's goal was to facilitate access of lower income and informal sectors to the mortgage market. It also included a technical assistance component to support the modernization of public records for properties in five states, and validated nearly 4 million registry entries.

- 4.10 At the end of 2008 the IDB approved a program to support the Housing Sector in Mexico:

- a. A USD2,500 million Conditional Credit Line for Investment Operations (CCLIP) to SHF to Support Business Development in Mexico.³
- b. INFONAVIT's Mezzanine Finance Facility,⁴ a Support Line for the purchase of low-income mortgage-backed bonds (RMBS.)
- c. A series of Technical Cooperation Activities, including the evaluation and monitoring of integrated sustainable urban development (DUIS for its Spanish acronym.)

b) Climate change, by strengthening federal and sub-national institutional capacities to implement climate change mitigation programs and reducing GHG emissions.

- 4.11 The GoM has established in its Special Climate Change Program (PECC) a reduction target of 50.6 MtCO₂e per year in 2012 and a long-term vision for the "decarbonization" of the economy, with an aspiration for 2050 of a 50% reduction in carbon equivalent emissions based on the levels of year 2000. The housing sector has been recognized as a fundamental element in the energy structure in the country, consuming more than a quarter of the total electricity demand and a high percentage of liquefied petroleum gas, while it continually expands its natural gas demand. The PECC establishes a target for GHG mitigation of 2.1 MtCO₂e for the 2008-2012 period, which is expected to be accomplished with the implementation of housing projects and efficient and green mortgages. The Sustainable Housing Program is not only considered in the National Housing Program 2008-2012 (PNV), but also in the National Program for Sustainable Energy 2009-2012 (PRONASE). There have also been federal policy programs like the Sustainable Housing Development Plan and the Transversal Sustainable Housing Program, the latter one implemented by the SEMARNAT, SENER and CONAVI. Mexico has already taken the first steps towards greening its residential sector through programs such as "Hipoteca Verde" (Green Mortgage) and "Ésta es

³ ME-X1010 CCLIP.

⁴ ME-L1062.

tu casa” (This is your house). The former offers supplemental loans that cover the incremental costs of energy-efficient appliances in new homes.⁵ Furthermore, Mexico has engaged international support through the establishment of programmatic Clean Development Mechanism (CDM) activities (Programs of Action) to channel carbon finance towards the sustainable housing sector.⁶

V. Indicative Results Matrix

Component/Product	Baseline		Target	Completion Date
	Value	Year		
Comp. 1: Improvement of the Simulation capabilities				
Improved climate data: granularity and climate change forecast	0	2011	1 technical report	Dec 2014
Thermal characteristics of additional building materials	0		1 technical report	Dec 2014
Air conditioning/heating decision model	0		1 technical report	Dec 2015
Transport Simulation: Case studies of selected cities on the carbon footprint of housing developments	0		1 technical report	Dec 2014
Lifecycle analysis of building materials	0		1 technical report	Dec 2014
Comp. 2: Design and Implementation of the M&E Tool:	0	2011		
M&E System designed and in place	0	2011	1 M&E System	Dec 14
Comp. 3: Knowledge Management Program	0	2012	1 manual prepared	July-Aug2012
Training courses by international experts to SHF and housing developers, focusing on South			8 training courses delivered	June 2013-June 2014
Study on the assessment of the economic benefits of low-carbon housing, and on the design of enabling policy, regulatory, and financial instruments			1 technical report	Dec 2015
Municipality/State Level Policy Development	0	2011	10 working sessions held	Dec 2013-Dec 2016
Communication Strategy, including events, manuals, social media, websites	0	2011	Communications Strategy implemented	Jan2013-Dec 2016

VI. Indicative Budget

Activity	Tentative Budget	1Q 2013	2Q 2013	3Q 2013	4Q 2013	2014	2015	2016
Improved climate data: more granularity and climate change forecasts	100,000			x	x	x		
Thermal characteristics of additional building materials	40,000			x	x	x		
Air conditioning/heating decision model	10,000						x	
Lifecycle emissions of additional building materials	15,000			x	x	x		
Transport case studies	60,000		x	x	x			
Basic NAMA Monitoring	260,000	x	x	x	x	x	x	
In depth, short-term Monitoring	200,000				x			
Training courses by international experts. south-south exchange	200,000		x		x		x	
Study on the assessment of benefits of low-carbon housing, and the design of enabling policy, and financial instruments	110,000		x	x	x	x	x	
Municipality/state level policies (10 regions; event+knowledge)	125,000					x	x	x
Knowledge management strategy; website; final report; events	190,000	x	x	x	x	x		
Program management	215,000	x	x	x	x	x	x	
Contingencies (5%)	75,000							
Total	1,600,000							

⁵ CONAVI and INFONAVIT jointly defined the green criteria as a set of basic eco-technologies: (i) Fluorescent energy efficient lighting; (ii) solar water heater; (iii) high-efficiency gas heater (hybrid of solar and gas); (iv) thermal insulation; (v) water saving toilets, shower-heads and faucets; (vi) organic and inorganic waste containers, and (vii) water and electricity meters.

⁶ Source: NAMA document.

VII. Executing Agency and Execution Structure

A. Executing agency

- 7.1 The Climate Change and Sustainability Division (INE/CCS) will be in charge of the execution of the operation, in coordination with the Federal Mortgage Society (SHF).

B. Structure for implementation

- 7.2 At the request of SHF, the Bank will select, hire and pay the consultants for program implementation. SHF and IDB will coordinate the supervision of consultant's contracts.

C. Procurement

- 7.3 At the request of SHF, the Bank will select, hire and pay the required consulting services to implement the program according to the Procurement Plan included in Annex III. All contracts and procurement of goods carried out in accordance with the Policies for the Procurement of Goods and Works Financed by the IDB (GN-2349-9) and Policies for the Selection and Employment of Consultants Financed by the IDB (GN-2350-9) and with the provisions of Technical Cooperation Agreement, the Procurement Plan and the indicative budget.

VIII. Major issues

- 8.1 The TC does not entail any major implementation risks. The Bank has identified a potential risk regarding the possibility of a delay in the implementation that could harm the project due to the government change in December 2012. The Bank and SHF are working extensively to ensure that the project is in the execution phase at the time the next administration takes office.
- 8.2 As the project contents are highly technical, there is a risk of not obtaining good-quality results. In order to mitigate these risks, two peer reviewers will be assigned to each of the products involving technical studies. The objective of the studies and the design of the M&E system is to facilitate the effective preparation and design of the program to ensure a seamless implementation.
- 8.3 There are no social or environmental impacts likely to arise from the activities financed by the present TC. On the contrary, the products are expected to generate the basis for reduced GHG emissions in low-income housing.

IX. Exceptions to Bank Policy

- 9.1 No exceptions to the Bank's policies have been identified.

X. Environmental and Social Strategy

- 10.1 The proposed TC does not include any activity that has been identified to generate any negative environmental or social impacts. Following the Safeguard Policy Filter Report and the Safeguard Screening Report, this TC has been tentatively classified under category "C".

XI. Annexes:

- Annex I: [Letter of Request from the Government of Mexico](#)
- Annex II: [Terms of Reference](#)
- Annex III: [Procurement Plan](#)