

MEXICO

MANAGEMENT SUPPORT TO THE SHF-KFW-IDB ‘ECOCASA’ PROGRAM IN MEXICO

TERMS OF REFERENCE

I. BACKGROUND

- 1.1 In order to support the efforts of the Sociedad Hipotecaria Federal (SHF, for its Spanish Acronym) to promote sustainable housing construction, the Bank, as an agency for channeling resources from the Climate Investment Funds (CIF), provides for the mobilization of an additional loan in the amount of US\$50 million from the Clean Technology Fund (CTF). These additional resources would be channeled, together with USD\$50 million from the Bank's ordinary capital for this operation, which is aimed at the implementation of energy efficiency measures in housing developments. This initiative makes a particular emphasis on those actions that would increase the effectiveness of SHF's efforts in terms of reducing CO_{2eq} emissions, and contributing to the development of a sustainable housing market in Mexico.
- 1.2 The proposed ECOCASA Program seeks to make the already existing model for green housing in Mexico more energy-efficient. The existing CONAVI/INFONAVIT criteria for “green” subsidies includes only eco-technologies included in standard homes. It does not include any guidelines for architectural design, building processes and materials, or urban design aimed at increasing the homes passive heating or cooling attributes. Furthermore, the criteria is defined in terms of specific homes features, not on their performance. The program will incorporate performance-based criteria, such as a given energy consumption reduction vis-à-vis a baseline, so that developers will be able to compete to find the most cost-effective ways to achieve energy savings.
- 1.3 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 projects that meet GHG reduction goals established by the program as well as mortgages that follow CONAVI's sustainability criteria.
- 1.4 The program is fully aligned with the objectives of the first Nationally Appropriated Mitigation Actions (NAMA) Program in the housing sector, recently presented by the Government of Mexico (GoM). The NAMA follows the “whole house approach” and bases the eligibility criteria in the performance of the homes, taking into account not only eco-technologies, but design and materials as well.
- 1.5 In order to support SHF in the management of the ECOCASA Program and the associated technical cooperation activities, this consultancy will finance a technical team that will be based in SHF and serve as link between SHF and the IDB in the implementation of the program and the evaluation of the products required as part of the TC activities. This Terms of Reference (TORs) are part of a Technical Cooperation (ME-T1201) which uses resources from the CTF.

II. OBJECTIVE OF THE CONSULTANCY

- 2.1 The objective of this consultancy is to build a technical team to support SHF in the seamless implementation of the program, as well as coordinate with IDB regarding the execution of the TC activities.

III. CHARACTERISTICS OF THE CONSULTANT TEAM

- 3.1 The team will consist tentatively of a Senior Expert and a Junior Expert.
- 3.2 Type of consultancy: office-based and travel.
- 3.3 Place of work: Mexico City.
- 3.4 Qualifications:
- a. Demonstrated experience of at least 5 years with monitoring and evaluation programs design and implementation.
 - b. Demonstrated knowledge on energy efficiency in buildings.
 - c. Demonstrated working experience in Mexico and excellent knowledge of the housing institutions and stakeholders in the public and private housing sector.
 - d. Excellent drafting ability and communication skills, both written and verbal; proven ability to communicate complex concepts and prepare reports that are clear, concise and meaningful.
 - e. Ability to produce high-quality outputs in a timely manner while understanding and anticipating evolving client and project's needs.
 - f. University degree graduate, preferably in the engineering, environmental, urban, climate change, public policy fields, or in another relevant field.
 - g. IT literacy.
 - h. Fluency in Spanish and English.

IV. ACTIVITIES

- 4.1 The consultant team will:
- a. Compile and review information for the program (project proposals, financial disbursements), from the housing developers and SHF, and make it available to IDB, meeting the reporting requirements established in the monitoring and evaluation (M&E) plan developed for the program. The team will be in close coordination with the General Directorate for Development and Innovation of the Housing Market, Project Coordination Unit.
 - b. Prepare the necessary information for the IDB's project team (reports, aide memoires during the preparation and supervision missions and terms of reference for consultancies to be developed in the framework of the Technical Assistance Package).
 - c. Maintain communication on a weekly basis with the IDB's project team.

- d. Maintain regular communication with CONAVI, INFONAVIT and the developers regarding the implementation of the program and the existing initiatives related to sustainable housing and the housing NAMA.
- e. Support SHF and the IDB in the coordination with the consultants in charge of delivering the products related to the TC's activities, in particular, the simulation studies, the technical reports and the coordination of the Communication Strategy. Further details will be discussed upon the start of the program.

V. COORDINATION

- 5.1 Mr. Claudio Alatorre, Climate Change Senior Specialist (INE/CCS), Team Leader and Ms. Gisela Campillo, Climate Change Consultant (INE/CCS), will be responsible for the supervision of the consultant team.

MEXICO

TECHNICAL STUDY - MODEL FOR DETERMINING THE REDUCTION OF TRANSPORT-RELATED EMISSIONS AS A FUNCTION OF THE HOUSE LOCATION

TERMS OF REFERENCE

I. BACKGROUND

- 1.1 As part of the eligibility requirements of the program, minimum GHG reductions, compared to a defined baseline case will be required. The current baseline does not take into account the location of the developments and the indirect emissions that arise from the use of transport to the developments. Current changes in the Rules of Operation 2012 of CONAVI regarding the grant of the subsidy include this element for the very first time, where three areas are defined based on statistical data and urban development issues. CONAVI has therefore formally acknowledged the relevance of the location in the carbon footprint of housing developments, and contributing to a shift towards a more sustainable urban pattern and less sprawl in Mexican cities. Nevertheless, the direct relationship between location and GHG emissions due to transport has not been adequately established in Mexico.
- 1.2 In order to fill this gap in knowledge, the IDB is commissioning (as part of a separate technical cooperation activity ME-T1202) a study to determine the reduction of transport-related emissions of the inhabitants of a house, as a function of the location of the house, including: (i) a model that provides the transport carbon footprint of a house according to its location based on its Geo-Statistic Basic Area (AGEB) scale, and (ii) the carbon footprint of houses in a baseline scenario, namely considering where houses are being built in the absence of the program at a city scale. Such model will be based only on statistical data, and not on the concrete geographical features of a city, particularly on its street layout and the characteristics of its transportation systems.
- 1.3 In order to assess the validity of the model, its results must be compared with specific case studies. Suggestions to improve the model may arise during its execution.

II. OBJECTIVE

- 2.1 The objective of this consultancy is to carry out transportation studies in two or three cities and assess the suitability of the statistical-data-based model for determining the reduction of transport-related emissions of a particular home's inhabitants, as a function of the location of the house.

III. CHARACTERISTICS OF THE CONSULTANT'S TEAM

- 3.1 Type of consultancy: office-based with field trips
- 3.2 Type of contract: Daily contract
- 3.3 Estimated number of working days: 200

3.5 Qualifications of the consultant's team:

- a. Team leader with graduate studies in a relevant domain (e.g. engineering, economics, urban development) and at least 10 years of experience in transport, urban development, or environmental economics.
- b. Geographic modeling expert with graduate studies in a relevant domain (e.g. geography) and at least 5 years of experience in geographical information systems.
- c. Urban transport expert with graduate studies in a relevant domain (e.g. engineering, urban development) and at least 5 years of experience in the analysis of urban transportation systems.
- d. In-depth knowledge of the Mexican urban transportation context.
- e. The team should have individuals with demonstrated experience in preparing project documents and technical papers on urban development, specifically in transportation issues; excellent drafting ability and communication skills, both written and verbal; proven ability to communicate complex concepts and prepare reports that are clear, concise and meaningful; and ability to produce high-quality outputs in a timely manner while understanding and anticipating evolving client and project's needs.
- f. Fluency in Spanish and English.

IV. ACTIVITIES

4.1 The consultant team will:

- a. Review the methodology developed under ME-T1202.
- b. Prepare studies in 2 or 3 cities in Mexico to assess the transport needs in determined areas of the city.
- c. Make a general zoning and urban grid study in the selected cities.
- d. Compare the outcomes with the results provided by the statistical-data-based methodology.
- e. Make recommendations to improve such methodology.
- f. Produce a report with the findings.

V. PRODUCTS

- 5.1 A final report incorporating the case studies, including background information, discussion, and results.
- 5.2 Toward 2030, as projected by the Social Development Ministry (SEDESOL), demand for residential construction in Mexico will intensify particularly in cities due to a significant growth in urban population. The National Population Council (CONAPO) estimates that during the 2005-2030 period the housing stock in Mexico will increase by 56%. In addition, electricity demand in Mexico is expected to grow 4.8% per year, with the residential sector currently accounting for about 15% of the total energy use in the country, and for 25.8% of the total electricity use. Poorly built buildings are one major contributor to a significant

increase in energy use in the commercial and residential sectors. Lighting, air-conditioning and home appliances are considered to be major factors that will have a significant impact on the residential electricity demand growth in Mexico. It can be concluded that aggressive energy efficiency measures in the building sector will be a crucial element to enable the country to reach its goal of GHG emission reductions of 50% by 2050. In order to support the efforts of SHF to promote sustainable housing construction, the Bank, as an agency for channeling resources from the Climate Investment Funds (CIF), provides for the mobilization of an additional loan in the amount of US\$50 million from the Clean Technology Fund (CTF). These additional resources would be channeled, together with USD\$50 million from the Bank's ordinary capital, for the implementation of energy efficiency measures in housing developments, with emphasis on those that increase the effectiveness of SHF actions in terms of reducing CO_{2eq} emissions, and help develop a sustainable housing market in Mexico.

VI. COORDINATION

- 6.1 Mr. Claudio Alatorre, Climate Change Senior Specialist (INE/CCS), Team Leader and Ms. Gisela Campillo, Climate Change Consultant (INE/CCS), will be responsible for the supervision of the consultant team.

MEXICO

IMPROVEMENT OF THE SIMULATION COMPONENT OF THE SHF-KFW-IDB ‘ECOCASA’ PROGRAM IN MEXICO

TERMS OF REFERENCE

I. BACKGROUND

- 1.1 One of the key components of the program is a simulation system that enables making an ex-ante assessment of the amount of emission reductions that a housing project will produce. The results of the simulation will be used: (i) to determine the eligibility of projects to access the concessional bridge loans offered by the program; and (ii) to provide a label to the houses once they are finished, in order to inform the home-buyers.
- 1.2 The Program will build on the DEEVI¹ thermal performance simulation system currently being developed by CONAVI and INFONAVIT with the same double purpose (labeling, and eligibility to finance in the context of the NAMA²). The DEEVI is currently being developed by the Passiv Haus 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 by a specialist 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 at an affordable cost.
- 1.3 The DEEVI model uses existing climate data (based on historical measurements), and available data on the thermal performance or a set of building materials that are commonly used in Mexico. When calculating energy use, the model assumes that the occupants of a house will have air conditioning and heating devices and will use them to keep their house at a predefined comfort level.
- 1.4 A parallel software called SAAVI is being developed by INFONAVIT to assess the savings characteristics of water-using devices in a house.
- 1.5 In its initial stage, the ECOCASA Program will use the DEEVI to determine eligibility. However, the program intends to build the capacity so that other factors that also contribute to the reduction of GHG can be accounted for at a later stage as well. These factors, as suggested by SHF and CONAVI are: (i) the use of efficient water-use devices; (ii) the use of building materials that have a smaller carbon footprint over their lifecycle; and (iii) the location of the homes, which creates an impact due to the use of energy for transportation.
- 1.6 As part of technical cooperation ME-T1202, preliminary studies will be carried out to: (i) determine the carbon emission factor related to the use of water in Mexico’s residential sector; and (ii) develop a methodology to determine the carbon footprint related to the transportation of a particular home’s inhabitants, as a function of the house location.

¹ Energy efficient Design for Buildings, DEEVI for its Spanish Acronym

² Nationally Appropriate Mitigation Action. It refers to a set of policies and actions that countries undertake as part of a commitment to reduce greenhouse gas emissions.

II. OBJECTIVE OF THE CONSULTANCY

- 2.1 This TC is aimed at improving 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.

III. CHARACTERISTICS OF THE CONSULTANT TEAM

- 3.1 The team should include at least four individuals with relevant graduate degrees and at least 5 years of experience in the following domains:
- a. Climate modeling
 - b. Thermal characteristics of building materials
 - c. Lifecycle assessment
 - d. Advanced software development
 - e. Advanced statistical data management
- 3.2 In addition, the team should have access to an advanced material research laboratory.

IV. ACTIVITIES

- 4.1 The consultant team will:
- a. Review existing climate forecasts models that take into account global climate change, and improve the climate data used by the DEEVI system, by incorporating expected climate data instead of historical data. Such data should have a city-level granularity.
 - b. Review the available data on the thermal and air-tightness characteristics of building materials/accessories in Mexico. Identify relevant materials/accessories for which insufficient data are available. Make research, including laboratory tests, on the thermal and air tightness characteristics of these materials/accessories. Improve the building material/accessory database of the DEEVI system, by including the new data.
 - c. Review the available data on the lifecycle emissions of building materials/accessories in Mexico. Identify relevant materials/accessories for which insufficient data are available. Make research on the lifecycle emissions of these materials/accessories, according to recognized lifecycle methodologies. Develop a simplified system to assess the material lifecycle emissions of a housing project, by complementing the DEEVI software.
 - d. For the purpose of the above two activities, relevant materials/accessories are those that are commonly used in Mexico or that could be used in low-carbon housing in Mexico, due to their favorable thermal performance, to their lower lifecycle GHG emissions, or both.
 - e. Review the available data on the use of air conditioning and heating in Mexico, including statistical data and the monitoring results of the ECOCASA program. Develop a heuristic model to determine (i) what indoor climate conditions lead home-occupants (owners or tenants) to buy an air conditioning or heating device (and what kind of

device); and (ii) what conditions lead the occupants to use such devices (and which devices). The model should be a function of contextual variables, including at least (i) family income; and (ii) electricity or fuel costs. Incorporate the results into the DEEVI software.

V. PRODUCTS

- a. Revision of the DEEVI software to incorporate climate forecast data.
- b. Revision of the DEEVI software to incorporate data on the thermal and air tightness characteristics of additional building materials/accessories
- c. Revision of the DEEVI software to include data on the lifecycle GHG emissions of building materials/accessories
- d. Revision of the DEEVI software to forecast air conditioning and heating use, based on a heuristic model.

VI. COORDINATION

- 6.1 Mr. Claudio Alatorre, Climate Change Senior Specialist (INE/CCS), Team Leader and Ms. Gisela Campillo, Climate Change Consultant (INE/CCS), will be responsible for the supervision of the consultant team.

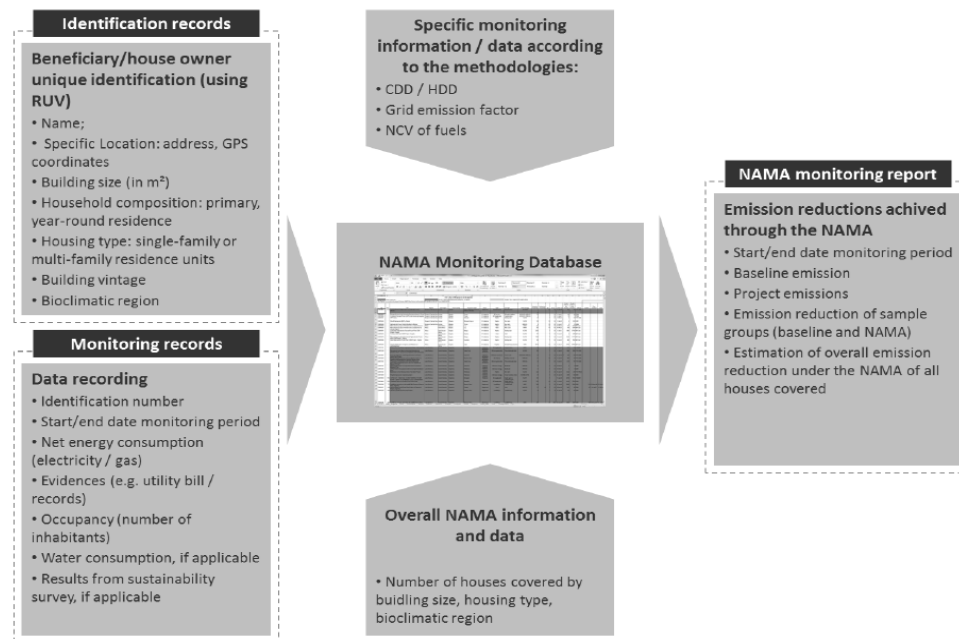
MEXICO
MONITORING AND EVALUATION FOR THE SHF-KFW-IDB ‘ECOCASA’
PROGRAM IN MEXICO

TERMS OF REFERENCE

I. BACKGROUND

- 1.1 In order to support the efforts of the Sociedad Hipotecaria Federal (SHF, for its Spanish Acronym) to promote sustainable housing construction, the Bank, as an agency for channeling resources from the Climate Investment Funds (CIF) provides for the mobilization of an additional loan in the amount of US\$50 million from the Clean Technology Fund (CTF). These additional resources would be channeled, together with USD\$50 million from the Bank's ordinary capital, for the implementation of energy efficiency measures in housing developments, with emphasis on those that increase the effectiveness of SHF actions in terms of reducing CO_{2eq} emissions, and help develop a sustainable housing market in Mexico.
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- 1.3 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 which meet GHG reduction goals established by the program, as well as mortgages that follow CONAVI’s sustainability criteria.
- 1.4 The program is fully aligned with the objectives of the first Nationally Appropriate Mitigation Actions (NAMA) Program in the housing sector, recently presented by the GoM. The NAMA follows the “whole house approach” and bases the eligibility criteria in the performance of the homes, taking into account not only eco-technologies, but design and materials as well.
- 1.5 The Mexican Government is engaging several stakeholders in an effort to expand the sustainable housing market, and monitor and evaluate its performance in Mexico. The NAMA includes a monitoring, reporting and verification system which is currently being developed.

Figure 1: NAMA's MRV outline (in preparation)



- 1.6 In the framework of the NAMA, the Passive House Institute (PHI) is currently developing an adaptation to the Mexican context of their PHPP tool (Passiv Haus Planning Package) to support INFONAVIT's initiative to launch a "Green Housing Rating System" (SiViVe, for its Spanish Acronym), which would be developed in close coordination with relevant housing agencies in Mexico. Other institutions such as the German Technical Cooperation Agency (GIZ), the German Ministry of Cooperation BMZ, the British Embassy, the Government of Canada, as well as other consultancy firms will contribute to the project. SiViVe will provide a system to "label" housing projects according to their level of environmental performance. Both the SiViVe and the NAMA will use a software tool called DEEVI (Energy Efficient Design for Housing), which is estimated to be ready by July 2012.
- 1.7 This system evaluates and ranks, according to a preset level, the energy performance and environmental impact of housing projects, taking into account three components:
 - a. Energy Demand
 - b. Power Consumption
 - c. Water consumption
- 1.8 For the evaluation it considers 3 parameters:
 - a. Architecture of the housing
 - b. Construction systems and materials
 - c. Eco-technologies incorporated
- 1.9 Based on the existing efforts of the Mexican Government regarding the Monitoring and Evaluation (M&E) of Sustainable Housing, this consultancy will design and implement a

M&E system for the ECOCASA Program. The present terms of reference are part of a technical cooperation (ME-T1201) which utilizes resources from the CTF.

II. OBJECTIVE OF THE CONSULTANCY

- 2.1 The objective of this consultancy is to design and implement a Monitoring and Evaluation system. Resources will be provided for the design and implementation of the monitoring phase by the ME-T1201. A future phase of evaluation upon completion of the program's implementation (tentatively 7 years) will be financed with resources from another TC in preparation. Table 1 shows the indicators to be measured.

Table 1: ECOCASA Program Indicators

Expected outcomes	Indicator	Formula / Description	Frequency of Measurement ³	Source of Verification
Emissions of CO ₂ of the homes in the program ⁴	Kg CO₂/m².a	=kg CO ₂ /m ² .a	1 year after delivery and occupation of the first homes, then annually	M&E Plan Information of SHF
Electricity bills of households participating in the program	USD/year	= \sum (kWh consumed*price of kWh)	1 year after the delivery and occupation of the first homes, then annually	M&E Plan ⁵ , Data from Utilities Companies Information of SHF
Consumption of electricity of the homes financed or built by the program	kWh/m².a	= kWh/m ² .a	1 year after the delivery and occupation of the first houses, then annually	M&E Plan ⁶ Information of SHF
Consumption of water of the houses financed or built by the program	l/house	= l/person.year	1 year after the delivery and occupation of the first houses, then annually	M&E Plan Information of SHF
Level of comfort the beneficiaries of the low-carbon houses	Qualitative and quantitative	Improvement in the level of comfort through the measurement of temperature in the house and results of the surveys	On the 1 st and 5th year after the delivery and occupation of the houses of the Program	Based on measurements of temperature of the inside and outside walls and through surveys (M&E Program)

- 2.2 Other indicators will be discussed with the IDB to be measured in the Program.

- 2.3 The M&E system will take into account the current initiatives being undertaken in Mexico in the framework of the SiViVe and the NAMA programs, and will build on existing efforts and methodologies.

³ The measurements will take place starting the second year of operation of the Program when the first ECOCASAS have been built.

⁴ The M&E will monitor the reductions of ECOCASAS, Green Mortgages and Passive Houses, but only the monitoring and evaluation of the ECOCASAS and Passive Houses will be object of the resources of the TC, as the Green Mortgages are already well developed and data exist on their performance.

⁵ The methodology will be determined with the resources of the CTF (CT ME-L1201). A consultancy firm will perform the data collection and evaluation with support from SHF and in coordination with the IDB.

⁶ The methodology will be determined with the resources of the CTF (CT ME-L1201). A consultancy firm will perform the data collection and evaluation with support from SHF and in coordination with the IDB.

- 2.4 The TC ME-T1201 will finance the installation of monitoring devices in selected pilots and control groups to reliably gather data regarding: (i) water, natural gas and electricity consumption in 1500-2000 homes, annually, over a period of 4 years (basic monitoring NAMA); and (ii) temperature and energy performance and other selected variables in 200 houses, a year after the program starts, to serve as calibration and reassessment methods for the program, together with a household survey (in depth, short term monitoring).
- 2.5 The proposed activities include, among others:
- a. Register the electricity, gas and water consumption.
 - b. Register indoor and outdoor temperatures of selected households over a period of six months to a year.
 - c. Take surveys and questionnaires describing energy and water consumption habits.
 - d. Compare monitoring results with the demand and consumption patterns provided by simulation tools.
- 2.6 The installed devices will be:
- a. Electricity consumption meter.
 - b. Water meter.
 - c. Gas meter.
 - d. Humidity and temperature sensors (inside and outside).
 - e. Wall sensors to measure the surface temperature.
- 2.7 The survey will be designed in order to obtain data on: (i) socio-economic conditions of the housing; (ii) habits of electricity, water and gas consumption; (iii) characterization of housing devices (appliances, shades); and (iv) household expenditures on electricity, water and gas. Photographic evidence of the homes conditions will be taken both at the beginning and the end of the program (year 1 and year 3 during this contract).

III. CHARACTERISTICS OF THE CONSULTANCY

- 3.1 Type of consultancy: office-based and travel
- 3.2 Place of work: Desk-based and field work
- 3.3 Qualifications:
- a. Demonstrated experience of at least 5 years with Monitoring and Evaluation programs design and implementation.
 - b. Demonstrated knowledge on energy efficiency in buildings.
 - c. Demonstrated working experience in Mexico and excellent knowledge of housing institutions and stakeholders in the public and private housing sector in the country.
 - d. Excellent drafting ability and communication skills, both written and verbal; proven ability to communicate complex concepts and prepare reports that are clear, concise and meaningful.

- e. Ability to produce high-quality outputs in a timely manner while understanding and anticipating evolving client and project's needs.
- f. University degree graduate, preferably in the engineering, environmental, urban, climate change, public policy fields, or in another relevant field.
- g. IT literacy.
- h. Fluency in Spanish and English.

IV. ACTIVITIES

4.1 The consultant team will:

- a. Develop a Monitoring and Evaluation methodology to measure the selected indicators on the table.
- b. Install the required measuring devices to ensure the quality of the data to be monitored.
- c. Coordinate with both SHF and the developers regarding the control groups and sample pilots to be monitored.
- d. Develop a survey methodology to determine qualitative information from the beneficiaries.
- e. Provide a monitoring report each year after the third year of the program.

V. PRODUCTS

- 5.1 A draft M&E methodology report.
- 5.2 A schedule detailing monitoring activities, products, reports and sources of information.
- 5.3 A technical proposal to implement the M&E System.
- 5.4 Technical personnel to perform the Monitoring of the houses.
- 5.5 A final M&E methodology report, incorporating IDB's comments.
- 5.6 The consultant will prepare documents in Spanish. All documents must be delivered to the IDB in electronic form and follow the IDB's requirements and template forms.
- 5.7 The Bank reserves the right to publish final reports, under its own name on its website or printed, with or without changes to the content of the document presented by the consultant.

VI. COORDINATION

- 6.1 Mr. Claudio Alatorre, Climate Change Senior Specialist (INE/CCS), Team Leader and Ms. Gisela Campillo, Climate Change Consultant (INE/CCS), will be responsible for the supervision of the consultant team.

MEXICO

ASSESSMENT OF ECONOMIC BENEFITS AND DESIGN OF POLICY AND FINANCIAL INSTRUMENTS TERMS OF REFERENCE

I. BACKGROUND

- 1.1 Even though sustainable, low-carbon houses provide evident economic benefits, their scale-up faces a number of barriers, as these benefits do not accrue to those in charge of making the decisions about their characteristics –namely the developers–, but to other stakeholders, and as no policy or financial mechanisms exist to enable capturing these benefits and providing the right kind of incentives to the decision-makers.
- 1.2 The main stakeholders that benefit from low-carbon housing are: (i) the occupants, who save in energy and water expenditures; (ii) the utilities, as they reduce the amount of resources used; (iii) the federal, state or municipal governments, that can reduce allocations for subsidies and infrastructure; and (iv) the international community, which benefits from reduced GHG emissions.
- 1.3 The savings that home-buyers will be able to make during the time they occupy a home usually cannot be translated into an ability to pay more for a low-carbon house, as no financial mechanisms are in place to enable them to capture the benefits and finance the additional cost. Mortgage regulations and financial institutions establish income-to-payment-ratio ceilings that prevent capturing the benefits of long-term savings. The energy efficiency trust-fund (FIDE) may provide some additional finance, but it also faces limitations in terms of amounts and financial terms, and there are no other third-party mechanisms in place for this purpose.
- 1.4 With regards to the savings that will accrue to utilities or governments due to the scaling-up of low-carbon housing, some policy and regulatory mechanisms can be put in place. These include lowering the technical requirements for the utility distribution networks that urban developers need to install, or setting policy instruments to internalize the fiscal benefits.
- 1.5 Finally, as far as the global climate change benefits are concerned, a supported NAMA framework was developed by the Government of Mexico in order to capture these benefits.

II. OBJECTIVE OF THE CONSULTANCY

- 2.1 The consultant team will carry out in-depth studies to assess the economic benefits of low-carbon housing to the different economic actors, and to propose possible policy and financial instruments to internalize such benefits.

III. CONSULTANT TEAM PROFILE

- 3.1 The consultant team should include at least the following individuals:
 - a. An economist team leader with at least 10 years of experience in economic analysis and policy design.
 - b. A financial expert with at least 10 years of experience in the design of financial mechanisms.

- c. A housing expert with graduate studies in a relevant domain (Engineering, Architecture, or Urban Design), and at least 5 years of experience in low-carbon, sustainable housing.
- d. An electricity systems expert with graduate studies in a relevant domain (Electrical Engineering), and at least 5 years of experience in electricity distribution systems.
- e. A water supply expert with graduate studies in a relevant domain (Civil or Mechanical Engineering), and at least 5 years of experience in water distribution systems.

IV. ACTIVITIES

- 4.1 Assess the economic benefits of low-carbon housing that accrue to the different economic actors, including the homeowners, the occupants (when different), the utilities, and the governments.
- 4.2 Review the technical standards in place for utility distribution networks, assess their suitability for low-carbon housing, and suggest relevant changes.
- 4.3 Review the financial regulations set by the National Banking Regulatory Commission (CNBV), as well as the internal standards of financial intermediaries, assess their suitability for low-carbon housing, and suggest relevant changes.
- 4.4 Review the financial instruments offered by the energy efficiency trust-fund (FIDE), assess their suitability for low-carbon housing, and suggest relevant changes.
- 4.5 Review other relevant policy, regulatory, and financial mechanisms in place in Mexico.
- 4.6 Review existing policy, regulatory, and financial mechanisms in place in other countries to favor low-carbon, sustainable housing.
- 4.7 Suggest a menu of policy, regulatory and financial mechanisms that can be used in Mexico to favor low-carbon, sustainable housing.

V. PRODUCTS

- 5.1 A study on the assessment of the economic benefits of low-carbon housing, and on the design of enabling policy, regulatory, and financial instruments.

VI. COORDINATION

- 6.1 Mr. Claudio Alatorre, Climate Change Senior Specialist (INE/CCS), Team Leader and Ms. Gisela Campillo, Climate Change Consultant (INE/CCS), will be responsible for the supervision of the consultant team.

MEXICO
KNOWLEDGE MANAGEMENT COMPONENT OF THE SHF-KFW-IDB ‘ECOCASA’
PROGRAM IN MEXICO

TERMS OF REFERENCE

I. BACKGROUND

- 1.1 In order to support the efforts of the Sociedad Hipotecaria federal (SHF, for its Spanish Acronym) to promote sustainable housing construction, the Bank, as an agency that channels resources from the Climate Investment Funds (CIF), provides for the mobilization of an additional loan in the amount of USD\$50 million from the Clean Technology Fund (CTF). Such resources would be supplied, together with USD\$50 million from the Bank's ordinary capital, for the implementation of energy efficiency measures in housing developments, with emphasis on those that increase the effectiveness of SHF actions in terms of reducing CO_{2eq} emissions and help develop sustainable housing market in Mexico.
- 1.2 The proposed ECOCASA Program seeks to make the already existing model for green housing in Mexico more energy-efficient. The existing CONAVI /INFONAVIT criteria for “green” subsidies includes only eco-technologies that are added to standard homes, and does not include any guidelines for architectural design, building processes and materials, or urban design, aimed at increasing the homes passive heating or cooling attributes. Furthermore, the criteria are defined in terms of the homes specific features, not on their performance. The program will incorporate performance-based criteria, such as a given energy consumption reduction vis-à-vis a baseline, so that developers will be able to compete to find the most cost-effective ways to achieve energy savings.
- 1.3 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.
- 1.4 The program is fully aligned with the objectives of the first Nationally Appropriate Mitigation Actions (NAMA) Program in the housing sector, recently presented by the GoM. The NAMA follows the “whole house approach” and bases the eligibility criteria in the homes performance, taking into account not only eco-technologies, but design and materials as well.

II. OBJECTIVE OF THE CONSULTANCY

- 2.1 In order to develop a comprehensive knowledge management program associated with the ECOCASA Program, this terms of reference describe the components to: (i) provide the stakeholders of the program (SHF, developers, municipalities, state governments, the program’s beneficiaries and the general public) with training and knowledge exchange opportunities; (ii) provide the institutions engaged in sustainable housing with valuable information and inputs to further develop the housing policy in Mexico; (iii) establish a

communications campaign to raise awareness on the benefits of the program and the NAMA “Wholehouse” approach at different levels.

- 2.2 This component includes several activities to build the capacity both within SHF and among the beneficiaries, the developers and institutional actors at the state and municipal level, and to raise awareness among the general public of the benefits of energy and resource efficient homes.

III. CHARACTERISTICS OF THE CONSULTANT TEAM

- 3.1 The team will consist of several experts of the communications sector with long expertise on producing dissemination materials (printed, audio and video), communication campaigns for governmental programs in Mexico and organization of public sector events. Experience with SHF will be considered a plus.

IV. ACTIVITIES

- 4.1 The activities encompass:

- a. **Training courses by international experts** to SHF and housing developers, focusing on South-South exchange, to foster the exchange of knowledge and the sharing of best practices in sustainable housing. International experts in the field of energy efficiency and bioclimatic design will exchange experiences with SHF and programs participants with a special focus on developing countries.
- b. **Municipality/State Level Policy Development:** Resources will be channeled to provide housing institutes and municipalities with training regarding the possible change in building codes and municipal and state-level regulations to enforce sustainability principles and implement energy efficiency policies at the local level, resulting from the impact of the program and from technical studies financed by technical cooperations ME-T1201 and ME-T1202. Working sessions in 10 program locations with state and municipal-level stakeholders and policy makers will be organized to provide input to current housing policies and regulations based on the lessons learned from the program.
- c. **Communication Strategy**, which will focus in the differentiated target groups and highlight different aspects of the Program:
 - i. Beneficiaries:
 - Energy savings.
 - Increased comfort level in homes.
 - ii. Developers and financial intermediaries:
 - Sustainable housing is as collateral of greater value.
 - Competitive advantage in business strategy
 - The ECOCASA as generator of future business, as the house increases in quality value over time and increases equity and debt capacity of the owner to the intermediary.

- d. **Educational material** will assist homebuyers in the use and maintenance of the environmental technologies provided in the INFONAVIT package, as well as additional technologies (e.g. photovoltaic cells, cross ventilation, etc.). The manual includes general information about the average energy savings associated with each of the technologies according to available estimates. The manual will be introduced during the first half of 2013, about the same time the launching event will take place.
- e. **Media materials**, including videos, will be produced.
- f. **Launching event.** Which will take place during the first half of 2013 together with event KfW and SHF will co-organize to present the program to the relevant housing institutions and developers not included in the initiative.

V. COORDINATION

- 5.1 Mr. Claudio Alatorre, Climate Change Senior Specialist (INE/CCS), Team Leader and Ms. Gisela Campillo, Climate Change Consultant (INE/CCS), will be responsible for the supervision of the consultant team.