

**Open Data for Resilience and Risk Management Initiative:  
Open Cities Latin America and Caribbean (LAC)  
Mexico - Local Implementation Partners**

Terms of Reference

---

Role:	Implementing partner
Application close date:	October 25th
Duration of assignment:	to March 2023
Work location:	Partially remote, activities to conduct in San Cristobal de las Casas (Chiapas, Mexico)
Type of contract:	Temporary, contractor
Supervision:	Project Manager, Open Cities Latin America and the Caribbean

**I. BACKGROUND**

**Humanitarian OpenStreetMap Team (HOT)**

Humanitarian OpenStreetMap Team (HOT) is a US-based NGO and global community of thousands of volunteers working together to use maps and open data for humanitarian response and the Sustainable Development Goals. As the world's preeminent participatory mapping NGO, HOT has fostered a global mapping community composed of more than 300,000 people with ground operations in several countries. HOT supports the growth of open mapping communities worldwide. When a major disaster strikes anywhere in the world, HOT rallies this global network to create the maps and data that enable responders to reach those in need. HOT works closely with humanitarian and development partners including the Red Cross, Médecins Sans Frontières, World Bank, and UN OCHA, among others.

**GFDRR**

The Global Facility for Disaster Reduction and Recovery (GFDRR) is a partnership of the World Bank, United Nations, major donors and recipient countries under the International Strategy for Disaster Reduction (ISDR) system to support the implementation of the Hyogo Framework for Action (HFA). Launched in September 2006, GFDRR provides technical and financial assistance to help disaster-prone countries decrease their vulnerability and adapt to climate change. GFDRR works closely with UN agencies, client governments, World Bank regional offices, and other partners. GFDRR implements the majority of its activities in countries through the World Bank, in partnership with national, regional, and other international agencies. It is organized along three tracks of operation to achieve its development objectives at the global, regional and country levels.

To meet the needs of the rapidly changing world, GFDRR Labs supports the use of science, technology, and open data in promoting new ideas and the development of original tools to empower decision-making in vulnerable countries to strengthen their resilience. Recent

innovations in the field have enabled better access to disaster and climate risk information and a greater capacity to create, manage, and use this information. Labs activities are designed and implemented in partnership with government institutions and key international and local partners, ensuring that all activities add value in planning, operational, and recovery activities.

GFDRR Labs supports World Bank Regional Disaster Risk Management Teams to build capacity and long-term ownership of open data projects with client countries that are tailored to meet specific needs and goals of stakeholders.

### **Open Cities Project**

As urban populations grow and their vulnerability increases, managing urban growth in a way that fosters cities' resilience to natural hazards and the impacts of climate change becomes an ever-greater challenge that requires detailed, up-to-date geographic data of the built environment. Addressing this challenge requires innovative, open, and dynamic geospatial data collection, strategies for data and technologies that support management of urban growth and disaster risk. Success is often contingent on: local capacities and networks to maintain and utilize risk information, enabling policy environments to support effective data management and sharing, and targeted tools that can help translate data into meaningful action.

To address this situation, Open Cities is a growing partnership that aims to catalyze the creation, management and use of open data to produce innovative solutions for urban planning and resilience challenges across several continents. Since its inception, Open Cities has brought together stakeholders from governments, donor agencies, the private sector, universities, and civil society groups in specific locations and cities to create usable information through community mapping techniques, to build applications and tools that inform decision making, and to develop the networks of trust and social capital necessary for these efforts to become sustainable.

### **Open Cities Latin America and the Caribbean (LAC)**

The Latin American and Caribbean (LAC) region is highly vulnerable to natural hazards and volatile weather conditions, a situation exacerbated by population density and climate change. In the 20 year period from 1998 to 2017, LAC was home to five of the top 10 countries most devastated by these events. Many Caribbean islands and coastal Central American countries suffer from recurring hurricanes, tropical cyclones, landslides and flooding. The area known as the dry corridor that extends from southern Mexico to Panama has suffered frequent droughts interspersed with heavy rainfall, both of which are destroying crops and resulting in food insecurity for local populations and national strain for those economies that rely on agricultural production. The region is also exposed to permanent seismic activity along geologic faults in Central America, the Caribbean and North America, and has experienced extreme events, such as the earthquakes in Mexico (2017) and Haiti (2010).

The region has two additional challenges: the worst migration crisis in its history and the impact of the Covid-19 pandemic on health and on the economy. Intranational migration, as well as migration from Central American countries to other countries, brings together multiple factors such as economic factors -such as wage and production gaps between countries-, natural disasters and the first impacts of climate change. All this is combined with the insecurity and structural violence that these countries have been suffering for years. The significant migration observed there, which has intensified in recent years, is closely and complexly related to the lack of better options in the places of origin and the differential opportunities that can be glimpsed in the place of destination. The Covid-19 pandemic has severely increased these dynamics.

It is important for government leaders and local communities to understand these dynamics and vulnerabilities in order to determine how best to respond. This requires up-to-date information on the population, but also on the geographic data of critical infrastructure and the built environment. However, much of this information simply does not exist or is practically inaccessible behind closed platforms and government silos. There have been some regional efforts to crowdsource geospatial information in the region through open data platforms, but there are persistent gaps in coverage, a lack of data/attribute richness and a dire need for local on-the-ground validation.

Building on the success of the Open Cities project in Asia<sup>1</sup> and Open Cities Africa<sup>2</sup>, and GFDRR's Code for Resilience<sup>3</sup>, Open Cities Latin America and the Caribbean will be carried out in cities and selected regions in Mexico, Guatemala, Jamaica, Dominica and St. Lucia, to engage local government, civil society and the private sector to develop information infrastructures necessary to meet 21<sup>st</sup> century urban resilience challenges. The project will be aligned with GFDRR's Resilient Cities Program<sup>4</sup> and implemented through a unique partnership between GFDRR and HOT, city governments, and a partner community composed of regional scientific and technology organizations, development partners, and technology companies to support Government activities in the selected cities.

Following a competitive application process, an implementing team will receive funding, targeted training, technical support, and mentorship to organize, perform and achieve the following objectives:

- 1) **Create and/or collate and release high quality open spatial data** about the built environment, critical infrastructure, and natural hazards risks; to inform resilient urban planning and infrastructure projects while also benefiting the international risk modeling community
- 2) **Enhance the local capacity and institutional development** necessary to support the design and implementation of evidence-driven urban resilience interventions; through the:
- 3) **Development of targeted products and/or tools** (e.g., visualization tools, atlases, map series, or mobile applications) to assist key stakeholders to utilize risk information towards addressing natural disaster risk in the selected city;
- 4) **Promote interaction and feedback mechanisms, and consolidate regional networks** across OpenStreetMap and open source communities.

In each participating location, Open Cities LAC projects will inform decision-making through the development of a use-case, around a specific Problem Statement identified by the local implementing partner, local institutions and the regional World Bank teams by achieving the following components:

- **Assessments on risk, resilience and preparedness information and other related topics** conducted to understand current data, human and capacity, and institutional contexts with the regards to the Problem Statement to address
- **Participatory mapping** of the target area and information completed using the global open collaborative mapping platform OpenStreetMap, and other relevant tools and repositories
- **Trainings** on topics such as community mapping and data collection, data visualization and risk communication, and other related topics carried out
- **Local open source communities enhanced and/or cultivated**

---

<sup>1</sup> <https://opencitiesproject.github.io/>

<sup>2</sup> <http://www.opencitiesproject.org/>

<sup>3</sup> <http://codeforresilience.org/>

<sup>4</sup> <https://www.gfdr.org/urban-resilience>

- **Communities of practice** in LAC around urban resilience supported and/or developed and
- **Targeted information tools/products** to support urban resilience interventions created.

Open Cities LAC will result in the development of new disaster risk and resilience data, with new tools/products to explore it, data related to other topics that increase vulnerability and risk and sustainability, increased capacities among local populations, and new partnerships among diverse stakeholders.

As part of this regional initiative, Open Cities LAC is soliciting applications from implementation team(s) in the participating location. Team(s) will be asked to collect data and develop resources to inform decision-making or support action around a specific Problem Statement determined in collaboration with the local government counterparts and the World Bank.

### **COVID-19 pandemic context**

This project begins after a year of pandemic by COVID-19, which implies a particular context to be considered for the selection of case studies and for planning: the permanence of high levels of contagion at the beginning of 2021 in many areas of LAC and the incipient and variable process of vaccination can compromise the direct contact and field work during the year 2021 in some areas; local budgetary and programmatic conditions are strained for all collaborators, some national and local programs are delayed or interrupted, and activities with universities may also be slower. The Open Cities methodology can be affected over time and may rely more on remote activities.

## **II. SCOPE OF WORK**

As part of the so-called Pacific Ring of Fire, Mexico is affected by strong seismic and volcanic activity. Two thirds of the country present a significant seismic risk, mainly due to earthquakes generated on the Pacific Ocean coast, at the junction of the Cocos and the North American tectonic plates. Of the existing volcanoes, fourteen of them are considered active. The country's location in an intertropical region also makes it subject to the onslaught of hurricanes generated in both the Pacific and Atlantic oceans. The effects of these phenomena, in terms of storm surges and winds, are felt mainly in the coastal areas of the Pacific, Gulf and Caribbean; the intense rains caused by these phenomena can cause flooding and landslides not only on the coasts but also in the mainland. Each year cyclones cause severe damage, and intense rains also occur due to the storms generated during the rainy season. On the other hand, the scarcity of rainfall is felt in various regions, which, when maintained for prolonged periods of time, leads to droughts that in turn impacts agriculture, livestock and the economy in general. Associated with the scarcity of rainfall are the forest fires that occur every year during the dry season and that in certain years reach extraordinary proportions, causing losses in forested areas and various damages. States on both coasts of the country, but especially in the South Pacific, are impacted most severely due to lower levels of human development index; low levels of education, vulnerable housing and poor basic infrastructure, malnutrition, low access to health services and development opportunities in general. For instance, the states of Chiapas, Oaxaca, Guerrero, and Colima, have required repeated humanitarian assistance in the past.

The Ministry of Agrarian, Territorial and Urban Development (SEDATU) together with the National Center for Disaster Prevention (CENAPRED) have been developing a strategy to generate, concentrate and organize relevant information to help governments in the creation of their **local development plans and risk atlases**. Related to the development of the Territorial and Urban Information System (SITU), and as a lasting system for the generation of territorial information and

data on risks and vulnerabilities as well as key points for the generation of a civil protection culture, CENAPRED is leading the creation of local “Community Committees”<sup>5</sup> in the entire country. A large progress has already been made in particular the state of Chiapas. In this region, the potential is great to collaborate with Community Committees, and strengthen the local residents capacities to create data on their territory, to feed the local risk atlases according to the established regulations, and to communicate and map vulnerabilities, as well as collective solutions, as well as to communicate in real time the different impacts of disasters in their territories.

On the other hand, Mexico has important commitments to reduce greenhouse gas emissions by 2030 through its Nationally Determined Contribution (NDC). The country has implemented a national strategy to reduce emissions, based on the General Climate Change Law, which contemplates that the states prepare **Climate Action Plans based on a GHG emissions inventory**. In relation to their Municipal Development Plan, several cities have elaborated a **Municipal Climate Action Plans (PACMUN)**<sup>6</sup> to build effective synergies between local and national stakeholders and to identify, analyze, evaluate, and prioritize city-level climate change mitigation and adaptation actions with active stakeholder engagement.

The Humanitarian Openstreetmap Team (HOT) will collaborate on the technical support given by the World Bank to SEDATU’s National Urban Upgrading Program implementation<sup>7</sup>, which aims to accelerate low-carbon, climate resilient development through the design and execution of multi-sector, area-based investment programs geared towards the regeneration of neighborhoods. Specifically, this collaboration will help a municipality to obtain the data needed to develop and strengthen municipal climate action plans, and support the identification of public investment projects with significant potential impact in reducing energy consumption and emissions and addressing climate resilience and adaptation.

This consulting assignment will support the World Bank local partners in local capacities-building and in creating community-based information and data to support the **Municipality of San Cristobal de las Casas (Chiapas)** in preparing its Municipal Action Plans to transition towards low-carbon, climate-smart development, and strengthening the planning capacities and instruments of the municipal staff to better manage the pressures of urban growth and tourism-related activities. The climate action plans are expected to inform urban investment programs under the National Urban Upgrading Program and contribute to maximizing their mitigation and adaptation potential.

San Cristobal is located in the Central Highlands region of Chiapas, one of the poorest states of Mexico, with an estimated population of 186,000, a large indigenous population and high rates of illiteracy. Approximately two-thirds of the population lives in poverty, with 27% of households living in overcrowded, inadequate homes and 30% of households lacking access to water and other basic services. The city’s municipal capacities are low, and the rapid urban growth over the past decades took place largely unplanned, with significant construction in risky areas and territories of high ecological value, thus leading to significant social and economic impacts. Furthermore, the city faces serious challenges related to solid waste management and adequate resource management.

---

<sup>5</sup>Community Committees are a structure installed by CENAPRED throughout the country, being groups of inhabitants organized at the municipal level that function as a local and voluntary civil protection unit, in contact with the Center for the rapid implementation of prevention, mitigation, preparedness and response.

<sup>6</sup> <https://iclei.org.mx/plan-de-accion-climatica-municipal-pacmun/>

<sup>7</sup> <https://mimexicolate.gob.mx/category/programa-de-mejoramiento-urbano/>

By participating in this technical support, HOT will contribute to provide permanent and replicable participatory mechanisms, based on local communities and Openstreetmap communities for the continuous creation of data to capture changes and measure the real-time impact of environmental damage. This assistance can cover various dimensions to be defined in more details during the first months: in supporting the creation of local-scale data; developing strategies for geospatial information management based on local communities participation, as well as participating in the development of integrative methodologies.

The OpenCities project will focus on capacity building through the OpenStreetMap community and open mapping / open data overall as well as local communities. This will allow support to the Climate Action Plans elaboration and the long term strategy with public institutions for local resilience, disaster preparedness, and a culture of civil protection. The training, sharing and creation of tools and strengthening local communities through participatory assessments, developed upon the previous OpenCities Africa and OpenCities South Asia projects, is tailored to empower local agencies to enhance their decision making, through better data access and gain ability to create, analyze and utilize open data as part of their systems and culture.

HOT through the Open Cities intends to:

- Provide a strategy for data production, sharing and integration between global volunteer open mapping communities; the Community Committees of San Cristobal de las Casas.
- Train authorities, representatives of local committees and designated groups of local residents, possible disseminators of the acquired skills and work methodologies.
- Coordinate the necessary work for the production of data remotely, in the field with the Community Committees and as needed with support materials such as drone and street-level images, including the implementation of innovative technologies with a long-term vision.
- Define and provide technical support to stakeholders for the integration of the data flow produced, its continuous updating from the local level, and its representation in the format and platforms necessary.
- Produce a working methodology for a result that is reproducible and usable by stakeholders and communities.

Contextual documentation to identify data needs and to understand the local context is listed in Annex 1.

### **III. ACTIVITIES AND TASKS**

The following data collection, training and guidance activities are key to a greater understanding of the multitude of cross-sectoral issues in vulnerable settlements. This data will be critical to prioritize and inform an evidence-driven strategy for the selected areas; a strategy that can be potentially scaled-up to the entire municipalities or groups of localities. A long-term vision is key in this project; the proposed work method should foresee the insertion in a strategy that involves a wider territory, and its replicability to other regions in the future.

- **Building Data:** The status of the existing data has to be examined. Some parts of the area of interest are already mapped by the local and global OpenStreetMap communities. Part of the data is out of date, has to be improved or completed with basic attribution. Moreover, urbanization is expanding permanently and at an accelerated rate, specifically in coastal areas, faster than the data do.

- **Infrastructure:** Multiple organizations have participated in creating data in the region. The World Bank has created geospatial files on city-level, infrastructure open data from the local governments can also be imported or used as a basis. Some OpenStreetMap data on transport, critical facilities and basic services exist at city-scale but community level data for all the basic services (water, sanitation, solid waste, transport and energy) and critical facilities tend to be missing or incomplete. Informal or alternative resources, infrastructures or nuisances will also typically miss from public sources. Local communities, particularly inhabitants, are the appropriate groups to expand on this existing data, know and locate details, the areas and their extension, nuances, changes over time, with their own mapping.
- **Community Data:** Depending on the need of the project, the team will potentially collect socio-economic information, with variables such as: livelihoods, household size, as well as community conditions, like access to services, solid waste management collection services, existing community network, tenure status, etc.

All programming under Open Cities LAC will fall under one of four phases: Assess, Map, Design and Develop and Present according to the following timeline:

**General timeline:**

	2021		2022												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Pilot (potential)	Pilot data collection														
1 Assess	Scope of work Data assessment		Remote mapping												
2 Map			Community engagement, development, training			Data collection, cleaning, processing									
3 Design								User research	Design & dev						
4 Develop & present															Product development, training, finalization, presentations

A description of each phase and its associated deliverables is presented below. Due to the number of stakeholders included, the timeline is prone to changes. The implementing partner will therefore be required to be flexible.

**Pilot Phase : (Potential)**

A pilot phase may be requested by local stakeholders. In the event that a pilot is supported by HOT, it may take the form of any part of the above mentioned Phases and would occur before the Phase One of the project. The pilot would generally be to exhibit proof-of-concept and would be a down-scaled version of any portion of the overall project. The implementing partner is expected to exhibit flexibility in streamlining their project plan to accommodate and re-purpose it for such an

activity. Details of the incorporation of this aspect, if required, would be discussed upon contract acceptance and signing.

### **Phase One: ASSESS and Plan (2 months)**

In this initial phase of project implementation, Open Cities LAC team(s) will identify project partners and stakeholders to accurately define needs and to ensure a meaningful participatory process. A criteria of sustainability at long-term will be considered in the entire process of definition. They will establish what data already exists, if it is accessible and its condition in regard to addressing the Problem Statement. They will then finalize the definition of the project target area and the data to collect. Teams will convene at a virtual Kick Off Meeting where they will meet with Open Cities leadership and teams from other cities to receive training on project components. The project team will then finalize the Workplan and Monitoring and Evaluation Frameworks. Some of the key activities to be carried during this first phase are described in the Open Cities Guide<sup>8</sup>.

#### **Activities:**

##### *1.1) Conduct Stakeholder Analysis and Data Assessment*

- First, team(s) will conduct a research on local context and literature and assess the availability of, and quality of, existing disaster risk management (DRM) and/or GIS data related to their specific Problem Statement and pilot area.
- Team(s) will determine which institutions have relevant datasets and the quality of the existing data, to ensure that the Open Cities project enhances existing sources, if any, and it connects efforts.
- Team(s) will work in consultation with the World Bank and local counterparts to define the target area for this work.
- Once team(s) have identified what data is available, they will then determine the data and resources required for the project, with a long term vision, including the exact perimeter that will be mapped, the objects within that area, the attributes to collect for each object, and any necessary equipment. This data capture strategy will be detailed in the Project Inception Report.

##### *1.2) Kick-Off Meeting*

Two members from each team will be required to attend an Open Cities LAC Kick-Off Meeting that will be held remotely during the first month of the project. The Kick-Off Meeting will provide implementation team(s) and their government counterparts an opportunity to meet the Open Cities LAC management team and their counterparts from the other participating cities. City/country team(s) will receive technical training on different forms of data collection, mapping and analysis; and develop their skills in project design, management and evaluation, if needed. Team(s) will have an opportunity to receive feedback on their draft Work Plans, including a data capture strategy for DRM data deemed necessary for the project.

##### *1.3) Inception Report*

Open Cities LAC team will prepare a Project Inception Report for their area of interest consisting of a stakeholder analysis, data assessment, and data capture strategy. The report will also include the project goal and geographic scope and will identify potential project partners and stakeholders and define their roles. This report will result from the intermediate

---

<sup>8</sup> <http://gfdr.github.io/community-mapping/#project-design-and-preparation>



activities above. With inputs from the workshop, the selected organization will finalize the data capture strategy and partner network capable of delivering on this Terms of Reference in January 2022. Specific attention should be put on how local experts, partners, and stakeholders will participate in the process of data collection, capacity building, documentation and community outreach to project stakeholders.

#### *1.4) Remote mapping*

The team will define a general remote mapping project in the pilot region, open to the different audiences that collaborate with HOT through voluntary mapping, as well as with groups formed around the pilot as such, to contribute basic elements to the mapping of the area. As needed, training for basic mapping will be provided, and support for mapathons. This will be considered as a preparatory phase to the more focused data creation strategy for the pilot.

#### **Key Deliverables:**

- Project Inception Report that outlines the:
  - Description of the Problem Statement
  - Data assessment and stakeholder analysis
  - Information that will be collected including geographic scope, survey forms, etc.
  - Approach and Process to collect the information including partners, activities and potential tools
  - Communication and Engagement Strategy
  - Type of outputs that will be derived from the data to tackle the problem statement
  - Etc.
- Project Monitoring and Evaluation Framework
- Monthly Progress Reports
- OSM dataset extracted from the remote mapping of the area

#### **Phase Two: MAP - Engagement, Training, Data Collection, processing and analysis (7 months)**

In this second phase, the team will roll out findings and data capture strategy developed in the first phase to address critical data gaps relevant to their specific Problem Statements. Some of the key activities to be carried during this first phase are described in the Open Cities Guide<sup>9</sup>.

#### **Activities:**

##### *2.1) Develop and/or Engage local OSM community and local partners*

The project team will train team members to collect data for the project, as well as to develop, and/or strengthen the local OSM community within the country or the region, as well as local community representatives in the selected area working in partnership with stakeholders. Involvement of all stakeholders present and active in the community of interest around the identified problem should be treated through frequent consultations on their view of the problem and their feedback on the progress of the project.

##### *2.2) Development of data collection and integration methods*

---

<sup>9</sup> <http://gfdr.github.io/community-mapping/#implementation-and-supervision>

The team will develop a methodology for data collection in line with the Problem Statement and the dynamics between stakeholders and communities, as well as with a vision of long-term integration of the data creation process into the stakeholders' activities. It will consider a complete information cycle: from the creation stage to its use by the stakeholders present.

### *2.3) Development of data collection tools and training*

Project team(s) may hold training on different tools and activities, mapathons, community town halls in coordination with a local university, open mapping groups, NGO or government counterparts. Training may take the form of remote or field mapping but is not to be restrictive to these core tasks. Data validation, conflation, generation of other information products and other activities deemed fit for the stakeholders' context are also considered in the potential training activities.

Depending on the case, training can include, but not restricted to:

- Remote mapping on OSM platforms
- Field mapping tools (eg. GPS, ODK etc.)
- OSM data focused download and integration in a GIS software
- (Basic) Data analysis in QGIS
- Tasking Manager
- Participatory mapping of vulnerabilities
- etc.

### *2.4) Data collection*

Team(s) will have already determined priority data to be collected for the project area, conducted baseline assessment of existing data, and taken stock of available remote sensing and other supplementary resources. During this phase, team(s) will coordinate field data collection according to the approach developed and agreed upon in consultation with project stakeholders. Depending on needs, tools for data collection may include smartphones or tablets, drones for the collection of high resolution imagery, or handheld GPS. Team(s) will be responsible for training and coordinating the work of any students or volunteer mappers involved in data collection, submitting regular progress reports, and conducting rigorous quality assessment of incoming data.

### *2.5) Data cleaning and processing*

As data is collected and uploaded to the OSM platform and other platforms if needed, implementation team(s) should conduct regular Quality Assurance/Quality Control checks with HOT's methodology to resolve possible gaps between expected and actual results. Activities can include data cleaning, data validation, validation with stakeholders, complementary remote mapping, data analysis and knowledge transfer. HOT's team will validate the final database and QA/QC report.

### **Key Deliverables:**

- General data uploaded to OSM and exported and shared with HOT
- Specific and sensitive data delivered in private platforms
- Monthly Progress Reports
- Data presentation and knowledge transfer meeting (intermediate product acceptance meeting)
- Quality Check and Quality assurance report

### **Phase 3: DESIGN (2 months)**

In this third phase of the project, team(s) will use the data collected in the Phase 2 Map and Data Collection to design tools or products to communicate the data to their stakeholders and support decision-making. Deliverables will vary depending on Area of Interest context, but could include, for instance, a database, a visualization tool, an atlas, a map series, a data portal, a mobile application, “cookbooks” or manuals.

#### **Activities:**

##### *3.1) Conduct user research*

Team(s) will use their updated Problem Statement and stakeholders analysis (Phase 1) to conduct user research, to define who they are, to better understand the needs for the information collected (if applicable, Open Cities’ User research tools/forms can be used), their convergences or specificities. Team(s) will take steps to understand the needs and values of each group, and determine *how* they could best use the information in terms of both ideal presentation and ultimate goal.

##### *3.2) Products design / wireframe development*

Based on the findings from this research, team(s) will further define the audience and produce the wireframe for their tool/ information product.

The design activities will include but is not restricted to:

- Intermediate workshops to consult the stakeholders at several stages of the process, user experience workshop.
- Implementing user research methods with stakeholders, which can include but is not restricted to HOT’s methodology (forms).
- As team(s) are developing their tools/products they will be asked to present them to local stakeholders and the Open Cities LAC community to present their tool/product wireframes and receive feedback from other Open Cities teams.

#### **Key Deliverables:**

- User Research results and analysis report and associated data
- Product Wireframe
- Progress Report

### **Phase Four: Develop and present (5 months)**

In the final phase of the project, team(s) will develop and share their final tools/products with their targeted end user population and other relevant stakeholders. They will then work with Open Cities LAC leadership and HOT team to explore follow-up opportunities.

#### **Activities:**

##### *4.1) Develop product(s)*

Using their wireframe and integrating feedback received from the stakeholders, users workshops and the Open Cities LAC community at the regional meeting, team(s) will spend further time developing/testing their tools/products. As they are being developed, team(s) will **share initial prototypes** with stakeholders such as their target users, government

leadership, World Bank country representatives, the OSM community and community members in the target areas to solicit feedback and make additional modifications. Once completed, pilot products will be submitted to Open Cities LAC leadership for feedback.

#### *4.2) Product Use, Capacity Building and Presentation*

After development, there will be interaction to secure the acceptance and viability of the tools created. This stage will highlight the engagement of the stakeholders for their use and development of capacity with the end users. The results of the tools/products developed are to be presented to their intended users and other relevant stakeholders. Team(s) are encouraged to share their tools/products with the broader OSM community that they have worked to develop over the course of the project, including for instance training sessions, seminars, workshops, as needed.

#### *4.3) Product Validation and Feedback Collection*

Feedback from workshops and user engagement will act as inputs for product validation. Additional tools such as digital feedback forms could be utilised and are to be collected and collated for any additional and final inputs for final product development.

#### *4.4) Exploring future opportunities for sustainability*

Once team(s) have presented the final versions of their tools/products, they will meet with stakeholders, their project mentors and Open Cities LAC leadership to explore opportunities for future work and sustainability in the pilot countries and in the region. Recommendations will be included in the final report.

#### **Key Deliverables:**

- Final report
- Final tool/product

All deliverables must be submitted in English.

## **IV. PROPOSAL REQUIREMENTS**

The technical proposal shall be presented electronically in Adobe PDF format, in English using the templates provided<sup>10</sup>.

**The proposal consists in three parts: (a) [Technical Proposal](#) (b) [Financial Proposal](#) (c) [Firm Qualification Questionnaire](#). The three parts are required to qualify the proposal.**

(a) The applicant must organize the Technical Proposal as follows:

---

<sup>10</sup> The templates are the following three files:

- [Financial proposal template.xlsx](#)
- [Operational Consulting Technical Proposal Template.docx](#)
- [Firm Qualification Questionnaire.doc](#)

- Section A. Background: briefly describe the background and organization of your firm/organization and the sub consultants that your organization proposes to engage for this assignment.
  - Section B. Summary of Consultants' Experience: The applicant should provide a brief summary of any previous projects that are either within scope or implemented in a similar city context.
  - Section C. Comments or Modifications: present or justify any modifications to the terms of reference the applicant would like to propose, if e any, to perform the assignment better and more effectively.
  - Section D. Technical Approach: the applicant should articulate their approach to addressing the Problem Statement defined in this TOR and achieve the desired results. This section should also indicate how the applicant will achieve the objectives and deliverables. Proposals should be organized by project phase in accordance with the TOR (e.g., Assess, Map, Develop, Present).
  - Annex 1: Staffing Plan and Key Personnel – The applicant must present an organizational and management structure which describes clearly the different positions, and the roles and responsibilities of team members. Each team should designate up to four “key personnel” including a Project Director and other team members that will lead the technical and managerial aspects of the project. The applicant should provide CVs/resumes for key personnel as Annexes to the technical proposal.
  - Annex 2: CV of Proposed Key personnel
  - Annex 3: Proposed work schedule for the project
- (b) The budget available for this project is between \$50,000 - \$60,000. The applicant must therefore develop the Financial proposal to suit the scope of the project.
- (c) The firm qualification questionnaire must be filled according to the forms instruction and send along with the proposal. Failure to send the firm qualification questionnaire will disqualify the proposal.

## V. SELECTION CRITERIA

The following selection criteria will be used to evaluate proposals the determine Open Cities LAC finalists:

	Criteria	Points
OSM and open source	Knowledge and engagement of the OSM community / open source & open data and tech local community	20%
Project development	Ability to respond to technical needs (eg. management of field person, research and connect with local service providers)	15%
	Demonstrated experience in management of similar large scale projects	15%
	Ability to formally engage with local stakeholder community/ partners and/or government counterparts	12%
	Ability to demonstrate financially sound budget	5%
Technical skills	Demonstrated experience in GIS / geo spatial information / mapping	15%

Literature review / knowledge of the local context	8%
Having IT experience (eg. web design, development, etc.)	5%
Written and Oral communication skills (local language + english)	5%

## VI. IMPLEMENTATION ARRANGEMENTS

During the Planning and Assessment stage, the implementer shall prepare a detailed project Work Plan, which depicts the interrelationship of various tasks in the assignment and depicts how they lead to the completion of different project components. The implementing partner will then prepare in collaboration with HOT a finalized budget according to this Work Plan and activities outlined.

The Implementing Partner should identify a Project Director who will be the principal contact for the Open Cities LAC work and will be expected to be available during project implementation. The implementer is encouraged to appoint an additional contact person who can be competently consulted on this undertaking.

The implementer shall be responsible for all aspects of performance of services as set forth in this TOR.

The Project Director and any key support staff are expected to attend the Open Cities LAC Kick Off Meeting and the End of Project Meeting.

HOT will provide:

- Technical training on data collection, analysis and user-centered tool/product development, depending on needs, to the implementation partner;
- Capacity building training on project management, leadership and sustainability, depending on needs;
- Where possible, HOT will share initial assessment findings with the project team(s) as a resource on available data and potential counterparts;
- Templates for the main reports so that they are consistent across cities.

## VII. PAYMENT SCHEDULE PROPOSAL

Event Triggering Payment*	Percentage of Final Contract Amount Paid
Contract finalization	10%
Submission and approval of the Inception Report at the end of Phase One	40%
Data collected with QA/QC analysis at the end of Phase Two	20%
Final Product and Report	30%

\*Payment schedule will be adapted according to each location's deliverable and general work plan.

## VIII. CORE COMPETENCIES

### Project management

Project manager with more than 7 years of experience in software project and product management, grant administration, and proposal and scope development. Previous work in the fields of: geospatial applications for decision making, civic technology, digital humanities, etc.

### **GIS Expertise**

Specialization in geographic information science and cartography, with more than 7 years of experience in geospatial data analysis, modelling and/or graphical representations in various media (including interactive web map composition), crossing various types of sources, including unconventional data (eg. AI, social network, etc.). Previous themes of work: risk or natural resources management, in relation with population data, risk atlases and local development plans. Experience in open source software and training, particularly with OpenStreetMap, is required.

### **IT and Data Management**

Over 5 years in data and file management, database design and planning, data analysis, use of open source database software, particularly relational databases. Experience working with spatial data would be an asset. Demonstrated use of programming, web portal development and social media platform integration is desirable.

### **Field Geo-data collection**

Team manager with more than 5 years of experience in field data collection including participatory processes. Experience working in areas with low accessibility, various technologies, such as GPS/GNSS, mobile data collection apps, as well as paper based methods. Familiar with the production of geo-referenced data and surveys, in open source formats with attention to data interoperability. Have a good sense of orientation and ability to interpret aerial imagery. Team management and demonstrated skills in local training , in person and virtually are required. Knowledge and ability of UAV/drone image data capture would be an asset.

### **Community risk mapping**

Expert with more than 7 years in the facilitation of community mapping of risks and collective resources, integrating the use of geospatial technologies and visualization methods. Ability to manage small to medium sized groups. Institutional knowledge and local context with the relevant community groups and organizations would be beneficial.

## **IX. ANNEX 1- NORMATIVE AND METHODOLOGICAL REFERENCES**

- The Law for Adaptation and Mitigation to Climate Change in the State of Chiapas and its regulations;
- the Action Program for Climate Change of the State of Chiapas;
- Two instruments that are currently under review by their corresponding federal authorities: the Municipal Urban Development Program, in its final phase prior to approval (and which can be facilitated by SEDATU); and the Municipal Risk Atlas, currently in consultation with the National Center for Disaster Prevention (CENAPRED);
- Relevant national and state framework legislation on climate change, environment and spatial and land-use planning, including, but not limited to:
  - the Climate Change Law,
  - the Ecological Equilibrium and Environmental Protection General Law,
  - the Human Settlements General Law,
  - the Urban Development Law,
  - the General Land Use and Environmental Policy Law,
  - the Planning Law,

- the Federal Housing Law,
  - the Cadastral Law,
  - Building Codes,
  - and current state climate policy programs;
- The general lines of the IPCC methodology, as a framework for the program, should also be examined.