

# Open Data for Resilience and Risk Management Initiative: Open Cities Latin America and Caribbean (LAC) Guatemala

## Local Implementation Partners

### Terms of Reference

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<b>Role:</b>	<b>Implementing partner</b>
<b>Application close date:</b>	<b>September 20th, 2021</b>
<b>Duration of assignment:</b>	<b>to March 2023</b>
<b>Work location:</b>	<b>Partially remote , partially in the pilot area to be defined in Guatemala</b>
<b>Type of contact:</b>	<b>Temporary, contractor</b>
<b>Supervision:</b>	<b>Project Manager, Open Cities Latin America and the Caribbean</b>

### 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 emigration 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. But 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.

#### **The role:**

Following a competitive application process, a small implementing team in each city 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** conducted to understand current data, human and capacity, and institutional contexts with the regards to the Problem Statement to address

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<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>

- **Participatory mapping** of the target area and information completed using the global open collaborative mapping platform OpenStreetMap, and other relevant tools;
- **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;**
- **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 data, with new tools/products to explore it, increased capacity 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 each participating city/location. In each city, team(s) will be asked to collect data and develop resources to inform decision-making or support action around a specific Problem Statement determined for each by 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 first semester of this year or the entire year 2021 in some areas; local budgetary and programmatic conditions are strained for all collaborators, some ambitious 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 in 2021.

## **II. SCOPE OF WORK**

**Guatemala is a country exposed to multiple risks** of geophysical (earthquakes and volcanic eruptions) hydrometeorological (floods, hurricanes and droughts) and anthropogenic origin, with significant human and economic impacts, placing it in eleventh place in the world with respect to the impacts of climatic phenomena over the last 20 years<sup>5</sup>. Between 1960 and 2016 the country experienced 74 severe events, half of which occurred after 2001, reflecting an increase in frequency. Forty percent of such events were tropical storms and floods, followed by earthquakes with 15% and 13% landslides.

Guatemala's economic and social development is regularly affected by disasters and their effects are particularly burdensome on the most vulnerable population. As the effects of climate change intensify, phenomena such as floods and droughts are expected to increase in frequency and intensity. The occurrence of a natural disaster of severe magnitude would generate significant emergency care needs and thus complicate the government's efforts to address the challenges of reducing poverty and inequality.

**Guatemala hosts high levels of biological diversity** due to its complex topography. Forests represent around 35 percent (3.7 million hectares) of Guatemala's territory. Forests and biodiversity represent both an important development opportunity and a growing challenge for the country. However, **pressures threaten the conservation** of local biodiversity and the well-being of the people who depend on ecosystems for their livelihoods. For instance, deforestation and forest degradation have affected two-thirds of the forest, occurring in particular in the northern lowlands

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<sup>5</sup> UN - CEPAL, 2018, [La economía del cambio climático en Guatemala, estudio técnico](#).

of Petén, northern Quiché and Alta Verapaz, where forests are converted into pasture, crops, plantations and infrastructure or urban expansion, unsustainable fuel-wood harvest, illegal logging, land grabbing in protected areas, and accidental or intentional fires<sup>6</sup>. Agricultural activities are generally traditional practices of slash-and-burn forest clearing to prepare fields for planting and then are turned into intensive livestock farming. Most frequent instance of these activities coincide with the the location of roads or access roads and in some cases on the banks of major rivers<sup>7</sup>.

**Immediate alterations due to deforestation** can be identified as: loss of biodiversity, flora and fauna; destruction of natural habitat and alteration of forest production cycles; and medium and long-term changes include increased desertification processes, imbalance of the water cycle (loss of natural water sources), erosion, blockage of rivers, lakes and ports, environmental pollution due to fires, overheating of the environment due to the loss of vegetation, and loss of soil productivity. These long-term alterations enhance the destructive effects of natural disasters in these areas already characterized by high social vulnerabilities, mostly in the rural poor and particularly Indigenous communities.

**On the other hand, forests provide Guatemala with climate change adaptation and mitigation co-benefits and have greater potential in this area if managed well.** Guatemala is considered a “hot spot” for climate change in the tropics, as extreme values of temperature and precipitation have changed several times over the last 40 years. Avoiding deforestation and degradation can play a key role in reducing future CO2 level as well as other greenhouse gas concentrations.

Forests provide opportunities for communities to adapt to climate change by providing environmental services such as increased water quality and quantity in watersheds, reduced soil erosion, and the creation of micro-climatic conditions that maintain and improve agriculture productivity, strengthening social resilience by building the capacity of local and national institutions and offering a diversification of revenue sources for forest-dependent people. The National Climate Change Adaptation Action Plan prioritizes win-win adaptation and mitigation measures in the forest sector.

In light of these factors, the Humanitarian OpenStreetMap Team (HOT) is well positioned to **provide mapping and other related support to assist in managing the vulnerability and pressure on the natural environment in Guatemala, by supporting the creation of local-scale data and strategies for geospatial information management, as well as participating in the development of integrative methodologies.** The OpenCities Latin-America and Caribbean project would focus on capacity building approaches, following the previous OpenCities Africa and OpenCities South Asia projects. It is tailored to empower agencies to enhance their decision making, through better data access and to gain the ability to create, analyze and utilize open data as part of their decision systems and culture.

HOT will support specifically the development of the ***The World Bank Guatemala Dedicated Grant Mechanism for Indigenous Peoples and Local Communities in Guatemala (Forest Investment Program)*** as part of Component 1: Strengthen capacity and enabling conditions for the application of traditional, indigenous, and local knowledge systems and practices of forest management. HOT and the Forest Investment Program will collaborate and define the location, specific needs, work methodology and data model to be created with the organization Sotz'il, to provide advice and support for the formulation of project proposals and plans within the framework of the *Grant Mechanism*.

In this context, HOT will work in a pilot area (community or group of related communities near each other) characterized by damages resulting from historical and recent disasters resulting from direct effects of forest degradation (floods, landslides, fires, violent effects of hurricanes), by **providing the communities, local stakeholders and NGOs, with technical skills for the production of**

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<sup>6</sup> Consult [The Global Forest Watch](#).

<sup>7</sup> For example in Petén: the Mopán, San Pedro, Usumacinta, La Pasión, Santa Isabel and Salinas ([https://coin.fao.org/coin-static/cms/media/3/12659050600730/tecnicas\\_de\\_evaluacion\\_de\\_areas\\_afectadas\\_por\\_incendios.pdf](https://coin.fao.org/coin-static/cms/media/3/12659050600730/tecnicas_de_evaluacion_de_areas_afectadas_por_incendios.pdf))

**data on their territory** in support of sustainable project planning, long term monitoring, negotiation processes and advocacy, environmental and economic awareness.

HOT will **train and accompany community representatives, indigenous leaders and key members (including women and youth) to give continuity to the initiative and collaborate with other communities**, for:

- Remote mapping of the build infrastructure of the communities and their environment (localities, roads, paths within natural areas) as well as main natural elements (rivers, riverbanks, waterbodies, wetlands, etc.). This effort will benefit from the remote support of broad Open Mapping communities (universities, OpenStreetMap volunteers, volunteer partners)
- Systemic understanding of their environment and participatory cartography of land representations and uses of the community territory and surrounding: conservation areas, cultural uses and (sacred) sites, usage rights, characterization of production uses, degraded areas, etc.
- Participatory cartography of the impact areas of recent disasters
- Assistance for the mapping and planning of potential sustainable production projects
- Training of local leaders and representatives, including those working with NGOs and national institutions (COCODEs, COLREDs) as well as local officials to manage the data produced under the project and to cross-check with other sources for monitoring and long-term planning (GIS).
- Collaboration with the academic community to provide technical knowledge and tools for warning and monitoring of future disasters events.

These project activities, in addition to providing measurement and planning capabilities, are the basis for a better understanding and awareness of natural environment management, as well as advocacy and empowerment of Indigenous communities.

The results will extend to the data produced, as well as a methodology and technical guidance for replication in other communities in the departments targeted by the Grant Mechanism for Indigenous Peoples and Local Communities in Guatemala. The mapped data (with the exclusion of sensitive data features and attributes) and mapping methodology can benefit other NGOs and institutions working in development aid and disaster response in the region.

### **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 entire municipalities or groups of localities. The proposed approach supports a long term vision for strategic replication in communities throughout other regions in Guatemala and potentially other countries.

- **Building Data:** The status of the existing data has to be examined. Parts of the area of interest (AOI) have already been mapped by the local and global OpenStreetMap communities, during regular mapping efforts and on the occasion of mapathons related to training or disaster response. Some of the data is out of date, needs geometric improvement and/or basic attribution. Moreover, many settlements are expanding permanently (and at an accelerated rate in coastal areas), and data creation has yet to catch up.
- **Existing infrastructure and land use data:** Multiple organizations have participated in creating data in the region. The World Bank has created geospatial files for city-level infrastructure, and open data from the local governments can also be imported or used as a reference. 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 are also typically missing from public sources. The residents' communities, due to their local knowledge, are best placed to know and locate local infrastructure and land use features, and to provide nuanced detail on how they may have changed over time. This information can be collected and shared using community mapping approaches.

- **Community Data:** Depending on the need of the project, the team will potentially collect socio-economic profiles, with variables such as: livelihoods, household size, 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:

**Timeline for Open Cities Latin America and the Caribbean**

	2021						2022							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
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.

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

In this initial phase of project implementation, Open Cities LAC team 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 their 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 GIS data related to their specific Problem Statement and pilot area, and disaster risk management (DRM).
- 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 (e.g., specific locality or group of localities, districts, zones within a city) for this work.
- Once team(s) have identified what data is available, they will then determine in collaboration with the partners the data and resources required for the project, with a long term vision, including the method for creating the data in a participatory manner, 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 pilot area 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 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 **October 2021**. 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.

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



#### 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 by the implementing partner, to contribute basic elements to the mapping of the area. As needed, training for basic mapping and support for mapathons will be provided. 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
- 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, as well as local community representatives in the selected area working in partnership with local stakeholders and organizations. 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*

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 and the community empowerment. It will consider a complete information cycle: from the creation stage to its use by the stakeholders present.

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

### *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, residents population. 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
- Data analysis in QGIS
- Tasking Manager
- Participatory mapping of land uses, risks and 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. Community representatives and residents will be the first reference and will be involved as possible during the mapping. Implementer team(s) will be responsible for training and coordinating the work of any mappers (residents, volunteers and professionals) 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
- Specific and sensitive data delivered in private platforms
- Monthly Progress Reports
- Data presentation and knowledge transfer meeting (intermediate product acceptance meeting)

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

In this third phase of the project, team(s) will use the data collected in the Map and Data Collection Phase (Phase 2) to design tools or products to communicate the data to their stakeholders and support decision-making. Deliverables will vary widely 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 or meetings 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
- 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

#### **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.

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.

Note that 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.

The applicant must organize the Technical Proposal as follows:

- 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

### **COVID-19**

HOT applies a general policy and protocols for field work in countries where activities are carried out. Our best efforts are put to foresee general risks in considering the COVID19 pandemic context, being applicable to any location, for all members of the implementation team. Its application to the letter will allow for greater control of working conditions. This includes strict requirements for all participants in the project to observe barrier measures, recommendations depending on situations with local communities and partners. The implementer will ensure the adherence of local protocols and rules for monitoring the health of each participant in case of signs of possible contagion. Applicants are required to take the COVID-19 local situation into account in the technical proposal methodology.

**Applications should be submitted at the email address [info@hotosm.org](mailto:info@hotosm.org).**

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

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

## V. SELECTION CRITERIA

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

	<b>Criteria</b>	<b>Points</b>
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 in Latin America and the Caribbean.

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

Event Triggering Payment*	% 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.