TERMS OF REFERENCE

DEVELOPMENT OF A HOUSING INFORMATIOM SYSTEM

1. BACKGROUND

The Government of Cabo Verde (GOVCV) has received from the International Development Association (IDA), a member of the World Bank Group (WBG) and hereafter so designated, an additional credit to finance the fiscal management project related to State Owned enterprises, whose main objective is to strengthen the capacities of the State enterprise sector in terms of the effective and efficient management of its processes and obligations in fiscal matters.

Designing and making the National Housing Policy (PNH) is one of the responsibilities of the Ministry of Infrastructure, Land Management and Housing (MIOTH) and was included in the government's program for the 10th legislature.

The lack of a National Housing Policy, combined with disorganized urban growth in some cities, has led to a speedy growth in housing deficit in Cabo Verde in recent years, and this became a major challenge before this government, which has brought it to a priority level for the 10th legislature.

With the approval of the PNH, the country now possesses a tool that will allow implementing actions that will transform informal settlements, and significantly contribute to efforts to reduce poverty, as it complies with the Constitution of the Republic of Cabo Verde and other national and international policy and strategic documents, such as the 2017-2021 Strategic Plan for Sustainable Development (PEDS) and the UN-Habitat Global Housing Strategy, the New Urban Agenda and the Sustainable Development Goals, in particular Goal 11 "make cities and human settlements inclusive, safe, resilient and sustainable" and the African Union Agenda 2063.

The process of implementing the PNH should go through harmonizing the entire legal and regulatory framework, and should have single implementation tools, namely: the National Housing Plan (PLANAH), the Municipal Housing Plans (PLAMUH) in all municipalities and a Housing Information System (SIH).

Monitoring the implementation of the National Housing Policy is key in planning and management process and allows to qualify the planned and executed programs as well as review the policy itself.

On the other hand, the central government body responsible for housing, local authorities, public and private institutions and civil society organizations directly involved in housing, regularly need access to systematized information, both on problems and actions proposed and

implemented under the Housing Action Plan, allowing for an adequate assessment and decision-making. Lacking a system providing systematic reports on demand and investments made, those who execute the PNH and implement the PLANAH are deprived of evaluation and follow-up mechanisms.

In this sense, the Housing Information System - SIH stands out as an important part in the process of implementing the PNH and the managing the PLANAH.

This System is expected to provide geo-referenced information on the social, economic, legal and urban dimensions of informal settlements, their occupants, as well as the goals of those registered in the CUBHIS system, the degree of implementation of proposed programs and projects both at central and municipality level, the flow of investments by municipality, and also the scenario for identifying institutional constraints and establishing priorities in meeting the demand and for increasing social housing and improving the living conditions of low-income and vulnerable groups .

Against the extent and generality of the information to be contained in the SIH, access to the System should be ranked according to the responsibility and specific interests of users in the public and private sectors.

Public access SIH data should be available to any citizen, with protection of personal and private information, providing a transparent environment of government actions, and to guarantee full participation of citizens in the dynamics of policy implementation. The dissemination of data to the public also encourages the development of studies by researchers and civil society institutions, which can contribute to improving the PNH in Cabo Verde. This should be one of the main contributions to the universal access to data systematized by the Housing Information System.

The establishment of goals is also a tool that enables the monitoring of government actions. The Government and municipalities, by coordinating with other sectors, should encourage the preparation of studies on the housing sector, as well as promote and support debate on related topics. In addition to the stage of monitoring the actions, the PNH evaluation should be conducted regularly at the central level of the Government, Municipal Assemblies, institutions directly involved in the housing sector, as well as by all stakeholders organized in professional associations, universities and international organizations in Cabo Verde. The objective is to promote brainstorming on the procedures adopted to implement the PNH and conduct possible

adjustments. This process may rely on the preparation of specific studies on certain aspects of evaluations after occupation of the facilities delivered.

2. OBJETIVE

The **general** objective of these terms of reference is to procure technical assistance for the development and implementation of the Housing Information System (SIH), fueled by existing data, and also to train the stakeholders who should update and manage the System data.

The development of this System should take into account the scopes, outcomes and information flows provided for in the study for the "setting up of the National Housing Fund - FNH"

The SIH is intended to be the “Housing Portal of Cabo Verde”, which will allow for the universal management and consultation of available data and information. The System will be managed by the General Directorate for Housing -DGH, which will establish access levels and profiles. The General Directorate for Housing should make available to all responsible entities the necessary tools for the management and operation of housing programs.

The existing data should be arranged in order to allow the differentiated selection of information for both the national and local level and taking into account the end user: the Ministry of Infrastructure, Land Management and Housing, City Councils, Ministry of Finance, Ministry of Family and Social Inclusion, in particular, and in line with the remaining ministries in general and also with Civil Society, Construction Industry, etc.

Data standardization from local information systems is a key condition for the SIH, at the National level, to have pre-determined reports, with reliable and real-time data. These data are essential for the Ministry of Finance and should be a tool for controlling the fiscal risk of the *Casa para Todos* Program and future programs to be implemented.

Data should be disaggregated by municipality, gender, age group and income group whenever possible.

In specific terms, the SIH should comprise several modules in its database, which will be differentiated at national and local levels. Interoperability between the SIH and the “Cadastro Social Único” (social single registry)” should be ensured, allowing, among others, the “Human Capital” project to be able to cross-reference data between the two systems.

At national level, the system should organize data that will facilitate the production of information on:

- Updated (preferably) Housing deficit;
- Average income of different income groups (IMC). These figures will be used to compare renting and sales amounts aiming at calculating financial affordability;

- Housing production from private parties (quantities, types, prices);
  - Housing programs, both at government and municipality level, including information on how to access the different housing programs;
  - Rehabilitation and resettlement programs;
  - Legislation and regulation on the housing sector;
  - Incentive programs;
  - Data on renting and sales;
  - Funding (public, private)
  - Construction materials (pre-approved plans and blue prints, bill of materials, budgets, etc.);
  - Sector companies;
  - Registry of those interested in housing programs based on CUBHIS, which should be adapted to include information on families´ housing ambitions;
  - Database of housing offer (public and private sector, public-private partnerships)
- Mapping of informal settlements, development areas, idle land, squatter neighborhoods, risk areas, tourist areas, and protected areas;

- Statistical data;

- Database of beneficiaries in social programs per type of service (in national and local level);

- Institutional framework of Municipalities in the housing and urban area (masterplan in place, specific housing body, housing fund, board, registry of interested individuals, etc.).

2.1 – EXPECTED OUTCOMES

The system is expected to allow:

I. At city level:

- Consolidated housing deficit numbers by city;
- A survey of demand and housing services;
- Make it possible to have an idea of construction costs, based on standard lowest cost projects, purchase and lease projects, and compare to affordability, for each city;

- Obtain data with a view to monitoring the beneficiaries of housing programs implemented by the government and municipalities.

II. At municipality level, the constituent data should produce information which will allow to characterize:

- The intervention prioritization system (based on settlement characteristics);
- The registry of families living in the settlements;
- The registry of properties leased, sold, granted, etc. including information on beneficiary families;
- The leasing management system, including the system developed by IFH;
- The management system of funding granted by municipalities;
- The list of land available for housing programs;
- The national depiction of housing deficit and its standards;
- The qualitative and quantitative scenario of housing programs, and what deficit elements each program intends to tackle;

Moreover, it should enable to

- Monitor and evaluate the deficit/housing programs progress;

as well as include the Municipal Housing Plans - PLAMUH which will facilitate:

- Mapping of social housing projects for the database to have records on housing production accomplished in past administrations and follow-up of the families that currently occupy the housing units, making the re-registration of families as well as the normalization of the granting conditions and inclusion of these families in the beneficiary register for the control of public assets;
- Mapping of informal settlements based on concepts pre-established by the INGT. This mapping should be georeferenced and relating only to the boundaries of the community;
- Mapping of illegal settlements aiming at identifying demand for property normalization;

- Mapping of basic services in the city and expansion areas namely in settlements to identify possibilities for residential development;
- Mapping of urban land idles conducive to the implementation of social interest housing projects, to help municipalities in the definition and exact knowledge of areas subject to the right of preemption, of special social interest areas, areas for possible enforcement of the progressive single tax and others tools that may be of assistance in housing policy;
- Mapping of risk áreas;
- Mapping of tourist areas.

3. PROFILE OF THE CONSULTING FIRM

The bidder firm/entity should have a minimum of 10 (ten) years of experience in the development and implementation of similar Information Systems and should include individuals with higher education in the fields preferably of housing, economics, urbanism, law, sociology, geospatial database, and statistics.

4. PROFILE OF THE TEAM MEMBERS

The **Main Team** should consist of at least **four Senior Members**, including a Team Leader and three key experts.

The members of the main team should meet the following technical requirements:

Member 1: (**Team Leader**)

This member should have at least a Master´s degree in Computer Engineering and a proven experience of at least 10 years in the design of similar Information Systems in developed countries, and at least 7 years of proven experience in implementing projects in similar countries and related areas. He/she should be familiar with public sector procedures and Cabo Verde's development partners in housing matters.

Member 2:

This member should have a master's degree in civil engineering, architecture or similar areas, with preference given to those who have worked in social interest housing programs. Have a minimum of 7 (seven) years of experience, preferably in housing program and project management. Proof of membership in a professional body/association (local or international) is required and proven work experience in developing countries will be valued.

Member 3:

This member should have a minimum college degree in Computer Engineering, with specialization in database systems, with at least 7 (seven) years of experience in the development of database systems that meet housing needs. Knowledge of Geographic Information Systems will be valued.

Member 4:

This member should have a minimum college degree in Urban Sociology, and proven experience of at least 10 years in social work in social interest housing programs in similar countries.

5. TASKS OF THE FIRM/ENTITY ASSIGNED FOR THE SERVICES

A) Submit an implementation plan and the work methodology.

B) Develop the architecture of the Housing Information System, through a detailed survey and analysis of requirements. In this sense, System Analysts, Database Technicians and Interaction Designers involved at this stage of the process will be required to thoroughly comprehend the current operating model of existing social housing programs for lower-income families with low market supply. They should, on the other hand, know how to conduct the interaction and business of the entities, which will be integral parts of said system and the technical and logistical conditions in place in each of them to fully comply with their business models and to access and operate the SIH.

C) Make an inventory of all data and information producing entities in the housing field, documenting all needs, constraints, and providing for the scalability of possible future requests, thus ensuring a list of possible responses for both the customer and final users. In this task, the firm should also make an inventory of all existing data in the housing field, produce a metadata catalog and establish business rules taking into account the different stakeholders, thus producing the design of the logical model.

D) Establish a protocol model to be signed between the General Directorate for Housing and the different data producing entities in order to ensure the responsibilities for producing and updating the data, in accordance with the approved metadata catalog.

E) Design the system´s physical solutions, in such a way that the result of the documentation produced in this stage has a very high degree of detail, clearly depicting the flows of data

and/or processes, and is in full compliance with the analysis of task requirements (b) and the design of the logical model of the task (c).

F) Acquire and install the hardware and software in accordance with the approved physical model and the needs listed in c);

G) Implement a high-fidelity prototype, which will undergo validation in the first instance by all data producing entities and sequentially carefully evaluate the credibility of the data flows between each output interface of the modules in question. At this critical stage, in addition to validating the quality of the data flow before the stakeholders interacting in that system, several indicators are to be established that will allow to gather inputs and feedbacks so that the development team is able to pinpoint improvements or deviations.

H) Test the prototype after the evaluation of the first instance, in a laboratory test environment, by the Software Test and Quality Technicians and consequently in a natural environment or use stage, for the approval of the Usability Rates of the high-fidelity prototype by the operation and consultation users. At this stage, the contracted entity fine-tunes all the test details, evaluates the software performance, in view of the business rules defined in the previous stages of development, and consequently makes a stable integration with other related systems.

I) Assess and propose the best solutions for hosting the SIH.

J) Enter the existing data in the current system developed in line with the metadata catalogue, safeguarding the effectiveness, efficiency and satisfaction in operational handling, focusing on the flexibility and load of the files in relation to the data flow bandwidth in the e-governance integrated system.

K) Install and submit a flexible and simplified maintenance model for the system produced. In addition, the consulting firm is required to prepare a user manual enabling the entities to produce the data in an easy fashion and in the language required by the System, and integrate a set of information and/or tutorials to help the user should any difficulties arise in completing certain tasks considered as complex.

L) Submit a capacity building plan for different entities on the use of the platform, including particularly municipal technicians, by consulting the different entities that will use the system to validate the main features and components;

M) Conduct training sessions as per the plan indicated above;

N) Develop a system analysis document containing all the information that allows the system to be continuously maintained and updated, and makes future integrations of new modules and maintenance interventions by different specialists in the area more flexible.

O) Prepare a Final Technical Report of the consulting services.

6. EXPECTED OUTPUTS AND DEADLINES

The deadlines to complete the tasks indicated above are provided in the table below.

Nº	**Tasks**	**Description of tasks/deliverables**	**Days**
1	Inception Report including the work plan	Document that should, in detail, describe all the tasks to be performed, identify the material and human resources needed, indicate the methodology to be used for each of the tasks/activities and present a detailed task execution schedule	15 days after contract signature
2	Approval of the work plan by the MIOTH	Activity to be conducted after each deliverable (output). Under the DGH coordination, the deliverables will be sent to the key entities for consideration or will be assessed in joint working sessions with the key entities (depending on the type of output)	30 daysafter contract signature
3	Inception report including the proposed SIH architecture	This report will present the situation analysis regarding sector data; it will describe the preliminary outcomes of the consultations conducted with the institutions, the progress made, the difficulties encountered and/or foreseen. In the absence of comments from the contracting authority on the inception report, the firm will carry on its work	60 after contract signature

4	Workshop to discuss and approve the SIH´s architecture	Start-up workshop of the consulting services with the main Government, municipality, private sector and civil society stakeholders	61 after contract signature
5	Presentation of SIH´s final architecture	Delivery of SIH´s architecture in line with the recommendations resulting from the workshop	92 after contract signature
6	Inventory of data producing entities; Delivery of the metadata catalog; **Delivery of the draft logic model** (with scalability estimate) that establishes the operation model, taking into account the different stakeholders.	It consists in delivering: an inventory of all data and information producing entities in the housing field, documenting all needs, constraints; an estimate of the scalability of possible future requests; an inventory of all existing data in the housing field; a metadata catalog, and the operating rules taking into account the different stakeholders.	167 after contract signature
7	Workshop to approve the logical model	Workshop to approve the logical model MIOTH/entities/UGPE	168 after contract signature
8	Delivery of the final logical model	Delivery of the final logical model as per the approval indicated above	198 after contract signature
9	Delivery of the draft physical model	Design of the system's physical solutions, design of data flows and/or processes, in accordance with the requirements analysis and the logical model	213 after contract signature
10	Validation of the physical model	Validation of the physical model with MIOTH, UGPE and the entity that will execute the hardware operation	214 after contract signature
11	Delivery of the final physical model	Delivery of the final physical model as per the validation indicated above	229 after contract signature

12	Acquisition of hardware and software according to the physical model approved	Hardware and software procurement report according to the physical model approved	289 after contract signature
13	Receipt and installation of equipment and software	Report on the receipt of equipment and software, with detailed information on tests, settings and physical installation with the entities	349 after contract signature
14	Assembly of the system prototype (Extended workshop for validation in the first instance by all data producing entities)	At this stage, a high-fidelity prototype will be implemented, which will be validated in the first instance by all data producing entities and sequentially by a careful analysis of the credibility of the data flows between each output interface of the proposed modules. Also, indicators will be established, allowing the collection of inputs and feedback so that the development team can identify improvements or point out deviations	409 after contract signature
15	Extended presentation of the prototype	Putting together an extended workshop to approve the prototype	410 after contract signature
16	Completion of the prototype validation process with each entity that will use the SIH	Completion of the prototype validation process with each entity that will use the SIH	440 after contract signature
17	Delivery of the proposed improvements and the deviations indicated during the process mentioned above	Presentation of the proposed improvements and the deviations indicated during the process mentioned above	455 after contract signature

18	Delivery of the final prototype	Delivery of the final prototype	485 after contract signature
19	Prototype test in laboratory environment (stage)	Prototype test in laboratory environment (stage)	500
20	Start of existing data entry in accordance with the metadata catalog	Existing data entry (charted above) in the current system developed as per the metadata catalog. It is proposed to enter data from some entities (e.g. 1 city hall, 1 NGO, 1 company, 1 ministry), to test both the prototype and the user manual. Following the test, the manual would be updated and other entities trained	530 after contract signature
21	Delivery of the user manual, the system maintenance model and tutorials to assist the user	Presentation of the user manual enabling the entities to produce the data in an easy fashion and in the language required by the system, as well as a flexible and simplified model for maintenance of the System produced (SIH)	560 after contract signature
22	Delivery of the capacity building plan and training manual for different entities	Delivery of a training plan and training manual after creating the access and operating conditions in the system and consulting the different entities that will use it, to validate the main features and components; the documents needed for the training sessions should be delivered and could be reviewed after the training sessions (extended and restricted according to the defined profiles); the Training Plan should be prepared in parallel with the prototype validation process with the different entities, and be validated with the prototype test and	650 after contract signature

		the start of the data entry work	
23	Approval of the training manual and the capacity building plan	Approval of the training manual and the capacity building plan by MIOTH/entities/ UGPE	651 after contract signature
24	Training	Conduct training sessions relating to the system´s replenishment, use and management as per the profiles to be assigned. The number of sessions should be proposed by the consulting firm.	681 after contract signature
25	Delivery of the final maintenance plan and SIH scalability proposal (future integration of new entities and new modules)	Document that is expected to contain all the information that allows the system to be continuously updated and maintained, always on the basis of future integrations of new modules and maintenance interventions by different specialists in the field.	711 after contract signature
26	Delivery of the final report	Deverá conter a descrição da implementação das soluções tecnológicas, de forma suficientemente pormenorizada, para permitir uma decisão fundamentada sobre a sua aprovação	741 after contract signature

The outputs should be delivered in Portuguese in digital version and in one (1) printed version.

The final report should be submitted with an executive summary in English.

7. TERM

The term of these consulting services is 25 months.

8. TARGET GROUPS

- MIOTH
- IFH
- Ministry of Finance, Ministry of Family, Ministry of Tourism, and other State entities of interest to the SIH
- City Councils
- National Institute for Land Management (INGT)
- Tourism Development Companies
- Social and Tourism Sustainability Fund
- Directorate General for State Assets and Public Procurement
- Cabo Verde Association of Building Contractors
- Institutions involved in research of building materials
- Universities
- Entities promoting housing
- Real estate agencies
- Civil Constructiion Cooperatives
- Banking/funding institutions
- Civil construction companies
- NGOs
- Civil society in general
- And other as may be identified

9. PROJECT MANAGEMENT

The technical management of the contract is the responsibility of the Ministry of Infrastructure, Territorial Planning and Housing (MIOTH) through the General Directorate for Housing.

The Special Project Management Unit (UGPE) will be responsible for the administrative management of the contract.

10. MANAGEMENT STRUCTURE

The project is technically managed by a task force appointed by the Ministry of Land Management (MIOTH), to include: the General Directorate for Housing (Lead party); IFH, S.A., the General Directorate for Assets and Public Procurement; City Councils representatives, the National Association of Municipalities, representatives of the Ministry of Family and Social Inclusion and the Ministry of Finance and others as may be deemed important.

A contract will be signed consistent with the lump sum model used at the Special Projects Management Unit - UGPE, with payments upon approval of the outputs and the reimbursable costs paid at actual cost upon submission of receipts