TERMS OF REFERENCE FOR CONSULTANTS

A. Overall Arrangements

1. The consultant will provide advisory support to help to develop National Spatial Data Infrastructure (NSDI) of the Republic of Armenia by developing national geospatial data standards and drafting terms of reference (TOR) for an integrated multifunctional national geoportal development. This will result in efficient and integrated land administration system operational nationwide in the Republic of Armenia. The NSDI should be developed based on the existing systems in Armenia. The task will be carried out in close collaboration with the executing agency—Cadastre Committee of the Republic of Armenia (Committee). Center for Geomatics of Cadastre Committee will be assigned as implementing agency for the task and other institutions of the government will provide relevant expertise to ensure effective delivery of the outputs. Active interaction is also required with the regional and local administrations. The consultant will organize and participate in training local staff at Committee and provide on-the-job training to the staff at the regional and district offices. The consultant will support activities to improve the beneficiaries’ understanding and knowledge of the services that the geoportal will deliver.

B. Scope of Work

2. The knowledge and support technical assistance (TA) is expected to deliver the following outputs:
   
   (i) development of national geospatial data standards to direct and regulate spatial data collection and sharing, and
   
   (ii) development of TOR for establishing a multifunctional geoportal.

3. The TA will comprise of four distinct phases:
   
   (i) investigate the current situation in Armenia to assess the needs for national geospatial data standards development and/or upgrade,
   
   (ii) investigate the current situation and design the architecture and interoperability scheme of the integrated national multifunctional geoportal,
   
   (iii) develop/upgrade at least 10 national geospatial data standards, and
   
   (iv) develop TOR for the integrated national multifunctional geoportal to be implemented independently within the same TA arrangements (under stage 2, to be funded by the High-Level Technology Fund).

4. The consultant will carry out the following, among others:
   
   (i) collect information on successful international experience of national geospatial data standards development, summarize the findings and recommendations,
   
   (ii) collect information on relevant data available locally in different systems and databases, summarize the findings and recommendations for standardization and integration of the existing data,
   
   (iii) organize and conduct national training/roundtables on proposed standards and national multifunctional geoportal structure and disseminate possible solutions,
   
   (iv) develop the TOR for geoportal development for relevant state authorities review and approval,
   
   (v) ensure professional translation of all deliverables into Armenian,
   
   (vi) prepare an inception report (1 month after mobilization),
   
   (vii) prepare progress reports every 3 months, and
   
   (viii) prepare a final report specifying the approach, summarizing the consultation with relevant government stakeholders, elaborating on the selection of the standards
to be developed/upgraded and on the underlying structure of the geoportal design, TOR of which will be attached to the final report.

C. International Consultant Team

5. A consulting firm will be recruited through the quality-based selection method, following submission of a full technical proposal. The team will be comprised of three international consultants with 32 person-months of inputs and three national consultants with a total of 20 person-months of inputs. The consulting firm will also be responsible for carrying out external publications, surveys, training, seminars, and conferences as indicated in the cost estimates and financing plan of the TA report in appendix 2. The TOR for experts are set out below.

   1. **Geospatial Data Standards Expert/Team Leader** (12 person-months, intermittent)

6. The geospatial data standards expert will advise on international geospatial data standards such as ISO, OGS, INSPIRE, and so on, as well as features and adaptation capacities and on the general design of the integrated land administration system and on procedures for integrated land administration between involved agencies and between different levels of administration. The expert will further advise on the development of training, conduct training, advise on need for amendments in legislation to be carried out by the Committee. The expert will have a postgraduate degree in a field relevant to land administration and ICT, with more than 15 years of work experience within a land administration organization in developing and modernizing NSDIs, or similar advisory role. Further experiences in managing (i) land administration modernization projects, (ii) human resource development planning and training, and (iii) land administration modernization projects in transitional and developing countries will be required. The ability to work as an adviser in different cultural environments is desirable.

7. The specific duties are the followings:
   (i) investigate and analyze existing systems and procedures relevant to the assignment in Armenia,
   (ii) advise Cadastre Committee on which international standards can be effectively applied to the Armenian context,
   (iii) propose a general design of information models, geospatial data standards, cadastral and land registration procedures, and legislative support for NSDI development,
   (iv) advise the Committee on hardware and software procurement necessary for the delivery of the Outputs,
   (v) develop a training program and plan training for Committee staff,
   (vi) be responsible for quality assurance of the consultancy input and the consultant’s reporting, and
   (vii) prepare and submit inception, progress and final reports.

   2. **Spatial Data Management Systems Expert** (10 person-months)

8. The spatial data management systems expert will advise on developing an efficient methodology for cadastral surveying and mapping of rural land, and how these surveys can be integrated with surveys of other areas. The expert will also advise on developing national geospatial data standards and will contribute to training activities. The expert will have a university degree in land surveying, geodesy, photogrammetry, or cartography, with more than 10 years’ work experience within a professional cadastral organization. Experience in the following areas
will be particularly desirable: (i) development of cadastral methodology including modern surveying, digital map construction, and establishment of cadastral databases for land registration purposes; (ii) development of geographic information system (GIS) applications from cadastral databases; and (iii) working experiences in a similar field in transitional and developing countries.

9. The specific duties will include the following:
   (i) investigate and analyze the existing capacity of the Committee including the existing systems and their usefulness for continued development,
   (ii) investigate existing standards, regulations and manuals for geospatial data survey and analyze their suitability for efficient surveying for digital land information systems,
   (iii) elaborate proposals for an improved methodology for cadastral survey and mapping,
   (iv) develop training materials to contribute to the capacity development of the Committee staff and conduct trainings,
   (v) advise on technical specifications of the national multifunctional geoportal to be developed including the structure and the technical specifications, and
   (vi) contribute to the development of the final proposal.

3. System Analyst and Database Design Expert (10 person-months)

10. The system analyst and database design expert will advise on the design of the integrated information system to be developed and will draft the TOR for such system development. The expert should have a relevant university degree in system analysis, database development or other relevant information technology (IT) topics. More than 10 years of work experience in developing IT systems for NSDI development is required. Further, (i) experience in system analysis and database design for land information systems in connection with development projects using modern development tools, and (ii) experience in working in IT development in transitional and developing countries are required. The ability to work as an adviser in different cultural environments should be sufficiently demonstrated. A working knowledge of Russian is desirable.

11. The specific duties will be as follows:
   (i) analyze the existing systems operational at the Committee and its scalability and usefulness for an integrated national multifunctional geoportal development,
   (ii) analyze the need for spatial information for the Committee and potential users of an integrated national multifunctional geoportal,
   (iii) advise on expanding the information model and the database model to incorporate an integrated national multifunctional geoportal,
   (iv) develop a comprehensive TOR for spatial data management geoportal development with detailed hardware and software specifications,
   (v) participate in trainings, and
   (vi) contribute to the development of the final proposal.

D. National Consultants (3 persons for a total of 20 months)

12. The national consultant positions will mirror those of the international consultants and will facilitate the dialogue between the International consultants’ team and the local stakeholders of the project working closely with the Committee and the international consultancy team. The national consultants must have relevant at least 4 years of experience in each of the areas of expertise of the international consultants they will support and will be instrumental in localizing
the solutions developed. A working knowledge of English is required.

E. Reporting

13. The consultant will produce and submit the following reports to the executing agency and ADB:

(i) inception report within 1 month including a detailed work plan and budget for the TA,
(ii) progress reports every 3 months on the performance, planning for next period, and experiences learned,
(iii) draft final report to be submitted 1 month before the finalization of the assignment. The final report will include the results and an analysis of the achievements. The EA and ADB will comment on the report within 3 weeks, and
(iv) final report to be submitted not later than 1 month after the assignment end.