



Institutional Capacity and Needs Assessment for the 2020 Census Round in the Republic of Moldova

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In order to strengthen the capacity of NBS staff for successfully carrying out the 2020 Population and Housing Census Round, UNFPA, with support of the Swiss Agency for Development and Cooperation (SDC), agreed to provide technical assistance for the evaluation of the last census and the preparation for the next census. This report on the Capacity and Needs Assessment is part of the technical assistance provided by UNFPA and SDC for starting preparation of the next global census round.

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Acronyms list

CNC	Census National Commission
DC	Data Capture
GIS	Geographical Information System
HR	Human Resources
ICT	Information and Communication Technology
NBS	National Bureau of Statistics
NSO	National Statistical Office
NSS	National Statistical System
PES	Post Enumeration Survey
PHC	Population and Housing Census
QA	Quality Assurance
RM	Republic of Moldova
SDC	Swiss Agency for Development and Cooperation
TASC	Tool for Assessing Statistical Capacity
UNFPA	United Nations Population Fund

1. Executive Summary

The Republic of Moldova has launched the preparation for the 2020 Census Global Round. As part of this, National Bureau of Statistics (NBS) went through an evaluation process of its capacities, resources and needs for conducting the next Population and Housing Census in alignment with UN Global Recommendations.

This report outlines the results of an assessment process that was conducted on October 2-6, 2017 to assess NBS' institutional capacity to conduct the 2020 Round Population and Housing Census in Moldova and identify the areas where the NBS can improve its capacity from internal resources, and areas where the financial and technical assistance from the development partners may be necessary.

In conducting the Institutional Capacity and Needs assessment for the 2020 Census round in the Republic of Moldova, the methodology was based on intensive daily group meetings with NBS staff from census and other units using as a basis the Tool for Assessing Statistical Capacity (TASC) developed by the U.S. Census Bureau to assess the statistical capacity of National Statistical Offices (NSOs) to conduct censuses and surveys. This methodology has been found appropriate to the task because it covered all relevant topics when the discussions themselves have been very informative and provided needed information to identify possible gaps (needs) and assess the NBS capacities on each and every given topic.

The general conclusion of this report is that NBS will be capable of conducting a high quality population and housing census, being in a better situation than it was before the census of 2014; all that provided governmental support in the form of proper budgeting and full cooperation of relevant governmental organizations is secured and additional technical support from international partners is made available.

The Institutional Capacity and Needs assessment for the 2020 Census round in the Republic of Moldova here reported covers the following activities associated with census taking and these are the main conclusions for each of them:

- Institutional capacity: legal environment was found adequate but needs to be updated for the next census; census budget needs to be ensured immediately to allow beginning of activities in January 2018; NBS organizational structure is suited for next PHC; in the field of data protection NBS has to substantially improve its ability to handle sensitive individual data; regarding human resources the NBS will be ready to conduct the next census provided some additional permanent and temporary staff will be recruited for the census years; physical infrastructure and environment in the central office was found also well adequate for the census project.
- Census planning and managing: NBS has staff with experience in budgeting and scheduling for census and survey operations, however there is a need to improve project-management skills of the senior and medium staff; there is also a clear need to improve publicity plans; since the use of electronic devices for data collection is planned, it is recommended to establish a multi-disciplinary working group for that; NBS to develop a total quality management program of census operations at all levels and stages; and a preparation of a comprehensive final census report to be included in the census plans.
- Mapping: The NBS is in the process of establishing a permanent GIS unit when a substantial amount of efforts and resources will need to be allocated for the census mapping processes; need to recruit at least 5 permanent staff for the GIS unit including the unit director and specialists in geocoding, photogrammetric and geographic DB maintenance and to recruit progressively at least 3 additional temporary staff dedicated to the PHC mapping activities; of importance is the development of the census cartographic program including measures of QA; GIS unit needs to develop an inventory and archive of

geographic files; all that will require a series of general TA on the field of GIS capacity building.

- Statistical Methodology: The NBS has permanent staff trained in sampling theory, sampling concepts, and mathematical statistics, including sample design and operations; it is recommended this unit should be reinforced with two additional statisticians that should specialize in the support of the census project.
- Questionnaire content and testing: NBS has extensive experience in the context of different household surveys and in previous census that will be helpful for the design of the next census questionnaires; an area that requires extensive improvements is the area of systematic testing of the census questions and questionnaires; testing plans should include testing of any changes and improvements introduced to the questionnaires and adapted to the kind of method that will be used for data collection and data capture; it is recommended to implement a TA project on the design and testing of census questionnaires with special reference to cognitive pre-testing issues; it is recommended to extend consultations with users of census data and with local experts.
- Field operations:
 - Organization and logistics: recommended development of the final hierarchical structure for census field operations as soon as the final reorganization of the local offices will be known and the collection method is selected; a monitoring system for the delivery and return of field work materials should be planned and implemented; procedures should be put in place for what to do when questionnaires and/or portable electronic devices are lost or stolen; recommended the development of a system to follow the temporary-staff progress since the stage of recruitment until release and payment.
 - Recruiting and Training: strong need to develop an upgraded training program for temporary staff; recommended for that international TA on census training of temporary staff; recommended preparation of separated manuals/instructions for each of the temporary staff different functions.
 - Testing and quality management: strongly recommended develop and put in place broad tests program including census extensive pilot; full revision enumeration procedures including extensive monitoring at different staff levels and quality assurance; revision of reporting tools and mechanisms at all staff levels during enumeration is recommended.
- Data processing: necessary to prepare plans and documentation on the treatments to be given to census data during the data processing stages; international TA on data processing of census data, adapted to data collection using mobile electronic devices is recommended; recommended integration of data processing and subject matter experts in the development of data processing tools and procedures, and in the design of data edit and imputation programs including enforcing of coding standards; recommended design of an archive system for long term storage of microdata from different sources; recommended to prepare manuals of coding, capture, and editing & imputation manuals for census data processing operations; recommended to ensure full and detailed documentation of data processing activities available to users and general public.
- Data analysis and evaluation: NBS has subject matter staff on most of the topics relevant to the census; it is recommended the recruitment and training of one permanent staff on the field of migration; there is a need to capacitate staff in population projections; NBS needs to capacitate staff to do demographic analysis; it is recommended to upgrade the plans for the conduction of PES of adequate size.

- Data dissemination: dissemination of the data from the previous census was satisfactory; it is recommended to improve modes and formats of census data dissemination and to improve and update a list of high priority data users that are known as more heavy users of census data and results; it is recommended to recruit and train additional permanent staff specialized in data visualization who utilizes modern methods and tools.
- Publicity: to recruit staff trained and experienced in publicity activities and to plan and implement a publicity campaign to cover each census stage; to include providing the opportunity for general public to provide feedback.
- Administrative Records: it is strongly recommended the creation of a unit with permanent staff that will specialize in processing administrative data and registers and the creation of an integrated system of administrative record databases; TA on the use and integration of administrative sources for statistical analysis and production is recommended.

Overall, NBS has the general capacity to conduct the next PHC, in particular from the methodological point of view, having staff that experienced the previous census and knows what the main challenges of such an exercise are. The situation today is better than it was in the previous census since there is an improved mode of senior management, the preparations for the next census already initiated, 4.5 years in advance and the census staff is now experienced in census taking. However, to conduct a successful PHC the NBS needs the full commitment and support of the government (proper budgeting and full governmental agencies cooperation). NBS will also benefit from any financial and technical assistance from the development partners. All the above mentioned is needed ASAP to allow the NBS to begin proper elaboration of the PHC program.

Recommendations

- The NBS needs to present to the government the recommended methodologies that can be used for the next PHC with their pros and cons
- The government should approve the methodology that will be used for the next PHC and the general Action Plan following that methodology including the census year
- The government needs to express his full commitment to support the conduction of the next PHC by approving the required budget and ensuring full cooperation of all the relevant governmental institutions
- In the context of the next PHC budget the government needs to ensure the immediate budgeting of the activities that need to be conducted in the census planning stage
- NBS should begin without any delay the preparations for the next PHC according to the census methodology and census year to be approved, including recruitment and training of additional staff that will be needed
- Development partners and donors should make efforts to ensure that any international TA to NBS for the next PHC will begin already during the first half of 2018 to ensure that lessons learned from this TA can be properly introduced in the next PHC plans

2. Background

The population and housing census represents one of the pillars for data collection on the number and characteristics of the population of a country, and should form a central part of an integrated national statistical system. On 10 June 2015 the United Nations Economic and Social Council (ECOSOC) adopted a resolution urging “Member States to conduct at least one population and housing census under the 2020 World Population and Housing Census Programme, taking into account international and regional recommendations relating to population and housing censuses and giving particular attention to advance planning, cost efficiency, coverage and the timely dissemination of, and easy access to, census results for national stakeholders, the UN and other appropriate intergovernmental organizations in order to inform decisions and facilitate the effective implementation of development plans and programmes” (Conference of European Statisticians Recommendations for the 2020 Censuses of Population and Housing, UNECE 2015, p. 4, para 14-15)

In order to strengthen the capacity of NBS staff for successfully carrying out the 2020 Population and Housing Census Round, UNFPA, with support of Swiss Agency for Development and Cooperation (SDC), agreed to provide technical assistance for the evaluation of the last census and the preparation for the next census. The main purpose of this TA was to evaluate the 2014 Population and Housing Census in Moldova, perform a Capacity and Needs Assessment and develop the Action Plan of the 2020 Census Round in Moldova of Population and Housing Census in alignment with UN/Eurostat recommendations and practices.

The scope of the present report is to assess the NBS’ institutional capacity to conduct the 2020 Round Population and Housing Census in Moldova and identify the areas where the NBS can improve its capacity from internal resources, and areas where the financial and technical assistance from the development partners may be necessary. The assessment was conducted using the Tool for Assessing Statistical Capacity – TASC developed by the U.S. Census Bureau. According to it, an NSO must demonstrate statistical capacity across a defined set of operations to successfully conduct a census or survey. These operations are:

- institutional capacity,
- planning and managing,
- mapping,
- sampling,
- questionnaire content and testing,
- field operations,
- data processing,
- data analysis and evaluation
- data dissemination, and
- publicity

This report covers the above mentioned activities and also an additional topic considered relevant for the next census is the collection and use of administrative records.

To collect the needed information for the assessment the consultant conducted intensive daily group meetings with NBS staff from census and other units using as a basis the above mentioned Tool for Assessing Statistical Capacity (TASC). In each meeting one of the 10 topics covered in the TASC questionnaires has been discussed. The participants in each group meeting have been chosen from the different units of NBS that deal with issues related to the topic of the meeting. The discussions have been very informative and provided important information to identify possible gaps (needs) and assess the NBS capacities on the given topic. In addition several meetings have been conducted with the census unit staff to begin the development of an Action Plan for the 2020 Census Round (that will be reported independently).

3. General assessment of capacities and needs by specific area

The present chapter provides an assessment of NBS capacities and needs detailed at the level of a series of areas considered relevant for the conduction of a population census. In each area the assessment refers (when relevant) to the human and physical capital, methodological soundness and international standards, quality assurance, and written procedures and documentation in the specific area.

3.1. Institutional capacity

Legal Environment: From the point of view of the legal environment there are laws and regulations that ensure the role of NBS in the National Statistical System (NSS) and in particular regarding the conduction of the census, even though these need to be updated towards the next census. The updating process is already in its way when a Census National Commission (CNC) has already been appointed with representatives of different relevant ministries and headed by the prime minister of the RM.

Recommendations:

- The improvements that are recommended in this respect are to enhance the **NBS status as leader of the NSS** and to ensure the **NBS free access to administrative data sources from other governmental agencies** following the provisions of the recently adopted Law on Official Statistics.
- It is also recommended that the new updated census Law will allow enough flexibility to the last moment changes that may be required to introduce to the census procedures (like length of collection) and the detailed list of variables to be collected following the census pilot, by delegating the authority of approval of these issues to the CNC.

Census budget: It is urgent to ensure domestic allocation for the needed budget of the next census round. The budget should cover the period from the beginning of 2018 and until the end of the census exercise that is expected not less than two years after the end of the census data collection activities (if the census will be conducted during 2023 that means at least until the end of 2025). In particular, since according to the preliminary action plan the year of 2018 will be dedicated for extensive planning and will end with the delivering of tenders for out-sourcing ICT systems, it will be necessary to ensure a budget that will allow signing the out-sourcing contracts not later than mid-2019 to ensure the development of these critical systems will be conducted during 2019 and the first half of 2020, to be ready for testing during the Pilot Census that is planned for 2021.

Recommendations:

- Ensure the allocation of the census budget covering the period since the beginning of planning and at least until two years after the enumeration year.

Data protection: NBS has to substantially improve its ability to handle sensitive individual data. There exists within NBS management and staff full understanding of the importance of this issue and the staff is trained on it, however the infrastructure needed to protect big amounts of administrative and other data that will be needed to support census operations is still not satisfactory.

Recommendations:

- It is recommended to establish a new unit that will be responsible for data confidentiality and protection and to develop an ICT supporting system for that.
- It is also recommended to implement international TA on data protection including ICT support of monitoring of data protection, and to develop an adequate system of data confidentiality and protection monitoring.

Organizational structure: NBS organizational structure is suited for what it is needed for the conduction of the next population and housing census. There are under way plans for the reorganization of the local offices that are dispersed all over the country (about 35 local offices, one in each raion and 3 in Gagauzia) and their concentration in a smaller number of regional offices. That is not expected to affect the census, provided this reorganization ends as expected in the following months, allowing census planners to take that in consideration when planning the organizational aspects of the census operations.

Recommendations:

- Adapt census plans according to the reorganization of local offices

Human resources: Regarding human resources (HR) the NBS will be ready to conduct the next census provided some additional permanent and temporary staff will be recruited for the main census years. That should begin already in 2018 with the recruitment of 10 additional permanent staff and about 5-10 additional temporary staff. In total, for all the census years, from 2018 to 2024 it is estimated that the NBS will need to recruit in the central office in Chisinau about 10 permanent staff (that will remain after the end of the census project) and about 25 temporary staff, most of them for 3-5 years, some for shorter periods (totalizing about 40 person-years all over the census years).

Recommendations:

- Begin recruitment and training of additional staff already in 2018 as soon as the new organizational structure will be approved.
- Generally improve actual internal policies and procedures to identify specific employees to take on larger responsibility and provide training to ensure the succession plan succeeds and also to improve NBS incentives in place to enhance staff retention and reduce turnover.

Physical infrastructure and environment: in the central office seem also well adequate for the census project (local area networks, spaces, staff equipment) and there exist these about 37 local offices that may be used for the census operations. Additional local offices (like for enumeration supervisors) and storage spaces may be ad hoc rented at the local level, as it was done in previous censuses.

Recommendations:

- Prepare plans to rent/assign offices and storage spaces for the census operations at local level

Stakeholder coordination: There is a clear need for improvements in the areas of coordination of data sharing among domestic data collecting and producing agencies and of setting standards for nomenclatures and classifications that follow international standards and are adapted to local context. It will also be helpful to further improve the advocacy program that seeks domestic and international donor financial and technical support for statistics and to make further efforts to ensure that sufficient government funding is available for statistics and little outside funding is needed.

Recommendations:

- Improve coordination of data sharing with other local agencies and setting standards for nomenclatures and classifications.
- Improve advocacy program for domestic and international donor financial and technical support.
- Ensure sufficient government funding is available for statistics.

3.2. Census planning and management

Project management: In this area the NBS has staff with experience in budgeting and scheduling for census and survey operations, however there is a clear need to improve project-management skills of the senior and medium staff, including the use of project managing and coordinating tools and the implementation of a general reporting and monitoring system of census operations at all levels of the census project operations, beginning at the earlier stages of census planning. It is recommended to have at least one staff fully dedicated to the monitoring and coordinating of census operations across the different NBS units that will be involved in the census. This staff should report on real time directly to the responsible of managing the census activities, allowing identifying in advance any unexpected delays or obstacles in the proper conduction of the census project. It is recommended implementing TA on project managing and on the use of ICT project managing and coordinating tools, and develop an adequate reporting and monitoring system (tendering process may be needed).

Recommendations:

- Appoint at least one staff fully dedicated to the monitoring and coordinating of census operations
- TA on project managing and on the use of ICT project managing and coordinating tools
- Development of reporting and monitoring system – tendering process may be needed

Publicity plans Following the experience of the last census there is also a clear need to improve publicity plans to make sure they cover all stages of the census operations at the national and local level, since the preliminary stages of the census planning activities, and in particular providing support to field tests and pilots that require the voluntary participation of the general public.

Recommendations:

- Improve publicity plans to cover all stages at the national and local level of census operations

Using electronic devices for data collection: Since the use of electronic devices for data collection is planned, it is recommended to establish a multi-disciplinary working group including experts in: design, field operations, and programming and analysis that make joint decisions regarding the use of mobile devices for data collection. International TA on the use of mobile devices for census data collection is recommended.

Recommendations:

- Establish multi-disciplinary working group on using mobile devices for data collection
- TA on the use of mobile devices for census data collection

Quality management: In the previous census a lack of quality management measures has been found. Therefore it is recommended for the next census that NBS develop a total quality management program of census operations at all levels and stages, to make sure that census operations include quality assurance procedures to ensure the plans are conducted properly and at the highest needed quality levels. The quality management program should be implemented since the beginning of the census planning phase. International TA on quality management of census operations is recommended.

Recommendations:

- Develop quality management program of census operations at all levels and stages
- TA on quality management of census operations

Final census report: Following previous census experience, it is recommended that the preparation of a comprehensive final census report to be included in the census plans covering all aspects of census operations since the earliest stages of the planning and until the late stages of the dissemination of the census results. The final report should analyze the performance of each of the census activities and point out lessons to be learned for the next census. This final census report should summarize and analyze the individual reports of the different census activities, reports that should also be included as a concluding stage of each of these activities.

Recommendations:

- Plan the preparation of a comprehensive final census report

3.3. Mapping

The NBS is in the process of establishing a permanent GIS unit that will provide mapping services to all the NBS units. Since the census is one of the biggest clients for mapping services a substantial amount of efforts and resources need to be allocated for the census mapping processes.

At the present moment there is a need to recruit at least 5 permanent staff for the GIS unit and to recruit progressively at least 3 additional temporary staff that will be dedicated to provide mapping services for the population and housing census. This staff will need to be trained progressively in GIS technology and in particular on planning and conducting redistricting GIS procedures for the delineation of the census enumeration areas (EAs). In addition, proper equipment should be provided that should include printers and plotters adequate to satisfy the population census needs.

Of particular importance is the development of the census cartographic program including measures of QA (quality assurance) for each activity. As part of this program, a census mapping training program for non GIS census staff will need to be developed, that will address the need to train a significant number of temporary staff (enumerators and supervisors) in the use of GIS techniques using electronic devices and on how to report and register possible differences between the electronic maps and the actual situation in the field. The census mapping program should cover the full range of mapping activities since the early stages of the census unit and until the dissemination of the census results using static maps and interactive maps generators.

Finally the GIS unit needs to develop an inventory and archive of geographic files and products including GIS data sets that will serve not only the population and housing census but also other general needs of the NBS units.

The above mentioned issues will require a series of general TA on the field of GIS capacity building like TA guidance on the needed functions and required equipment of the GIS unit and TA incremental training of GIS staff on more advanced GIS topics. In addition, TA will be needed for the development of the census cartographic program and for the development of a training program for temporary census staff (enumerators, supervisors etc.).

Recommendations:

- Recruit at least 5 permanent staff for the GIS unit and progressively at least 3 additional temporary staff for census activities
- Acquire proper equipment for GIS operations
- Development of census cartographic program including measures of QA
- Development of census mapping training program for non GIS census staff
- Develop inventory and archive of geographic files and products
- A series of TA on the field of GIS progressive capacity building

3.4. Statistical methodology (sampling)

The NBS has permanent staff trained in sampling theory, sampling concepts, and mathematical statistics, including sample design and operations. Also methods used for calculating sampling and non-sampling errors follow international standards. An area that needs improvement is the area of documentation of statistical procedures that are used and the creation of manuals for NBS sampling experts that explain how to create a sample and details the sampling methodology, including the calculation of probabilities of selection, response and coverage rates, and the calculation of survey weights for each survey. Also it is needed to prepare documentation for data users explaining how to correctly use the datasets and details the sampling methodology, including the calculation of probabilities of selection, response and coverage rates, and the calculation of survey weights for each survey and census.

The statistical unit suffers from a partial lack of permanent staff that does not allow to have samplers specialized by area (household, business, census, etc.). It is recommended that at least for the period of the census this unit should be reinforced with two additional statisticians that should specialize in the support of the census project regarding the planning and preparation of the PES and the evaluation of the coverage and content of the census data, and regarding the processing and analysis of the census results. In addition, international TA on advanced statistical methodology including issues related to the implementation of the PES and additional methods for census evaluation and comparisons with other data sources is recommended.

Recommendations:

- Improve documentation of statistical procedures and creation of manuals for NBS sampling experts
- Prepare documentation for data users on how to correctly use the datasets and detailing sampling methodology
- Recruit and train at least two additional statisticians for the census period
- TA on advanced statistical methodology related to census

3.5. Questionnaire content and testing

In the field of questionnaire content and design the NBS has accumulated extensive experience in the context of a variety of different household surveys and in the previous census that will be helpful for the design of the next census questionnaires. The NBS has subject-matter experts for most topics relevant to the census (age, gender, education, etc.) and subject matter staff is routinely involved in reviewing the questionnaire. Also census questionnaire content is decided taking historical continuity and international standards into account following internationally accepted standards for wording of questions and response categories in order to adequately measure concepts.

The NBS still needs to improve several areas related to questionnaire design and in particular questionnaire testing. Specific areas that need improvement are the the questionnaire structure, which needs simplification, the balancing of respondent and interviewer burden and the introduction of systematic procedures for the translation of the questionnaires to the relevant languages that are needed. An area that requires extensive improvements is the area of systematic testing of the census questions and questionnaires. It is recommended to prepare plans for systematic testing of the questions including cognitive pre-testing to make sure the questions are understandable and measure what are intended to measure. The testing plans should include the testing of any changes and improvements that are introduced to the questionnaires. The tests should be adapted to the kind of method that will be used for data collection and data capture. For the above mentioned issues it is recommended to implement a

TA project on the design and testing of questionnaires for census and other population based surveys with special reference to cognitive pre-testing issues.

In addition, it is recommended to extend the consultations with users of census data and with local experts in the questionnaire topics. This should be done by planning and implementing a consultation program.

As in other areas it is strongly recommended to include in the plans proper documentation of the questionnaires development and design process, both to learn for the future and to make the relevant information available to data users and the general public.

Recommendations:

- Develop program of consultations with data users and experts on census topics
- Improvement of census questionnaires design issues (including balancing burdens and questionnaire structure)
- Prepare plans for systematic testing of the questions including cognitive pre-testing
- Development documentation plans of questionnaires development and monitoring plans implementation
- TA project on the design and testing techniques for questionnaires

3.6. Field operations

3.6.1. Organization and logistics

The field operations of the census collection stage was performed in previous censuses in a combined decentralized/centralized mode where the local statistical offices have been responsible for the recruiting, training and collection performance, but all the planning and preliminary preparations for the census has been done in the central NBS office in Chisinau. A similar mode is planned for the next census even if it is not yet totally clear how the new reorganization of the local offices will be changed (this restructuring expected to end in a few months). Therefore as a first step it is recommended the development of the final hierarchical structure for census field operations as soon as the final reorganization of the local offices will be known.

Following the experience from the previous census, a monitoring system for the delivery and return of field work materials (logistics, on line reporting, recovery procedures) should be planned and implemented. For this, the development of an ICT system dedicated to the managing of equipment distribution and its follow up may be needed and the tendering of this system should be considered.

In addition, procedures should be put in place for what to do when questionnaires and/or portable electronic devices are lost or stolen. Backup questionnaires and/or portable electronic devices should be available throughout the country to avoid delays in the census operations. An additional activity that needs full attention is the development of a system that should follow the temporary-staff progress since the stage of the recruitment (perhaps even before that, from the stage of the reception of the postulants applications to be part of the temporary census staff) through the postulant allocation to a specific duty and location, contracting, training, performance during the census, release and payment. This system may be centralized or decentralized according to the NBS decision on the optimal mode, but should be fully recorded and allow the central office to know at each stage what is the situation of any given permanent staff and of the whole temporary staff disaggregated by regions etc. This will require the development of an adequate reporting system and that may require an independent ICT tendering process, unless it is included as part of other systems tenders. Since extensive tendering will be required for the census, it is recommended to reinforce the NBS procurement unit for the census with 1 additional staff.

Recommendations:

- Decide on the final hierarchical structure for census field operations
- Develop monitoring system for the delivery and return of field work materials (tendering of this system should be considered)
- Plan recovery procedures in case questionnaires or electronic devices are stolen
- Develop system to follow temporary-staff progress since recruitment and until final release (tendering of this system should be considered)
- Reinforce NBS procurement unit for the census with one additional staff.

3.6.2. Recruiting and Training

The training of census temporary staff that includes thousands of employees should be proper and carefully planned, including the development of a full and detailed hiring and training plan that should include recovery measures in case of something does not work properly. This plan should be elaborated by the HR unit in full collaboration with the census planning team.

Following the experience of the previous census there is a strong need to develop an upgraded training program for enumerators, supervisors, chiefs of circumscriptions / trainers of trainers. It is recommended for that technical assistance on census training of temporary staff, preferably to be provided by experts with sounded experience on census training of temporary staff for population censuses.

In parallel, it is recommended the preparation of separated manuals/instructions for each of the temporary staff with different functions (enumerators, supervisors, chief of circumscriptions / trainers of trainers). TA on development of census manuals/instructions for temporary staff is recommended.

Recommendations:

- Develop full and detailed hiring and training plan in collaboration with HR unit
- Prepare upgraded and detailed independent training programs for enumerators, supervisors, chiefs of circumscriptions / trainers of trainers
- Prepare separated manuals/instructions for each of the temporary staff functions
- TA on development of training program for temporary staff and on development of adequate census manuals/instructions for each function

3.6.3. Testing and quality management

The last census was characterized by a lack of systematic testing of enumeration procedures and collection tools. For the next census, it is strongly recommended to develop and put in place a sounded and broad tests program that should include a census extensive pilot of all the census collection procedures and questionnaires, two years before the census to allow the time that will be needed to analyze the pilot results, learn the relevant lessons and then implement the necessary improvements in procedures, systems and questionnaires, including modular testing of the changes/improvements. International TA on development of census tests program is recommended.

A full revision of enumerators and supervisors enumeration procedures including extensive monitoring at the different staff levels and quality assurance measures is recommended for the next census. International TA on design of enumerators and supervisors enumeration procedures including QA measures is recommended. These procedures should then become part of the system/s that will be uploaded to the mobile collection devices (tablets) and that may require an independent ICT tendering process, unless it is included as part of other systems tenders.

Following again the experience from the previous census, a revision of reporting tools and mechanisms at all staff levels during enumeration is recommended. Reporting (and its

documenting) support will require the development of an adequate reporting system and that may require an independent ICT tendering process, unless it is included as part of other systems tenders.

Recommendations:

- Develop broad tests program including census extensive pilot of all the census collection procedures and tools about two years before final enumeration
- TA on development of census tests program
- Revision of enumerators and supervisors enumeration procedures including QA measures
- TA on development of enumerators and supervisors enumeration procedures
- Revision of reporting tools and mechanisms at all staff levels during enumeration
- Development adequate reporting system (tendering of this system should be considered, see item on HR in 3.1 Institutional capacity above)

3.7. Data Processing

The data capture (DC) in the previous census has been delayed for two years and therefore will require special attention in the next census. The planned use of mobile devices for the collection of the census data will imply that data entry will be conducted in the field, and therefore, real time data validation protocols and mitigating actions for errors need to be in place. An error monitoring system may need to be put in place to allow constant quality control during the enumeration, but still also processing operations will be needed after data collection on the field, before the final data set can be sealed and be ready for preparing the census products.

NBS staff has been only partially involved in the processing of the data in the previous census. In particular the imputation of missing values has been delegated to an international consultant with little participation of NBS staff.

It is necessary to prepare plans and documentation on the treatments to be given to census data during the data processing stages and to make this information available to the public together with the publication of the census results. International TA on data processing of census data, adapted to data collection using mobile electronic devices is recommended.

For the processing of the census data it is also recommended to recruit ICT additional temporary staff to support this activity. It is also recommended the integration of data processing and subject matter experts in the development of data processing tools and procedures, and in the design of data edit and imputation programs including enforcing of coding standards.

If for some reason paper questionnaires will be used (even if only for some part of the population) it will be necessary to develop a proper system to monitor and track the movement of questionnaires at all stages from printing to storage after census. Also it will be necessary to develop a system to monitor production rates of data capture staff and the development of additional documentation for data processing will be required..

Since portable electronic devices are planned to be used in data collection, an electronic system needs to be created by the NBS that will link the enumerator to the device and to the enumeration area. The system should allow the reassignment of enumeration areas to another enumerator.

It is recommended the design of an archive system for long term storage of microdata from different sources. That may require an independent ICT tendering process, unless it is included as part of other systems tenders.

In any case it is recommended to prepare manuals of coding, capture, and editing & imputation manuals for census data processing operations

Finally it is recommended to ensure that a full and detailed documentation of data processing activities is created and made available to the users and the general public together with the published census results.

Recommendations:

- Prepare plans and documentation on the treatments to be given to census data during data processing stages
- TA on data processing of census data, adapted to data collection using mobile electronic devices
- Recruit ICT additional temporary staff to support data processing
- Integrate data processing and subject matter experts in the development of data processing tools
- Development of electronic monitoring system for portable devices (ICT tender may be needed), including linking enumerator to the device and to the enumeration area allowing re-assignment when necessary
- Design archive system for long term storage of microdata (tendering of this system should be considered)
- Prepare manuals of coding, capture, and editing & imputation manuals
- Create full and detailed documentation of data processing activities

3.8. Data analysis and evaluation

NBS has limited experience in the data analysis and evaluation of census data, perhaps with the exception of the area of the PES where NBS staff has been more intensively involved in the conduction of the survey and the calculation of the coverage rates. In particular NBS staff lacks experience in the areas of demographic analysis (and comparisons with other data sources), in the production of census final estimates, in population projections and in the production of census thematic reports.

NBS has subject matter staff on most of the topics relevant to the census. However, there is one missing area that is of extreme importance for the census in the case of the Republic of Moldova that experienced heavy emigration from the country, and therefore it is recommended the recruitment and training of one permanent staff on the field of migration. It should be mentioned that NBS already established an inter-sectorial Working Group on migration in 2017 in order to improve the mechanism of data collection on population migration. It is also recommended to consider TA on this field to find a proper way to incorporate better statistics on migration to the NBS population current estimates.

The NBS needs to capacitate staff to do demographic analysis to evaluate the results of a census. It is recommended international TA in this area too. Reinforcement of staff capacity to conduct advanced statistical analysis using software programs such as SAS, SPSS, STATA or R is needed. This capacitation courses may be provided by local firms and/or by existent NBS staff already experienced on this area.

Similarly it is recommended the reinforcement of the capacity of staff to produce more in depth thematic reports using the census results, in an independent mode or in collaboration with research institutions.

It is recommended to reinforce the capacity of permanent subject matter staff in producing estimates of coverage and content error. That again may be done by implementing courses on this issue delivered by NBS staff already experienced on this area.

There is a need to capacitate staff in population projections by age and sex for multiple levels of geography. For this activity it is recommended international TA on population projections and their possible use to evaluate the quality of census results.

Data weighting (for coverage errors) and content correction may be needed also in the next census. In the last census, a small PES has been successfully conducted that allowed the estimation of undercount rates all over the country, but since its size was small it did not allow the estimation of coverage errors at detailed levels of disaggregation. For the next census, it is recommended to upgrade the plans for the conduction of PES of adequate size to estimate and if necessary correct for coverage and content errors also for smaller areas and population groups.

A general plan for the conduction of demographic analysis with data fully independent from the Census (e.g., all data is from administrative registers such as a vital registration) needs to be developed. International TA in this area is recommended.

As for other activities it is recommended to create documents of written procedures for the whole evaluation program and make it available to the public. In addition, it is also recommended to create manual of written estimation procedures for measuring content and coverage error, imputation procedures, non-response adjustment procedures, and estimating probabilities for matching and resident status.

Recommendations:

- Recruitment and training of one permanent staff on the field of migration
- TA to improve current population estimates with incorporation of migration statistics
- Reinforce staff capacity to conduct advanced statistical analysis
- Plan conduction of PES of adequate size to estimate and correct for coverage errors
- Recruitment and training of one independent staff responsible for PES operations planning and implementation
- Recruitment and training of one staff responsible for demographic analysis
- TA on improving staff capacity to conduct advanced statistical analysis of census data
- TA on preparation of thematic reports using census data
- TA on demographic analysis of census data
- TA on population projections
- Create documents of written procedures for the whole census evaluation program

3.9. Data dissemination

The dissemination of the data from the previous census, despite the delay on the data release caused by the late data capture of the census data from the questionnaires, was satisfactory and covered data dissemination in different media, but still further improvements will be needed for the next census.

For the next census it is recommended to recruit and train additional permanent staff specialized in data visualization who utilizes modern methods and tools. It is also necessary to improve and update a list of high priority data users with specific data needs that are an important target of the data results publication. It is also recommended to improve modes and formats of census data dissemination. In particular a policy to allow online and off-line access to microdata maintaining data confidentiality rules is strongly recommended. This policy may require the implementation of a proper application to make sure policy rules are strictly followed.

The dissemination program should include training and promotion program for data users and an extended consultation policy with domestic and international stakeholders and users on data dissemination formats. It is recommended to improve the census products review process including considerations for: confidentiality, accuracy of data, international standards, sensitivity, and conformity to publication standards. Finally the product catalog and public library of relevant NSO publications needs to be updated and improved and the creation of standards addressing elements to include in each publication is also recommended.

Recommendations:

- Recruitment and training of additional staff specialized in data visualization for the production of census products
- Improve and update list of high priority data users
- Improve modes and formats of census data dissemination including online and off-line access to microdata
- Develop training and promotion program for data users and extended consultation policy with domestic and international stakeholders and users
- Improve and update product catalog and public library of NSO publications
- Create written standards addressing elements to include in each publication as part of the general dissemination policy and guidelines of NBS

3.10. Publicity and communication

For the previous census a full plan of publicity was prepared at both the national and local levels but for different reasons this program was only partially implemented. This plan should consider issues like educating journalists to improve their numeracy and understanding of statistical operations, de-politicization of data operations, regular interviews for newspapers, radio and tv, ,op-eds, tv-spots, etc.

The recommendation for the next census is to recruit staff trained and experienced in publicity activities and to plan and implement a publicity campaign to cover each census stage involving local leaders and high profile members of the community and including branding elements, such as a logo and slogan.

It is also recommended the plan to include providing the opportunity for general public to provide feedback on their experiences working with the NBS, and other activities to improve the use of census results and at the same time improving the public image of the NBS showing its openness and transparency.

Recommendations:

- Recruit staff trained and experienced in publicity activities
- Implement publicity campaign to cover each census stage at national and local level
- Improve use of census results and the public image of the NBS providing opportunity for general public to provide feedback on their experiences working with the NBS

3.11. Administrative Records

The use of administrative records in the statistical production is increasing all over the world and RM is not an exemption for that. Two existing obstacles need to be removed to allow extensive use of administrative records in the NBS. The first is the lack of a convincing system of data protection that was already addressed in a previous chapter. The second is the lack of dedicated staff to deal with these kinds of data.

Therefore it is strongly recommended the creation of a unit with permanent staff that will specialize in processing administrative data and registers. Following that it is recommended

the creation of an integrated system of administrative records databases. In addition, the NBS should consider the creation of an inter-ministerial platform to work out formalities on data sharing arrangements and compatibility issues

The activities of this new unit should include the development of a quality control system with defined protocols for the primary sources of administrative registers, the development of an appropriate coding system to facilitate the reconciliation or matching work between different sources of administrative registers and the creation of an inventory of administrative records that are available in the country. A TA on the use and integration of administrative sources for statistical analysis and production is recommended.

Recommendations:

- Implement new unit specialized in processing administrative data and registers
- TA program on the use and integration of administrative sources for statistical analysis and production
- Creation of an integrated system of administrative records databases
- Develop quality control system with defined protocols for primary sources of administrative registers
- Develop coding system to facilitate reconciliation or matching between sources
- Creation of national inventory of administrative records

4. Conclusions

The Institutional Capacity and Needs assessment for the 2020 Census round in the Republic of Moldova here reported covered the following activities associated with census taking and these are the main conclusions for each of them:

- Institutional capacity: legal environment was found adequate but needs to be updated for the next census; census budget needs to be ensured immediately to allow beginning of activities during the first half of 2018; NBS organizational structure is suited for next PHC; in the field of data protection NBS has to substantially improve its ability to handle sensitive individual data; regarding human resources the NBS will be ready to conduct the next census provided some additional permanent and temporary staff will be recruited for the census years; physical infrastructure and environment in the central office was found also well adequate for the census project.
- Census planning and managing: NBS has staff with experience in budgeting and scheduling for census and survey operations, however there is a need to improve project-management skills of the senior and medium staff; there is also a clear need to improve publicity plans; since the use of electronic devices for data collection is planned, it is recommended to establish a multi-disciplinary working group for that; NBS to develop a total quality management program of census operations at all levels and stages; and a preparation of a comprehensive final census report to be included in the census plans.
- Mapping: The NBS is in the process of establishing a permanent GIS unit when a substantial amount of efforts and resources will need to be allocated for the census mapping processes; need to recruit at least 5 permanent staff for the GIS unit and to recruit progressively at least 3 additional temporary staff dedicated to the PHC mapping activities; of importance is the development of the census cartographic program including measures of QA; GIS unit needs to develop an inventory and archive of geographic files; all that will require a series of general TA on the field of GIS capacity building.
- Statistical Methodology: The NBS has permanent staff trained in sampling theory, sampling concepts, and mathematical statistics, including sample design and operations; it is recommended this unit should be reinforced with two additional statisticians that should specialize in the support of the census project.
- Questionnaire content and testing: NBS has extensive experience in the context of different household surveys and in previous census that will be helpful for the design of the next census questionnaires; an area that requires extensive improvements is the area of systematic testing of the census questions and questionnaires; testing plans should include testing of any changes and improvements introduced to the questionnaires and adapted to the kind of method that will be used for data collection and data capture; it is recommended to implement a TA project on the design and testing of census questionnaires with special reference to cognitive pre-testing issues; it is recommended to extend consultations with users of census data and with local experts.
- Field operations:
 - Organization and logistics: recommended development of the final hierarchical structure for census field operations as soon as the final reorganization of the local offices will be known; a monitoring system for the delivery and return of field work materials should be planned and implemented; procedures should be put in place for what to do when questionnaires and/or portable electronic devices are lost or stolen; recommended the development of a system to follow the temporary-staff progress since the stage of recruitment until release and payment.

- Recruiting and Training: strong need to develop an upgraded training program for temporary staff; recommended for that international TA on census training of temporary staff; recommended preparation of separated manuals/instructions for each of the temporary staff different functions.
 - Testing and quality management: strongly recommended develop and put in place broad tests program including census extensive pilot; full revision enumeration procedures including extensive monitoring at different staff levels and quality assurance; revision of reporting tools and mechanisms at all staff levels during enumeration is recommended.
- Data processing: necessary to prepare plans and documentation on the treatments to be given to census data during the data processing stages; international TA on data processing of census data, adapted to data collection using mobile electronic devices is recommended; recommended integration of data processing and subject matter experts in the development of data processing tools and procedures, and in the design of data edit and imputation programs including enforcing of coding standards; recommended design of an archive system for long term storage of microdata from different sources; recommended to prepare manuals of coding, capture, and editing & imputation manuals for census data processing operations; recommended to ensure full and detailed documentation of data processing activities available to users and general public.
 - Data analysis and evaluation: NBS has subject matter staff on most of the topics relevant to the census; it is recommended the recruitment and training of one permanent staff on the field of migration; there is a need to capacitate staff in population projections; NBS needs to capacitate staff to do demographic analysis; it is recommended to upgrade the plans for the conduction of PES of adequate size.
 - Data dissemination: dissemination of the data from the previous census was satisfactory; it is recommended to improve modes and formats of census data dissemination and to improve and update a list of high priority data users; it is recommended to recruit and train additional permanent staff specialized in data visualization who utilizes modern methods and tools.
 - Publicity: to recruit staff trained and experienced in publicity activities and to plan and implement a publicity campaign to cover each census stage; to include providing the opportunity for general public to provide feedback.
 - Administrative Records: it is strongly recommended the creation of a unit with permanent staff that will specialize in processing administrative data and registers and the creation of an integrated system of administrative record databases; TA on the use and integration of administrative sources for statistical analysis and production is recommended.

Overall, NBS has the general capacity to conduct the next PHC, in particular from the methodological point of view, having staff that experienced the previous census and knows what the main challenges of such an exercise are. The situation today is better than it was in the previous census since there is an improved mode of senior management, the preparations for the next census already initiated, 4.5 years in advance and the census staff is now experienced in census taking.

However, to conduct a successful PHC the NBS will need full commitment and support of the government (proper budgeting and full governmental agencies cooperation). NBS will also benefit from any financial and technical assistance from the development partners. All the above mentioned is needed ASAP to allow the NBS to begin proper elaboration of the PHC program.

5. Main Recommendations

In order to comply with United Nations Economic and Social Council (ECOSOC) resolution from 10 June 2015 “urging Member States to conduct at least one population and housing census under the 2020 World Population and Housing Census Programme” the main more general recommendations based on this assessment are:

1. NBS should immediately present to Moldovan Government recommended alternative methodologies proposed to be used for the next PHC with an analysis of pros and cons
2. RM government should select and approve the methodology that will be used for the next PHC and the general Action Plan following that methodology, including the census year
3. RM government needs to express full commitment to support the conduction of the next PHC by approving the required budget and ensuring full cooperation of all relevant governmental institutions
4. In the context of the next PHC budget RM government needs to ensure the immediate budgeting of the activities that need to be conducted in the years 2018 and 2019
5. NBS should begin without any delay, since the beginning of 2018, preparations for the next PHC including recruitment and training of additional required staff
6. Development partners and donors should make efforts to ensure international TA to NBS will begin during the first half of 2018 and be concentrated in the two years 2018-2019 to allow the NBS to introduce international experience into the census plans that will be tested during the census pilot of 2020

Detailed recommendations have been introduced within the assessment presented in the previous part of this report and in the Annexes a detailed list of topics in which improvements/support is recommended, a list of recommended TA projects, the number of recommended additional staff and a list of main ICT related projects that may need tendering (for outsourcing).

6. Thanks

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7. Appendixes

Table 1: Detailed list of topics in which improvements/support is recommended by type of measure: Internal measure/activity or external/international support

Table 2: List of recommended TA projects by length and by year

Table 3: Number of recommended additional staff at NBS offices by unit, length and purpose/duties

Table 4: List of main ICT related projects that may need tendering (outsourcing)

Table 1: Detailed list of topics in which improvements/support is recommended by type of measure: Internal measure/activity or external/international support

	Topic	Internal measures / policies	External / international support
1	Improvement of legal environment and NBS status as leader of NSS	Lobbying for status, budget and free access to data sources Improve census Law to allow more flexibility for NBS	Lobbying support
2	Census budget	Ensure census budget since 2018	Lobbying support
3	Establishing unit for data protection	New unit, 2 permanent staff Development of ICT monitoring system	TA on data protection including ICT aspects of data protection
4	Reorganization of local offices	Adaptation of census plans to reorganization of local offices	
5	Recruitment and training of additional staff	Begin recruitment and training of additional staff already in 2018 Consider allocation of additional permanent staff in the new organigram of central office	
6	Improvement of HR management	Improvement of procedures for staff promotion and retention	TA on developing HR strategy
7	Physical infrastructure and environment	Prepare plans to rent/assign offices and storage spaces for census operations at local level	
8	Stakeholder coordination	Improve coordination of data sharing Improve advocacy program for domestic and international donor financial and technical support . Ensure sufficient government funding is available for statistics	
	Census Planning and Management		
9	Improvement project management skills of the senior and medium staff	1 staff (5 years) for monitoring and coordinating census operations across units	TA on project managing and use of ICT Project managing and coordinating tools
10	Development of general reporting and monitoring system of census operations at all levels	Development of reporting and monitoring system – tendering process may be needed	TA on reporting and monitoring of census operations.
11	Improvement of publicity plans for ALL stages of the census operations at national and local level	1 staff (5 years) for planning and leading publicity for census	Local private firms to assist in training and execution of publicity campaign – tendering process may be needed
12	A multi-disciplinary working group needs to be formed including experts in: design, field operations, and ICT programming and analysis that make joint decisions regarding the use of mobile devices for data collection	Creation of a multi-disciplinary working group regarding the use of mobile devices for census data collection (CATI, CAPI, CAWI)	TA on the use of mobile devices for census data collection
13	Development of a total quality management program of census operations at all levels and stages	Development of a total quality management program	TA on quality management of census operations as part of TQM to be implemented in NBS

14	Preparation of a final census report and full documentation of census activities	Preparation of a final census report and full documentation of census activities	
	Mapping		
15	Establish a mapping unit	5 permanent staff; 3 temporary staff (2-3 years) for census (and pilots)	TA guidance on the needed functions and required equipment
16	Training of GIS staff	Training courses on GIS topics	TA training of GIS experts
17	Equipment of mapping unit	Equipment acquisition - tendering process may be needed	
18	Development of census cartographic program including QA for each activity	Development of CENSUS cartographic program	TA guidance on development of census cartographic program + QA
19	Development of census mapping training program for non GIS census staff	Development of census mapping training program	TA guidance on training of enumerators, supervisors etc on using GIS and maps.
20	Development of inventory and archive of geographic files and products including GIS data sets	Development of inventory and archive of geographic files and products including GIS data sets	TA on quality assessment of administrative data
	Statistical methodology		
21	Documentation of statistical procedures	Improve documentation of statistical procedures and create manuals for NBS sampling experts	
22	Recruitment of additional statisticians for census support	2 (2-3 years) statisticians with strong ICT skills	
23	Capacity enhancement on census related statistical methodology		TA on statistical methodology related to census
24	Develop written documentation procedures for statistical aspects of census (PES, post-stratification and re-weighting etc.)	Develop written documentation procedures for statistical aspects of census	
	Questionnaire Content and Testing		
25	Develop program of consultations with data users and experts on census topics	Develop program of consultations with data users and experts on census topics	
26	Improvement of census questionnaires design issues (including balancing burdens)	Improvement of census questionnaires design issues	TA on census questionnaires design
27	Develop program for pre-testing of census questionnaires (including cognitive pre-testing)	Develop program for pre-testing of census questionnaires	TA on census questionnaires pre-testing
28	Development documentation plans of questionnaires development and monitoring implementation	Development documentation plans of questionnaires development and monitoring plans implementation	
	Field Operations		
	Organization and logistics		
29	Development of hierarchical structure for census field operations	Development of hierarchical structure for census field operations	

30	Development of delivery program and monitoring system of field work materials (logistics, on line reporting, recovery procedures)	1 staff (4-5 years) responsible for managing and coordination of census field operations including pilots. Develop ICT system to monitor and track the movement of field work materials - ICT tender	
31	Development of a temporary staff follow-up system since recruitment until release that will allow monitoring the temporary staff situation at each stage of the census operations.	Develop ICT system to monitor and track the temporary staff during the census project - ICT tender	
32	Reinforcement of NBS procurement unit for the census (tendering)	1 staff (5 years)	
	Training		
33	Development of hiring and training plans, reinforcement of HR unit	1 staff (3-4 years) to reinforce HR unit - Development of hiring and training plans (together with census staff)	
34	Upgrade training programs for enumerators, supervisors, chiefs of circumscriptions and trainers of trainers	1 census staff (4-5 years) to coordinate training of temporary staff (census and pilots)	TA on census training of temporary staff
35	Preparation of separated manuals/instructions for different functions (enumerators, supervisors, chief of circumscriptions, trainers of trainers)	3 census staff (1-2 years) to develop the separated manuals/instructions	TA on development of census manuals for temporary staff
	Testing and quality management		
36	Develop and put in place a sounded and broad pilot tests program		TA on development of pilot tests program
37	Revision of enumerators and supervisors enumeration procedures including QA		TA on design of enumerators and supervisors enumeration procedures including QA
38	Revision of reporting tools at all staff levels during enumeration	Revision of reporting tools at all staff levels during enumeration	
	Data Processing		
39	Preparation of plans and documentation on the treatments given to census data and its public availability	1 census staff (2-3 years) responsible for plans and documentation of data processing	TA on data processing of census data
40	Recruiting of ICT additional staff to work on census projects (tenders preparation and monitoring)	3 ICT experts for 2-3 years	
41	Integration of data processing and subject matter experts in the development of data processing tools and procedures	Integration of data processing and subject matter experts in the development of data processing tools and procedures	

42	Design of data edit and imputation programs including enforcing of coding standards	2 census staff (2-3 years) with strong statistical and ICT skills in collaboration with statisticians from methodology unit	TA on data editing and imputation
43	Develop system to monitor and track the movement of questionnaires from printing to storage after census – if paper questionnaires are used	Develop system to monitor and track the movement of questionnaires from printing to storage after census - ICT tender	
44	Development of electronic monitoring system for portable devices	Development of electronic monitoring system for portable devices - ICT tender	
45	Develop system to monitor production rates of data capture staff	Develop system to monitor production rates of data capture staff - ICT tender	
46	Design of archive system for long term storage of microdata from different sources	Design of archive system for long term storage of microdata from different sources - ICT tender	
47	Preparation of manuals of coding, capture, and editing & imputation manuals for census data processing operations	Preparation of manuals of coding, capture, and editing & imputation manuals for census data processing operations	
48	Documentation of data processing activities	Documentation of data processing activities	
	Data Analysis and Evaluation		
49	Recruitment of staff for migration statistics	1 permanent staff in demography unit	TA on development of international migration statistics
50	Capacitation of staff to do demographic analysis to evaluate the results of a census	Capacitation course/s to do demographic analysis to evaluate the results of a census	TA on demographic analysis to evaluate census results
51	Reinforcement of staff capacity to conduct advanced statistical analysis using software programs such as SAS, SPSS, STATA, R	Capacitation course/s on the use of statistical software	
52	Reinforcement of the capacity of staff to produce thematic reports	Capacitation course/s on producing thematic reports	
53	Reinforcement of the capacity of permanent subject matter staff in producing estimates of coverage and content error	Capacitation course/s on producing estimates of coverage and content error	
54	Capacitation of staff in population projections by age and sex for multiple levels of geography	Capacitation course/s in population projections by age and sex for multiple levels of geography	TA on population projections
55	Plans for the conduction of PES of adequate size to estimate and if necessary correct for coverage and content errors	1 (independent) census staff (3-4 years) responsible for PES operations planning and implementation	
56	Plans for the conduction of demographic analysis with data fully independent from the Census (e.g., all data is from administrative registers such as a vital registration)	1 census staff (1-2 years) responsible for demographic analysis	

57	Create documents of written procedures for the whole evaluation program and make it available to the public	Create documents of written procedures for the whole evaluation program and make it available to the public	TA on census management
58	Create manual of written estimation procedures for measuring content and coverage error, imputation procedures, non-response adjustment procedures, and estimating probabilities for matching and resident status	Create manual of written estimation procedures for measuring content and coverage error, imputation procedures, non-response adjustment procedures, and estimating probabilities for matching and resident status	
	Data Dissemination		
59	Recruit and train additional permanent staff specialized in data visualization who utilize modern methods and tools	2 staff (3-4 years) for data dissemination unit	
60	Improve and update list of high priority data users with specific data needs	Improve and update list of high priority data users with specific data needs	
61	Improve modes and formats of census data dissemination	Improve modes and formats of census data dissemination	
62	Adopt policy to allow online access to microdata maintaining data confidentiality rules	Adopt policy to allow online access to microdata maintaining data confidentiality rules	TA on developing internal policy on access to microdata
63	Implement training and promotion program for data users	Implement training and promotion program for data users	
64	Implement consultation policy with domestic and international stakeholders and users on data dissemination formats	Implement consultation policy with domestic and international stakeholders and users on data dissemination formats	
65	Improve products review process including considerations for: confidentiality, accuracy of data, international standards, sensitivity, and conformity to publication standards	Improve products review process including considerations for: confidentiality, accuracy of data, international standards, sensitivity, and conformity to publication standards	
66	Improve product catalog and public library of relevant NSO publications	Improve product catalog and public library of relevant NSO publications	
67	Create written standards addressing elements to include in each publication	Create written standards addressing elements to include in each publication	
	Publicity		
68	Recruit staff trained and experienced in publicity activities	1 additional staff (4-5 years) in publicity unit	
69	Plan and implement a publicity campaign to cover each census stage involving local leaders and high profile members of the community and including branding elements, such as a logo and slogan	Plan and implement a publicity campaign to cover each census stage involving local leaders and high profile members of the community and including branding elements, such as a logo and slogan	
70	Introduce the opportunity for general public to provide feedback on their experiences working with the NSO	Introduce the opportunity for general public to provide feedback on their experiences working with the NSO	

	Administrative Records		
71	Create unit with permanent staff specialized in processing administrative data and registers	Create dedicated unit with 2 permanent staff	TA on the use and integration of administrative sources for statistical analysis and production
72	Promote proper implementation of the legislation to monitors the use of administrative data that allows free access to the NBS	Promote proper implementation of the legislation to monitors the use of administrative data that allows free access to the NBS	
73	Create integrated system of administrative record databases	Create integrated system of administrative record databases	
74	Develop quality control system with defined protocols for the primary sources of administrative registers	Develop quality control system with defined protocols for the primary sources of administrative registers	
75	Develop appropriate coding system to facilitate the reconciliation or matching work between different sources of administrative registers	Develop appropriate coding system to facilitate the reconciliation or matching work between different sources of administrative registers	
76	Create inventory of administrative records that are available in the country,	Create inventory of administrative records that are available in the country,	

Table 2: List of recommended TA projects by length and by year

	TA topics	Year *	number of working days	number of missions
1	Data protection including ICT aspects of data protection	2018	30	1
2	Project managing and use of ICT Project managing and coordinating tools	2018	20	1
3	Reporting and monitoring of census operations.	2018	20	1
4	Using mobile devices for census data collection	2018 & 2019	60	3
5	Quality management of census operations	2018	30	1
6	Guidance on GIS needed functions and required equipment	2018	20	1
7	Training of GIS experts on advanced GIS applications	2018-9	40	2
8	Guidance on development of census cartographic program and quality assurance	2018	20	1
9	Guidance on training of enumerators, supervisors etc.	2019	30	1
10	Statistical methodology related to census	2019	30	1
11	Census questionnaires design	2018 & 2019	50	2
12	Census questionnaires pre-testing program	2018	20	1
13	Census training of temporary staff in using GIS and maps during enumeration	2019	10	1
14	Development of census manuals for temporary staff	2019	20	1
15	Development of pilot tests program	2018	15	1
16	Design of enumerators and supervisors enumeration procedures including quality assurance	2018 & 2019	50	2
17	Data processing of census data	2019	30	1
18	Development of international migration statistics	2018 & 2019	40	2
19	Demographic analysis to evaluate census results	2020	20	1
20	Population projections techniques	2020	30	1
21	Use and integration of administrative sources for statistical analysis and production	2018 & 2019	40	2
22	Development of HR strategy for the census	2019	15	1
23	Quality assessment of administrative data	2019	15	1
24	Data editing and imputation	2020	20	2
25	Census management	2018	15	1
26	Development of internal policy on access to microdata	2020	15	1
	Total		705	34

*When 2018 is stated it means the second half of 2018

Table 3: Number of recommended additional staff at NBS offices by unit, length and purpose/duties

	unit	number	Permanent / temporary	length in years	Purpose
1	Data protection (new unit)	2	permanent		Implementation and monitoring of data protection policies in NBS
2	GIS unit	5	permanent		Provide GIS services for NBS
3	GIS unit	3	temporary	1	Assist in delineation of EA maps
4	Statistical Methodology	2	temporary	3	Census support for PES, editing and imputation, errors calculation
5	Procurement/financial	1	permanent		Coordination of tender administration
6	Human resources	1	permanent		Coordination of census temporary staff management
7	ICT	3	temporary	4	Support preparation and administration of ICT tenders
8	Demography	1	permanent		Expert in migration
9	Dissemination	2	temporary	2	Data visualization support for census products
10	Publicity	1	temporary	4	Coordination of census publicity campaign
11	Administrative records (new unit)	2	permanent		Use and integration of administrative sources for statistical analysis
12	Census unit	1	temporary	4	Monitoring of Census Action Plan
13	Census unit	1	temporary	4	Monitoring Census field operations including tests and pilot
14	Census unit	1	temporary	3	Training coordinator
15	Census unit	3	temporary	1	Manuals and other training tools preparation
16	Census unit	2	temporary	3	Data processing experts
17	Census unit	1	temporary	3	PES coordinator
18	Census unit	1	temporary	2	Census evaluation and demographic analysis responsible
	Total	33		68	
	Temporary staff	23	temporary	40	
	Permanent staff	10	permanent	28	

Table 4: List of main ICT related projects that may need tendering (outsourcing)
(Part of them may need to be separated into subprojects or unified into one common project)

	Main ICT related projects that may need tendering (outsourcing)
1	Human resources management of census temporary staff - recruitment, contracting, duty/region allocation, training, enumeration performance, release and payment
2	Development of NBS data protection system/s
3	Monitoring census logistics - equipment and tools delivering and return
4	Mobile device (tablet) software modules for enumerators and for supervisors: questionnaires, dwelling lists, monitoring and reporting tools, maps and GPS, communications, etc.
5	Archive system for micro data from different sources (administrative, censuses, surveys)
6	GIS applications for EA delineation
7	Acquisition of tablets for tests, pilot and enumeration
8	Reporting and monitoring of census enumeration operations

