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Evaluation Report of the 2014 Population and Housing Census in the Republic of Moldova

The **Evaluation Report of the 2014 Population and Housing Census in the Republic of Moldova** was conducted based on the recommendations of the 2010 Census Global Round.

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Evaluation of the 2014 Population and Housing Census was conducted at the request of the National Bureau of Statistics. The international consultant has assessed the results, challenges and lessons learned from the 2014 census based on the international recommendations of the 2010 Global Census Round.

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WORDS OF APPRECIATION

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List of Acronyms

CPT	Census Planning Team
CSPro	Census and Survey Processing System
CWG	Census Working Group
DC	Data Capture
EA	Enumeration Area
GIS	Geographical Information System
ICT	Information and Communication Technology
ITAB	International Technical Advisory Board
NBS	National Bureau of Statistics
NCC	National Census Commission
ODE	Optical Data Entry
ONS	Office for National Statistics
PES	Post Enumeration Survey
PHC	Population and Housing Census
RM	Republic of Moldova
TA	Technical Assistance
TQM	Total Quality Management

1. Executive Summary

Republic of Moldova conducted a Population and Housing Census in 2014 (2014 PHC). The goal of this report is to evaluate this exercise, and come with recommendations for the preparation of the next Population and Housing Census. The Population and Housing Census of the RM of 2014 has been prepared and conducted under very difficult circumstances that included: Political instability, lack of governmental involvement, low and unsecure budget; close political elections and lack of trust in NBS credibility; highly centralized not effective management at NBS; totally new census staff with no experience in census taking; very tight schedule. The NBS overcome most of the problems and managed to produce a census of reasonable quality that provides the best data on population available for the RM.

Major challenges in last census were related to the lack of active commitment of the government and a low and unsecured budget; inadequate mode of management (ineffective high centralization of decision making); very tight schedule (late beginning of preparations); lack of experience in census taking; ICT services failure/absence; too reduced (and late) communication campaign; not enough control procedures during census field work and no systematic report and documentation of the census operations; insufficient manuals for training (one manual for all the functions of temporary staff); questionnaires printing delayed to the last moment; data capture delay of two years; not enough collaboration with other institutions; limited ability to implement some of the international experts recommendations.

Main recommendations for next census are: get government support and a realistic budget for the census (until end of dissemination); better organization of census management with clear and effective chain of command, enlarging the census units in NBS, reorganization work subdivision within the census units, and other NBS units; build program of continuous capacitation of actual and new staff to be recruited; choose best strategy to decide the census methodology that fits to RM situation (census vision); building and strict adherence to a detailed working plan; planning better and more adequate methodology for enumeration incorporating TQM and tight monitoring measures of the field work; prepare manuals and training materials for each function; develop a system of full documentation of the census work at all stages and a reporting system for close follow-up of field work; development of detailed ICT support program (even if only for outsourcing these activities); develop collaboration programs with other governmental agencies and analyze possible use of administrative sources to improve census performance.

Despite a negative first impression the PES showed that under very difficult and adverse circumstances, the NBS managed to conduct a full Population and Housing Census in 2014 of reasonable quality. In practice, excluding Chisinau city and perhaps to a lesser extent a few other urban areas the quality of the census seem to be high enough to be used to update the current population estimates. Undoubtedly, census data when compared to any other available data source are the best available source to calculate population estimates for the RM. Moreover, the census data shows clearly that actual population estimates are misleading: In practice the population residing in the Republic of Moldova by the time of the census was found to be smaller than the current estimates by more than 600,000 inhabitants (about 22% surplus). Therefore, after proper corrections are introduced in the census data for Chisinau city and other urban areas, it will be possible and necessary to correct the current population estimates, recalculate the statistical indicators that are calculated today based in unrealistic population estimates, and finally produce more reliable indicators in a variety of statistical areas.

2. Introduction

A population census is the most important and extensive statistical operation for any Office for National Statistics (ONS) and is one of the pillars on which stands the whole statistical system. Census population estimates are even more important in countries where like in the RM the statistical system does not provide proper high quality coverage of migratory movements that have played an important role in RM in the last decades. In these cases the census is the only statistical tool capable to provide proper population estimates at both the national and local level.

Republic of Moldova conducted a Population and Housing Census in 2014 (2014 PHC), which provides the best available data for the recalculation of the population estimates according to current realities. The goal of this report is to evaluate this exercise, and come with recommendations for the preparation of the next Population and Housing Census.

However, before doing that, it should be mentioned that the Population and Housing Census of the RM of 2014 has been prepared and conducted under very difficult circumstances that were outside the NBS control and must be mentioned before any evaluation is presented:

Political instability, lack of governmental involvement, low and unsecure budget: The political situation in the years of preparation and conduction of the census has been instable, characterized by great public discontent and very low public trust in the central government. Moreover, the government did not fully support the census operations; to a great extent it was almost forced to budget the operations because of international pressure. This situation influenced the budget that was allocated for the census that was much lower than necessary and also unsecure: most of the time it was not clear if the allocated budget will be available on time. That affected the ability of NBS to release tenders for private services that were needed for the census like the printing of questionnaires and other forms and, in particular, the provision of ICT services. In addition to that, the lack of governmental involvement resulted also in low level of cooperation with NBS of other governmental agencies who owned data and maps that were necessary for the census.

Political elections and lack of trust in NBS credibility: Upcoming political elections combined with the public identifying the NBS as representing the central government created massive and active distrust in any NBS operation. Because of the willingness to include the census in the 2010 census round the census has to be conducted before the end of 2014 (in practice was conducted in May), when a governmental election was planned for the end of November 2014 meaning that by the time of the census there were massive political debates that influenced very negatively the census operation.

Ineffective centralized management at NBS: The management of the NBS during the preparations of the census and during its field work was highly centralized and almost every decision was taken only at the top management level. This mode of work combined with a slow reaction at the top level created a situation when critical decisions were taken only at the last moment, and at times even after the last moment. Since census operations are closely related to each other that resulted in damaging the census operations. A vivid example is the delay in approval of the printing of the questionnaires that in some cases arrived to the field after the beginning of the (short) collection period.

New staff with no experience in census taking: For different reasons the very small staff that was charged with the responsibility to plan and conduct the census included enthusiastic young professionals, but it did not include any staff with previous experience in census taking. Besides that the whole NBS staff was small, in many cases also new and unexperienced, and therefore the assistance they could offer to the Census Planning Team was limited.

Very tight schedule: The law to conduct the census in 2014 (first in April, later on postponed to May) was published in April 2012, and the actual decision to begin the preparations in December 2012. This allowed less

than two years for census preparations, and that was a very tight schedule in any case, but in particular under the circumstances above described.

Under such challenging circumstances in which the 2014 PHC was conducted, the results gotten cannot be considered less than admirably satisfactory. There were a series of problems during the preparation and execution of the census, and they are presented in the rest of this evaluation, and part of the results will need to be revised and corrected before using them (as it is the case in most censuses), but despite the challenging situation in which the census has been conducted the NBS overcome most of the problems and managed to produce a census of reasonable quality that, as stated at the beginning of this introduction, undoubtedly provides the best data on population available for the RM.

The present evaluation is based on five days of meetings where the senior staff of NBS has been interviewed in-depth about different stages and aspects of the PHC. During the meetings the methodology used in each stage has been presented and discussed, and the more important problems/challenges have been identified. From the pre-censal activities of planning and preparations until the last stages of the PES including the preparation of the final census population estimates and the actual situation of the dissemination activities, each stage of the PHC has been briefly discussed and its main problems and challenges identified. These challenges have been also in the center of the discussions with some of the senior staff responsible for the field work in Chisinau city that was the more challenging zone, and the more rural raion of Causeni. Similar discussions have been conducted with a representative from Action Global Communications, a private company that was involved in the recent dissemination of the PCH data, and with a representative of the National Youth Council of Moldova, who conducted before the census an information campaign targeting some youth sectors of the RM population.

In addition to the meetings, relevant laws, internal documents, procedures, the staff capacity and the workflow have been analyzed, and conversations with international consultants who have been involved or connected with the census activities and provided significant contributions to this evaluation have been conducted in remote mode.

Using that information as a background, the present document presents an evaluation of the 2014 PHC against the original General 2014 PHC Workplan and the Conference of European Statisticians Recommendations for the 2010 Censuses of Population and Housing, including assessing the phase performances, and pointing out the highlights, lessons learned and the recommendations for the next census. This evaluation is based in a week of meetings and an additional week dedicated to learn the existing documentation and write the present report. Therefore the evaluation that follows is not a full and detailed evaluation of the census that would have required much more time resources and detailed documentation, but an evaluation focusing in the main challenges that will need to be tackled when preparing for the next census.

3. Background

The field work of the 2014 PHC of the Republic of Moldova was conducted during 14 days, 12-25 May of 2014 (census day: midnight of May 11, 2014) followed a month later by a PES conducted on June 16-29. This census was conducted 10 years after the previous Census was undertaken in 2004 that was a Population census only (without the Housing part)¹.

In April 2014 the Government of the Republic of Moldova decided to carry out the second Population census, and for the first time, a Housing Census (PHC), to be included in the Global 2010 Census Round in accordance with the UN recommendations. In addition, the Government was also keen to develop proactively the standards to meet expectations for the 2010 Global Census Round.

In April 2012 a new law on the PHC was approved by the Parliament, the Government's decision on the National Commission on Census and detailed Action Plan has been approved by the Government on 21st December 2012. The field work of the census was originally planned on 1-14 April 2014, while a pilot census was planned on 1-14 April 2013 but conducted on 15 – 28 April 2013.

At national level, the supervisory authority was anchored in the National Census Commission, intended to provide the overall oversight of the 2014 PHC. The Census Commission was chaired by the Prime Minister and its members included line ministers and head of the governmental agencies as well as UNFPA. As a high-level national decision-making body, the commission required technical opinions, information about options, and confirmation of the adequacy of procedures. An International Technical Advisory Board (ITAB) as advisory forum was established by UNFPA intended to work in close cooperation with this commission. The ITAB advised on technical, logistical, and administrative issues concerning the implementation of the 2014 census based on best practice and international experience. This international board was comprised of international experts in the field of demography, statistics, and allied disciplines and provided advice and guidance during four meetings and was available individually or collectively to provide advice regarding specific census issues.

¹ Before that the 1989 Soviet Census counted the population of the territory of the current Republic of Moldova.

4. Preparations for the census

4.1. Legal basis

A Census Law that "establishes the way of organizing and conducting the census of the population and of the dwellings, the method of collecting and processing the data obtained within it" has been enacted as recommended (UN Principles and Recommendations for Population and Housing Censuses Revision 2, para. 1.83)

According to it the body responsible for organizing and conducting the census, processing the obtained data, generalizing the results, as well as ensuring the methodological provision of the census, is the National Bureau of Statistics, and that should be done under the supervision of the National Commission for the Census (NCC) of Population and Housing, which coordinates and monitors the smooth running of the whole action and approves the census documentation and instruments. The NCC was a very high level commission chaired by the prime minister and therefore the approvals of the census docs and instruments required these to be presented to the NCC quite in advance to allow enough time to prepare them on time for the census.

The Census Law included a somewhat problematic population definition of persons with usual residence in RM, requiring the inclusion of all temporarily absent persons working and studying abroad, without limiting that to those abroad for less than a year as it is required by the internationally agreed population definition that states that "persons who may consider themselves usual residents of a country because of citizenship or family ties, but are absent from the country for either most of the last 12 months, or for 12 months or more, depending on the definition adopted, should be excluded" (Principles and Recommendations for Population and Housing Censuses Revision 2 , para. 1.463 & 2.31).

The Law seems also too rigid, limiting the NBS flexibility to incorporate necessary last moment changes in the census procedures and questionnaires. For example, the Law included the census and pilot beginning and ending dates. It also included detailed list of variables and even list of allowed answers for the census questionnaire.

Recommendations:

- The NBS needs flexibility to make changes and allow perhaps a longer collection period. It is recommended that the decision on the final calibration of the collection procedures and questionnaires should remain in the hands of NBS that may need to change them, in particular following the evaluation results of the last (dress rehearsal) pilot census, a year or so before the census.
- From the Law it is evident that the collection operation is to a great extent also the responsibility of others (like local authorities) that normally may not have the duty to report to NBS. It is recommended that the Law gives the NBS a clear mandate to implement and monitor the census operations even when they are operated by other institutions or organizations.
- Since the Law requires the approval of the NCC at different stages, the relevant materials should be prepared quite in advance and this needs to be taken in consideration when preparing the census calendar and work plan.
- The Law includes a very detailed list of variables – some flexibility may better be allowed. It seems sufficient to mention in the Law the main topics, allowing flexibility under the responsibility of the NBS. Again, the last pilot before the census may indicate that last minute changes are necessary.
- The Law allows using data from population register if no questionnaire is filled in. This authorization may be used to wrongly (in purpose or not) include data for persons who may not be any longer living in the relevant census address. It is recommended to introduce more control measures from NBS side on this issue to avoid misdoing.

4.2. Census Budget

It seems that the originally estimated budget for the census (slightly over 5 million USD, less than 2 USDs per capita) was low when compared with other countries that may be considered similar to RM where the census cost was of more than 3 USD per capita and usually over 6 USD per capita. Donor countries contributed to about a fifth of the Census budget (about 1.6 million USD).

Moreover, the budget was not secured and final until a very late stage in the process, close to the conduction of the census pilot in April 2013 and even then it was not clear if it will be available on time in 2014 (Dinculescu assessment, April 2013 - perhaps that was the reason of the delay in the payments of the temporary staff to the end of the year). These produced a delay in the publication of tenders like those related to ICT support or the printing of the census questionnaires and forms.

By the end, the budget was increased by the government (by about 7% more) to cover the data capture process that was conducted with two years of delay, using Manual Data Entry (and not Optical Data Entry technology as originally planned) in less than 6 months, and a full data set of the census data of all questionnaires was created.

Recommendations:

- The budget for the census should be estimated in the more realistic way, taking in consideration that during the years since the beginning of the preparations (when the budget is estimated) and the year of the census field-work the salaries and other important costs may increase substantially, and therefore some adjustment may be needed closer to census year.
- The budget should cover the whole operation including the dissemination of the census results and any services the NBS will provide after the census to users of census data (like preparation of ad hoc tables, anonymized data files, etc.).
- The preparation of the budget estimates requires major strategic decisions like the decision on the use or not of self-enumeration or the technology to be used for Data Capture, to be decided in advance or at least the alternative costs calculated to allow a realistic budget.
- After the experience of PHC 2014 special efforts should be devoted to estimate the costs of the ITC services that will be needed for the census and on time release of any necessary tender.

4.3. Work plan

As recommended (Principles and Recommendations for Population and Housing Censuses Revision 2, para. 1.103), a full census plan (calendar) was elaborated and approved by the end of March 2013 (close to the beginning of the pilot) and extended and revised on April 2013.

However, it seems clear that the census plan was not fully respected, and many operations ended too late, including crucial activities that conditioned other activities based on them that were therefore further delayed. Evident departures from the work plan schedule were related to the printing and distribution of the printed census questionnaires and other materials. As a consequence in several regions the actual collection has to be delayed because of the lack of printed questionnaires. Another example is the preparations and actual implementation of the Data Capture activities, which by the end has been delayed by two full years.

Recommendations:

- A full work plan and calendar needs to be developed since the early beginning of the planning operations, and follow up periodic meetings of the Census Planning Team (CPT) and any others involved in the census operations are needed to ensure adherence to the plan and its time table.
- At the beginning the work plan will be preliminary since the final details of certain operations would need to be finalized, but a final calendar and work plan should be adopted as soon as practicable.

- The plan should allow identifying those activities that are in the critical path of the census program that should be followed up more closely. These are activities that are conditional to many other ones or to other critical ones.
- This periodic revision of the work plan will allow the implementation of a risk management plan, and reduce risks by allocating or transferring more resources to critical activities at high risk of failure.
- Periodic reports on the work plan advancement and budgeting should be presented to the National Commission on Census.

4.4. Organization of census work and beginning of preparations

The permanent team (Census Planning Team, CPT) responsible for the planning and preparation of the census was incredibly small (only 4 persons) and in practice there was no team member with experience in previous censuses. Taking only that in consideration the results they got should be considered more than satisfactory.

The team relayed on the assistance of other staff from the NBS, but this staff had in addition their own responsibilities beside the census work, and therefore limited possibilities to be fully involved in census preparations. This situation required also to improve coordination, communication and cooperation among different units which is at times not easy, and conducting regular meetings with clear agenda and systematic follow up and adherence to the pre-established calendar according to the work plan. For the purpose of the census preparation in the last census it was established a census working group (CWG) inside the NBS, consisting of representatives from the divisions contributing to the Census preparation.

The preparatory work for the 2014 PHC begun at the earliest during 2012; not more than two years before the planned census date. Undoubtedly, this was a very short period of time to allow the preparations that are needed for such an extensive and challenging operation as a full national population and housing census. In particular this was a very short period of time taking in consideration that the staff that remained responsible for the Census from September 2013 was new with no previous experience in Census taking and therefore this was at a great extent an on the job learning experience for them.

Since the census budget was not finally approved until very late in the process (on April 2013 the budget was not yet secured), but the NBS managed to overcome this problem doing most of the preparatory work on the basis of a provisional and not totally clear budget.

Recommendations:

- In general, census preparations require a series of pilots that need to be planned with enough time in advance; therefore it is recommended to begin preparations at least 4 if not 5 years before the intended census date.
- The preparations should include, beside small tests of particular procedures, tools and systems, at least 2 pilots, one relatively small (in size and scope) preliminary pilot to be conducted about 3-4 years before the census to check basic methodological concepts, the kind of technologies planned to be used and a prototype of the questionnaire. This pilot allows the CPT, in particular new staff with no previous census experience, to better learn and understand what a census is like. The second is a big dress rehearsal pilot to be conducted 1-2 years before the census to check each and every piece of methodology, technology and an (almost) final questionnaire. This last big pilot should be a simulacrum of a full census testing the preparations for the field work, the recruitment and training of the temporary staff at all levels, enumeration, post enumeration survey, data capture, editing and coding, and anything else in between until the dissemination of the pilot results.
- Such kind of Committee like the CWG above mentioned, presided by the Census Director can serve also in the next census to coordinate census activities that are conducted in other NBS units (outside the CPT) and to make sure the adherence to the time table. Since several units of the NBS will be

involved in the census the NBS full directory should have periodic reports and discussions on the progress of the preparations.

- It is important to ensure since the beginning of the census preparations that at least a preliminary budget is determined that will allow the CPT to know what type of alternative activities may not be relevant because of lack of funds.

4.5. Communication campaign

A full communication plan for the census has been developed, but for different reasons it was partially implemented by NBS. The communication campaign started just a month before the field work (April 17, 2014) and only at the national (not local) level, hardly reaching any significant part of the population. Moreover, the PHC launch generated some negative debate in society. In practice, it seems that many people discovered about the census when first visited by the enumerator. As a consequence the collaboration of the population was many times very limited and many refused to participate in the census.

It seems that the main reason for the failure of the communication campaign was the lack of experience of personnel in conducting of communication campaigns and the absence of a procurement process to contract media companies that should have been prepared in advance.

Recommendations:

- NBS should plan a campaign to correct the distorted image that the NBS has in several sectors of the population, stressing that NBS duty is to provide objective information for the benefit of the population and that its work is ruled by professionals concerns only.
- The census campaign should include a comprehensive program to reach major users of census data, persons and institutions participating in the census operations and the general public. This campaign should keep in mind that the census "is a national activity that is completely dependent for its success upon the wholehearted cooperation and assistance of the general public and many governmental and local organizations" (Principles and Recommendations for Population and Housing Censuses Revision 2, para. 1.112). Without the cooperation of the public and other organizations the census may not succeed.
- One important part of the campaign should be the consultations with users of census data about the topics to be included and the best way to collect relevant information about each of them.
- The publicity for the census before and during the census operations should include an educational campaign with the purpose to awake the interest and the cooperation of the population.

4.6. Mapping and delineation of Enumeration Areas (Sectors)

The delineation of EAs has been done by a large number of registrators (about 800) who went to the field with the best paper maps available, many of them of low quality (buildings and streets unclear). The registrators had the duty of collecting basic info for each dwelling and subdivide the area assigned to them (about 1,500 dwellings) into sectors of about 130 dwellings in urban areas and 110 in rural areas. Most of the maps were cadastral maps. Most of the maps updated in the field were then digitized in a GIS environment. Background orthophotos were used only when available, usually not in rural areas. For a limited number of zones, maps have not been available during census operations, for some others a list of addresses were used instead of maps (Bianchini R., Mission report, 2016).

Because of the low quality of some of the maps in many areas the EAs borders were problematic and difficult to identify. As a consequence and when the delineated borders did not allow an effective enumeration (too big population or too small population for one enumerator) EA borders have been changed during the field work, however no systematic methodology was used and in many cases these changes have not been properly documented and reported.

In practice for the delineation of the EAs a dwelling census was conducted, even if during this huge operation (about 800 persons working in the field for about one month) the data collected for the dwellings was very limited.

Recommendations:

- Mapping of the whole country, at the level of buildings is an essential and critical part of the census that demands proper resources, human and other (software, hardware, maps, warehouses, etc.). This operation should be well budgeted and its resources should be assigned in advance.
- A general program on the use of mapping and GIS technology in the census should be prepared at the preliminary stages of the census preparations. The use of GIS technology for the census is relevant not only before the data collection (to delineate the EAs) but also during the field work, as an essential tool for monitoring the field operations and the changes that will be needed in the borders of the pre-delineated EAs, for the PES and other evaluation activities, during the Data Capture to monitor the process of Data Entry, and as part of the micro and macro editing, and finally at the stage of the dissemination of the census results. All this needs to be detailed in the mapping and GIS program for the census.
- It is recommended that for the next census more and better GIS technology be used to reduce or avoid the massive and expensive operation of EAs delineation that is conducted several months before the actual enumeration, which in any case needs to be updated close and during the census field work.
- If the maps are not provided for free, negotiations with other governmental agencies that may have proper maps should be conducted with enough time in advance, including the provision of a new set of updated maps close to census day. Since the maps are relevant also for other NBS activities this is a common interest of other NBS units as well. The financing of the maps cost from other governmental agencies should be the responsibility of the Ministry of Finance and not of NBS.
- In any case, it is necessary to ensure that the best quality updated maps, covering the whole RM are available on time for the delineation of the EA borders, with the best technology. If there are regions where high quality maps are missing, provision should be made to make sure these gaps are filled in on time by the relevant agencies (and if not, that this activity is outsourced to private companies).
- It has been reported that GIS specialists are now working at the NBS. It is recommended that this GIS unit will become an integral part of NBS. This GIS unit should receive proper training and be the basis of the enlarged unit that will be needed for the support of the next census.
- It should be remembered that the census data for small areas, at least at the geographical level of EAs, should be available for processing (the level of geographical detail to be published is an independent issue) and for the preparation of the census tables and other products. Therefore the census EA structure needs to be maintained and updated not only during the whole census projects but also be part of the census database, fully interconnected with the GIS database.

4.7. Census pre-tests

Only one test of the census operations was conducted in April 2013 (about a year before the census) but was a pilot limited in scope, when the main goal was to test the census questionnaire. Even though, some indications that the EA size in urban areas was not adequate and that the enumerators may not be able to finish the collection in 14 days already aroused during this pilot.

Recommendations:

- A full program of tests of the different parts of the census operations needs to be planned, and at least too big tests (pilots) should be conducted before the census, the last one to be conducted as dress rehearsal, where all the census activities planned to be conducted in the census (including preparations for the field work, the field work itself, the reporting system, the PES and the data capture

and results dissemination) should be tested, allowing enough time to make the proper changes towards the conduction of the actual census.

- Because of that, such final pilot should be planned to be executed at least one or two years before the census to make sure there is enough time to adjust census procedures and relevant technology (ICT usually needs time to make and test changes) according to the results of the test. Such dress rehearsal pilot should be conducted in a significant sample of EAs, and include a variety of areas where different kind of challenges may be expected.

4.8. ICT services

There was in practice very little support of ICT to the census activities, in particular during and after the collection activities. The census work plan included several systems that should be designed to support the census activities, but it seems none of these systems has been developed. An ambitious plan was developed during 2013 for upgrading the ICT systems of the whole NBS including the needs of the census, but the plan was not implemented.

Recommendations:

- Technology plays a critical part in the census preparations and may need a considerable part of the census resources. Technology supports each and every stage of the census and therefore a general plan should be generated at the beginning of the census preparations. The CPT should prepare a list of the many processes where ICT support will be needed and together with ICT experts a final plan should be prepared and properly budgeted at the earliest stages of the preparations for the census.
- The testing of different aspects of technology should be included in the census pre-tests and in particular in the last and larger census pilot when all the different ICT systems and their interaction should be tested together with the full range of census field work activities.

4.9. Preparation and printing of questionnaires

A set of draft questionnaires has been revised and corrected by the end of 2013, following the advice of an expert contracted by UNFPA (Kostadinova-Daskalovska, Mission report on Census Methodology and census instruments for enumeration, Dec 2013).

The set included 4 questionnaires:

- Questionnaire on housing unit (form 1CL)
- Questionnaire for person (form 2P)
- Questionnaire for the persons with a temporary stay, up to 12 months (form 3S)
- Questionnaire on collective living quarter (form SCL)

The NBS corrected the questionnaires according to the expert advice in most topics. Still the inclusion of the population living abroad for more than a year was done against the advice of ITAB experts that recommended not including this population.

Besides that problem, the questionnaires included questions on 28 direct core topics (out of the 38 recommended) and are providing information for 8 derived topics (out of 9 in the recommendations) and can be considered as fully compliant with the recommendations, since all the core topics have been included.

The questionnaires have been designed to allow the use of a system of ODE (optical data entry) using scanning, automated recognition, editing and coding. However until the last moment it was not clear what system would be developed for data capture and the printing of the questionnaires was delayed. In practice, only a small and insufficient part of the questionnaires has been printed before the beginning of the collection activities, and

that was one of the reasons that in some areas (mainly urban) the enumeration was not finished within the 14 days allocated for that.

Recommendations:

- Since the advice provided by census experts was so helpful it is recommended to plan to get this advice also in the next census at an earlier stage and with enough time to be able to introduce any suggested corrections and test them in the field.
- The questions used to determine the inclusion in the census population should be properly adapted to the international agreed definition of place of usual residence and so the instructions regarding who should be included and who should not.
- The draft questionnaires should be ready for testing in the field in the preliminary tests and the final set should be tested in the last (dress rehearsal) final pilot at least one year (if not two) before the census. It should be taken into consideration that in the pre-tests also the system to be used for Data Capture needs to be tested, therefore at least a developed draft of the questionnaire in the proper printing format should be ready very early in the process.
- The printing of the questionnaires is a critical activity that needs also to be tested before the census and should be included as far as possible in the same mode that it is planned for the census (in particular if an ODE system would be used), and so the activity of distribution of the different questionnaires all over the RM.

4.10. Documentation of the census activities

There was only partial documentation of the census activities, in particular during the fieldwork. The whole system of reporting was limited and did not allow a close follow-up of the census operations. In particular there is not a systematic and detailed analysis, day by day, of what happen during the collection activities.

Recommendations:

- The documentation of the census operations is critical both for the monitoring of the operations and their quality and for the analysis and understanding of any problems that have been discovered and solutions that have been provided. This documentation is also critical to allow a proper analysis and learning towards the following census. It is recommended to develop and implement a process that will allow proper documentation of the whole set of activities connected to the census since the earliest stages of the census preparations until its very end, when the last results are published.

5. ITAB advice and Technical Assistance (TA)

The census was supported by several donors when the acting agency was UNFPA (that also provided financial support). A large series of TA mission have been conducted to support the census work that improved the ability of the NBS to conduct and finalize the census operations and improve the quality of the results.

The ITAB conducted 4 meetings with the NBS senior management and the staff in charge of the census beginning in 2013 (May and September), when the third meeting was conducted several weeks before the census field work (April 7-8, 2014), and the last after the end of the field work (July 2014). The work of the ITAB experts was not limited to review and provide advice on different topics of the census during the meetings themselves, but included also a follow-up of the way NBS implemented the recommended actions. Undoubtedly NBS tried to follow the ITAB recommendations but not always it was possible because of the tight schedule or lack of resources. The reports regarding ICT systems provided in ITAB meetings were not always accurate, and at times they were too optimistic, and therefore ITAB recommendations at times fall short to be helpful enough.

In addition to the ITAB meetings, UNFPA contracted members of the ITAB (and other experts) individually to provide TA in the form of short missions conducted at different census stages. These experts provided advice on a variety of topics that have been identified during the ITAB meetings with NBS as areas where they will be more necessary/effective. The list of topics on which TA was provided was large and included several missions on the organization of the census, including preparation of the census work plan and budget, a mission on the preparation of the census materials, several missions for preparing and conducting the PES, several missions on linking administrative data with census data and estimating the coverage in Chisinau, a mission on the use of CSPro (Data Entry computer assisted software), missions on the editing of the census results and on the use of GIS maps for the distribution of the census results. There is no doubt that this TA helped NBS to improve the census operations and overcome the many challenges they had to afford to finally produce the final census data.

Recommendations:

- It is recommended for the next census to implement as early as possible a more effective ITAB that will be capable of following and monitoring the census process since the beginning of the preparations, during the data collection and until the end of dissemination. Lack of expertise in NBS regarding some of the census areas makes this continuous advice and monitoring critical for the success of the next census.
- To organize the TA under the supervision of one senior census consultant that should be responsible for the whole TA project. This senior consultant would prepare a general program selecting consultants with recognized expertise in specific fields and guiding them on what issues the NBS needs assistance and of what kind, and continuously coordinating and supervising the specialized consultants work.

6. Data collection

6.1. Data collection procedures

The census methodology and the census concept that NBS declared to be using in 2014 PHC were in general compliance with the international census recommendation and standards, using the concept of usual resident population (Kostadinova-Daskalovska, Mission report on Census Methodology and census instruments for enumeration, Dec 2013). However their implementation was only partial.

A document describing the methodology to be used in the 2014 PHC was prepared based in a document from 2004 census. This document provided a starting basis to develop a more detailed and far more complete document on the census methodology that should serve as basis to prepare manuals for the different census staff (but such a document was not developed). In particular were missing detailed instructions on how the different temporary staff should perform their duties.

The data collection procedures did not include enough monitoring procedures of the enumeration process to ensure that enumerators, supervisors etc. do their job properly and on schedule. Also the reporting system did not allow getting a clear picture of what was going on in the field during the field work, and to a great extent not even after the end of it. Therefore there is little information about what were the reasons for the fact that in a significant number of EAs the collection was only partial. It was reported that some of the maps provided for the field work were of bad quality, and there were not enough map copies, that the interviews took more time than expected, and in general that enumerators in urban areas had not enough time to cover the whole EA during 14 days.

One critical methodological problem of the enumeration procedures was that the enumerators went to the field not only with maps, but also with the list of dwellings prepared (by the registrators) several (five) months in advance. Even though the enumerators were supposed to update the list looking for new dwellings, the extra work that was needed to do that combined with the lack of time they had (in particular in urban areas) may explain the high rates of under coverage discovered in specific areas during the PES. Ideally, the

enumerators had to prepare by themselves in a pre-collection stage the list of dwellings in their EA, and then update the list on the census day, before beginning (immediately after the census day) the collection of the questionnaires information. It was a methodological mistake to give the list of dwellings to the enumerator, if at all, that list should be kept in the hands of supervisors and used to check and control the enumerators work (Principles and Recommendations for Population and Housing Censuses Revision 2, para. 1.173). There is a high chance that in many cases the list of dwellings was not updated during the census and therefore the field work was conducted according to the list of dwellings updated to the end of 2013, another reason that may explain the high under-coverage rates.

Another identified problem is that the borders and codes of EAs seem to have changed in different places, when no proper report of these changes has been reported to the CPT and these changes were discovered, if at all, during the PES and later on during Data Capture.

It is evident that the CPT needed to ensure some way of knowing and controlling the performance in the field during the whole census. The quality management program was missing in 2014 PHC.

The Census Methodology should define more concretely the use of the state and local administrative registers as an alternative source for data on buildings, housing units or persons that were not obtained during the enumeration within the households. The methodology should specify the data that can be copied from the registers, the time of request and receiving, method of providing data, medium on which data are to be provided, responsible parties/persons, application of data protection. In particular, data obtained from administrative sources should be reported as that and this information kept in the census database together with the census data.

Recommendations:

- It is advised NBS to develop a comprehensive census methodology that should include definitions and classifications both on topics on which data are to be collected during the enumeration as well on derived topics. The definition of the total (usual resident) population of Moldova and the method of the calculation should be clearly defined.
- The comprehensive Methodology document should be adopted officially by NBS and approved by the NCC and should serve to the NBS census staff for developing the instructions and manuals for the field census staff.
- It is advisable to prepare a strategy on quality control in the 2014 PHC. Concrete activities and instructions on how to perform the quality control at each level should be part of the respective census manuals.
- We should recommend for the next census to have a representative of the CPT in each big region to report directly to the CPT on matters related to the quality of the work performed. This should be part of a general program of Quality Management.
- A proper system and procedures regarding how and when EA borders or codes can be changed including the way of doing and reporting these changes needs to be incorporated into the collection procedures.
- Enumerators should better prepare in a pre-collection stage the list of dwellings in their EA, updated to the census day before beginning, immediately after census day, the filling of the questionnaires.
- Preparation of the methodology document and manuals should be assisted by an expert in census taking and based in the internationally adopted census guidelines.

6.2. Recruitment of temporary staff

The whole system of contracting and payment of the temporary staff seems to have led to a refusal of many potential candidates to become enumerators. For example, the temporary staff was requested to participate in a two day un-paid training before they signed any contract, and the final payments have been made several

months after the field work was finished. It turned out that many of those who participated in the training declined later on to sign a contract and participate in the census. This alone created a deficit of enumerators already at the beginning of the enumeration, especially in urban areas. After that, other enumerators quitted their job after a few days of work, creating a further deficit of employees during the field work.

Recommendations:

- The process of recruiting (and training) of the temporary staff should be revised and a proper strategy developed for publicity, selection, recruiting, signing of the contracts, training, releasing and payment of the temporary staff.
- The method of payment (like one bulk sum or based on hours worked or based in the amount of questionnaires collected, etc.) should be discussed and selected to avoid the problems faced in the 2014 PCH. The CPT has to have a clear and decisive say on the method of payment since this may crucially affect the whole collection process and the quality and the completeness of the census data.

6.3. Manuals

One unified manual was prepared for all the three different functions during the field operations (enumerators, instructors and heads of districts). The manual included a chapter on methodological principles and basic operational definitions, including instructions regarding how to keep the confidentiality of the collected information; a chapter describing the duties of the different staff (enumerators, instructors and heads of districts); a long chapter with instructions on how to fill in the different questionnaires and additional forms; and a chapter on how to communicate with the population and answer to some expected questions.

The manual contents covered most of the issues that was expected to cover, but because it was one unified manual to all functions the manual included unnecessary information about others duties and not always included enough information about the specific duties of a specific function. In particular much more space in the future manuals should be dedicated to issues related to the procedures intended to ensure coverage that seem not detailed enough in the manual used in the census. It may be advisable that some monitoring procedures at a given level should not be communicated in advance to the staff of this level.

It should be stressed that the manuals are critical for the success of the census. They are the tool through which the methodology chosen for the enumeration is transmitted to the field workers, and is the place where they should find answers to most of the problems they will face during the enumeration. Therefore, they should be properly structured, include a description of the most common enumeration procedures and recommended solutions in cases these are not effective.

Recommendations:

- It is recommended to prepare separated dedicated manuals at least to each staff level and in particular for enumerators and supervisors. Supervisors need to know each and every detail of the enumerator duties but not vice versa. Also the training of supervisors should be subdivided into two: training on enumerator duties and training on supervisor duties. Head of districts need to have very good command of the supervisors duties, but may have less detailed information about the specific procedures of the enumerators.
- Besides the manuals, one for each function, there is the need to prepare adequate training materials that should also include the detailed structure of the training courses at each level, tests that should be given during and after the end of each course and supporting materials like computer assisted presentations, videos, maps etc.

6.4. Training

The training was done as is common in censuses in a chain hierarchical mode where the NBS census planners trained the senior field staff (about 85 heads of local statistical offices and census responsible in the local office, 3 days of training), then those trained the Head of districts (about 300, also 3 days of training) that trained by themselves the 2,300 supervisors and 11,000 enumerators (2 training days, in most case enumerators and supervisors have been trained together). The training of trainers (2 highest levels) has been reported to be of good quality but the training of supervisors (2,300) and enumerators 11,500 was reported less satisfactory. Also the logistics of the whole training, in particular of supervisors and enumerators, has been reported less satisfactory (missing manuals and other training tools).

The training in the next census will certainly use more technology in the form of video lessons or other ways of e-learning but in any case it is important that in each of the 37 regions (raions and municipalities if the 2014 PHC organization scheme will be kept) at least one person should be fully dedicated to training enumerators and supervisors during the field work to allow also the training of additional staff that will be needed when enumerators (or supervisors) stop working. This person may be considered the representative of NBS in each region and will have the responsibility to make sure the methodology and procedures are fully implemented and may report independently and continuously to the census staff in NBS about the quality of the field work. The training coordinator (not to be confused with the Census Coordinator responsible for the logistical issues) concentrates in training and quality checks during the census and may report directly to the CPT. It needs to be stressed that the training of the field workers is critical for the success of the census. Training is the process that ensures the optimal methodology that has been chosen for conducting the enumeration is indeed performed properly in the field.

Recommendations:

- It is recommended for the next census that the organization of the training be more centralized, to allow the NBS staff to be directly involved in the instruction of at least the level of Head of Districts and to add an additional function in each district or group of districts of "Responsible for training".
- It is recommended the supervisors to be trained intensively and separated from the enumerators. One effective way of learning is to involve supervisors in the training of enumerators. After their own training the supervisors of a giving region, under the direction and guidance of the Regional Training Responsible can be responsible for the training of the enumerators in that region. The supervisor should be considered the more critical function during the field work. They are in direct contact with the enumerators and in many cases also with the population itself. During the enumeration they have to solve the specific problems that arise from the field and therefore they become during the census the most critical and professional staff. It is extremely important to train them properly and heads of districts should provide them all the logistical and other assistance they may need to fulfil their duties.

7. Data capture, cleaning and editing

The data capture was done using a computer assisted Data Entry software (CSPPro, Census and Survey Processing System), and not as originally planned using an Optical Data Entry system (based on scanning and optical character recognition), with a delay of two full years.

In October 2014 some staff of the NBS was trained in the use and programing of CSPPro for the PES questionnaires, but all the operation was frozen until 2016 because of the lack of domestic budget. On April 2016, after the new government finally allocated additional budget, an international consultant was recruited for the adaptation of the CSPPro software for the census questionnaires and the installation of the Data Entry system. The Data-Entry process was conducted from April 2016 until the end of October 2016.

After that, the editing and cleaning of the data was conducted with the assistance of an international expert who worked for almost two months on the census data files released from the Data Entry project. During his

intensive work there was not a high level of involvement of the local staff, meaning the local staff may still need to learn the techniques and procedures of data editing and cleaning for the next census.

The results of the editing are now stored in flat files (and not in data bases), again because of the lack of ICT capabilities and support in the NBS. The coding of some of the variables was not finished yet.

Recommendations:

- The technology that will be used for data capture needs to be selected at an early stage of the planning since the questionnaire design (format and graphics) and some parts of the collection procedures will be affected by this selection. If paper questionnaires are used there is little doubt that ODE technology (scanning, recognition etc.) will be used to capture the data.
- Since the ODE technology is available from private companies that have long experience with census data entry, that means that proper tenders should be prepared on time to select the company already before the last pilot to allow the testing of the Data Capture (DC) system at least once.
- The data captured will need to go micro editing during the DC process, probably immediately after scanning still as part of the DC process, and further macro (and perhaps additional micro) editing after entered to the DB. Since in 2014 PHC an important part of this editing has been done by external consultants it is necessary to have a team within the CPT preparing the DC and editing plans very early in the planning process.
- Following the above mentioned it will be advisable to have an expert on DC and editing assisting and training this data-capture-and-editing team.

8. Post Enumeration Survey

Following the recommendation of the previous 2004 census International Expert Group, a post enumeration survey was conducted to evaluate the population coverage and the quality of some of the variables included in the questionnaires. The PES was conducted by an independent team headed by an external expert and using different enumerators and supervisors than in the census, ensuring by doing that objectively independent estimates that are necessary in this kind of operations as it is recommended (Principles and Recommendations for Population and Housing Censuses Revision 2, para. 1.395).

The PES planning started relatively late in the process, when the CPT and NBS in general had no previous experience with such kind of operation. The PES was planned on a sample of 90 EAs (out of 11,000 in the census) which allows estimates at the level of the whole RM and some big regions, but not at the level of raions and localities.

During the preparations and the field work of the PES some of the problems of the census have been identified, in particular the bad reporting of changes that have been introduced in the codes and borders of EAs. Several sampled EAs did not fit partially (border changes) or totally (code change) to those in the organizational structure of the census. Also the PES suffered from the delay of data capture and therefore no reconciliation visits (intended to verify and understand lack of consistency between census and PES information) have been made and that potentially damaged the accuracy of the coverage estimates.

However, the PES produced successfully reliable estimates at the level of the whole RM, for Chisinau, and also for the RM urban and rural areas. The level of net under coverage for the whole RM was estimated at 10.5%. Most of the undercount was found in Chisinau city where the net under coverage was the highest (about 44%), and to a lesser extent in the rest of the urban areas, but in rural areas (more than 60% of the population) the net under coverage was relatively low (1%).

The PES provided estimates of the under count but because of the problems above described of the EA borders was not able to provide reliable estimates of over count. To overcome the problem this over count has been estimated in Chisinau city taking advantage of data from the electricity company that allowed the NBS to

prepare estimates of the number of active (minimum consumption of electricity) households at time of the census in each EA and compare it with the number of households found in the census.

In the PES several variables have also been checked for content errors, and most of them have been found of high quality (in particular age and sex that are important for population estimates); only education would require further investigation.

The levels of net under coverage in urban areas in general, and in Chisinau in particular require that major adjustments need to be made before the census estimates can be incorporated into the system of current (yearly) population estimates.

Recommendations:

- Even if the PES has been conducted successfully in 2014 PHC with the active participation of NBS statisticians, since consultants have a heavy role in the process, it is recommended to have a PES expert assisting the PES team from NBS in planning the whole process.
- It is necessary to plan the PES in advance and to test it together with the rest of the census procedures, at least a full test during the last pilot (dress rehearsal). A PES team should be in charge of planning the PES from beginning and until the last estimates are produced. As it was done in 2014 this team should work independently of the rest of the CPT to ensure the maximum level of independency of the PES.
- It is recommended the planning of a full evaluation program including other kinds of evaluation analysis procedures besides the PES, like demographic analysis and comparisons with administrative data from different sources.

9. Data dissemination and communication

A dissemination strategy and an action plan were developed for the census. Data dissemination of the census results was done via the NBS site, a data visualization app, infographics, video-graphics, maps, press releases, and media events. A press release was published with preliminary results at the end of 2014 and the final results have been published by the end of March, 2017, including estimates of the undercount in Chisinau.

At the same time the final data were presented in the NBS site in different forms: as a series of tables in excel format, a series of static maps, and in the form of infographics. In addition a series of videos holding interviews of NBS managers and census experts regarding the census and other information has been also posted in the NBS site.

An advanced application that allows visitors to build their own tables, infographic charts, or select their own maps, on the basis of census final data has been launched. The application allows selection of different geographical levels from locality and up and to select from a list of variables. The information can be retrieved for population, dwellings and households and in the format of HTML, Excel and CSV. The application and the whole site have been developed by a private company. In addition to that, specific tables are provided on demand. For the moment no paper publications have been produced but one analytical publication is undergoing.

In general, besides the delay on the publication of the data caused by the delay in Data Capture, the dissemination seems to be more than satisfactory. It is still missing some plan to allow researchers access to anonymized individual data to foment researchers in using census data. That will require the adoption by NBS of a policy that will allow access to anonymized individual data.

Recommendations:

- To prepare a full plan of dissemination that should include the use of all the vehicles available and include, as it was already done in 2014 PHC, access to the data via the NBS site (adding more possibilities like more variables or user tailored maps) and access to the census metadata regarding the methodology used for the census, and if necessary instructions on how to deal with data that the evaluation showed are less reliable.
- Among the census products a program should be prepared to allow researchers access to anonymized micro-data, of course making sure that the confidentiality of individual data is respected.

10. Main challenges identified in the 2014 PHC

Since the report focuses on the problems and challenges faced during the execution of the last census, this may create a distorted image of the final results of the census. Indeed, despite the negative first impression that may arise from the previous list, it is evident that under very difficult and adverse circumstances, the NBS managed to conduct a full Population and Housing Census in 2014 that provides the best available set of data on population and its basic characteristics for the whole RM.

The key challenges of the 2014 PHC that were identified in the evaluation process are:

- Lack of active commitment of the government and a low and unsecured budget: The estimated and provided budget was low and continuously unsecured. An inadequate contracting and payment system of temporary staff worsen the problem.
- Inadequate mode of management of the whole census operation at the top NBS level: High centralization of decision making combined with a slow reaction to the census project requests contributed to the inability to adhere to the census work plan that had a very tight time table.
- Very tight schedule (late beginning of preparations): The schedule did not allow enough time to proper testing of the plans and tools to be used in the census.
- Lack of experience in census taking: The absence of staff with previous experience in census taking transformed the census to some extent in an on the job learning project.
- ICT services failure/absence: Ambitious plans that were not backed by the available budget did not allow the on-time release of critical tenders for the outsourcing of ICT operations.
- Reduced (and late) communication campaign: Facing a very adverse public opinion the communication campaign was not effective and hardly felt in the field.
- Lack of control procedures of census operations: The methodology used for the whole census project did not include enough monitoring measures to ensure the quality of the results; that was evident in particular during the field work. There was not systematic and detailed report and documentation of census operations.
- Only one manual for training: The unified manual prepared for training was not detailed enough for all the different levels of temporary staff (enumerators, supervisors and chiefs of districts).
- Questionnaires printing delay: the delay on the printing of the questionnaires combined with a too short period of time allocated for the collection of the questionnaires caused a delay in the beginning of the collection that was not finished in a number of EAs, in particular in urban areas and in the city of Chisinau.
- Data capture delay: Again the lack of active commitment of the government brought a delay of two years in the capture of the census collected data because of the lack of budget.
- Not enough collaboration with other institutions: The above mentioned lack of active commitment also influenced the cooperation of other governmental agencies owning data and maps that were necessary for the census.
- Limited ability to implement ITAB recommendations: Tight time table, combined with very low budget reduced the ability of NBS to implement the ITAB professional recommendations.

From the results of the PES we learn that most of the population has been counted with relatively low levels of undercount: the net undercount for the whole country excluding Chisinau city (80% of the total population) was of only 2%, and in the rural areas (60% of the total population) less than 1%. The main problems were concentrated in Chisinau city, and perhaps other big cities like Balti.

Therefore, excluding Chisinau city and some other big urban areas the quality of the census seem to be high enough to be used to update the current population estimates. Undoubtedly, census data when compared to any other available data source are the best available data to calculate population estimates for the RM. Moreover, the census data shows clearly that because the lack of accurate estimates of emigration the actual population estimates are wrong and misleading. In practice the NBS produced 3 different population estimates

sets of the population living currently in RM for 2014 that are used for different purposes: the census (raw) count of 2.6 million inhabitants, a census preliminary corrected estimate of 2.8 million and a current population estimate that is updated every year of 3.4 million.

Beside that there are two estimates of persons living abroad for more than one year, which according to the internationally agreed definition of population are not part of the actual population of RM: 209.0 thousands according to the census and 144.4 thousands according to the current population estimates.

It is clear that the census data after some corrections are introduced (using undercount estimates from the PES) provides the more reliable figure, and therefore that the current population estimates are over-estimating the population by more than 600 thousand inhabitants (a surplus of +22%). The reason for that is known: the current population estimates, updated last time on the basis of the 2004 census, include most of the emigrants who left the country since then. The reason for that is that current estimates of emigration are undercounting the actual number of emigrants leaving the country each year.

There is a clear need to remain with a unique set of estimates that will be closer to the real figures, and this set will be the one based in the corrected census data, once it is finally calculated. Therefore after some corrections are introduced for Chisinau city and perhaps other urban areas it will be possible and necessary to correct the many statistical indicators that are calculated today based in highly biased population estimates, and get more reliable indicators in a vast variety of statistical areas.

In the short range, there remain several challenges that NBS is recommended to begin to deal with together with the preparations for the next census:

1. Correction of the census figures to create the best set of population estimates for 2014.
2. Replacement of actual current population estimates with one unique set beginning in 2014 based on the PHC corrected estimates and the proper population definition.
3. Recalculate the many statistical indicators that are based on current population estimates.
4. Campaign to convince users these are the only true estimates that should be used.
5. Find the optimal way to update yearly the current population estimates (main problem: migration).
6. Advocate for the next census: new Law and budget.
7. Campaign to improve the NBS public image.
8. Begin preparations for the next census.

11. Preliminary recommendations for the next census

Detailed recommendations have been already inserted in the different chapters of this evaluation. Following, we present what we consider as the main preliminary general recommendations for the next census. These recommendations will be reviewed in the light of the Needs and Capacity Assessment for the next census:

- Work on getting government support and a realistic budget for the census operation since the preparatory stages until the end of dissemination.
- Reorganization of census management: clear and effective chain of command.
- Enlarging the census units; reorganization and work subdivision within the census and other NBS units, identification of projects that will need to be "outsourced" to prepare proper procurement process.
- Program of continuous capacitation of actual and new staff to be recruited.
- Decide on the best strategy to decide the next census methodological approach, adequate to RM situation (census vision).
- Building and strict adherence to a detailed working plan and calendar.
- Revision of enumeration methodology incorporating TQM and tight monitoring measures of the field work.
- Preparation of different manuals and training materials for each function of the temporary staff.
- Develop a system of full documentation of the census operations at all stages and a reporting system that will allow close follow-up during the field work.
- Development of ICT program (even if only for outsourcing these activities).
- Develop collaboration programs with other institutions and governmental agencies and analyze possible use of administrative sources to improve census performance.

12. Annexes

12.1. List of census experts

- Mr. Roberto Bianchini, International Consultant on GIS / Cartography
- Mr. Victor Dinculescu, International Census Consultant
- Mr. Anwar Farhan, International Consultant on Data Editing and Imputation
- Ms. Katerina Kostadinova-Daskalovska, international expert in population censuses, demography and statistics
- Mr. Guido Pieraccini, International Consultant on CSpro
- Ms. Ljubinka Popovska-Tusheva, International Consultant on Post-Enumeration Survey
- Ms. Tiziana Tuoto, International Consultant on Census Coverage and Population Estimates
- Mr. Jose Luis Cervera, Team Leader EU Project "Improved Regional Statistics"
- Marco Scarnò, International Consultant on development of territorial demographic indicators derived from the PHC 2014.
- (Other) ITAB members: Ms. Meryem Demirici, Mr. Mathias Till, Mr. Ronnie Anderson

12.2. List of documents used in the preparation of this report

- Work Plan
- Enumeration Manual
- Global Assessment of the National Statistical System of Moldova from 2013
- Narrative Report SDC for 2014
- Narrative Report SDC for 2015
- Narrative Report SDC for 2016
- Romanian Government 2014 Final Narrative Report.
- Assessment Report by Katerina Daskalovska 02 12 2013
- Assessment_Apr_2013_Moldova_Census_by Victor Dinculescu
- Assessment_Jan_2014_Moldova_Census_Victor Dinculescu
- Coding, Editing and Publicity mission Report by Ronnie Andersson
- CSPro Capacity Building Guido PIERACCINI
- Data Entry Software options for data entry and processing
- PES 1st Mission Report by Ljubinka Popovska
- PES 2nd Mission Report by Ljubinka Popovska
- PES 3rd Mission Report by Ljubinka Popovska
- Trainings Final Report
- Informative Note Preliminary Census Results
- DECISION NO. 967 on implementation of Law 90
- LEGE Nr. 90 26-4-2012
- CS Pro Data Entry Report by Victor Dinculescu
- Coverage and Population Estimates by Tiziana Tuoto
- Data Editing Report by Anwar Farhan
- GIS 1st by Roberto Bianchini Oct 2016
- GIS 2nd mission by Bianchini May 2017
- GIS 2nd mission by Roberto Bianchini January 2017
- PES Technical_Report by Ljubinka Tosheva
- Demographic Barometer 1_Economic Crisis Demographic Implications_2016
- Demographic Barometer 1_Real number of population_2015
- Reliable mortality estimates with distorted population stats - M Plank

- ITAB meetings reports (1-4)
- Principles and Recommendations for Population and Housing Censuses Revision 2 Department of Economic and Social Affairs, UN Statistics Division

12.3. Agenda of the mission



**International Mission on Census Evaluation, Institutional Capacity and Needs assessment for the 2020
Census round in the Republic of Moldova
MISSION 1
Chisinau, Moldova - 7-11 August 2017**

Provisional Agenda

Purpose of the assignment:

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.

First mission Objective: Evaluate the entire 2014 Population and Housing Census based on the 2010 Round UNECE recommendations.

First mission Deliverable:

Evaluation report of the 2014 Population and Housing Census

International Expert:

Mr. Eliahu Ben Moshe, UNFPA Consultant

Interviewed stakeholders:

Mr. Vitalie Valcov, General Director

Ms. Ala Negruta, Deputy General Director

Ms. Valentina Istrati, Head of Demography Statistics and Population Census Division

Ms. Snigalitea Nasco, Head of Population and Housing Censuses Section

Mr. Lilian Galer, Head of Statistical Methods Unit, responsible for PES

Mr. Dmitrii Calincu, Head of Statistical Infrastructure Division

Ms. Lilia Racu, Head of Synthesis and Dissemination of Statistical Information Division

Ms. Larisa Borș, Head of Coordination of Data Collection in Households Service

Ms. Olga Moraru, Head of Sampling and Inference Statistics Service

Ms. Victoria Sîrghi, Head of Statistics for Căușeni Raion

Ms. Janeta Savva, deputy Head External Trade and Market Services Statistics Division

Ms. Nina Cesnocova, senior advisor, Demography statistics section, Demography Statistics and Population Census Division

Ms. Carolina Panico, senior advisor, Population and Housing Census section, Demography Statistics and Population Census Division

Ms. Elena Galer, advisor, Population and Housing Census section, Demography Statistics and Population Census Division

Ms. Natalia Bargan, Demographic Research Center (ex-head of Census Division at NBS)

Ms. Natalia Plugaru, Assistant Representative, UNFPA
 Mr. Cristian Ziliberberg, Project Officer, UNFPA
 Ms. Viorica Crețu, Deputy Director of Cooperation, Swiss Cooperation Office
 Mr. Radu Danii, National Program Officer, Swiss Development and Cooperation Agency (SDC)

Ms. Anna Moghilda / Anastasia Taburceanu, Action Global Communications
 Ms. Galina Petcu, National Youth Council of Moldova

Remote communication with:

Ms. Olga Gagauz, Deputy Director, National Institute for Economic Research
 Mr. Eduard Mihalaș, Programme Analyst on Population & Development and Gender, UNFPA Moldova
 Ms. Tiziana Tuoto, International Consultant on Census Coverage and Population Estimates
 Ms. Ljubinka Popovska-Tusheva, International Consultant on Post-Enumeration Survey
 Mr. Jose Luis Cervera, Team Leader EU Project “Improved Regional Statistics
 Mr. Victor Dinculescu, International Census Consultant
 Mr. Roberto Bianchini, International Consultant on GIS / Cartography

Date and place	Topic	Participants
Monday 7, UNFPA & NBS	Welcoming and Preparation for the Census	
9.30-10.30	<ul style="list-style-type: none"> Introductory meetings with UNFPA 	Natalia Plugaru, Cristian Ziliberberg
11.00-12.00	<ul style="list-style-type: none"> Introductory meeting with NBS Setting up the agenda 	Vitalie Valcov Ala Negruta Valentina Istrati
12.00-13.00	<i>Lunch break</i>	
13.00-17.00	Evaluating the Pre-census activities <ul style="list-style-type: none"> Institutional and Legal Environment, Census Workplan and budget, Census Design Enumeration Areas, Census Documentation Pilot Census Collaboration with other institutions 	Ala Negruta Valentina Istrati Snigalitea Nașco Elena Galer Carolina Panico
Tuesday 8, NBS	Data collection	
9.00-12.00	Evaluating the Census methodology and data collection activities: <ul style="list-style-type: none"> Methodology of Census data collection and other field operation Selection and training of the personnel Census Communication campaign 	Ala Negruta Valentina Istrati Snigalitea Nașco Elena Galer Carolina Panico
12.00-13.00	<i>Lunch break</i>	
13.00-14.00	Pilot Census and 2014 PHC at the local level, Caușeni Raion	Victoria Sîrghi
14.00-15.00	Pilot Census and 2014 PHC at the local level, Chișinau	Janeta Savva

Date and place	Topic	Participants
15.00-16.30	Challenges in the organization of staff training and data collection	Valentina Istrati Natalia Bargan Snigalitea Naşco Elena Galer Carolina Panico
Wednesday 9, NBS	Data Processing Entry, Cleaning, and Editing	
9.00-12.00	<ul style="list-style-type: none"> • Database design • Data entry • Cleaning and editing the data 	Valentina Istrati Snigalitea Naşco Ala Negruţa Dmitrii Calincu Elena Galer Carolina Panico
<i>12.00-13.00</i>	<i>Lunch break</i>	
13.00-17.00	Continuation <ul style="list-style-type: none"> • Data tabulation • Data coding 	Valentina Istrati Snigalitea Naşco Ala Negruţa Elena Galer Carolina Panico
Thursday, 10, NBS	PES, Administrative Data, Population Estimates and Quality evaluation	
9.00-12.00	PES evaluation: <ul style="list-style-type: none"> • Elaboration of PES methodology • PES fieldwork • PES data entry and analysis • Linking the PES, Census and Administrative Data 	Lilian Galer Dmitrii Calincu Larisa Borş Olga Moraru Ala Negruţa Elena Laur
<i>12.00-13.00</i>	<i>Lunch break</i>	
13.00-16.30	Population Estimates and Census Quality: <ul style="list-style-type: none"> • Calculating the coverage • Calculating the population estimates • Evaluating the Census quality 	Lilian Galer Dmitrii Calincu
<i>16:30-17:00</i>	<i>Commuting to UNFPA</i>	
17:00-18:00	Meeting at UNFPA	Natalia Plugaru Cristian Ziliberberg
Friday 11, NBS & UNFPA	Data dissemination, communication and use and storage	
9:00-9:30	Door-to-door census information campaign	Galina Petcu

Date and place	Topic	Participants
9.30-10.40	Data dissemination and communication campaign	Lilia Racu Valentina Istrati Ala Negruța Anna Moghilda
10.40-11.00	Data dissemination and communication campaign	Anna Moghilda Anastasia Taburceanu
11.00-12.00	Use of census data	Nina Cescocova
<i>12.00-13.00</i>	<i>Lunch break</i>	
13.00-13.30	Data storage and archiving	Valentina Istrati Snigalitea Nașco Ala Negruța Elena Galer Carolina Panico
13:30-15:00	Preparation for the presentation session	
15:00-16:00	Wrap-up: <ul style="list-style-type: none"> • One hour presentation of the main findings to the NBS Staff 	BNS staff Ala Negruța Natalia Plugaru
16:00-17:00	<ul style="list-style-type: none"> • Conclusions and next steps with NBS and UNFPA 	Cristian Ziliberg Viorica Crețu Radu Danii

12.4. Terms of Reference

Terms of Reference International Consultant on Census Evaluation, Institutional Capacity and Needs assessment for the 2020 Census round in the Republic of Moldova

Job Title:	International Consultant on Census Evaluation, Institutional Capacity and Needs assessment for the 2020 Census round in the Republic of Moldova
Duration of assignment:	June-October 2017 (30 working days, including 15 working days home-based)
Duty station:	3 Missions to the Republic of Moldova (June / October) and home-based
Beneficiary:	National Bureau of Statistics of the Republic of Moldova (NBS)
Funded by:	UNFPA, United Nations Population Fund and Swiss Agency for Development and Cooperation
Reference to Project:	MDA2U714 "Enhanced capacity of national institutions to undertake the Population and Housing Census"

I. Background

UNFPA, United Nations Population Fund, is implementing the Country Programme 2013–2017, which is based on the Government's priorities as formulated in the Strategy "Moldova 2020" and in the United Nations-Moldova Partnership Framework (UNPF) "Towards Unity in Action"² and is concentrated on health, reproductive rights, with a focus on disadvantaged groups, policies and population dynamics and addresses gender-based violence. Transversal issues include human rights and gender equality, the concerns of young people, inclusive partnerships, national ownership and humanitarian assistance.

As part of UNFPA Country Programme 2013 – 2017 implementation (Output 4 "Enhance capacity of national institutions to produce and analyse statistical data on population dynamics, youth, gender equality and sexual and reproductive health"³), UNFPA assisted the Government of Moldova in carrying out the second Population Census, and for the first time, a Housing Census (PHC) in May 2014. In order to evaluate the census quality, in the period of 16 – 29 June 2014, National Bureau of Statistics (NBS) has conducted for the first time a Post-Enumeration Survey.

On 31 March 2017 NBS released the main results of the 2014 PHC and by the end of June 2017 will finalize processing and disseminating all data. Consequently, the NBS and the Government of Moldova are starting the preparation for the next census, which will fall within the 2020 Global Census round, in accordance with the UN recommendations. Thus, the NBS and the Government are keen to develop proactively the standards to meet expectations for the 2020 Global Census Round.

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.

II. Justification

The National Bureau of Statistics of Moldova released on 31 March 2017 the main results of the 2014 Population and Housing Census. The National Commission on the 2014 Population and Housing Census (2014 PHC), chaired by the Prime Minister of Moldova approved on 2nd May 2017 the results of the 2014 PHC. It also decided that the National Bureau of Statistics will start the preparations for the next census round, which is in line with the Strategy for the Development of the National Statistical System 2016-2020.

One of the main goals of the strategy is "Preparation of legislative, administrative and organizational framework for carrying out the next Population and Housing Census in the Republic of Moldova for the Round

² United Nations Partnership Framework 2013-2017 http://unfpa.md/images/stories/docs/UN-Moldova_Partnership_Framework_2013-2017.pdf

³ UNFPA Country Programme for 2013-2017, approved by UNFPA Executive Board at the ordinary session of 4 to 10 September 2012, http://unfpa.md/images/stories/docs/UN_version_CPD_for_the_Republic_of_Moldova_2013-2017_Engl.pdf

2020.” The primary steps in this regard will be to assess the current needs and capacities of the NBS and to prepare the action plan for the next census.

III. Purpose

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.

IV. Objectives

In order to achieve the expected results, the following Objectives are to be accomplished:

1. Evaluate the entire 2014 Population and Housing Census based on the 2010 Round UNECE recommendations;
2. Assess NBS’ institutional capacity to conduct the 2020 Round Population and Housing Census in Moldova;
3. 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;
4. Elaborate a budgeted Action Plan for the 2020 Census Round.

V. Process and Methodology

The consultant will work from home and will undertake three missions to the Republic of Moldova. The following steps shall be followed:

First mission: Evaluation of the 2014 Population and Housing Census (June – July 2017)

The main objective of the first mission is to evaluate the 2014 Population and Housing census, including all its phases (planning, preparation, data collection, data processing, quality assurance, dissemination and archiving). During this mission the consultant will interview in-depth the NBS top management and staff, and the relevant stakeholders. It will analyze the relevant laws, internal documents, procedures, the staff capacity and the workflow. Using that information as a background, the consultant will evaluate the 2014 PHC against the original General 2014 PHC Workplan and the Conference of European Statisticians Recommendations for the 2010 Censuses of Population and Housing⁴, which will include assessing the phase performances, and pointing out the highlights, lessons learned and the recommendations. The structure of the report will be proposed by the consultant and agreed with NBS and UNFPA.

Second mission: Needs and Capacity Assessment for the 2020 Global Census Round (July – September 2017)

The 2014 PHC evaluation will serve as a starting point for the assessment of the NBS needs and capacity to undertake the 2020 Census round. The consultant may use the following dimensions specified by the US Census Bureau’ - Tool for Assessing Statistical Capacity (TASC)⁵ and by PARIS21 Task Teams on Statistical Capacity Building⁶, though the consultant can come with its own methodology taking into account the 2020 Census Global Recommendations:

- Institutional capacity (sub-dimensions: Legal Environment, Data confidentiality and protection, Organizational Structure and workflow, Human resources and Physical capital, Stakeholder coordination);
- Census Planning and management (sub-dimensions: experienced Human Resources trained in census planning and management, having necessary skills; the existing Physical capital, equipment, space; adequate Hierarchical structure and Work-flow; necessary Electronic devices and staff trained in using, programming and maintain them; the Support Community network formed to promote awareness; Methodological soundness and international standards, Quality assurance; Written procedures and Documentations)
- Mapping and use of GIS
- Questionnaire content and testing (sub-dimensions: subject matter staff, historical continuity and international standards of the content, consultations with data users, checks of translation of the questionnaires, cognitive pretesting, design for chosen data capture);

⁴ https://www.unece.org/fileadmin/DAM/stats/publications/CES_2010_Census_Recommendations_English.pdf

⁵ <https://www.census.gov/population/international/about/tasc/tascdownload.html>

⁶ <http://www.paris21.org/Task-Teams>

- Field operations (sub-dimension: the plan, hiring and training of the enumerators and supervisors using field tests, the hierarchical and delivery structures, manuals for trainers of trainers)
- Data processing (sub-dimensions: documentation for data processing, the necessary staff, data capture, data coding, pilot census, procedures in place to return the questionnaires, coding standards, testing of the portable electronic devices, preparation for the PES)
- Data dissemination (sub-dimensions: staff trained to disseminate data in customized forms, including data visualizations, according to international standards, with available microdata, and a dissemination plan)
- Administrative records (sub-dimensions: capacity to adapt administrative records for statistical purposes)

Based on these findings the consultant will formulate a report, which will evaluate the capacity and identify the needs of the National Bureau of Statistics, taking in consideration the following domains and options mentioned by the Conference of European Statisticians Recommendations for the 2020 Censuses of Population and Housing⁷:

- **Census methodology.** A number of census methodologies are used in Europe, including traditional census, traditional census combined with yearly updates, rolling census, register based censuses, register based census combined with traditional census or with just a sample field data. Each of these approaches has its advantages and disadvantages. The consultant will propose the most suitable approach based on the current capacity and potential resources.
- **Technology.** Traditionally, the census data are collected on paper. However, recently there were other developments in the field, CAPI, CAWI, mailing the questionnaires. The data capturing, storage, analysis and output production technologies play an important role, as well, in census organization. Thus, the consultant is expected to provide recommendation regarding the most appropriate and feasible technologies.
- **Field and operational activities.** The preparation for the census, consultations with the main stakeholders, pre-testing of the entire methodology and technology, communication with the targeted population, and the field operation itself, dissemination, documentation, metadata and archiving should be properly organized in order to assure a successful census operation.
- **Quality management.** In order to assure the quality of the entire census and the final results, a set of checks and measures for each stage of the census are defined and implemented. The consultant is expected to provide its recommendations on the most adequate approaches.
- **NBS Organization and management.** The NBS organizational structure and workflow has a direct impact on the census procedures effectiveness, thus the consultant will provide its recommendations.

The report should clearly point out the reasoning and evidences that support each claim and recommendation. It should also mention the areas that the National Bureau of Statistics can develop internally, and areas where external financial and technical assistance is necessary. Based on the identified gaps, the consultant will develop a detailed and practical budgeted Action Plan for the 2020 Census Round. The structure of the report will be proposed by the consultant and agreed with NBS and UNFPA.

Budgeted Action plan

Taking in consideration the needs and capacity assessment, the Consultant will develop a detailed budgeted action plan for the 2020 Round Population and Housing Census in Moldova. The Action plan should specifically mention all census stages (eg census planning, preparation, enumeration area delineation, enumeration, data processing etc), the specific activities to be accomplished within each stage (eg development of the procurement plan, creating a GIS database etc), the timeframe for each stage and the responsible parties. Each stage and action of the plan should be budgeted, with provided reasoning. In order to increase its visual appeal and clarity, the action plan should be presented as a Gantt-chart, as well.

Third mission: Consultations and Workshop (September – October 2017)

The draft report and budgeted plan will be consulted with the NBS and relevant stakeholders. Also, based in this report, the consultant will provide NBS a workshop to discuss the reports and plan the future actions.

⁷ <https://www.unece.org/publications/2020recomm.html>

Afterwards, based on the collected feedback and additional inputs, the consultant will deliver the final version of the report and of the budgeted action plan.

VI. Monitoring and progress control, including reporting requirements, periodicity, format and deadline

At the end of the mission, the international consultant will present a report, which will include details on each deliverable according to the point IX of this ToR.

VII. Expected travel

The Consultant will undertake three missions in the Republic of Moldova in the period of June 2017 – October 2017. Exact dates of the mission will be decided in consultation with NBS. UNFPA will pay international travel, terminals and DSA as per UNFPA regulations.

VIII. Supervisory arrangements:

International Consultant will work with the UNFPA Project Officer, under overall coordination of the UNFPA Programme Analyst on Population & Development and Gender. In addition, Consultant will work with staff of the National Bureau of Statistics in achieving objectives of this ToR. The National Bureau of Statistics will nominate technical staff who will work closely with the international consultant.

IX. Deliverables and time frame

The activities under the present assignment are expected to be realized during 26 June – 31 October 2017. The activities will be implemented and the deliverables will be presented according to the following timetable:

Tasks / Deliverables	No. of w. d.
First mission: <ul style="list-style-type: none"> Evaluation report of the 2014 Population and Housing Census 	10
Second mission: <ul style="list-style-type: none"> The draft Capacity and Needs assessment report for the 2020 Global Census round, with recommendations in accordance with the Conference of European Statisticians Recommendations for the 2020 Censuses of Population and Housing, submitted to NBS and UNFPA The draft budgeted Action Plan for the 2020 Census Round in Moldova and the associated Gantt chart submitted to NBS and UNFPA 	15
Third mission: <ul style="list-style-type: none"> Facilitate a two-day' workshop with NBS staff for planning the next census. Final Needs and Capacity assessment report for conducting the Population and Housing Census in the 2020 Census Global Round Final Budgeted Action Plan of the Population and Housing Census in the 2020 Census Global Round and the associated Gantt chart. 	5
Total number of working days:	30

All deliverables will be presented to UNFPA and to NBS in English.

X. Schedule of payment

Payment will be done based on working days. The fee per working day will be established based on the requirements included in ToR and years of experience of selected consultant in alignment with UNFPA policies. The payment will be made after provision of the requested deliverables at the end of each mission upon certification by UNFPA.

XI. Requirements for Experience and Qualifications

Academic Requirements:

- Master's degree in mathematics, statistics, demography, economy, sociology, social sciences, or as equivalent (10 p).

Experience:

- At least 10 years of specific professional experience with statistical organizations/offices. (10 p.)
- Experience in conducting assessments of the statistical organizations/offices; (15 p)

- Previous experience in managing at least 2 censuses; (15 p)
- Experience working with administrative data and innovative technologies in census required; (10 p)
- Involvement in the preparation of the EU / UN Census recommendation will be highly regarded; (5 p)
- Experience in technical capacity building or training is considered an asset; (5 p)
- Experience with NBS in Moldova will be considered as advantage. (5 p)
- Experience with UNFPA will be considered as advantage. (5 p)

Languages:

- Proficiency in English is required. (5 p)
- Knowledge of Romanian or Russian will be an asset. (5 p)

Computer skills:

- Excellent writing and communication skills (5 p)
- Proficiency in use of current office software applications (5 p)

XII. Application process

Interested candidates must submit by 4th June 2017 to jobs.moldova@unfpa.org the following documents/information to demonstrate their qualifications:

- **P11** including past experience in similar assignments and at least 3 references, and, optionally, the CV.

Please note that the selected consultant will be asked to submit a series of documents (health statement, certification of health insurance; passport, vendor form, security certificates etc.) before starting their assignment.