

**PEER ASSESSMENT
OF
THE 2011 POPULATION AND HOUSING CENSUS IN
MONTENEGRO**

Final Report

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I. Introduction and background

1. Montenegro carried out a population and housing census from 1 to 15 April 2011, as planned. Of its neighbouring countries, Kosovo carried out a census at the same time. In order to ensure transparency and increase confidence in the census results the Montenegrin authorities requested a peer assessment of the population census. The European Commission, which had already supported Montenegro with technical assistance in the preparatory phase, agreed to organise the peer assessment of the 2011 Montenegro census.
2. The first mission took place in July 2010, the second in November 2010, the third from 1 to 15 April 2011, during field activities, and the fourth and final one from 13 to 15 June 2011.
3. The main objective of the peer assessment of the Montenegro population census was to assess whether the census was conducted in line with the international recommendations published by the United Nations Economic Commission for Europe (UNECE)/Eurostat and adopted by the Conference of European Statisticians as Principles and Recommendations for the 2010 Census of Populating and Housing.
4. As mentioned in the terms of reference, the assessment was carried out by a senior census expert, Mr Jean-Michel Durr, assisted by Mr Roberto Bianchini. Mr Bianchini participated to the first, third and fourth missions. In line with the objective of the peer assessment, as indicated above, the fourth mission was the last one conducted by the experts.
5. After the first mission in July 2010, a report was prepared for the Steering Committee to assess the preparation of the Montenegro census of, to identify success factors, risks and areas requiring technical assistance, and to make some recommendations to Monstat (the statistical office of Montenegro).
6. The main objective of the second mission, conducted three months after the first one, was to assess the progress achieved in the preparation of the census and the implementation of the recommendations. In addition, the second mission provided the opportunity to meet with external stakeholders, such as political parties and municipalities, to assess the political and organisational context of the census preparation.
7. The third mission aimed to assess the implementation phase of the census operation and to ascertain whether the recommendations made during and after the two previous missions had been implemented. Each of the 21 Municipalities of Montenegro was visited during census operations. At the beginning of each visit to the municipalities, a meeting was organised with the municipal commission. Census municipal premises were visited, state instructors and municipal instructors met, and a number of interviews carried out by enumerators with households were observed.
8. The fourth and last mission was organised to assess a) data processing operations, b) census evaluation, mainly through the analysis of the methodology used to conduct a post enumeration survey, and c) the plan for census data dissemination and analysis.

II. Executive summary

9. The mission was able to conduct the assessment and observation tasks with the very helpful participation of Monstat. In particular, the mission would like to express its sincere thanks to Ms Gordana Radojević, General Director of Monstat, Mr Radomir Djurovic, General Director of Monstat and later Head of the Census Project, Mr Bozidar Popović, Assistant Director, Mr Rajko Lakovic, Assistant Director, and in particular to Ms Snezana Remiković, Head of the Demography Department in charge of the preparation of the census.

10. Despite its relatively short existence as National Office of Statistics, Monstat had strong experience in the domain of data collection. In addition, it was open to learning from the experience of other countries and the mission was pleased to note that most of the recommendations made in the course of this assessment mission were taken into consideration.

11. The preparation of the census suffered from a shortage of human resources in Monstat. It was not possible for a full time team to be allocated to the census preparation and this had consequences, in particular in the preparation of the data processing and dissemination phase. The census could be prepared and conducted only because the staff most closely involved worked much overtime.

12. The census law would have benefited from more legal expertise in its preparation to specify some definitions and avoid some ambiguities.

13. The census budget was in line with that for other European countries. The cost per capita was around 5 €, for a European median cost of 4.5 €.

14. The questionnaires were in compliance with the Conference on European Statisticians (CES) Recommendations.

15. The printing of the census questionnaires and instruction manuals was properly carried out.

16. The preparation of the maps was satisfactory, despite some problems with updates. The absence of building boundaries and building codes limited the use of maps for the monitoring of coverage during census operations.

17. Organisation in the field was satisfactory and benefited from the high quality of staff, including temporary staff. However, the limitations in sharing responsibility between Monstat and the municipal commissions were demonstrated in the field.

18. The communication campaign was very successful, as evidenced by an almost total awareness of the census operation amongst the population.

19. No specific problems were encountered regarding logistics.

20. The overall impression was that municipalities prepared for the census very carefully and offered good premises to the census staff.

21. The selection process was conducted according to the Monstat recommendations, with priority usually given to unemployed people. The selection procedure also included a test to be passed after training.

22. Observation of interviews showed that the instructions given to enumerators were applied well.
23. Some recommendations were made for future censuses, to review the procedure for enumerating absent members of households.
24. The processing of the census data (recording in electronic format, coding and editing) was conducted following well-known methods and was fully satisfactory. However, for future operations, Monstat could invest in modern techniques such as automatic edits.
25. Monstat developed a comprehensive quality control system for all the steps of the census. The mission was able to verify and confirm the high quality of the result obtained. Monstat carried out a Post Enumeration Survey to measure the coverage of the census, following the internationally accepted methodology.
26. As an output of the last mission, some recommendations were made to Monstat, in particular regarding dissemination and census data analysis. A strategy and plan for the post-enumeration phase seemed to be the most urgent action required. In addition, the mission recommends that technical assistance be provided to Monstat in the domain of dissemination, on the elaboration of the strategy, and for IT tools for dissemination.
27. In conclusion, the mission found that the 2011 census of Montenegro was prepared, conducted in the field and processed in accordance with the international recommendations, and in particular the recommendations made by the Conference of European Statisticians for the 2010 round of Population and Housing Censuses.

III. Assessment of the preparation of the census

28. In order to assess the preparation of the census, the mission decided to look at all the steps for the preparation and implementation of a population and housing census. A list of activities was created from the United Nations Principles and Recommendations for Population and Housing Censuses, as well as from the experience of the experts.
29. The list of activities was organised as follows: (a) preparatory work; (b) mapping; (c) enumeration; (d) data processing; (e) dissemination; (f) evaluation; and (g) analysis.
30. This assessment was mainly based on the information reported by Monstat during meetings, and on direct observations of the mission. As a consequence, the comments and recommendations presented below are based on the understanding of the experts, and may not reflect the real situation.

PREPARATORY WORK

Legal basis for the census

31. The census law was prepared by Monstat, with assistance from European Union and national experts. The project was presented to the ministries involved, such as a Ministry of Justice or Defence, and national councils. The objective was to draft a consensual text for which large agreement could be obtained.

32. The law was discussed at the Parliament, adopted on 9 July and amended afterwards to replace the term ‘ethnic affiliation’ with ‘ethnic or national identity’ and to remove the definition of the term ‘mother tongue’ from the questionnaire. The argument was that for Montenegrins born during the era of the former Yugoslavia, the mother tongue (the language learned in early childhood) is Serbo-Croatian or Croatian-Serb, languages that are no longer mentioned in the country’s constitution.

33. By law, Monstat was responsible for the organisation of the census. No other body, such as a National Census Commission, was established for the census. The results will be published by Monstat, but not in the official gazette.

34. The law would have benefited from more legal expertise in its preparation. For example, no explicit reference was made to the statistical law of Montenegro. The responsibilities of the different bodies were not clearly defined and sometimes confused with the tasks. For example, Monstat’s responsibility in the control of the enumeration census should have been stated explicitly. The composition of the municipal commissions was not defined. The census was implicitly defined by the first article of the law as covering only the enumeration phase, which is not appropriate, and could exclude the processing and dissemination stages from the operation.

35. More problematic, the obligation placed upon the population to respond to the census was not defined explicitly, covered only by the amount of fines in the case of refusal. In addition, there was no provision to allow non-response to the questions on ethnicity, religion and disabilities. Monstat considered that for these questions, a non-response would be considered as a valid answer, which had no real legal basis. This vagueness of the law was noted by some organisations and a constitutional appeal was initiated by Human Rights Action. The appeal by Human Rights Action was rejected by the Constitutional Court before the census field work started.

36. In addition, some inconsistencies between the census law and the methodology document were pointed out by municipal commissions. For example: Article 11 of the law includes the following tasks for municipal commissions:

- a. Take over the census material and shall control its completeness and quality;
- b. In cooperation with the state instructor, draft preliminary results for settlements and local government units, and they shall submit them to the Statistical Office not later than 20 April 2011;

37. However, the methodology, reaffirmed by a letter from the Director of Monstat to the municipalities during the enumeration, asserted that the municipal commissions could not have access to the census questionnaires. This situation could be avoided by a clear definition of what are ‘census material’, ‘preliminary results’ in the law. In particular, the term ‘first results’ was used in the methodology instead of ‘preliminary results’. This gave some political parties the opportunity to request that the municipal commissions be able to process and publish the municipal structure in terms of ethnicity, religion and mother tongue.

38. A complete debriefing of issues relating to the law should be made and recorded after the census. This is necessary to prepare the next census. Special attention should be given to the words used and their definition. For example, it should be made clear that the

release of census results is the responsibility of the Statistical Office alone. The word 'counting' should be used for the municipal commissions.

Budget and cost control

39. The budget presented by Monstat received the agreement of every ministry, including the Ministry of Finance. It was adopted by the government and included in the global budget presented to the Parliament. The regular budget of Monstat, however, was reduced. Monstat then delegated the funds to the municipal commissions.

40. The Montenegro census budget was in line with that for other European countries. The cost per capita was around 5 €, for a European median cost of 4.5 €. Considering the small size of the country and the fixed costs of a census, this is comparable. The cost breakdown by main activities shows that mapping represented 3% of the budget (compared to 2.9% in Europe), printing 1.8% (3.6% in Europe), publicity campaign 3% (3.5% in Europe), field work 52% (37.5% in Europe), data processing 6.8% (13.4% in Europe), Post Enumeration Survey 1.6% (1.2% in Europe) and dissemination 1.8% (5.5% in Europe). Field work and training represented 72% of the budget, which is quite high, even if the cost of premises rental was included. On the other hand, the budget allocated to the publicity campaign and dissemination was not very high.

41. As the census enumeration took place in April, many expenses were incurred at the beginning of the year. Monstat contacted the Ministry of Finance and the Treasury Administration to ensure a prompt transfer of funds at the beginning of 2011.

42. Separate budget control was undertaken not by Monstat, but through the Public Treasury system. Monstat has to report on spending of the budget every year. Regular reports were made to the 'Census bureau', that is to say the top management of Monstat.

Census calendar

43. International recommendations consider a calendar or timetable indicating the sequence and estimated duration of each of the component operations to be an indispensable element in the planning of a census. At the early stages of census planning, a provisional calendar of selected key dates should be prepared as an overall framework for the census. The calendar should be revised and made more detailed as planning proceeds, with the aim of establishing final dates as soon as practicable.

44. A timetable, including only the main deadlines, was prepared by Monstat in December 2009, and not revised until July 2010. Then, following the recommendations of the first mission, the existing timetable was expanded and regularly updated. The census coordinator was in charge of collecting reports from the working groups every week and informing the working groups of the Bureau's decisions he.

45. Light-touch monitoring was put in place, based on regular reports from the working groups and staff involved. In addition, the Census Bureau met regularly to monitor the preparation of the census. Regular reports from the working groups were systematically reviewed during these meetings and a concise report was written, but not disseminated to the census team.

46. However, the mission noticed that although the planning of the enumeration phase was carried out correctly, the data processing phase was not planned sufficiently. For example, the data capture staff should have been hired and trained before the end of the enumeration in order to be ready to start data entering of the questionnaires as soon as they were returned to Monstat. One of the characteristics of a census is the succession of steps that need to be developed in parallel, which makes planning difficult.

Management structure

47. There was no full time team devoted to the census until a new Director General was appointed at the beginning of 2011. The former Director General then took on responsibility for the census project. This helped provide a better structure for the preparation of the census. Every staff member involved in the census, including the Head of the Demography Department in charge of the census technical preparation, had other regular assignments. Most of the preparation work was done by working groups constituted on an ad hoc basis and reporting to the Census Bureau. The 'Census Bureau' was the top management structure, composed of the Director, the two Assistant Directors and the Head of the Demography Department. Its structure changed over time. From January 2011 there was the following composition: Head of Census Bureau, Assistant Head, Secretary, Head of Working Group for Methodology, Head of Working Group for Logistics, and Head of IT Department.

Field organisation

48. The first level of organisation in the field was the state instructors, in charge of the overall supervision of field operations, each covering a large area. There were 70 state instructors (15 in Podgorica) plus a total of 4 reserve instructors. State instructors were treated by Monstat as two sub-groups, senior and junior (newly recruited Monstat staff). Monstat held regular meetings, mainly with Senior state instructors in charge of coordinating Junior instructors. There was one senior state instructor for each municipality.

49. Municipal commissions were created in the 21 municipalities of Montenegro to organise field work, and select and train field staff. Each commission comprised at least 5 members, among them 2 from the municipal opposition. In practice, municipal commissions were composed of at least 7 members (9 for Podgorica). Monstat representatives were not members of the municipal commissions. The head of each commission was the mayor, and in certain cases local representatives of institutions were part of the commission. Article 11 of the law describes the task of the municipal commission. The composition of each municipal commission had to be formally approved by the Director of Monstat.

50. Each municipal commission appointed municipal instructors to be in charge of the enumeration of a part of the territory of the municipality. The 461 municipal instructors recruited each had responsibility for selecting, training and supervising 7 enumerators on average. The total number of enumeration areas (EAs) in the country was 3 884. One enumerator was appointed in each EA. In rural areas, the ratio of enumerators to municipal instructors was around 5 and in urban areas it could reach 10. Every state instructor had to supervise on average 6.6 municipal instructors. These ratios were in accordance with international practices.

51. The limitations of sharing responsibility between Monstat and the municipal commissions were demonstrated in the field. On the one hand, the municipal commissions

had a role in the overall control of the census, as the citizens' representative. On the other hand, they had a practical role in facilitating the census by offering premises, vehicles or help in encouraging non-respondents. They also brought their knowledge of the territory, which was invaluable. But these two roles were confused and not clearly defined. For example, members of the municipal commissions had no access to the questionnaires and some of them complained that they could not really control the enumeration. In most cases, members of the municipal commissions did not provide tangible input apart from the selection of enumerators. This created some tensions, when compared with the hard work undertaken by enumerators, municipal instructors and state instructors.

52. For future censuses, Monstat should come up with a more operational administrative structure. The municipalities are indispensable in the census enumeration: they know their territory, have some authority with the population and can provide practical support such as premises. They should be more involved in the delineation of the enumeration areas to ensure that their size is homogeneous. Municipalities could also provide the state instructors with administrative resources, for example a list of addresses for waste collection, to ensure complete coverage of dwellings.

53. The role of overall control of the operation, as representative of the population, could be played by a small commission of members of the local parliament, as they are elected, and chaired by the mayor. The role of this commission would be to make sure that the operation is going smoothly in the municipality according to the law, to make sure that the municipality devotes the necessary resources to the census, and to sign the final counting documents. The municipality could appoint one or several 'Municipal Coordinators', according to the size of the municipality, to play the technical role: to provide premises and technical equipment, check the delineation of enumeration areas (EAs), prepare the selection of enumerators and municipal instructors etc.

Contracting out

54. Monstat conducted three procurement procedures: for printing, for stationery and for the public campaign. Tender documents were prepared on time for the three operations, but Monstat could not launch the procedures until the budget had been adopted by the parliament.

55. Procurement has been a subject of concern throughout the preparation of the census. To avoid similar stress in future operations, it is strongly recommended that all possibilities for launching the procurement procedure, even before the formal adoption of the budget, should be explored, especially some provisions of Article 27 of the law on procurement.

56. The specifications should make provision for additional orders in case of accidents, with a special time clause. For example, if a batch of questionnaires is accidentally destroyed due to flooding, Monstat should be able to order a reprint and receive delivery within a few days.

Quality assurance programme

57. Monstat recognised a lack of knowledge in the domain of quality assurance concepts and expressed a need in that area. An overall strategy for census quality assurance was, however, developed, with the help of an expert. In particular, a quality assurance

programme for field work was developed, including a list of controls to be performed by the municipal instructor as well as the state instructor.

58. In future, Monstat could benefit from the assistance of advanced countries in quality assurance, as well as from the Eurostat guidelines in this area.

Administrative report

59. It is recommended that a country prepare and, if possible, publish an administrative report providing detailed information on the manner in which the census was planned, organised and conducted, and problems encountered at the various stages of the operation, as well as points to be considered in future censuses. This report would both assist the users of the census results in appraising and interpreting the data and facilitate the proper planning of future censuses.

60. Monstat prepared an outline for the administrative report and gathered information after each stage of the census, but the actual report is not yet available.

Census communication activities: user consultations, census publicity and promotion of census products

61. Consultation with users and representatives of social groups is an indispensable step in the preparations for the census that should be taken early. Such consultations can also serve to foster a wider and more informed understanding of, and support for, census plans and activities. In that regard, Monstat carried out a wide consultation with the relevant authorities and social groups in the country. Ministries, and national councils representing the various ethnic and national groups, were presented with the census project and given the opportunity to comment either on the content of the questionnaire or on the organisation of the operation. Few comments were received from users, and most of the proposals made were taken into consideration. This should encourage Monstat to consider consultation as part of an educational process to involve users in statistical activities.

62. Arranging the publicity for the census is one of the important tasks in the census operation. This entails an educational campaign to gain the interest and cooperation of the general public. The aims are not only to dissipate any anxiety regarding the purposes of the census but also to explain the reasons for the various questions in the questionnaire and to offer some guidance as to the manner in which these questions should be answered. The publicity campaign may also be an important tool for increasing the completeness of census coverage, particularly among groups it is difficult to enumerate. Monstat did not consider outsourcing the creation and implementation of the strategy, but developed a comprehensive communication strategy on its own. The plan included the organisation of press conferences and the use of a slogan, leaflet, posters, billboard, TV and radio spots.

63. Monstat developed a logo internally, and was able to design all documents without waiting for the communication campaign:



64. Although the communication campaign was weak in terms of the number of leaflets distributed and the number of posters, an almost complete knowledge of the census operation was observed amongst the population. The logo gave the census a very dynamic image, and the mission noticed in the field that respondents were well informed about the census, thanks also to the discussion promoted by media and political parties on topics related to ethnicity, religion and language. However, also due to this factor, the population was not always aware of the main objectives of a population census, which are not to obtain data on sensitive topics such as ethnicity, religion and languages used by individuals.

65. It was recommended to carry out an evaluation of the various media used, and their impact. In particular, sending messages via SMS (short message service, on mobile phones) was a promising new medium.

Questionnaire design

Topics

66. The questionnaires were finalised in April 2010. Recommendations from experts as well as lessons learnt from the pilot census were taken into account. The questionnaires covered all the core topics of the Conference of European Statisticians (CES) Recommendations for the 2010 Round of Population and Housing Censuses. In addition, the following non-core topics were included in the questionnaires: de facto marital status, number of live-born children, school attendance, literacy and computer literacy, ethnicity, mother tongue, religion, disability, type of sewage system, air conditioning, electricity, main type of energy used for heating, and internet connection.

67. The question on 'Ownership of the dwelling' (Q.12): private, other (state and local administration institution), must be combined with the question on 'Basis for using the dwelling' in the household member list, to obtain the classification of type of ownership recommended in the CES Recommendations: owner-occupied dwellings, in cooperative ownership, rented dwellings, in private ownership, owned by the local or central government and/or by non-profit organisations, mixed ownership, other types of ownership. A single question in the dwelling form would have been more appropriate.

68. The questionnaires were in compliance with the CES Recommendations, except for the question on type of ownership.

Sensitive questions

69. Questions on ethnicity, religion, mother tongue and disability were considered as sensitive, and the response to these was not obligatory (see Legal basis for the census above). These questions were considered indispensable by the authorities. There is a law for national minorities in the country. Every minority representing more than 1% of the population can create its own national council. Religion and mother tongue are linked to ethnicity.

Montenegro has a National Strategy on Disability, and the data on disability were requested in support of this strategy.

Design

70. The questionnaires were prepared in all languages recognised in the constitution (Serbian in Cyrillic, Croatian, Bosnian, Albanian and Montenegrin) plus other languages spoken in the country: English and Russian. Only the Montenegrin version was used to collect data, and the Albanian version in areas inhabited by the Albanian population.

71. Only the individual form had a carbon copy, given to people interviewed, after the form had been signed. The head of households (or the person interviewed for the compilation of the questionnaire for the dwelling and households), was asked to sign also the form on dwelling and households. This procedure was described in the leaflet used in the communication campaign.

72. The two questionnaires, Individual form (P1) and Dwelling form (P2), were in general easy to use and well designed. However, the following observations were made in the field:

- a. The carbon copy was cumbersome to make and caused a waste of paper. Most of the people enumerated did not understand its use. In addition, some cases were reported of a family member looking at the answers given by another member. There was also a risk that carbon copies would be collected to produce unofficial 'results'. Despite the fanciful nature of such an assertion, it led to some rumour-mongering during the enumeration.
- b. Dwelling form (P2), question 3: Use of the dwelling. In the case of empty dwellings, the enumerators were frequently confused when trying to find the correct item among the very detailed possibilities: 'Use for housing only' or 'Temporarily vacant', or 'Abandoned', or 'For seasonal use, in summer house' or 'In family house', or 'In other type of building'. This classification mixed the use of the dwelling with the category and should be revised. In addition, no item was provided for dwellings occupied during the week by person working in a place but enumerated with their family in another place.
- c. Dwelling form (P2), question 14: Year of construction: Period of construction (for example by decade) would have been better because dwellers usually don't know precisely the exact year of construction.
- d. Individual form (P1), question 21: 'Has the person performed any regular or usual work for salary / profit (in cash, goods or services) during the period from 25-31 March 2011, at least one hour or has the person performed any kind of non-paid work (in enterprise, professional practice or on agricultural farm owned by any member of his/her family)?', although in line with the International Labour Organisation's recommendations, was too complex and should be rephrased. Instructions should be given to enumerators to follow a step by step protocol for this question.

- e. Individual form (P1), question 28: Industry. Industry is a notion which is difficult to understand by lay people, and examples should be given in the questionnaire;
- f. Individual form (P1), question 32: Disability. The question is written as follows: 'Does person have any difficulties or disability in performing every day's activities because of long term illness, invalidity or old age?' (Y/N) and if the answer is yes the type of disability is asked in the following question. This approach has probably led to an underestimation of disability as people do not necessarily declare that they have what may be considered minor disabilities, such as difficulties in seeing. The formulation proposed by the Washington Group is more appropriate: for each kind of disability, for example with seeing, the person is asked if they have no difficulty, some difficulty, or great difficulty in seeing, even when using glasses.
- g. The structure of the individual questionnaire was not logical and included many skips. For example, persons less than 15 years old were not asked questions 9 to 11, but had to answer to questions 12 to 20, then skip questions 21 to 29 on employment, and then answer to questions 30 to 35. The observation of interviews as well as the checking of questionnaires showed that this led to mistakes and corrections, especially during the first days of the enumeration. The structure should be organised in a way that all the questions regarding persons living abroad comes first, then the questions which also regards persons less than 15 years old, then persons not economically active, and finally persons economically active.

Printing

Maps

73. Census maps were printed at Monstat premises in Podgorica, as was done for the agriculture census. Monstat had very good printers and didn't face any delay in the printing. Map layouts were stored as pdf files and could easily be reprinted if needed.

74. Maps were provided directly by Monstat to municipalities and the Real Estate Agency.

Questionnaires and instruction manuals

75. About 300 000 forms were printed in A3 format (household and housing unit questionnaires), 800 000 forms in A4 format (individual questionnaires), and about 20 000 additional forms in A4 format. The number of copies printed of the instructions for enumerators manual was 4 000 (about 40 pages), of the organisation of census operations for municipal instructors manual it was 1 000 copies (about 20 pages), and of the methodological manual it was 1 000 copies (about 70 pages). The latter was distributed to each census municipal commission and included both the instructions for enumerator's manual and the organisation of census operations manual. A data entry operations manual was also printed for data entry operators.

76. A local printing company was given the responsibility for printing the census materials and delivering them to municipalities. The municipal commissions prepared the packages for field activities locally, for enumerators and for training.

77. The printing of the census questionnaires and instruction manuals was carried out properly. It was possible to produce a reprint of the questionnaires in Albanian in only one day.

Training preparation

78. Monstat planned and organised three levels of training, using a cascade training approach: at the first level, state instructors were trained by the census bureau at Monstat; at the second level, instructors in the municipalities were trained by the state instructors. Finally, at the third level, enumerators were trained by the municipal instructors. Three days of training were organised for municipal instructors and three days for that of enumerators.

79. The preparation of the training was completed in January and the training materials were ready on time.

Pilot census

80. A pilot census was conducted in June 2009. All the phases of the census were tested, including data capture and storage in a database. This operation was considered by Monstat as very fruitful and providing valuable lessons to improve the preparation of the census as well as training in all the steps.

81. The main lessons drawn from the pilot census concerned the questionnaires and the field work manuals. Some questions were rephrased for better understanding and others added, for example about activity. The order of the questions in the questionnaire was also modified.

82. The pilot census was well prepared, organised and conducted. The main lessons and technical recommendations drawn by Monstat and the experts have been taken into consideration.

MAPPING

83. The geographic framework of the 2011 population and housing census was based on a digital spatial data infrastructure (SDI) which considered only administrative and statistical units. The spatial units considered on the census questionnaires were municipalities and enumeration areas (EAs). EAs were coded from 001 to 999 in each municipality. In each EA, housing units were coded from 001 to 999. A linkage between EAs, statistical areas and settlements was established through linking tables. The smallest statistical territorial unit was the EA, ideally containing about 100 households in areas classified as urban and approximately 60 households in areas classified as rural.

84. The digital SDI for the population and housing census was organised in a Geographic Information System (GIS) composed of i) a base map layer of orthophotos derived from large scale aerial photographs taken between 2006 and 2009; ii) a polygon layer

representing municipalities; iii) a polygon layer representing settlements; iv) a polygon layer representing statistical areas; v) a polygon layer representing EAs; vi) a line layer with street names. Building boundaries and addresses are not represented.

85. The SDI was developed by the Real Estate Administration, a public mapping service under the Montenegro Ministry of Finance. Monstat, also under the Ministry of Finance, has established fruitful, informal institutional cooperation with that office. A web-based GIS application was developed by the Real Estate Administration for the preparation of the 2010 agriculture census, with methodological support from the Statistical Office.

86. For the population census Monstat used the maps prepared for the 2010 agriculture census. EA maps were re-sized when the estimated number of households was largely above (or largely below) 100 households for an EA. Buildings were not identified or coded. Maps were not updated prior to the enumeration. The re-sizing of EA boundaries was carried out by Monstat for about 400 EAs. The work was implemented by municipalities and the Real State Administration, under Monstat's supervision.

87. Although the census law prevented municipalities from deciding changes of settlement boundaries until the enumeration period, this did happen in a few cases. Monstat cooperated with municipalities to limit such cases as far as possible, and to adapt EA boundaries to the changed settlement boundaries when deemed necessary.

88. All the enumerators observed were equipped with an EA map. The majority of the maps seen did not support the identification of the buildings to be visited, especially in rural areas, where the scale of the maps was smaller than needed. The absence of building boundaries and building codes limited the use of maps for the monitoring of coverage during census operations.

89. In some cases, it was observed that enumerators were confused when recording on forms the code of their assigned EA. This was due to the use of the same map layout as used for the agriculture census, with an EA code shown on the map. The EA code to be used for the population and housing census was added by Monstat on the right hand side of the map. This issue was mentioned in the first mission report. However, it is expected that supervisors have corrected those errors.

90. Monstat should develop within the Institute specific competencies for use of the GIS census database implemented by the Real Estate Administration. This would include the establishment of a small GIS and Cartography Unit, composed of at least two staff, the implementation of a training programme for the staff appointed, and the development of specific activities relating to the spatial analysis of census data and its dissemination (thematic mapping, census atlas, web applications).

ENUMERATION

Method of enumeration

Use of sampling in the enumeration

91. What was used was not a long form for a sample of the population, but a single set of questionnaires for the whole population.

Units of enumeration

i. Person

92. In accordance with the census law, the census covered citizens of Montenegro, citizens of Montenegro having another citizenship, foreign citizens, and stateless persons, having a residence (permanent or temporary) in Montenegro, regardless of their stay in Montenegro or abroad at the time of the census, regardless of whether or not they possessed personal identification documents, and regardless of whether they lived in a dwelling, other premises or public areas. The census did not cover diplomatic personnel of foreign diplomatic and consular representative offices and their family members. Only people with their usual place of residence in Montenegro were considered to be part of the population of Montenegro.

ii. Household

93. A household was defined as a family or other community of persons living together and spending their income on primary living needs (housing, food, etc.) regardless of the presence of its members in the place where the household lives, or whether some of them live for a longer period in another place, i.e. abroad for the purposes of work, education or other. A household could also be a person living alone in the place of enumeration (a one-person household) without any household in another place or abroad.

iii. Institutional population

94. The population in institutions were enumerated as a so-called collective household, i.e. households consisting of persons living in institution for the permanent care of children and adults, hospitals for patients with long-term care needs, monasteries and other religious institutions.

95. Following a recommendation of the first mission, people in prison were recorded at the place of the prison and not in their household. There are two prisons in Montenegro. Staff from Monstat visited the prisons five days before the census started to interview the inmates personally. The prison staff only assisted in escorting them to the interview.

96. With regard to soldiers, there is only a professional army, and soldiers do not live in barracks but in their own private dwellings. They were therefore enumerated as part of the civil population. For the few soldiers outside Montenegro, a questionnaire was sent.

97. Hospitals, older people in nursing homes, religious institutions etc. were enumerated as collective dwellings and the population living there for more than one year was enumerated in the institution.

iv. Building

98. Buildings were not counted in the census, some of their characteristics only were reported in the dwelling form as appropriate to the dwelling.

a. Place of enumeration — definition of place of residence

99. The usual place of residence was the place where a person usually resides, regardless of temporary absence for the purposes of recreation, holiday, visits to friends or relatives, business, medical treatment or religious pilgrimage; also the place where a person has resided continuously, from at least 1 April 2010, or he/she arrived in that place later but with the intention of staying there for at least one year.

100. As mentioned above, the population outside Montenegro was reported in the household, but in a special category, and will not be counted in the Montenegro population. The government wanted to estimate the number of Montenegrins living abroad.

101. Students were counted in their family's household except if they had their own family. If they lived in a dwelling, this dwelling would be enumerated as vacant. Students who studied abroad were enumerated but not counted in the population.

Timing and length of the enumeration period

102. The enumeration took place by law from 1 to 15 April. There was no possibility of extending this period.

Time reference period for data

103. The reference date for the enumeration was midnight on 31 March.

104. The definitions of the units to enumerate and place of usual residence were in accordance with the CES Recommendations.

105. The case of students and commuting workers may have caused a problem. If they lived during the week at or near their place of work or study, and came back home at the week-end, the instructions were to enumerate them with their family and consider their dwelling during the week as vacant. This may lead to an undercounting of occupied dwellings, with consequences for housing policy.

106. For future censuses, it is recommended to create a category of 'occasional dwelling' for dwellings occupied during the week by workers or students. This will allow more accurate measurement of the occupancy and vacancy rates of housing units. The mobile population and homeless people should be enumerated during the first day of the enumeration to avoid counting them several times if they change their location during the two weeks of the enumeration. In addition, Monstat should consider the possibility of legally extending the enumeration period in the case of natural disaster (for example floods etc.).

Logistics

a. Distribution and return of questionnaires and materials

107. The packing and distribution to municipalities of the census materials was assigned to the company contracted for printing the materials. Maps were distributed by Monstat. A working group was in charge of logistical issues and prepared a logistical plan as well as the procurement documents.

108. The materials were sent back to Monstat at the end of April 2011. No specific problems were encountered regarding logistics.

109. Tables for the management of census logistics (number of enumerators, for census materials, number of questionnaires delivered, etc.) were prepared for each municipality.

b. Security and confidentiality

110. Statistical confidentiality and protection of the collected data were mentioned in the census law (Articles 18 and 20, respectively). Monstat had discussed these issues internally and with the municipal commissions. Nevertheless, no specific plan was developed to ensure the security and confidentiality of the documents during transportation.

Staff selection and training

111. Municipal instructors and enumerators were selected and appointed by the census municipal commission. The state instructor could advise on selection and the municipal commission usually took this advice into consideration.

112. Each enumerator received 0.5 € for each empty dwelling form, 1 € for each occupied dwelling form, and 0.7 € for each individual form, plus 15 € per day during the training. Municipal instructors received 0.07 € per questionnaire.

113. Following requests made by national councils, it had been accepted that enumerators should be from the most represented national group enumerated. According to the 2003 census, Montenegrins represent 43% of the population, Serbs 32%, Bosniaks 8%, Albanians 5%, Muslims 4% and Croats 1%. Other groups constitute less than 1% of the population. For the Roma population, 2 600 persons in 2003, Monstat anticipated difficulties in finding enumerators, due to the level of education. Therefore, Monstat made contact with non-governmental organizations involved in projects related to education in order to train some people to be enumerators before the official training. Apart from the Roma, who have their own settlements, other minorities are more spread over the country, especially in urban areas.

114. Training was organised in a three-tier system. At the first level, state instructors received a complete three-day training in February 2011. Then, each of them trained the municipal instructors and members of the municipal commission in their area for three days around 20 March. Then enumerators were trained for three days by the municipal instructors, a few days before the beginning of the enumeration, on 27–29 March.

115. Following a recommendation made by the mission, Monstat ensured that the State instructors were present consistently during the enumerators' training, to provide quality control and additional inputs when needed.

Supervision and monitoring

116. The instructions for supervision were provided in the manuals. Two days before the enumeration, the municipal instructor visited the enumeration area (EA) with the enumerator to identify the EA borders and ascertain the exact number of buildings and the approximate number of housing units to be enumerated.

117. On the first day of the enumeration, the enumerator had to interview just a few households and then show the completed questionnaires to the municipal instructor and the

state instructor. This review enabled the identification of misunderstandings on the part of both enumerator and municipal instructor, and the provision of additional training if needed.

118. During the enumeration period, the state instructor regularly checked a sample of questionnaires. The municipal instructor had to check every questionnaire of each enumerator.

119. Respondent and enumerator were requested to sign the questionnaire. In the case of refusal to respond, the municipal instructor contacted the household, and then the municipal commission if necessary. It could have happened that a dwelling was considered as empty whereas it was a refusal. The enumerator had to go three times, and could ask the neighbours if the dwelling was occupied.

120. Enumerators had to finish the data collection by 10 April, with the possibility to extend to 15 April only. In many municipalities, data collection was completed before 10 April.

121. At the end of the enumeration, municipal instructors and municipal commissions received the questionnaires and other forms from the enumerators. The municipal instructor checked every questionnaire and the calculations, and signed the documents they had checked. Then the municipal commission organised a meeting with the state instructor to check the materials. The state instructor had to check the questionnaire and the calculations on a sample basis.

122. As recommended, Monstat developed a strict protocol for the supervision and monitoring of field operations, with a set of indicators to be completed by the municipal instructor and the state instructor. A manual in Montenegrin and English languages 'Methodology for preparation, organisation, and conducting the census' was prepared by Monstat. It includes a) the census law; b) a general section on objectives, method and period of enumeration, and duties for respondents; c) a section on the organisation of field activities; d) guidelines for the enumeration; e) census forms with an example of how to fill them in.

Observation of field operations conducted by the mission

123. The mission observed the enumeration during the whole 15 day period. They visited each of the 21 municipalities of Montenegro during census operations. At the beginning of each visit to municipalities, a meeting was organised with the municipal commission. The objective of the meeting was to assess a number of points as reported in the table in Annex 1: composition of the commission, selection process, preparation and cartographic issues, premises, public attitude, and other topics the commission may like to discuss. In each municipality, census premises were visited, state instructors and municipal instructors were met, and a number of interviews made by enumerators to households were observed. The documents of at least 2 enumeration areas were systematically checked by the members of the mission in each municipality.

124. In total, 52 dwelling interviews were observed by the mission, representing 173 persons. The mission paid special attention to observing a large variety of situations, such as family households, older people, refugee camps, hospitals, and religious institutions, as well as various ethnic groups' population: Montenegrins, but also Albanians, Bosniaks, Croatians, Muslims, Romas and Serbs. The detailed tables are reported in Annex 2. The following points were checked:

- a. Did the household accept being enumerated?
- b. Did the enumerator introduce him/herself properly?

- c. Were the persons interviewed aware of the census?
- d. Did the enumerator copy the correct enumeration area (EA) code from the map onto the census forms?
- e. Did the enumerator establish coverage of usual residents?
- f. Did the enumerator inform the person interviewed that it is possible not to declare ethnicity, religion and language?
- g. Did the enumerator ask the questions as written in the questionnaires?
- h. Was the questionnaire filled in with a ballpoint pen?
- i. Was the questionnaire signed and a copy given to the person interviewed?
- j. Number of persons in the household.
- k. Total number of listed persons in P2 columns 10 and 13 (temporarily absent).
- l. Interview duration.

125. The overall impression was that municipalities prepared the census very carefully and offered the census staff good premises. The municipal parliament room was normally provided, and several other premises, in order that enumerators and instructors could work close to their area. The mission checked systematically that a special room was dedicated to the storage of completed questionnaires and that only the state instructor had the keys.

126. Good cooperation and spirit, within the municipal commissions and with the state instructors, was noted in each municipality. The selection process was conducted according to the Monstat recommendations,, with priority usually given to unemployed people. The selection procedure also included a test to be passed after training had been delivered.

127. Due to the country's employment situation and the payment proposed, many candidates applied, which allowed selection of the best. The mission noted the overall good calibre of the municipal instructors and enumerators, who were mostly students.

128. Some problems were reported regarding the cartographic preparation, especially relating to the small size of some enumeration areas in terms of dwellings/population, which led some enumerators to resign, as they would receive very few.

129. The municipalities reported some additional expenses incurred in providing vehicles to enumerators responsible for remote areas. Monstat gave assurance that all additional costs will be covered.

130. The observation of interviews showed good application of the instructions given to enumerators. The interview protocol was carefully followed. Only the information that the answer to the three questions on ethnicity, religion and mother tongue was optional was not systematically given, some enumerators preferring to give this only if the person showed some reluctance to answer. The average duration of interviews was between 30 and 45 minutes per dwelling.

131. There were no cases of two enumerators being appointed in one enumeration area (the Montenegrin language is well understood by all the population, with the exception of older Albanian people in some remote areas). The questionnaire was therefore also printed in the Albanian language (about 40 000 copies of the enumeration form and about 10 000 copies of the questionnaire for dwellings and households). The decision to print and use the Albanian version of the questionnaire was taken by Monstat just a few weeks before the commencement of data collection operations. This decision will most probably improve the overall quality of census data in areas where the Albanian forms will be used, but at the same time will potentially create an additional burden in the processing of such forms.

132. Each enumerator was equipped with a set of census materials (questionnaires, the booklet 'Kontrolnik' P3 with a total of 225 rows, one for each household, map, etc.).

Enumerators were mostly selected from the area they would work in, which facilitated acceptance by the population, including language issues, and good coverage of the enumeration area.

133. At the end of the enumeration, the aggregated numbers of dwellings, households, persons etc., were reported on a special form (P9) by the municipal commission and the state instructor. The state instructor entered the data in an Excel sheet and sent this to Monstat, where they were integrated into a database.

134. It was noted that there was no specific procedure for enumerators to monitor the coverage of the enumeration area. No forms were provided for enumerators to record the dwelling units to which it was not possible to gain access, and the number and dates of the second and third visits. It was observed that enumerators drew a plan of the buildings in a notebook, on which to mark dwelling units visited and not visited. The fact that enumerators were usually working in the area they lived in helped remind them about which housing units they had to come back to. However, the absence of such procedures for classifying housing units visited and not visited may create an issue of under-enumeration.

135. It was observed that over-enumeration was avoided sufficiently by listing in separate columns household members residing abroad or in other parts of the country. Those persons were not enumerated using the individual questionnaire and not considered as usual resident population.

136. Being able to report on behalf of other members of the household, although making enumeration easier, poses some problems:

- a. It allows a representative of the household to answer for another person even if that person is present. To ensure accuracy, but also as a matter of respect, answers should be obtained only from the person themselves and from another member only in the case of absence (or for children). The mission was present at some interviews where the husband was reporting for his wife while she was present in the room. Monstat should consider this point from a gender perspective.
- b. Reporting for absent household members is not strongly monitored. In the context of Montenegrin culture, it may happen that parents still consider their children as members of the household, even if they are adults and live in somewhere else. In addition, the place of residence of the child is not asked. The only situation where the name of the municipality can be known is if they work or study elsewhere, but the address is still asked. Therefore, the only way to check that the child is not enumerated elsewhere is by the ID number, which is not systematically reported by the parents, or by the name, which is difficult to check as it is subject to misreporting.

137. The numbering of dwellings is strange: dwellings are not numbered within the building but following a sequence. A more logical order should be adopted: Enumeration Area — Building — Housing Unit — Person.

138. The remuneration given to enumerators was generally good, with regard to the workload and the country's average wage. However, some enumerators were allocated enumeration areas with very few households, either because their EA was small, or in some cases because it was very large and a long time was required to interview the few houses, which were widely spread.

139. For future censuses, it is recommended to draw up a list of dwellings to be enumerated the day before the enumeration starts. For this, the enumerator would go through their enumeration area in a logical order (for example going left from a starting point, in the building starting from the ground floor and going left from the entrance etc.), and record the address and information on the location of each and every dwelling to be visited. There would be no need to contact the population for the completion of this task. This list would be used by the enumerator and supervisors to follow up the enumeration, and to note the visits and appointments so that no dwelling is missed. In addition, the list would provide the number of dwellings to be enumerated, and thus make the monitoring of enumeration easier.

140. It is also recommended to review the procedure for enumerating absent members of households. Firstly, to ask for the address where they stay elsewhere in the country during the week, and secondly to request written authorisation from the person if they are older than a certain age (e.g. 18 years).

DATA PROCESSING

141. After the end of the enumeration, questionnaires were sent to Monstat by the municipalities for data processing.

Data capture

142. When received at Monstat, questionnaires were put into an electronic format. An initial set of controls was performed to ensure the completeness of the documents before data entry.

143. The methodology adopted was manual key entry. The data entry application was prepared for the pilot census in Visual Basic and the entered data stored in an SQL server. This application was then adapted for the census.

144. After completion of data entry for an enumeration area, a report was displayed by the application in order to identify outliers. Some indicators, such as the number of households per dwelling, the number of persons per dwelling and so on were computed. This helped to identify data entry errors or field work discrepancies.

145. The data entry operations were carried out in premises rented by Monstat at walking distance from Monstat headquarters, at the 'Nikic' building in Podgorica. The premises comprised a set of separate rooms for data entry operators (7), for the storage of questionnaires (3), for controllers (1), and for IT support (1). The rooms for data entry operators contained 60 computers, one for each work station, and here about 180 operators entered census data, organised into 3 work shifts: the first from 07:00 to 14:00, the second from 14:00 to 21:00, and the third from 21:00 to 01:00. The data entered into each computer were stored in a server. Each operator was assigned a folder containing the census forms of a complete enumeration area (EA) to enter, and when all the forms of the EA were entered, the folder was returned to the storage room, ready to be checked by controllers. The delivery of forms to operators and their return were recorded by the person responsible for the storage room.

146. Data were entered by municipality and by EA. Priority was given to small sized municipalities, in order to test the overall procedure before entering large municipalities such as Podgorica. In general, a limited set of control tools were included in the application developed for data entry. These were: a) the provision of drop-down menus to help operators enter data and to avoid values not in the range of variables being entered; b) the definition of

a set of editing rules for some variables to improve consistency of data. No automatic imputation methods were used. In spite of previous plans, Monstat decided not to include in the application the option for operators to choose from a pre-coded list possible answers already encountered for open questions such as those relating to ethnicity, religion and mother tongue. Instead, they were to record in the data entry exactly what was written by enumerators on the P2 forms. The mission observed that, even though it seemed the most correct approach to enter such information, it created a large number of different answers which will be difficult to aggregate and interpret. Monstat reported that after 80% of the data were entered, about 2 000 different answers were found in the database, but that most of them were due to differences between language spelling characters.

147. The data capture rate was in accordance with the expected rate of 200 forms a day by operator. In total, 40 working days were needed to complete the data capture. On average, about 30 000 questionnaires were entered each day (about 11 000 during the morning and afternoon shifts and 8 000 during the evening shift).

148. Backups were made every day, both logically on the servers and physically on a DVD stored in Monstat headquarters.

149. The premises rented for data capture offered very good working conditions as well as the necessary security measures.

Coding

150. Coding, that is to say the process to assign classification codes to responses on the census form, took place after the data capture phase, when all questionnaires had been entered. The questions on education, occupation and industry were coded using a computer assisted application.

151. The coding process was carried out by municipality. Response wordings were sorted by frequency and treated together. The coding operator chose from the list of classification items the one which best corresponded to the response, and then all similar responses were coded with the same item. If the operator could not find a correct item, the response was considered as missing. For responses occurring only once in the municipality, the operator opened an 'individual coding' window, to see the complete individual form and choose a classification item using responses to other questions, such as schooling, occupation and industry. For industry, the application used the name of the company to find the official code in the business register if possible. Three groups of coders were set up for the three variables.

152. The coding application was basic and worked well. No complex algorithms were used, just choice from a list of classifications items. With regard to the volume of material to be coded, and the complexity of developing automatic coding algorithms, Monstat's choice was relevant. However, Monstat did not estimate the workload in terms of number of work days and did not have a clear view of the timetable for the coding phase before starting.

Data editing

153. Editing is the procedure for detecting errors in and between data records, and for adjusting individual items, for example by imputation. Monstat decided to conduct manual editing and imputation instead of automatic edits.

154. After the capture phase, automatic controls would be carried out in batch mode on the database to list discrepancies among variables, within a record and among records within the same households. An application would display the problematic records and specialised staff would be requested to correct discrepancies manually, following a process as well as their own expertise, based on the values of each variable. No imputation would be carried out for missing values, Monstat preferring to release tables with non-responses.

155. The editing program, written in Visual Basic, was clear and well documented, and included error counts and imputations flags, as recommended by the mission, to retain information about unedited data. Monstat could obtain the number of imputations, and number of edits by variable and by record. This information will form part of the quality report. This phase was expected to last two months, with 20 staff working in two shifts.

156. Monstat's decision to conduct manual edits was based on the experience of former censuses, but also considering the lack of experience as well as the insufficient time available to learn and develop automatic edits. Monstat's choice made sense, considering the context. However, the risk that successive manual controls would slow down significantly the process of cleaning the database, introduce biases or circular correction (e.g. by correcting a variable already corrected) was highlighted by the mission. It was therefore recommended to develop a reasonable set of controls for which manual corrections could be performed. A first set of controls related to sex and age was performed manually before releasing the first results in July. A second set has been prepared to run automatic controls for occupation, industry and educational attainment before releasing the final database.

Processing control

157. As recommended, Monstat set up a monitoring process for data capture. After the information from an enumeration area (EA) had been captured by an operator, it was randomly checked by a supervisor. Each operator had an identification number in the system and was checked individually.

158. At the end of the data capture phase, it was planned to conduct a quality control exercise on a sample of EAs. The questionnaires of these EAs would be completely captured again, and the results compared with the original capture. A supervisor would then decide what was the correct value in the case of discrepancies between the two captures.

159. The checking by a supervisor is not as effective as capturing by another operator and then the two captures being compared by a supervisor, and Monstat followed the recommendation to include a double-capture control. However, at the time of the mission, more than 1 000 EAs were captured but not yet checked, which represented 44% of the total number of EAs captured. This showed that the monitoring process was too complex and long to follow the capturing rate, with the risk of cancelling out the monitoring of the last EAs. It was recommended to review the monitoring process, for example to check only a sample of questionnaires, to speed up the process while maintaining a monitoring system during the whole life of the data capture process.

160. In addition, coding should be monitored, as the variables are complex to code.

Data capture quality control performed by the mission

161. In order to assess the accuracy of data capture, especially in the sensitive area of processing the questions on ethnicity, mother tongue and religion, the mission conducted a monitoring exercise on data capture.

162. In each of the 50 enumeration areas (EAs) sampled, two dwellings were chosen randomly. The responses on category of dwellings, surface area and the household list were compared with the corresponding recorded values in the database. For each individual in the household, responses on sex, date of birth, ethnicity, religion, mother tongue and activity status were checked. In total, 100 dwellings and 337 individuals were checked. No differences were found between the questionnaires and the database, confirming the high quality of the data capture.

Archiving

163. Monstat had no real archiving policy, neither for the census nor for other surveys. Databases were kept in the office of IT staff, but there was no formal documentation or archiving. In the case of damage caused to the premises by fire or flood, the statistical heritage of Montenegro could be lost. Following the recommendations of the first mission, Monstat started to develop an archiving policy, for the census and for other surveys.

DISSEMINATION OF THE RESULTS

164. The preliminary results, giving the population by municipality, were published on 13 May 2011. Monstat released a second set of results on 12 July, by sex and also by ethnicity, religion and mother tongue, in response to the insistent demands of some political parties.

165. Apart from the plan for first release, Monstat did not develop a complete timetable for the dissemination of census results, including dates and a description of the data to be released. The mission therefore recommended that Monstat develop a strategic plan, bearing in mind potential users and their needs. It was recommended to consider the following points:

- The most important section of the public is the country's inhabitants, and the way to feed back to them the information they provided (and paid for in their tax contributions), is to convey messages through the media. It is therefore, recommended to spread the dissemination over time instead of releasing all the results together. The media have limited capacity to convey messages if they are too numerous. It would also be good to develop a short analysis that 'tells a story'. This would be helpful for journalists in conveying the main messages of the census.
- Identify potential users and their needs. In that regard, it is not sufficient to showcase the products and services available. Many users are not aware that they could use statistical data in their daily jobs and it is the responsibility of the statistical office to 'sell' the data. An in-depth analysis of each category of users is necessary to understand their work, and to determine if and how census results could help them in their responsibilities. For example, Monstat should develop cooperation with the municipalities. The mission noted that the

municipalities had few expectations regarding the results of the census.. This demonstrates the need to educate them about the use of census results for their policy management. Monstat should develop a programme of dissemination specifically targeting municipalities. A short document, presenting the main results for the municipality in a user friendly way (small tables, graphs and maps) would be a good introduction to the wealth of information a census can provide. Monstat could then organise systematic meetings with the municipalities to present the results and better understand their needs, in order to propose appropriate products and services, such as on-request tables, maps etc.

- Give priority to online dissemination. Figures are more easily used in electronic format than on paper. Limit the use of paper publications to analysis, and not for raw tables. Much time is required to prepare a publication with tables, due to the physical constraints of the format on paper.
- Use the opportunity of the availability of census data to develop internal capacity with regard to dissemination and analysis of statistical data. This would also include the transfer of knowledge of basic mapping capabilities, and digital census maps from the Real Estate Administration inside the Institute, as already recommended in previous reports.
- Release data only if they have a high level of confidence, considering also the timeliness of dissemination.

166. Monstat would benefit greatly from technical assistance with dissemination, aspects of the development of a detailed plan and technical IT tools (including for mapping).

Privacy and confidentiality

167. The smallest geographical level for data dissemination is the settlement. Any cell in a table with less than three units is not displayed. It was recommended to Monstat to carefully analyse the question of confidentiality. The threshold of three units is insufficient to avoid data disclosure. Monstat could certainly take advantage of the numerous studies carried out in Europe under the auspices of Eurostat.

EVALUATION OF THE RESULTS

168. A Post Enumeration Survey (PES) was conducted immediately after the census enumeration, from 17 to 27 April, to estimate the coverage of the census and some content errors. There were 55 enumeration areas (EAs) sampled (around 1% of the total EAs) with probability proportional to size, stratified by urban/other type of settlement. In each sampled EA, every household was listed, with the number of members. In one out of ten households, each member was enumerated and a subset of census questions asked. The PES was conducted with the same reference date as the census.

169. The initial methodology was revised following the mission's recommendations.. In particular, the sample of 10% of households was directly sampled in the field using a table of

random numbers, and not from the census control list, in order to ensure independence between the census and the PES.

170. The matching operation was carried out manually by a working group.

171. Based on the review of the documentation provided by Monstat, the mission concluded that the PES was conducted in accordance with international recommendations. In particular, recommendations made earlier regarding the independence between census and PES were followed.

ANALYSIS OF THE RESULTS

172. As part of the dissemination strategy, a first programme of analysis was initiated. The mission recommended that Monstat develop a programme of analysis, alone or in partnership with other institutions (universities, ministries etc.) to analyse in depth the census results. For example, comparison of the demographic growth of the municipalities should lead to deeper analysis of internal migrations and movement of population from the municipalities of the north of the country to the capital or the south. As the first census of the country since its independence, the 2011 census should be used extensively to inform policy decisions.

IV. General conclusion of the assessment mission

173. In conclusion, the mission considered that the 2011 census of Montenegro was prepared, conducted in the field and processed in accordance with international recommendations, and in particular the recommendations made by the Conference of European Statisticians for the 2010 round of Population and Housing Censuses. In addition, the mission noted with appreciation the high standard of professionalism of the staff involved at all levels in the census, from Monstat as well as temporary staff. The mission considers that the census has achieved a high level of quality, especially in terms of accuracy and timeliness.
