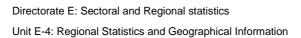eurostat

LUCAS 2012

(Land Use / Cover Area Frame Survey)

Technical reference document C-4:

Quality Control procedures

Issue 4/0 dated 13 January 2012

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DOCUMENT CHANGE RECORD			
ISSUE	*DATE*	*CHANGE AUTHORITY*	*REASON FOR CHANGE AND AFFECTED ECTIONS*
1/0	07/05/2008	Eurostat	Creation of version 07/05/2008
2/	12/02/2009	LuxSpace S.à.r.l.	Review of the entire document for adaptation to the LUCAS 2009 survey specifications - Version 12/02/2009
3/0	12/02/2009	Eurostat	Version 12/02/2009 applied during the LUCAS 2009 survey
3-1	12/02/2009	LuxSpace S.à.r.l.	Introduction of Eurostat comments
4/0	13/01/2012	LuxSpace S.à.r.l.	Update based on LUCAS 2012 Field Form - version 8 of 14/11/2011 and discussions on meeting with Eurostat on 12 January 2012

1 SCOPE

This document is part of a series of reference documents defining the framework of the Land Use / Cover Area frame statistical Survey (LUCAS).   The LUCAS reference documents are continuously improved and adapted taking into account the lessons learnt from the implemented surveys and the requirements of the LUCAS data & information users.

This document addresses one of the most important topics within LUCAS: Data Quality Control. Below detailed information and descriptions are given on which data and the way how data will be controlled, and by whom.

The current version of the document reflects the status as of 14. November 2011 considering the updated field form for the LUCAS 2012 survey.

2 THE ACTORS AND THEIR ROLES WITHIN THE DATA QUALITY CONTROL PROCEDURES

2.1   ROLE OF THE SURVEYOR (SU)

The surveyor's task is to carry out the field survey according to the LUCAS instructions. He is in charge to fill in the field form and keep it until the end of the survey respectively to hand it over to the regional/central office.   Hereby, the surveyor needs to respect the instructions given during the surveyor training and those provided in the LUCAS documentation.

The surveyor has to enter the data in the Data Management Tool (DMT), to control the data, to export the data and to forward the data to the responsible regional or central office of the field work contractor.   The surveyor controls all data regarding completeness, correctness and consistency during data collection at the point and during data entry, including GPS tracks and the anonymisation of the photos. The built-in controls of the DMT support the surveyor in this task. Any problem or inconsistency identified during data entry or data export needs to be verified with the original field form and other means at hand and corrected immediately.

If there is a feedback from the regional/central office, the surveyor corrects or completes the data. If necessary to do so, he has to go back to the field and to survey the (false or missing parts of the) point again.

2.2   ROLE OF THE REGIONAL/CENTRAL OFFICES (RO/CO)

The regional/central office receives the data from the surveyor, including photos and GPS tracks. The RO/CO imports the data into the DMT and initiates the quality control. Since there are many built-in

error correction features integrated in the DMT, data should be formally correct, complete and free of formal errors when received from the surveyor. This means that RO/CO shall concentrate on the trueness or accuracy of the data content (e.g. LC corresponds to the reality shown on the crop photo etc.). Detailed control procedures are listed in Chapter 3.

If any error is identified, RO/CO corrects the data directly if possible or returns the data to the surveyor requesting correction and/or clarification. The RO/CO shall give advice and guidance to the surveyors on how to avoid in the future the type of identified errors.

In the case of any formal or content error which cannot be corrected, it is mandatory to add a remark clarifying the circumstances. If such remarks are missing, data will not pass the QC carried out by LuxSpace or Eurostat.

All data collected during the 2012 survey campaign must be sent to LuxSpace.

2.3   ROLE OF LUXSPACE

2.3.1   Data control

LuxSpace will have a similar role to play as the RO/CO: LuxSpace anticipates formal correctness of data and assumes that data already went through RO/CO quality control. Almost identical cross checks are done as those specified for the RO/CO. Details on control procedures applied are listed in Chapter 3.

If any error in the submitted LUCAS data is detected by LuxSpace, data are sent back once to the RO/CO for correction. LuxSpace accepts only one re-submission of data. After that correction round, the data sets are directly forwarded to Eurostat with a status indicating that the data contains errors.

2.3.2   Follow-up missions

In addition to the data control, experienced experts in land cover / use information & statistics will visit the Field Work contractors to supervise and assess the sound application of proposed quality assurance measures by the FW contractors. These so-called "Follow-up" missions of 3-days duration will be organised in the early stage of the survey implementation to enable detection of possible systematic errors due to misunderstanding of instructions or any other reasons whatsoever. The expert will check the "office" phase as well as the survey implementation in the field. During the office phase of the mission, the set-up and the organisation of the survey at the central (or a regional) office of the relevant country will be subject of the assessment. A specified checklist will be executed. The field survey implementation will be assessed based on a field trip accompanying a surveyor on a sample of points selected. The FW contractor is requested to provide any assistance the expert might need to carry out his task, including putting relevant documentation at disposal of the expert timely in advance of the visit. The report of the expert serves Eurostat as input to their quality assessment of

the survey implementation. In case it deems necessary, Eurostat will request the FW contractor to assist to a second ad-hoc visit of the expert of duration of one day.

2.4   ROLE OF EUROSTAT

Eurostat supervises the whole quality control process and intervenes if systematic errors are detected at any step.

Eurostat also makes random checks to the data received from LuxSpace according to the criteria presented in detail in Chapter 3.

3 CONTROL PROCEDURES

In the following more details are provided on control procedures being applied.

Please note that this is not an exhaustive list and other additional checks can and will be carried out.

3.1 Data import/export

The LUCAS Data Management Tool (DMT) shall be used as the only tool for data entry, import and export. Automatic control procedures embedded in the DMT are described in the DMT Manuals (ref. document D-1).

3.2 Surveyor ID (Field A)

To be defined by Central offices. For each surveyor an individual ID should be assigned to enable tracing the surveyor and "his/her" data.

3.3 Point_ID (Field B)

Fixed through the sample design. Correctness checked automatically by means of the GPS geographical coordinates and the "Observation Distance" entered by the surveyor.

3.4 Date (Field 1)

Role	Check
DMT	Checks that the survey date is within the specified survey period
QC SU	Check correctness.
QC RO/CO	Cross check with photo shooting (creation date of photo file) if questionable.
QC LXS	Cross check with photo shooting (creation date of photo file) if questionable.

3.5 Start time and End time (Field 2, 3)

Role	Check
QC SU	Check that the survey time is more than 15 min and less than 1 h 15 minutes. Give

	reasons for a shorter or longer time in the remarks (Field 15).
QC RO/CO	Duration of survey/point < 15 min: check remarks and field documents and have a close look to the data, particularly the transect..
QC LXS	Duration of survey/point < 15 min: check remarks and field documents and have a close look to the data, particularly the transect. Add surveyor on the watch list in case of problems.

3.6 Type of Observation (Field 4, 5), Latitude/Longitude (Fields 6, 7, 8, 9, 10), Distance (Field 12) and Direction (Field 13)

Role	Check
QC SU	Check that lat/long is entered with six decimal degrees. Check together with distance to the point whether point ID, lat/ long, W/E are correct. If Type of Observation is 2, 3 or 4, add a comment.
QC RO/CO	Check whether lat/long is given in decimal degrees, with six decimals. Checks whether observation position/location is reasonable in the given context: check with Distance to the point (Field 12), and Observation Direction (Field 13), as well as with the field documents and orthophotos. In case, check if Photo-Interpretation is justified. Check with GPS tracks/waypoints on orthophotos. Check with previous LUCAS survey data. Add any comment if necessary.
QC LXS	Check whether lat/long is given in decimal degrees, with six decimals. Checks whether observation position/location is reasonable in the given context, together with Distance to the point (Field 12), and Observation Direction (Field 13), as well as with the field documents and orthophotos. In case, check if Photo-Interpretation is justified. Check with GPS tracks/waypoints. Check with previous LUCAS survey data.

3.7   Elevation (Field 11)

Role	Check
DMT	Automatically checked with elevation derived from public datasets used during stratification
QC SU	none
QC RO/CO	none
QC LXS	none

3.8   Description of the way to the point (Field 14)

Role	Check
QC SU	Check that the comments are reasonable. Preference should be given to the use of standardised comments. If free text is used, SU shall make sure that the comments are clearly understandable.
QC RO/CO	Check if free text can be transformed in standardised comments and do so. Provide translations in English if textual comments are important for the QC carried out by LXS and Eurostat.
QC LXS	Check whether comments are reasonable.

3.9   Remarks about special circumstances (Field 15)

Role	Check
QC SU	Check that the comments are reasonable, understandable and pin-pointing the encountered situation.
QC RO/CO	Check if free text can be transformed in standardised comments and do so. Provide translations in English if the comments are important for the QC carried out by Eurostat (e.g. why the point was not observed etc.).
QC LXS	Check whether comments are needed, useful and understandable.

3.10 Land Cover and Land use: LC1 (Field 16), LC2 (Field 17), LU1 (Field 27) and LU2 (Field 28) and Plant species (Field 23, 24)

Role	Check
QC SU	Check LU and LC combination for consistency. Check with LC/LU from the previous survey (if available) for consistency. Add a remark if necessary.
QC RO/CO	Check LC and LU with all photos and ground documents for accuracy. Check LU and LC combination for consistency. Check consistency with previous data if available. Add a remark if necessary.
QC LXS	Check LC and LU with all photos and ground documents for accuracy. Check LU and LC combination for consistency. Check consistency with previous data if available.

3.11 Area Size (Field 19)

Role	Check
QC SU	Check with the landscape photos. Add remark, if orthophoto differs from reality (e.g. outdated).
QC RO/CO	Check with the landscape photos, orthophoto and remarks.
QC LXS	Check with the landscape photos, orthophoto and remarks.

3.12 Height of trees at the moment of survey (Field 20)

Role	Check
QC SU	Check with the photos.
QC RO/CO	Check with the photos.
QC LXS	Check with the photos.

3.13 Height of trees at maturity (Field 21)

Role	Check
QC SU	Check with the photos.
QC RO/CO	Check with the photos.
QC LXS	Check with the photos.

3.14 Width of Feature (Field 22)

Role	Check
QC SU	Check with the orthophoto. Add remark, if orthophoto differs from reality.
QC RO/CO	Check with ground document, photos and remarks.
QC LXS	Check with ground document, photos and remarks.

3.15 Percentage of land coverage LC1/LC2 (Field 24, 25)

Role	Check
QC SU	Check with the landscape photos/crop photo.
QC RO/CO	Check with the landscape photos/crop photo.
QC LXS	Check with the landscape photos/crop photo.

3.16 Land management (Field 29)

Role	Check
QC SU	Check with crop photo and landscape photos.
QC RO	Check with crop photo and landscape photos
QC LXS	Check with crop photo and landscape photos

3.17 Special Remark on land Cover/Land use (Field 30)

Role	Check

QC SU	Check with crop photo and landscape photos.
QC RO	Check with crop photo and landscape photos
QC LXS	Check with crop photo and landscape photos

3.18 Special Status (Field 31)

Role	Check
QC SU	
QC RO	Checks not applicable.
QC LXS	Checks not applicable

3.19 Presence of water management (Field 32)

Role	Check
QC SU	Check that the photo has been taken.
QC RO	Check whether photo taken and water management is visible on the photo. Check if the code coincides with feature on the photo.
QC LXS	Check whether photo taken and if the photo is of good quality. Check if the code coincides with the feature on photo.

3.20 Source, Type of irrigation and Delivery System (Field 33 - 35)

Role	Check
QC SU	Check that the photo has been taken.
QC RO	Check with photos if possible
QC LXS	Check with photos if possible

3.21 Transect (Field 42)

Role	Check
QC SU	Check type (and length in case of point sampled for that) with the transect photo.

	Crosscheck with orthophoto for completeness if necessary. Add a remark if orthophoto differs from reality.
QC RO/CO	Check with orthophoto, ground document, landscape photos and GPS track for fundamental mistakes and incompleteness. Check if the first element coincides with rules (if transect starts with linear feature, look if N rule applied etc). Check whether visible structural elements in E direction appear in photos and transect. Check that the possible photo interpretation has been marked.
QC LXS	Check with orthophoto, ground document, landscape photos and GPS track for fundamental mistakes. Check if the first element coincides with rules (if transect starts with linear feature, look if N rule applied etc). Check whether visible structural elements in E direction appear in photos and transect. Check that the possible photo interpretation has been marked.

3.22 Remarks to the transect (Field 43)

Role	Check
QC SU	Check that comments are understandable and pin-pointing the specific situation, use standardized remarks whenever possible.
QC RO/CO	Check that comments are understandable. If free text is used check whether they can be converted into standardized remarks. Translate into English if of relevance for QC.
QC LXS	Check if potential problems have been commented.

3.23 Point, Crop, Landscape, Irrigation, and Transect (and in case Soil) Photos (Field 44 - 52)

Role	Check
QC SU	Check that all required photos are taken and of good quality. Rename the photos and take care that the photos are correctly assigned.

	Check whether photos need to be to be anonymised, and do so if necessary
	Check the physical size of the photo and compress if necessary.
QC RO/CO	Check completeness of photos, whether Taken/Not taken coincides with photos available.
	Check that the quality of the photos is good.
	Check whether photos have been correctly assigned to each category.
	Check whether not relevant fields are correctly ticked or whether photo should have been taken.
	Check whether photos are in correct format.
	Check the physical size of the photo and compress if necessary.
	Check whether photos have been multiplied/copied. It is not allowed to copy the photos.
	Check whether photos that need to be anonymised have been indicated and anonymised.
QC LXS	Check completeness of photos, whether Taken/Not taken coincides with photos available.
	Check that the quality of the photos is good (focused, light conditions OK etc.).
	Check whether photos have been correctly assigned to each category (e.g. irrigation photo not taken as W landscape photo).
	Check whether not relevant fields are correctly ticked or if photo should have been taken.
	Check whether photos are in correct format.
	Check whether photos have been multiplied/copied.
	Check whether photos that need to be made anonymous, have been indicated and anonymised.