



AGEA (Italian Paying Agency)



Italian LPIS system

**How Italy implemented LPIS QA in 2012 and How
Commission Auditors checked this**



Baveno, October 2013



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SUMMARY

Main arguments:

- LPIS QA 2012 in Italy – how Italy has implemented it
- Commission Audit 2013 Inquiry N°AA/2013/035 – How Commission Inspector performed it
- First EC Audit about this theme in Europe
- This presentation would give the Audit Report synthesis for other MS benefit



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Italian Payment Agencies and applications numbers

• AGEA:	14 REGIONS	803.340 applications
• APPAG:	PROV TRENTO	5.696 applications
• ARCEA:	REGION CALABRIA	115.602 applications
• ARPEA:	REGION PIEMONTE	38.880 applications
• AGREA:	REGION EMILIA ROMAGNA	48.501 applications
• ARTEA:	REGION TOSCANA	43.568 applications
• AVEPA:	REGION VENETO	88.568 applications
• OPLO:	REGION LOMBARDIA	34.769 applications
• OPPAB:	PROV BOLZANO	12.300 applications

AGEA – NATIONAL coordination body 1.191.575 total applications



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Italian Payment Agencies – other info

- About 1,2 millions applications per year
- About 300.000 sKm
- About 100.000 sKm Declared
- 70 millions of cadastral parcel –12 millions declared
- Each Payment Agency contributes to update its LPIS
- AGEA coordination maintains National LPIS and IACS connected with other local agencies
- AGEA coordination performs LPIS QA inspections for all Payment Agencies



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LPIS QA 2012 in Italy – Art 31 a

Art. 31 a Reg. EC 1122/2009 By a derogation from Article 31 Member States may decide to replace checks on control samples (based on a risk analysis) with checks based on ortho-images used for updating LPIS referred to Article 6.

Before applying this Article Member States must:

1. Perform a complete update of the agricultural parcel identification system within the previous three years.
2. Apply successfully LPIS-QA during two years preceding the application of this Article.
3. not exceed 2 % rate of errors found in random checked on-the-spot samples in the two preceding years of this Article application.

Applying the above Article Italy decided to reduce OTSC in 2012



LPIS QA 2012 in Italy – art. 31 a

Italy completed the first LPIS updating cycle (three years) in 2009 (2007-2009)

- LPIS_QA 2010 results:
 - Based on Commission instructions LPIS QA 2010 was re-performed with 2011 rules
- LPIS_QA 2011 results:
 - All the 7 LPIS Quality elements were in the expected ranges
- LPIS_QA 2012 results:
 - All the 7 LPIS Quality elements were in the expected ranges

Also for OTSC the rate of error during the two precedent years (2010-2011) was below 2%

LPIS QA 2012 in Italy - Reference Parcel

- According to ATS the cadastral parcel was identified as the Official Italian Reference Parcel.
- The Abstract Test was carried out once during the first LPIS QA Campaign in 2010.
- The AGEA coordination body performed at central level the LPIS QA Exercise
- AGEA coordination body used all updated images sources: satellite VHR acquired for CwRS and aerial images used for the annual LPIS Refresh.
- AGEA acquires aerial images (IR and RGB – 50 cm pixel) for a third of the National area each year

LPIS Aerial ortho-imagery last acquisition plan

LPIS QA 2012 in Italy - Reference Parcel



Italian ETS Scoreboard 2012 - 1

2012 LPIS quality assessment report - ETS v5.2

Member State:	Italy	Region:	
Reference parcel	Cadastral parcel	Scheme	SPS
Sample size:	1250		

PART 1: Quality Elements

1. Maximum eligible area:

Score 2012:	100,23 %	Target:	98% ≤ x ≤ 102%	Conformance 2012	conforming
Score 2011:	99,91 %	Target:	98% ≤ x ≤ 102%	Conformance 2011	conforming
Assessment:	QE1 - Measure 10201: the result for this Measure is equal to 100,23%; it is inside the expected range of 98% and 102%.				
Effect of actions:					
Self-evaluation:					

2a. Proportion of RPs (>0.1 ha) with incorrectly recorded area or "contaminated" with ineligible features.

Score 2012: n _{nc} =	8	AC _{Proportional}	18	Conformance 2012	conforming
Score 2011: n _{nc} =	14	AC _{Proportional}	26	Conformance 2011	conforming
Assessment:	QE2 - Measure 10202_2: the result for this Measure is equal to 8 not conforming RP out of 205 RP; it is below the acceptance number expected which is 18.				
Effect of actions:	2012 is the last year of the second LPIS update cycle; the great part of not conforming parcels are in poor pasture areas which were been object of an overall revision concluded this year.				
Self-evaluation:					

Italy ETS Scoreboard 2012 - 2

2012 LPIS quality assessment report - ETS v5.2

Member State:	Italy	Region:	
Reference parcel	Cadastral parcel	Scheme	SPS
Sample size:	1250		


PART 1: Quality Elements

2b. Distribution of RPs, according to the correctness of the eligible area recorded

	≤ 50	> 50 ≤ 20	> 20 ≤ 12	> 12 ≤ 8	> 8 ≤ 4%	> 4 ≤ 2%	> 2 ≤ 0	> 0 ≤ 2	> 2 ≤ 4	> 4 ≤ 8	> 8 ≤ 12	> 12 ≤ 20	> 20 ≤ 50	> 50
Score 2012: n _i %	0,34	0,34	0,34	0,34	2,32	4,75	5,42	78,98	3,05	2,03	0,34	0,00	1,02	0,68
Score 2011: n _i %	0,00	0,26	0,78	0,52	1,04	4,42	12,73	69,09	5,44	3,63	0,52	0,52	0,52	0,52
Assessment:	QE2 - Measure 10203: the table above shows the RP distribution in respect with the recorded eligible area. The RPs were 295 in total													
Effect of actions:	for this measure no Quality Expectation is established													
Self-evaluation:														

3. Categorization of the non-conforming RP

Issues →	updates	upgrades	completeness	errors	design	GAC	Conformance (AC _{nonconform})
Score 2012: n _{nc} =	1	0	0	19	6	0	conforming
Score 2011: n _{nc} =	2	0	0	29	4	0	conforming
Assessment:	QE3 Measure 10204: the rate of non conformity for all the causes is equal to 2,08%; the erroneous processing cause rate is equal to 1,52%.						
Effect of actions:	Quality Expectation for this measure is expressed as limiting Quality of 12,5 and results in an acceptance number of 26						
Self-evaluation:							



Italy ETS Scoreboard 2012 - 3

2012 LPIS quality assesement report - ETS v5.2


Member State:	Italy	Region:	
Reference parcel	Cadastral parcel	Scheme	SPS
		Sample size:	1250

PART 1: Quality Elements


4. Occurrence of RP with critical defects

Score 2012: n _{ac} =	14	AC	18	Conformance 2012	conforming
Score 2011: n _{ac} =	11	AC	18	Conformance 2011	conforming
Assessment:	QE4 - Measure 10205: the total number of parcel affected by critical defect is 14; 8 RP with the Total ineligible area Defect and 6 with invalid RP perimeter;				
Effect of actions:					
Self-evaluation:					

Quality Expectation for this measure is expressed as Limiting Quality of 12,5 and results in an acceptance number of 18



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Italy ETS Scoreboard 2012 - 4

2012 LPIS quality assesement report - ETS v5.2


Member State:	Italy	Region:	
Reference parcel	Cadastral parcel	Scheme	SPS
		Sample size:	1250

PART 1: Quality Elements

5. Ratio of total declared area in relation to the total area recorded for the conforming RPs

Score 2012:	V1 %	87,20	V2 %	77,00
Score 2011:	V1 %	76,46	V2 %	78,00
Assessment:	QE5 - Measure 10206: ratio of total declared area in relation to the total area recorded, in the ETS (V1) and in the total IACS (V2)			
Effect of actions:				
Self-evaluation:				

for this measure NO formal quality expectation has been formulated



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Italy ETS Scoreboard 2012 - 5

2012 LPIS quality assessment report - ETS v5.2

Member State:	Italy	Region:	
Reference parcel	Cadastral parcel	Scheme	SPS
		Sample size:	1250

PART 1: Quality Elements

6. Cumulated rate of non-conforming reference parcel due to undetected or unaccounted land cover changes, as observed in ETS, accumulated over the years

Score 2012:	0,05 %	Target	< 25 %	Conformance 2012	conforming
Score 2011:	0,22 %	Target	< 25%	Conformance 2011	conforming
Assessment:	QE6 Measure 10207: LPIS cumulative land changes				
Effect of actions:	the good result for this measure depends on the short updating frequency of the Italian LPIS (Refresh)				
Self-evaluation:					

- The expected Conformance level for this measure is below 25 %, expressed as cumulative rate of not detected parcel's change; counting from the reference year, parcels were systematically verified.
- Italy has a short updating cycle and as we have seen the main problem is not the lack of land change detection, but thin pastures interpretation.



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Italy ETS Scoreboard 2012

2012 LPIS quality assessment report - ETS v5.2

Member State:	Italy	Region:	
Reference parcel	Cadastral parcel	Scheme	SPS
		Sample size:	1250

PART 1: Quality Elements

7. Rate of irregularities determined during on-the-spot checks

Score 2012:	0,0000	X ²	>0.05	Conformance 2012	conforming
Score 2011:	0,10	X ²	>0.05	Conformance 2011	conforming
Assessment:	QE7 Measure 10208 - OTSC rate of irregularities: in 2012 the OTSC application which matching with ETS sample are 4; and none of them is irregular by an OTSC point of view; so this measure is Not Applicable.				
Effect of actions:					
Self-evaluation:					

For a compliant LPIS system the probability value should be bigger than 0.05: Italian value is not bigger than the conformance value, due to a low rate of common RP between LPIS_QA sample and OTSC we considered this measure not Applicable



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AUDIT



How Commission Auditors performed this

- Inquiry no. AA/2013/035 Regulations (EC) Nos. 73/2009, 1120/2009 and 1122/2009.



Baveno, October 2013



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AUDIT preparation

Audit requirements for Italian Authorities

- LpisPoligonZeroState - parcels situation at the first control step – all the parcels within a 100 m. buffer from the sampled parcels

To facilitate the Audit execution Italian aut. have been invited to make available the following:

- inspection procedure used during the LPIS Quality assessment execution;
- access to all the data sources used during the controls
- two WS with operators to make available all the database related to LPIS QA



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Audit First day

Auditors presented the program of the Inquiry and the Italian authorities gave presentations about:

LPIS QA Methodological procedures used by AGEA to perform the test;

LPIS QA 2012 Results - Assessment report and scoreboard


Discussion about the argumentations raised during Italian presentations



Audit first and second day

Audit prosecuted with the review of several RP belonging to three different ETS categories used during ETS works.

- skipped parcels = parcels which failed feasibility for inspection (measure 10100)
- parcels not feasible for measurement = parcels which failed measurement (measure 10101)
- measured parcels = parcels really measured, used for the area based measure calculation procedure.




Audit field visits

- Auditors chose 7 parcels within measured parcels, located in control zone Molise Region (250 km from Rome) for a field checking of the ETS correctness.
- the second day afternoon and the whole third day were entirely dedicated to these field inspections
- after the last field control, Audit responsible explained her observations about the entire Italian control process, pointing out both major considerations and weakness points

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Audit progress

Auditors main observations:

- **Scope of the Quality Assessment**
 - Size of total eligible area (reference population)
 - Parcels with reference area "0"
 - LPIS QA performed on information that is not the basis for cross-checks
- **Accuracy of imagery**
- **Review of the ETS**
 - Skipping of reference parcels
 - Review of parcels measured during ETS inspection
 - **Review** of the ex post verification (quality control)
 - Detailed review of parcels measured in control zones MOLIS
- **Representativeness of the reference parcels included in the ETS**
- **Other methodological remarks**

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Audit remarks in detail

Commission Inspectors observations:

- **Scope of the Quality Assessment**
 - *Size of total eligible area (reference population)*
- Commission Inspectors contested that figures related to the overall IACS eligible area delivered during the ETS exercise and those delivered in the audit were different.
- AGEA judges that this is not so strange, because data used for ETS Score-Board 2012 come from the annual statistics submitted under Art.84 of R.1122/2009 **on 15 July 2011** and those delivered to the auditors come from the same statistics but submitted on **15 July 2013**.
- On the other hand, when the Scoreboard was produced (January 2012), 2011 data appeared as the last available statistics

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Audit progress

Commission Inspectors observations:

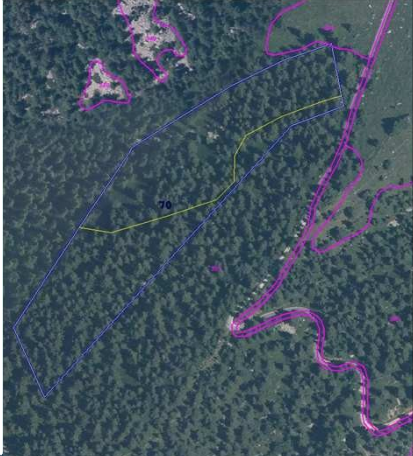
- **Scope of the Quality Assessment**
 - *LPIS QA performed on information that is not the basis for cross-checks*
 - EC auditors found an issue because they found a parcel (NOT in ETS sample) which, despite it was correctly classified on LPIS updating layer, it was not correctly reported on "living LPIS".
 - LPIS QA 2012 was performed on the same information data-set used for cross checks (simply it was an error)
 - The possible incongruence comes from the updating publication priority of AGEA.
 - When on the "Live" LPIS was detected a more "reliable" (such as field inspection) land cover updating do not cover the data.
- **Learned lesson: review priority rules**

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Audit progress

- **Review of the ETS**
 - Review of parcels measured during ETS inspection
 - Commission, considering that most of the skipped parcels were on permanent pasture, conducted a specific check on these parcels
 - Commission states that “it was found that the information for parcel D666-37-63.70 was different between the 2 systems (ETS and the Live system)”.
 - *The Italian system is only one; the found differences were only due to errors*



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Audit progress

Commission Inspectors observations:

- **Accuracy of imagery**
 - Commission states that: Italian system allows three image shifts to ensure the correctness of the RP positioning over the imagery. Auditors worried about the possible double accounting of areas.
 - Italian system allows only one general shift: before the interpretation of the new raster, the imagery is shifted (in X and Y direction) to ensure compatibility between the previous image. The used tool in this operation is called “macroarea”
 - Only during some OTSC or after a Farmer claim for revision, Back-office operators could perform a local shift when the cadastral wrong positioning do not allow the correct eligibility attribution.

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Audit progress

Commission Inspectors observations:

- **Review of the ETS**
 - *Skipping of reference parcels*
 - All skipped parcels (117) were screened by DG JRC in view of the mission preparation; 20 were indicated as potentially incorrectly skipped
 - A screen review of the above 20 parcels confirmed unduly skipping for 14RP
 - **Italian Authorities really recognized as erroneously skipped only 8 RP**

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Audit progress

- **Review of the ETS**
 - *Skipping of reference parcels*

Erroneous skipping causes:

 - Some parcels were in wrong skipping mode by material errors
 - Some were skipped due to the failure of SW app in showing some parcels (belonging to certain PA) led interpreters in error
 - Some RP were skipped due to a wrong interpretation of the guidance
 - **Learned lesson: always re-check more and more times the skipped parcels**

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Audit progress

- **Review of the ETS**
 - *Skipping of reference parcels*

Errors, in the other cases, could be:

- Italian erroneous interpretation of ETS rule?
- Or
- maybe rules not enough fitted for cadastral systems?

Lesson learned:

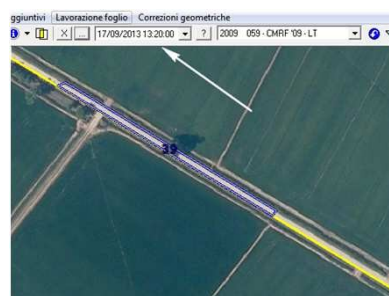
- Knowledge of cadastral systems to be improved

Skipping of reference parcels - example

- **Parcel skipped as ParcelGeometryIsNotAvailable – T5**



Commission concluded that : there were different parcels with the same reference number . This goes against the principle of Art.17 of R.73/2009 requiring parcels to be uniquely identified.



The problem was that the parcel originally identified as 39 was really 29. the centroid was misplaced.



Audit progress

Commission Inspectors observations:

- **Review of the ETS**
 - *Review of the ex post verification (quality control)*
- Quality controls performed by the Italian authorities were carried out by 2 groups: first group checked the feasibility for inspection, second, checked the feasibility for measurement.
- Each group then checked the other.
- *This procedure is not considered to be in line with the ETS recommendations, which foresees the verification and confirmation of the ETS observations for all reference parcels belonging to the QC sample by independent operators.*
- *Lesson learned: organize always two independent groups*




Audit field visits

- **Review of the ETS**
 - *Detailed review of parcels measured in control zones MOLISE*
- Commission Auditors wanted to field check 7 parcels they considered as incorrectly assessed.
- After the field inspection they stated that For 6 of 7 parcels, the ETS inspection by the Italian authorities could not be confirmed. **2 parcels were at least partially ineligible, the maximum eligible area of other 2 could not be reproduced in situ and 2 others had issues with local shifting.**

- The Italian point of view confirmed this judgment only in three cases




Lesson learned:

AGEA agreed that some RP during the ETS exercise need rapid field visits to be better investigated for eligibility or other issues (e.g. boundaries identification in case of doubtful interpretation)



Audit Field visits example

- This parcel was judged as measurable by ETS interpreter because there were not ineligible elements around its boundaries
- Really the southern part was encroached with bushes and trees, making the parcel both not measurable and not eligible in part.

Audit Field visits example

- The Auditors wanted to measure eligibility by GPS and the measure was in line with the respective Observed area.
- But a little overlap between the two neighboring cadastral parcels was found (because they belonged to different cadastral maps).
- They wanted to measure the distance between two visible corners on ground for comparing it with LPIS cadastral vectors and the measure on control image.


GPS: 153,45 meters
 On the LPIS vector: 155,47 meters
 On the image: 152,84 meters







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Conclusions

Generally

- LPIS QA is a good tool to check the system reliability and to identify system weaknesses
- LPIS QA guidelines should be still improved for Cadastral based systems

In Italy

- Next target in the future could be a system with only one general shift, before the photo-interpretation
- Next LPIS QA task will always foresee field visits in case of doubtful interpretation.
- More attention to skip parcels activity during feasibility for inspection

